

REPORT

2009 SCIENTIFIC EXPEDITION TO

MOUNT BOSAVI

**SOUTHERN HIGHLANDS
PAPUA NEW GUINEA**

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SUMMARY

An international team of scientists and filmmakers spent six weeks in the forests in and around Mount Bosavi in the Southern Highland Province of Papua New Guinea. In the course of the expedition, it is estimated that at least forty new species were collected. These include at least sixteen new species of frog, two new species of lizards, three new species of fish, one new species of bat and an undescribed, endemic subspecies of the Silky Cuscus were documented. Another mammal and the largest new species of animal discovered during the trip, was a Woolly Giant-rat, found in the forest inside the crater of Mount Bosavi. In addition there are undoubtedly many new species of insects and spiders represented in the material collected. Our findings show that Mount Bosavi and the surrounding area is unusually rich, especially in local and regional endemic species. It is therefore vitally important for conservation organisations and the government of Papua New Guinea to work in partnership with local landowners to ensure that the forests of Mount Bosavi are incorporated into Papua New Guinea's protected area network as soon as possible.

THE TEAM

Dr Allen Allison: Reptile expert from the Bishop Museum, Hawaii.

Steve Backsall: Naturalist and climber.

Gordon Buchanan: Wildlife cameraman with 20 years experience.

Dr Jack Dumbacher: Bird expert from the California Academy of Sciences.

Dr Kristofer Helgen: Mammal expert from the Smithsonian Institution, Washington.

Bulisa Iova: Biologist from the Papua New Guinea National Museum.

Ulla Lohmann: Photographer.

Alanna Maltby: Bat specialist from the Zoological Society of London.

Dr George McGavin: Insect expert from the Oxford University Museum of Natural History.

Muse Opiang; Mammal specialist from the Papua New Guinea Institute for Biological Research.

Dr Phil Shearman: Remote sensing expert from the University of Papua New Guinea.

Kwiwan Sibiu: Naturalist and guide with specialism in birds

Dr Philip Willink: Fish expert from the Chicago Field Museum.

INTRODUCTION

New Guinea is the world's largest and highest tropical island with an area just over 785,000 km². Geologically complex, the island of New Guinea forms part of a single landmass Australia-New Guinea, connected by a shallow continental shelf. The two became separated when the land bridging them became flooded at the end of the last ice age when sea levels began to rise. Although making up less than one percent of the Earth's surface area, New Guinea harbours a disproportionately large number of species as much as 70% of which may be found nowhere else. Politically, the island is roughly divided down the middle by a line running from North to South. The Western half comprises part of Indonesia, the eastern half including New Britain, New Ireland and Bougainville as well as several hundred numerous offshore islands makes up the Independent State of Papua New Guinea.

The purpose of the expedition, which took place 28th January - 4th March 2009, was to film and document as many species as possible in the vicinity of Mount Bosavi on the Great Papuan Plateau. One of the primary aims of the expedition was to find undiscovered species of plants and animals in the area. Mount Bosavi [S:06 34.578' – E:142 51.544'], which rises to a height of 2,507 metres (8,225 ft) above sea level, is the collapsed cone of an extinct volcano in the Southern Highlands of Papua New Guinea that last erupted some 250,000 years ago in the Pleistocene. What makes this area so interesting is that it is remote, relatively unexplored and the difficulty of accessing the crater means that hunting pressure on the animals inside is currently very low. Additionally, the top of Mount Bosavi, being an isolated montane habitat, will harbour species not found in the surrounding lowland forest.

LOCATION

The BBC team, comprising film-makers and scientists, were based at a jungle camp at Nunupi Creek [S:06 31.903' – E:143 06.614'] on the banks of the Hegigio River four hours march through the rain forest from the nearest human settlement at Fogamai'u [S:06 30.560' – E:143 04.830']. Because heavy rain regularly turned the forest floor into a quagmire, raised wooden walkways were made, joining the sleeping quarters, refectory, store rooms, production area and field laboratory. Although the camp was sited well above the river, several days of torrential rain further upstream can cause the water level to rise rapidly and late one night the flight of wooden steps leading up from the beach was completely submerged within a few hours.

As well as working in the forest, caves and riverine habitats around base camp, two groups set out to explore Mount Bosavi itself. One group went down into the interior of the volcano while the other stayed on the crater rim. The vegetation on the rim of the crater is very different to the lush forest that which clothes the interior. Above 2,000 metres the trees are much shorter than the forest below and the high humidity encourages the growth of epiphytes and luxuriant carpets of moss. At this altitude it can be cool and although very moist, much of the water comes, not from rainfall, but from clouds. Despite this these montane forests are very prone to periodic drying out and can be seriously damaged by fires set to flush game. When this happens, the natural vegetation with its high species diversity, is replaced by a community of grasses and fire-resistant plants with a low diversity.

