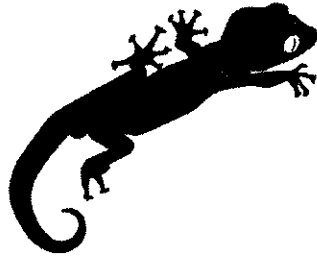


Report of Project Hoona – 2003

**Diversity of Nilgala Fire Savannah,
Sri Lanka: with special reference to its herpetofauna**



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Summary: During this 38-day expedition at Nilgala Fire Savannah, we observed 13 species of amphibians and 41 species of reptiles. This includes two species of amphibians and five species of reptiles that could not be identified using available keys. Currently molecular studies and alpha taxonomy of these animals are being carried out in the US by Aaron Bauer Ph.D. Villanova University and Chris Austin Ph.D., University of North Dakota.. In addition, several unrecorded behavioral habits, distribution and threats of rupicolous herpetofauna, (geckos, skinks, lacertids, snakes, and amphibians) and threats faced by the unique fauna in Nilgala Fire savannah too were observed. Presently ten scientific papers ensuing from Project Hoona is in print along with the Proceedings of Fourth World Congress Herpetology in a single volume entitled "*The herpetology of Sri Lanka: current research*".

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For further details please look at the expedition report (120 page), which is available on request.
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Citation of periodicals reporting work done under this project:

The Following six papers are published in the: *The Herpetology of Sri Lanka: current research* (Including the Proceedings of the Fourth World Congress of Herpetology, December 2001 and Nilgala Expedition Report, 2003). *Lyriocephalus* special edition. 2004 Volume 5 (1 & 2):

1. THE DIVERSITY OF NILGALA FOREST, SRI LANKA, WITH SPECIAL REFERENCE TO ITS HERPETOFAUNA. Anslem de Silva, Aaron Bauer, Christopher C. Austin, S. Goonawardena, Z. Hawke, V. Vanneck, A. Drion, K. B. J. K. Perera, R. L. Jayaratne & M. M. Goonasekera
2. SOME CULTURAL TRAITS OF THE INHABITANTS OF THE NILGALA FIRE SAVANNAH, SRI LANKA, TOWARDS ANIMALS: WITH SPECIAL REFERENCE TO THE HERPETOFAUNA Anslem de Silva, Aaron Bauer, C. C. Austin, B. J. K. Perera, R. L. Jayaratne, M. M. Goonasekera, S. Goonawardena, Z. Hawke, V. Vanneck & A. Drion
3. DISTRIBUTION AND THE ECOLOGY OF *CALODACTYLODES ILLINGWORTHORUM* (REPTILIEA: GECKONIDAE) IN SRI LANKA: PRELIMINARY FINDINGS. Anslem de Silva, Aaron Bauer, C. C. Austin, S. Goonawardena, Z. Hawke, V. Vanneck, A. Drion, Panduka de Silva, B. J. K. Perera, R. L. Jayaratne & M. M. Goonasekera
4. FIRST REPORT OF PARASITES OF *HEMIDACTYLUS MACULATUS HUNAE* & *CALODACTYLODES ILLINGWORTHORUM* (REPTILIA: GECKONIDAE) INHABITING THE NILGALA FIRE SAVANNAH, SRI LANKA. Anslem de Silva, R. P. V. J. Rajapakse, Aaron Bauer, W. M. J. de Silva, C. C. Austin, S. Goonawardena, M. M. Goonasekera
6. FIRST REPORT OF MITES from *CALODACTYLODES ILLINGWORTHORUM* & *MABUYA* SPECIES .INHABITING THE NILGALA FIRE SAVANNAH, SRI LANKA. R. P. V. J. Rajapakse, Anslem de Silva, Aaron Bauer, C. C. Austin, D. Ekanayake, S. Goonawardena
7. SOME BEHAVIOURAL ASPECTS OF *OPHISOPS MINOR MINOR* (REPTILIA: LACERTIDAE) AT NILGALA FIRE-SAVANNAH, SRI LANKA. Anslem de Silva, C. C. Austin, Aaron M. Bauer, S. Goonawardena, Z. Hawke, V. Vanneck, A. Drion & M. M. Goonasekera

Results

The island of Sri Lanka is one of the 25 biological “hot spots” in the world (Myers, 1988, Myers *et al.*, 2000). The island also has high species richness and endemism in its herpetofauna (de Silva, 1996; Das, 2001).

Sri Lanka has many unique ecosystems, each with its own charm and specific flora and fauna. Of these some of the best known are Sinharaja (World Heritage Site), Ritigala, Knuckles, Horton Plains, and Nilgala Fire Savannah. The present work deals with the Nilgala Fire Savannah ecosystem.

Detailed studies were conducted during June 17th 2003 to August 19th, 2003. This work investigated the nature of the fauna, with special reference to the herpetofauna and characteristics of their habitats, flora, and archaeology of Nilgala Fire Savannah. The objectives of the study were to record and identify the herpetofaunal species inhabiting the savannah, rock outcrops, monsoon forests and its canopy, and assess their relative abundance, population status, interspecies associations, habitat features, distribution within the Nilgala Forest and to identify the threats to these animals and their habitats. On the basis of this data, propose recommendations regarding future research directions and management of the Nilgala Fire Savannah. The field technique employed was to make an inventory of the amphibians and reptiles found in rock outcrops and mountains, monsoon forests, and anthropogenic vegetation in the Nilgala Fire Savannah. Estimation of species diversity, relative abundance, population densities, and threats faced by amphibians and reptiles were also conducted. Additional nocturnal investigations were conducted on the amphibian and reptile species inhabiting the forests.