In addition to the main study site of Mount Bosavi, two satellite trips to New Britain were undertaken. In March 2008 an Anglo-French team of cavers explored the 'white water cave' of Mageni. This cave system has only been entered once before, in 2006, and remains largely unexplored- with good reason, as the way in involved abseiling down 80 metres to the entrance after which the team had to wade, scramble and climb their way deep into the heart of the mountain. One of the team said it was like travelling through the world's greatest jet-wash. The enormous quantities of water and spray gave the cameras and sound equipment a hard time but they still managed to film some extremely exciting new passages that seethed with wall-to-wall white water as well as the cave's natural inhabitants, bats, leeches and cave crickets. A species of blind cave crab was also discovered. Another, smaller team visited Tavorvur in March 2009, an active stratovolcano near Rabaul in East New Britain. In 1994 the eruption of Tavorvur, along with another nearby vent, Vulcan, caused much of Rabaul to be abandoned and the provincial government was moved to a new capital, Kokopo. During the time BBC team were filming, Tavorvur became unusually and spectacularly active, throwing up huge plumes of ash and ejecting some large volcanic 'bombs'. One of the most interesting species filmed in these seemingly inhospitable conditions was the megapode *Megapodius eremita*, the Melanesian Scrubfowl. Early in the morning these birds flew in to bury their eggs deep in the sand and ash of natural ground hollows.

RESULTS

Amphibians and Reptiles

Dr Allen Allison of the Bishop Museum, Hawaii, together with Bulisa Iova of the PNG National Museum and other field assistants documented a total of 64 species of frogs and reptiles from the Mt. Bosavi area during the expedition. Their results were based on extensive field surveys conducted around the base camp and Fogamai'u village, supplemented by limited surveys of the crater rim and Teramasu village. These collections and observations include 18 potentially new species of frogs and two new species of lizards. At least half the frogs are members of taxonomically complex groups and will require careful study to determine if they are truly new to science, but it is likely that the collections include at least sixteen new species of frogs. In addition two species of frogs were recorded on the summit rim but not collected. Based on their calls, they almost certainly represent new species. Two species of lizards collected, are unquestionably new species, one being a pretty little banded gecko, (*Cyrtodactylus* sp). This high number of new species is an indication that Mt. Bosavi has a rich but previously poorly known herpetofauna and because of its geographic isolation from the central mountains of New Guinea, is a local centre of endemism for frogs. In contrast, most of the lizards and nearly all of the snakes in the region are members of relatively widespread species.

Mammals

Dr Kristofer Helgen of the Smithsonian Institution, Muse Opiang of the Papua New Guinea Institute for Biological Research and Alanna Maltby of the Zoological Society of London surveyed the mammals. They documented the presence of at least 55 native mammal species (1 monotreme, 21 marsupials, 10 rodents, and 23 bats) in the vicinity of Mount Bosavi. Sixteen of these species were primarily or exclusively montane species, demonstrating the importance of high-elevation habitats on Bosavi for the maintenance of high mammal diversity. A great highlight of the trip was the discovery, in the crater, of a new species of Woolly Giant-rat (*Mallomys* sp.) with a total length of 813 mm (32.5 inches) and weighing 1.5 kilograms. This means it is one of the largest species of giant rat in the world. Another very notable find was an undescribed, endemic montane subspecies of the Silky cuscus (*Phalanger sericeus*). Both species were studied and filmed during the expedition.

It is clear that Mount Bosavi provides a critical haven for five species currently recognized as species of conservation concern by the IUCN (International Union for Conservation of Nature and Natural Resources) because of globally declining populations. One of these, the Eastern Long-beaked Echidna (*Zaglossus bartoni*), is classified as Critically Endangered. Another, Goodfellow's Tree-kangaroo (*Dendrolagus goodfellowi*), is classified as Endangered. Two kangaroo species, Doria's Tree-Kangaroo (*Dendrolagus dorianus*) and the Dusky Pademelon (*Thylogale brunii*) are listed as Vulnerable, and one, the Lesser Forest Wallaby (*Dorcopsulus vanheurni*) is listed as near threatened. Dr Helgen says that the persistence of these threatened and rarely encountered species on and around Mt. Bosavi shows that the local mammal fauna remains largely intact. However, based on his examination of human hunting patterns (derived from interviews and studies of animal trophies and skins), he found that these species, and many others (including almost all

marsupials, large rodents, and flying foxes), are regular targets of subsistence hunting. If hunting pressure in the crater were to increase substantially, the long-term survival of many species in the area, especially the larger mammals, would be seriously threatened.

The twenty-three bat species collected include three species endemic to New Guinea (*Emballonura furax*, *Hipposideros muscinus*, and *Nyctimene draconilla*) that are listed by the IUCN as “Data Deficient” because so little is known about them. The results of will provide valuable information on the distribution and basic biology of these poorly known bats. Many of the bats collected need to be studied carefully to be sure of their taxonomic status but at least one species, a blossom-bat found at high elevations on Mount Bosavi, is apparently an undescribed species. It is quite likely that other specimens will be shown to belong to new species. In addition to collecting specimens for study, the echolocation calls of twelve bat species were recorded, some for the first time.

Freshwater Fish

Dr Phil Willink of the Chicago Field Museum recorded sixteen species of freshwater fish on the expedition of which three (19% of the total) are potentially new to science, and provisionally named the Henamo Grunter (*Hephaestus* sp.), the Sun Apea Goby (*Glossogobius* sp.), and the Hegigio Rainbowfish (*Melanotaenia* sp.). The Henamo Grunter was found at the mouth of Henamo Creek at the Hegigio River and juvenile individuals have a bright spot near the tail that Phil suspects is used to distract predators. They are called 'grunters' because they use their swim bladder to make grunting noises underwater as a form of communication. The Sun Apea Goby is a small well-camouflaged fish, around 5cms in length that lives on the bottom. Although first seen in Sun Apea Creek, this species was common in many other streams. The Hegigio Rainbowfish, a very pretty red and blue fish about 10cms in length, was found in isolated pools on the beach immediately across the river from base camp. Of the other freshwater fish recorded, only three (the Giant Long-Finned Eel, Fringe-Lipped Mullet, and Concave Goby) are found outside of New Guinea and its associated islands. The rest are restricted to New Guinea, and many are only found in the southern foothills of the Central Dividing Range of mountains in the vicinity of Mount Bosavi.

Some of the fish species encountered were potentially hazardous. Fork-Tailed Catfish can be more than half a metre long and have strong pointed spines in their dorsal and pectoral fins. At least one person was stabbed in the hand by one of these fish and required minor medical treatment. Another catfish, the Southern Tandan has sharp spines in the dorsal and pectoral fins, as well as venom glands. These spines are roughly equivalent to stingray spines and can cause extremely painful wounds.

While exploring a cave, Dr Willink also discovered a population of Fimbriate Gudgeon. This is a wide-ranging species in New Guinea, and is very likely a species-complex. The cave individuals looked like surface-dwelling individuals but their behaviour was more like cave-dweller. For example, they were very lethargic and easy to catch with a handnet and although they did not react to light, they did seem to respond to pressure changes in the water. In another cave close to base camp, he discovered a population of cave shrimp.

These shrimp were pale with small eyes and elongated antennae. Shrimps collected immediately outside the cave where the stream exited were bluish, possessed large eyes, and relatively shorter antennae. It is possible that the shrimps in the cave were taking the first evolutionary steps to becoming a new species adapted to cave conditions.

Dr Willink notes that all the species of fishes in the region are extremely hardy as they have to survive in rivers and streams that are characterized by fast flowing water. After heavy rainfall river levels can rise quickly and strong currents pick up tree trunks and boulders, scouring the river bottom. Only fishes that can find shelter from the current and recolonise streams after flooding will persist and it is these factors that promote isolation and subsequent speciation. Despite their toughness, if the region is subjected to significant negative environmental impacts, then these species could experience global extinction. There are no others of the same species elsewhere to replace them.

Birds

Dr Jack Dumbacher of the California Academy of Sciences and PNG naturalist Kwiwan Sibum surveyed the birds around base camp. Although no new species of birds were recorded this is not entirely unexpected given that birds have been more thoroughly sampled historically than any other animal group. Overall, 111 bird species were verified in the area immediately surrounding the base camp at Nunupi and this constitutes a representative sample from healthy lowland forest. Many species were detected by their songs or by single sighting and only 29 bird species were caught in the mist nets. The netted birds were common rain forest understory species that spend considerable time at mist-net height. Some species were inferred by the presence of their burrows and other signs. Interestingly, many of the larger species were common, including Pheasant Pigeon, Southern Crowned Pigeon, and megapodes, as well as the larger parrots such as Sulphur-Crested and Palm Cockatoos. Because these species are typically exploited by hunters, the numbers present suggest that these forests are still healthy and are under relatively low hunting pressure. Southern cassowaries were heard in the forests and captured on film by camera traps. These large birds are shy creatures travelling over huge areas and may have retreated to remote corners of their home range to avoid the disturbance and foot traffic of our team. Of the Birds of Paradise (Paradisaeidae), the Trumpet Manucode (*Manucodia keraudrenii*), Magnificent Riflebird (*Ptiloris magnificus*), King Bird of Paradise (*Cicinnurus regius*), the Magnificent Bird of Paradise (*Cicinnurus magnificus*) and the Raggiana Bird of Paradise (*Paradisaea raggiana*) were present.

Insect and spiders:

Dr George McGavin of the Oxford University Museum of Natural History collected more than 1,000 specimens of insects and spiders representing several hundred species. It is conservatively estimated that at least twenty will be species new to science as little collecting has been done in this area but it is impossible as yet to quantify. Likely candidates for new species include several species of parasitic flies (Hippoboscidae and Nycteribiidae) collected from the fur and wing membranes of bats. The diversity of moths on the summit of Mt Bosavi was surprising. Despite cool and wet conditions, a mercury vapour moth trap set up on the crater rim attracted many hundreds of moths, representing

80-100 species. Some large species of stick insect were recorded, including *Eurycantha insularis* and *Megacrania nigrosulfurea*. The caterpillars of a large and colourful fruit-piercing noctuid moth, *Eudocima iridescens* were filmed and reared to adulthood.