The vegetation in Nilgala Fire Savannah

The Nilgala area falls into the “intermediate forest” vegetation zone (Erdelen, 1989). The vegetation consists of extensive grasslands and much of the savannah is covered by aralu (*Terminalia chebula*), bulu (*Terminalia bellirica*) nelli (*Phyllanthus emblica*) and kahata (*Careya arborea*).

The following distinct vegetation zones can be distinguished in the Nilgala forest:

1. Savannah
2. Monsoon forests
3. Anthropogenic vegetations (paddy fields, vegetable, corn, banana and coconut cultivations)
4. Degraded vegetation with predominant thorny weeds (weed species such as lantana, etc.) Tertiary vegetation (weed species eg: Eraminiya *Zizyphus napeca* and Katuhinguru *Lantana camera*)

The monsoon forest was rich with timber species, we observed 59 timber tree species during the expedition. Several Medicinal plant species too were observed during the expedition. It is interesting to note that there is a popular belief among many, especially among traditional physicians, that the Nilgala forest had been the “medicinal plant garden” of the famous physician king Buddhadasa (337-365 AD).

Fauna in Nilgala Fire Savannah

Birds: During the survey, we observed 41 species of birds in the Nilgala forest.. This is more than what has been listed by the Field Ornithology Group of Sri Lanka. 2003.

Mammals: During the survey, we observed 12 species of mammals in the Nilgala forest, but 24 species has been known to inhabit the area- data gathered from The KAP survey (indigenous knowledge, attitudes and practices survey) on adults in the Nilgala area.

Amphibians and Reptiles: summary table of herpetofauna encountered in Bibile compared to rest of Sri Lanka.

Taxonomic group	No species in Bibile (Endemic %)	No species in Sri Lanka (Endemic %)
<i>Testudines</i> (Tortoises and turtles)	2 (0%)	9 (11%)
<i>Agamidae</i> (Lizards)	5 (40%)	13 (70%)
<i>Gekkonidae</i> (Geckos)	10 (70%)	20 (50%)
<i>Scincidae</i> (Skinks)	3 (100%)	29 (43%)
<i>Lacertidae</i> (Lacertid lizards)	1 (100%)	2 (100%)
<i>Varanidae</i> (Monitor lizards)	2 (50%)	2 (50%)
<i>Serpentes</i> (Snakes)	12 (42%)	96 (53%)
<i>Rana</i> and <i>Bufo</i> (Frogs and Toads)	15 (80%)	51 (55%)

Threats and Management

Threats to the Gecko populations with a special reference to *Calodactylus illingworthorum*.

Humans have shared the gecko habitat for 1000s of years. Drip ledges and treasure stones constructed by veddas (aborigines of Sri Lanka) were found at several of our sites. However it became apparent during our studies that there are many recent human threats faced by golden gecko populations due to expansion of farmland and changes of traditional ways. It will be interesting to see if these threats have any effect on the population numbers we have counted in years to come.

Threats caused by human behaviour include:

- Clearing of trees and lianas cluster1 by forestry department surveyors, exposing the rock face to sunlight which may result in changes in temperature, humidity and light intensity of the rock.
- Encroachment by paddy fields and other changes in land use i.e. Segregation of rock outcrops due to local paddy field farmers creating thrashing floor in cluster1.
- Clearing for thrashing floor leads to tertiary vegetation, as thorny weed species (*Eraminiya Zizyphus napeca* and Katuhinguru *Lantana camera*) engulf natural vegetation of Kirikone, Mille, Thelabo, Dhikande, Kalupanni
Note – these thorny species do not allow geckoes to move around easily
- Grazing by cattle cluster 2
- Honey collecting by destructive methods
- Burning savannah for Arulu and bedi leave collection. Note: time of year when the burning begins as its not too dry. Once started the fires go on for about 4 months until it hits a fire break.
- chopping of woody saplings for fence making cluster2
- illegal extraction of timber
- Human disturbance, i.e. in Cluster 3 (Building construction and building materials, Dynamite and debris, Graffiti and Children playing).

Other Threats to the area.

- Overexploitation of medicinal plants in the fire savannah which include most species and other plants like wild tobacco, bidi and binkohomba.
- Threats to archaeological monuments etc from destruction by treasure hunters.
- Hunting of protected mammals i.e. finding Pangolin scales (*Manis crassicaudata*) on Lacertid rock.
- Illegal gem mining especially on the banks of the Gal Oya River and its tributaries seen in Thotilleketiya.

Management recommendations

- Encourage the original lianas cut down by the survey department to put the forestry boundary post.
- Put speed bumps on the roads to slow down traffic on the pitakumbura road to stop reptile fatalities.
- More stringent law enforcement to prevent starting fires in the fire savannah and encroachment to this habitat, as well as illegal timber extraction. *Swietenia macrophylla* (mahogany), *Tectona grandis* (teak) was observed to be a rapidly depleting resource due to the exploitation of this timber in natural forests.
- To have some control and monitoring treasure hunting and gem mining.
- Creating a permanent study plot at palamugala to further research on the reptile findings found, especially phenomenon relating to the eggs in the cave.
- Conservation education on reptile conservation and its importance at all age levels.
- Increase conservation status of the fire savannah to protect its high biodiversity. Especially areas like Rathugala, Galkotte, palamugala.
- Reduce the spread of *Eraminiya* and *Katuhiguru*, as well as other tertiary weed species, especially at Palamugala and Maligathanne by de-weeding.
- Limit Cattle grazing by reducing stock density at Cluster 2.