FOREST LOSS

Dr Phil Shearman and his colleagues at the University of Papua New Guinea and the Australian National University have recently analysed thirty years of satellite imagery for Papua New Guinea and have found that 19.8 million acres of forest was lost between 1972 and 2002. At the rate forest is being cleared or degraded, around 3.5% per annum, they suggest that more than 80 percent of the country's accessible forest - and more than half of the total forested area will be gone or severely damaged by 2021. The loss of what is the world's third-largest rain forest would see the extinction of a unique flora and fauna and have devastating and far-reaching effects on the physical environment, regional weather patterns and the lives of the people that live there. As the process of logging releases huge amount of carbon dioxide into the atmosphere, continuing deforestation make it virtually certain that the world will not be able to escape the worst effects of global climate change.

CONCLUSION

The BBC team has gathered powerful evidence that the area surrounding and including Mount Bosavi represents an unusually rich and important habitat containing large numbers of local and regional endemic species. Because montane forests such as that on top of Mount Bosavi cover only a small area and will be the first areas to be affected by global climate change, they are especially vulnerable. We recommend that national and international governments and agencies in collaboration with local land owners should take urgent steps to ensure that a conservation plan is drawn up and implemented so that the long-term future of this area can be safeguarded.

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Appendix 1

List of mammals encountered during the Mt Bosavi survey

Key

Specimen = collection of a voucher specimen or specimens
 Trophy = bones or skin retained by local hunters from animals hunted and eaten
 Photograph = identified in camera trap images
 Filmed = identified in filmed images
 Netted = caught in mistnet, identified, and released
 Sign = clearly identifiable tracks or spoor
 Sighting = definitive sighting by the first author of a species not documented by other methods
 * (asterisk) = primarily or exclusively montane species

IUCN conservation-concern status color key

Critically Endangered

Endangered

Vulnerable

Near Threatened

Data Deficient

Scientific Name	Common Name	
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Order Monotremata, Family Tachyglossidae

1. <i>*Zaglossus bartoni</i>	Eastern Long-beaked Echidna	sign
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Order Peramelemorphia, Family Dasyuridae

2. <i>Murexia longicaudata</i>	Short-furred Dasyure	specimen
3. unidentified dasyurid (<i>Myoictis</i> or <i>Phascosorex</i>)		photograph

Order Peramelemorphia, Family Peramelidae

4. <i>Echymipera kalubu</i>	Common Echymipera	trophy
5. <i>Echymipera rufescens</i>	Long-nosed Echymipera	trophy
6. <i>*Microperoryctes ornata</i>	Ornate Mouse-bandicoot	specimen
7. <i>*Peroryctes raffrayana</i>	Raffray's Bandicoot	photograph

Order Diprotodontia, Family Macropodidae

8. <i>*Dendrolagus dorianus</i>	Doria's Tree-kangaroo	filmed, trophy
9. <i>*Dendrolagus goodfellowi</i>	Goodfellow's Tree-kangaroo	trophy
10. <i>Dendrolagus spadix</i>	Lowland Tree-kangaroo	trophy
11. <i>*Dorcopsulus macleayi</i>	Papuan Forest Wallaby	trophy
12. <i>*Dorcopsulus vanheurni</i>	Lesser Forest Wallaby	photograph, trophy
13. <i>Thylogale brunii</i>	Dusky Pademelon	photograph

Order Diprotodontia, Family Phalangeridae

14. <i>Phalanger gymnotis</i>	Ground Cuscus	trophy
15. <i>Phalanger mimicus</i>	Southern Common Cuscus	trophy
16. <i>*Phalanger sericeus</i>	Silky Cuscus	specimen, filmed
17. <i>Spilocuscus maculatus</i>	Common Spotted Cuscus	trophy

Order Diprotodontia, Family Petauridae

18. <i>Dactylopsila trivirgata</i>	Striped Possum	filmed
19. <i>*Dactylonax palpator</i>	Long-fingered Triok	sighting
20. <i>Petaurus breviceps</i>	Sugar Glider	heard

Order Diprotodontia, Family Pseudocheiridae

21. <i>*Pseudocheirops cupreus</i>	Coppery Ringtail Possum	photograph, specimen
22. <i>*Pseudocheirulus forbesi</i>	Painted Ringtail Possum	filmed, specimen

Order Rodentia, Family Muridae

23. <i>Lorentzimys nouhuysi</i>	Long-footed Tree-mouse	specimen
24. <i>Melomys rufescens</i>	Black-tailed Melomys	specimen
25. <i>*Mallomys</i> sp.	Bosavi Woolly-rat	filmed, specimen
26. <i>Paramelomys platyops</i>	Lowland Paramelomys	specimen
27. <i>*Paramelomys rubex</i>	Mountain Paramelomys	specimen
28. <i>Pogonomys macrourus</i>	Chestnut Tree-mouse	specimen, sightings
29. <i>*Pogonomys loriae</i>	Large Tree-mouse	sighting
30. <i>*Rattus niobe</i>	Common Moss-forest Rat	specimen
31. <i>Rattus leucopus</i>	Cape York Rat	specimen
32. <i>Uromys caudimaculatus</i>	Mottled-tailed Giant-rat	trophy, cave bones

Order Chiroptera, Family Vespertilionidae

33. *Miniopterus* sp. Bentwing-bat (unidentified) specimen

Order Chiroptera, Family Molossidae

34. *Chaerephon jobensis* Northern Mastiff Bat filmed

Order Chiroptera, Family Emballonuridae

35. *Emballonura beccarii* Beccari's Sheathtail-bat specimen

36. *Emballonura diana* Large-eared Sheathtail-bat specimen

37. *Emballonura furax* New Guinea Sheathtail-bat specimen

38. *Emballonura raffrayana* Raffray's Sheathtail-bat specimen

Order Chiroptera, Family Rhinolophidae

39. *Rhinolophus euryotis* New Guinea Horseshoe-bat specimen

40. *Rhinolophus megaphyllus* Eastern Horseshoe-bat specimen

Order Chiroptera, Family Hipposideridae

41. *Aselliscus tricuspidatus* Trident Horseshoe-bat specimen

42. *Hipposideros ater* Dusky Horseshoe-bat specimen

43. *Hipposideros calcaratus* Spurred Horseshoe-bat specimen

44. *Hipposideros cervinus* Fawn Horseshoe-bat netted

45. *Hipposideros maggietaaylorae* Maggie Taylor's Horseshoe-bat specimen

46. *Hipposideros muscinus* Fly River Horseshoe-bat specimen

47. *Hipposideros wollastoni* Wollaston's Horseshoe-bat specimen

Order Chiroptera, Family Pteropodidae

48. *Dobsonia minor* Lesser Bare-backed Fruit-bat netted

49. *Dobsonia moluccensis* Great Bare-backed Fruit-bat specimen, trophy

50. *Nyctimene albiventer* Common Tube-nosed Bat specimen

51. *Nyctimene draconilla* Dragon Tube-nosed Bat specimen

52. *Paranyctimene raptor* Unstriped Tube-nosed Bat specimen

53. *Pteropus neohibernicus* Greater Flying-fox trophy

54. *Syconycteris australis* Common Blossom-bat specimen

55. **Syconycteris* sp. Mountain Blossom-bat specimen

Appendix 2

List of birds encountered during the Mt Bosavi survey.

Taxonomic Order	Family	Latin Name	Common Name	Sighted list	HABITAT SEEN
2	Casuariidae	Casuaris casuaris	Southern Cassowary	Y: Kwiwan	Forest, river edge
5	Anhingidae	Anhinga melanogaster	Darter	Y: Kwiwan	River edge
6	Ardeidae	Egretta alba	Great Egret	Y: Kwiwan	Seen at the village (Fogomai'u)
9	Ardeidae	Nycticorax caledonicus	Rufous Night-Heron	Y: Kwiwan	Along Hegigio River
11	Accipitridae	Aviceda subcristata	Pacific Baza	Y: Kwiwan	Seen near Base Camp (Nunupi #2)
15	Accipitridae	Accipiter novaehollandiae	VARIABLE GOSHAWK/GREY GOSHAWK	Y: Kwiwan	Seen near Base Camp (Nunupi #2)
19	Accipitridae	Harpyopsis novaeguineae	PAPUAN HARPY EAGLE	Y: HO(albert and kwiwan)	Deeper in the forest, still heard at long distance
21	Accipitridae	Haliaeetus leucogaster	White-bellied Sea Eagle	Y: Photographed by BBC team	Photographed by BBC crew up river near flying fox camp
25	Megapodiidae	Megapodius freycinet	DUSKY MEGAPODE	Y	seen on mound near J5
26	Megapodiidae	Talegalla fuscirostris	BLACK-BILLED BRUSH TURKEY	Y	Seen along trail near j4-j5
27	Megapodiidae	Aepyodius arfakianus	WATTLED BRUSH TURKEY	Y	
28	Rallidae	Rallina tricolor	RED-NECKED CRAKE; Red-necked Rail (Burrows)	Y	Seen near aviaries adjacent to Nunupi #2 Base Camp
30	Charadriidae	Tringa hypoleucos	Common Sandpiper (Burrows)	Y	Seen around Hegigio River
31	Charadriidae	Charadrius dubius	Little Ringed Plover	Y	Seen By Kwiwan along Hegigio River
33	Columbidae	Macropygia amboinensis	BROWN CUCKOO-DOVE	Y: Kwiwan	seen in flight
35	Columbidae	Reinwardtoena reinwardtii	GREAT CUCKOO-DOVE	Y	Seen perched above mouth of the Warofeni Cave
36	Columbidae	Trugon terrestris	Thick-billed Ground Dove	Y: Heard by Kwiwan	
37	Columbidae	Chalcophaps stephani	STEPHAN'S DOVE	Y	Caught in forest net
39	Columbidae	Otidiphaps nobilis	PHEASANT PIGEON	Y	Seen and heard along trails in forest, especially between C1 and C2, and J4 and J5
40	Columbidae	Goura scheepmakeri	SOUTHERN CROWNED PIGEON	Y	Seen and heard along trails in forest, especially between C1 and C2, and J4 and J5
41	Columbidae	Ptilinopus magnificus	WOMPOO FRUIT DOVE	Y	heard along forest trails
42	Columbidae	Ptilinopus perlatus	PINK-SPOTTED FRUIT DOVE	Y	
43	Columbidae	Ptilinopus ornatus	ORNATE FRUIT DOVE	Y: Phil took a photo on the crater rim	Found on Crater rim

44	Columbidae	Ptilinopus superbus	SUPERB FRUIT DOVE	Y	heard along forest trails
45	Columbidae	Ptilinopus pulchellus	BEAUTIFUL FRUIT DOVE	Y	heard throughout forest
47	Columbidae	Ptilinopus iozonus	ORANGE-BELLIED FRUIT DOVE	Y	Heard By Kwiwan
48	Columbidae	Ptilinopus nanus	Dwarf Fruit-Dove (Burrows)	Y	
49	Columbidae	Ducula rufigaster	PURPLE-TAILED IMPERIAL PIGEON	Y	Heard By Kwiwan
51	Columbidae	Ducula pinon	PINON'S IMPERIAL PIGEON	Y: Kwiwan	
53	Columbidae	Ducula zoeae	BANDED IMPERIAL PIGEON/ZOE'S IMPERIAL PIGEON	Y	Heard along Fogo Road/
54	Columbidae	Gymnophaps albertisii	PAPUAN MOUNTAIN PIGEON	Y: Kwiwan	
57	Psittacidae	Trichoglossus haematodus	RAINBOW LORIKEET	Y: Kwiwan	Seen around Fogomai'u village
59	Psittacidae	Lorius lory	BLACK-CAPPED LORY	Y	Often heard in forest
63	Psittacidae	Probosciger aterrimus	BLACK SCIMITARBILL; Palm Cockatoo (Burrows)	Y	Commonly heard in forest; filmed above camp
64	Psittacidae	Cacatua galerita	SULPHUR-CRESTED COCKATOO	Y	Common throughout area
65	Psittacidae	Micropsitta pusio	BUFF-FACED PYGMY PARROT	Y(YELLOW-CAPPED PYGMY PARROT)	The form encountered here is the Yellow-capped Pygmy Parrot - NOT the Buff-faced Pygmy Parrot. Both of these forms are likely part of a single biological species complex.
66	Psittacidae	Cyclopsitta guiliemertii	ORANGE-BREASTED FIG PARROT	Y	heard along forest trails
68	Psittacidae	Geoffroyus goeffroyi	RED-CHEEKED PARROT	Y	
69	Psittacidae	Geoffroyus simplex	BLUE-COLLARED PARROT	Y	
70	Psittacidae	Eclectus roratus	ECLECTUS PARROT	Y	
71	Psittacidae	Psittichas fulgidus	PESQUET'S PARROT	Y: Kwiwan	
73	Cuculidae	Cacomantis variolosus	BRUSH CUCKOO	Y: Kwiwan	heard in the Village Fogumai'u
78	Cuculidae	Caliechthrus leucolophus	WHITE-CROWNED KOEL	Y: Kwiwan	
79	Cuculidae	Microdynamis parva	DWARF KOEL	Y	
80	Cuculidae	Eudynamis scolopacea	COMMON KOEL	Y	Common forest call
82	Cuculidae	Centropus menbecki	Greater Black Coucal (Burrows)	Y: Kwiwan	
84	Tytonidae	Tyto tenebricosa	GREATER SOOTY OWL; Sooty Owl (Burrows)	y	heard (Kwiwan)
85	Strigidae	Ninox theomacha	JUNGLE HAWK-OWL; Papuan Boobook (Burrows)	y	
86	Podargidae	Podargus ocellatus	MARbled FROGMOUTH	Y	
87	Podargidae	Podargus papuensis	PAPUAN FROGMOUTH	Y	
91	Apodidae	Collocalia vanikorensis	Uniform Swiftlet (Burrows)	Y	Note: This is likely the species caught in the Warofeni Cave; however, each individual had feathered tarsus (typical of mountain swiftlet) but measurements suggested Uniform Swiftlet.
92	Apodidae	Collocalia hirundinacea	Mountain Swiftlet (Burrows)	y	
93	Apodidae	Collocalia esculenta	GLOSSY SWIFTLET	Y	
95	Alcedinidae	Melidora macrorrhina	HOOk-BILLED KINGFISHER	Y	
96	Alcedinidae	Dacelo gaudichaud	RUFous-BELLIED KOOKABURRA	Y	
98	Alcedinidae	Halcyon sancta	Sacred Kingfisher (Burrows)	Y	

99	Alcedinidae	Halcyon torotoro	Yellow-billed Kingfisher (Burrows)	Y	
101	Alcedinidae	Ceyx lepidus	VARIABLE DWARF KINGFISHER	Y	
102	Alcedinidae	Alcedo azurea	AZURE KINGFISHER	Y	
103	Meropidae	Merops ornatus	RAINBOW BEE-EATER	Y: Seen at Fogomai'u by Kwiwan	
104	Coraciidae	Eurystomus orientalis	DOLLARBIRD	Y: Seen at Fogomai'u by Kwiwan	
105	Bucerotidae	Rhyticeros plicatus	PAPUAN HORNBILL; Blyth's Hornbill (Burrows)	Y	
106	Pittidae	Pitta erythrogaster	RED-BELLIED PITTA; Blue-breasted Pitta (Burrows)	Y	
108	Hirundinidae	Hirundo tahitica	PACIFIC SWALLOW	Y	
112	Campephagidae	Coracina boyeri	BOYER'S CUCKOO-SHRIKE	Y	
115	Campephagidae	Coracina schisticeps	GREY-HEADED CUCKOO-SHRIKE	Y: Kwiwan	
117	Campephagidae	Campochaera sloetii	GOLDEN CUCKOO-SHRIKE	Y	
121	Eupetidae	Ptilorrhoa caerulescens	BLUE JEWEL-BABBLER	Y	
122	Eupetidae	Ptilorrhoa castanonotus	Chestnut-backed Jewel-babbler (Burrows)	Y	
127	Acanthizidae	Crateroscelis murina	LOWLAND MOUSE WARBLER; Rusty Mouse-Warbler (Burrows)	Y	
134	Acanthizidae	Gerygone chrysogaster	YELLOW-BELLIED GERYGONE	Y	
138	Acanthizidae	GERYGONE MAGNIROSTRIS	LARGE-BILLED GERYGONE	Y	
139	Rhipiduridae	Rhipidura threnothorax	SOOTY THICKET FANTAIL	Y	
144	Rhipiduridae	RHIPIDURA RUFIDORSA	RUFOUS-BACKED FANTAIL	Y	
146	Rhipiduridae	Rhipidura rufiventris	NORTHERN FANTAIL SPOT-WINGED MONARCH	Y	
151	Monarchidae	Monarcha guttula	MONARCH	Y	
152	Monarchidae	Monarcha manadensis	HOODED MONARCH	Y	
154	Monarchidae	Arses telescopthalmus	FRILLED MONARCH	Y	
156	Machaerirhynchidae	Machaerirhynchus flaviventer	YELLOW-BREASTED BOATBILL	Y	
158	Petroicidae	Monachella muelleriana	TORRENT FLYCATCHER	Y	
162	Petroicidae	Poecilodryas hypoleuca	BLACK-SIDED ROBIN	Y	
172	Pachycephalidae	Pachycephala simplex	GREY WHISTLER	Y	
175	Colluricinclidae	Colluricincla megarhyncha	LITTLE SHRIKE-THRUSH	Y	
176	Colluricinclidae	Pitohui kirhocephalus	VARIABLE PITOHUI	Y	
178	Colluricinclidae	Pitohui ferrugineus	RUSTY PITOHUI	Y	
180	Melanocharitidae	Melanocharis nigra	BLACK BERRYPECKER	Y	
185	Nectarinidae	Nectarinia aspasia	Black Sunbird (Burrows)	Y	
187	Meliphagidae	Melilestes megarhynchus	LONG-BILLED HONEYEATER	Y	
188	Melanocharitidae	Toxorhamphus novaeguineae	YELLOW-BELLIED LONGBILL	Y	
189	Melanocharitidae	Toxorhamphus poliopterus	SLATY-CHINNED LONGBILL	Y	
200	Meliphagidae	Meliphaga albonotata	WHITE-MARKED SCRUB HONEYEATER; Scrub	Y	

			White-eared Meliphaga (Burrows)		
201	Meliphagidae	Xanthotis flaviventer	TAWNY-BREASTED HONEYEATER	Y	
204	Meliphagidae	Meliphaga analoga	MIMIC HONEYEATER; Mimic Meliphaga (Burrows)	Y	
205	Meliphagidae	Lichenostomus versicolor	VARIED HONEYEATER	Y	
207	Meliphagidae	Meliphaga aruensis	PUFF-BACKED HONEYEATER; Puff- backed Meliphaga (Burrows)	Y	
208	Meliphagidae	Philemon novaeguineae	New Guinea Friarbird (Burrows)	Y	
214	Artamidae	Artamus maximus	GREAT WOODSWALLOW	Y	
216	Cracticidae	Cracticus quoyi	BLACK BUTCHERBIRD	Y	
217	Cracticidae	Cracticus cassicus	HOODED BUTCHERBIRD	Y	
218	Cracticidae	Peltops blainvillii	LOWLAND PELTOPS	Y	
220	Oriolidae	Oriolus szalayi	BROWN ORIOLE	Y	
222	Dicruridae	Dicrurus hottentottus	HAIR-CRESTED DRONGO; Spangled Drongo (Burrows)	Y	
224	Ptilonorhynchidae	Ailuroedus buccoides	WHITE-EARED CATBIRD	Y	
226	Corvidae	Corvus tristis	GREY CROW	Y	
229	Paradisaeidae	Manucodia keraudrenii	Trumpet Manucode (Burrows)	Y	
234	Paradisaeidae	Ptiloris magnificus	MAGNIFICENT RIFLEBIRD	Y	
236	Paradisaeidae	Cicinnurus regius	KING BIRD-OF- PARADISE	Y	
237	Paradisaeidae	Cicinnurus magnificus	Magnificent Bird of Paradise (Burrows)	Y	
238	Paradisaeidae	Paradisaea raggiana	RAGGIANA BIRD-OF- PARADISE	Y	
239	Sturnidae	Mino dumontii	YELLOW-FACED MYNA	Y	
241	Sturnidae	Aplonis metallica	SHINING STARLING; Metallic Starling (Burrows)	Y	

Appendix 3

List of fish encountered during the Mt Bosavi survey

Taxa list

Anguillidae

Anguilla marmorata

Giant Long-Finned Eel

Ariidae

Ariidae sp. 1

Fork-Tailed Catfish

Ariidae sp. 2

Fork-Tailed Catfish

Plotosidae

Neosilurus equinus

Southern Tandan

Hemiramphidae

Zenarchopterus novaeguineae

Fly River Garfish

Melanotaeniidae

Melanotaenia goldiei

Goldie River Rainbowfish

Melanotaenia sp. **

Hegigio Rainbowfish

Atherinidae

Craterocephalus nouhuysi

Mountain Hardyhead

Terapontidae

Hephaestus sp. **

Henamo Grunter

Apogonidae

Glossamia sandei

Sande's Mouth Almighty

Mugilidae

Crenimugil heterocheilus

Fringe-Lipped Mullet

Eleotridae

Mogurnda cingulata

Banded Mogurnda

Oxyeleotris fimbriata

Fimbriate Gudgeon

Gobiidae

Glossogobius concavifrons

Concave Goby

Glossogobius sp. **

Sunabia Goby

Gobiidae sp.

Goby

** Potentially new species to science.

16 species. 3 potentially new species (19%).

Appendix 4

List of amphibians and reptiles encountered during the Mt Bosavi survey

FROGS:		LIZARDS:	
Albericus sp. 1	1	Carlia	1
Albericus sp. 2	1	Cyrtodactylus	1
Asterophrys turpicula	1	Emoia caeruleocauda	1
Austrochaperina sp.	1	Emoia cf. physicae	1
Cophixalus sp. 1	1	Emoia kordoana	1
Cophixalus sp.2	1	Emoia longicauda	1
Hylophorbus	1	Emoia pallidiceps	1
Lechriodus melanopyga	1	Eugongylus rufescens	1
Litoria cf. iris	1	Gehyra	1
Litoria cf. mucro	1	Gekko vittatus	1
Litoria cf. thesaurensis	1	Hypsilurus modestus	
Litoria infrafronata	1	Hypsilurus modestus	1
Litoria prora	1	Hypsilurus ornatus	1
Litoria sauroni	1	Lipinia sp.	1
Litoria sp. 1	1	Nactus	1
Litoria sp. 2	1	Papuascincus sp.	1
Litoria sp. 3	1	Sphenomorphus	1
Litoria sp. 4	1	Sphenomorphus cf. solomonis	1
Litoria thesaurensis	1	Sphenomorphus jobiensis	1
Mantophryne cf. lateralis	1	Sphenomorphus muelleri	1
Nyctimystes	1	Sphenomorphus simus	1
Oreophryne sp. 1	1	Tiliqua gigas	1
Oreophryne sp. 2	1	Varanus indicus	1
Oreophryne sp. 3			
Rana arfaki	1		
Rana cf. daemeli	1		
Rana sp. 1	1		
Rana [Red/O'Dowd][Above Telasu]	1		
Sphenophryne cornuta	1		
Xenobatrachus	1		
Peeper [Summit/Uncollected]	1		
Xenobatrachus [Summit/Uncollected]	1		
TOTAL SPP	31	TOTAL SPP	22
POTENTIAL NEW SPECIES [in bold]	18	POTENTIAL NEW SPECIES [in bold]	2
 SNAKES:		 CROCODILES:	
Acanthophis laevis	1	Crocodylus novaeguineae	1
Boiga irregularis	1		
Dendrelaphis	1		
Stegonorus dieli	1		
Stegonotus cucullatus	1		
Tropidonophis	1		
Candoia aspera	1		
Candoia carinata	1		
Chondropython viridis	1		
Liasis albertisii	1		
TOTAL SPP	10	TOTAL SPP	1
POTENTIAL NEW SPECIES [in bold]	0	POTENTIAL NEW SPECIES [in bold]	0
 OVERALL TOTAL SPECIES	 64		
OVERALL TOTAL			
POTENTIAL NEW SPECIES	20		