

DAVIS EXPEDITION FUND

REPORT ON EXPEDITION/PROJECT

Expedition/Project Title: Project Knuckles 2005 (Phase II)

Travel Dates: 10 July to 14 November 2005

Location: Knuckles Mountain Range, Central Province, Sri Lanka.....

Group Members: Suraj Goonewardene and John Drake.....

Aims: Assess the status of reptiles and their habitats in the Knuckles Mountain Range.

OUTCOME (not less than 300 words):-

Project Knuckles was a scientific study collaborating with Sri Lankan herpetological expert Mr. Ansem de Silva, President of the Amphibian and Reptile Research Organisation of Sri Lanka (ARROS).

Project Knuckles 2004 was the first in-depth herpetofaunal study of the Knuckles Mountain Range and its forests. The main aim of the expedition was to provide information for the formulation of up-to-date conservation status reports of the globally threatened reptile species which inhabit the Knuckles range. Whilst the project managed to collect substantial amounts of information, due to logistical issues (such as difficult terrain and heavy rains) and lack of time, the project could not fully meet its objectives. Thus in 2005, two members of the previous team returned to Sri Lanka to consolidate the research of 2004 and in the process study new and previously undocumented reptile and amphibian species, thus exceeding the success of Phase I.

The Leaf-nosed lizard (*Ceratophora tennentii*), is a geographical relict and is found only in the montane forests of the Knuckles and seem to have viable populations in most of the locations sampled, even where habitats have been altered, thus indicating that the species itself is very adaptable. Large numbers were even observed inhabiting Pine plantations (*Pinus carebea*) - a non-native forest type.

Other relict agamid species include the Sri Lankan Pygmy lizard (*Cophotis ceylanica*) and the Crestless lizard (*Calotes liocephalus*), both observed to be even rarer than the *C. tennentii*'s, through causes unknown. *Cophotis ceylanica* is a monotypic species but for years now, experts have suspected that the Knuckles population is distinct from the populations found elsewhere in the country. Ansem de Silva who has been studying the *Cophotis* in the Knuckles for the last 20 years, suspected that populations had fallen to a critical level. Mass mortality of *Cophotis ceylanica* has been documented during mid 1990's in the Nuwara Eliya and Hakgala area where hundreds of specimens died daily reducing previously high populations to virtual extinction. It is believed that these events may be caused by climatic changes. It is also possible that the *Cophotis ceylanica* population in the Knuckles suffered the same fate. However, to the relief of global herpetology, the project managed to locate six *Cophotis* individuals in the Knuckles, reassuring but due to the few numbers observed, indicative that a drastic population crash has occurred nonetheless. Existing data remains insufficient for the IUCN Sri Lanka and the Zero Extinction group to firmly conclude on the status of the lizard.

Also studied by the project were the newly described Dumbara Bent-toed Gecko (*Cyrtodactylus soba*) and the Four-toed Snake Skink (*Chalcidoseps thwaitesii*), both species being endemic to the Knuckles range and thus thought to be endangered but was found to be locally common. Prior to Project Knuckles, very little was known of their natural history.

The project has also discovered the existence of several species which were previously unknown to inhabit the Knuckles range, such as *Riopa singha*, *Nessia sarasinorum* and *Liopelitis calamaria*. To date, the project has physically verified and documented the presence of 76 species (of which 55.3% are endemic) of reptile inhabiting the Knuckles range. These findings surpass both those of Project Knuckles 2004 [Phase I] and the IUCN (Sri Lanka) survey (2003) results by an additional 23 species. 5 - 10 additional specimens which cannot be identified using available keys. This suggests that these species may be new to science, which will be confirmed with molecular and alpha taxonomical investigation, currently underway. The present study indicates that the Knuckles range harbours a higher diversity of reptiles and amphibians than previously known.

Other Outputs

1. Whilst travelling to certain mountains, the project discovered a series of archaeological monuments, including two caves where Mesolithic Man once lived. These are now under investigation by the Archaeology department of the University of Peradeniya.
2. The extensive and well illustrated project report is in print now and should be available for distribution in end of February 2006. The findings of Project Knuckles will be published in local and international journals. To date 22 research papers have been written and co-authored by the team, Mr. De Silva and numerous experts around the world. These papers will be published in the format of a monograph: an edition of the journal '*Lyriocephalus*' (the only 'Zoological' indexed herpetological journal of Sri Lanka) entitled '*The Diversity of the Dumbara Mountains (The Knuckles Massif, Sri Lanka): With special reference to its herpetofauna. Lyriocephalus Special issue, 2005 November, Volume 6 Numbers 1 & 2*' which in addition to the papers of the Project Knuckles team will also contain numerous research papers from external scientists focussing on other taxonomical groups of the Knuckles range.
3. The information gathered during the project will be used for current taxonomical revisions by Mr. De Silva in collaboration with the following herpetologists: Professor Aaron Bauer (University of Villanova, on the Geckoes of Sri Lanka) and Dr. Christopher Austin (University of North Dakota, on the Skinks of Sri Lanka).
4. Working in conjunction with the Sri Lankan Universities of Rajarata, Peradeniya, Jaffna, Sri Jayawardenapura and Batticaloa (Eastern University), the project has trained 35 undergraduate students in the latest herpetological techniques, using both basic to more complex tools such as Global Position Satellite units and a variety of computer programmes. This has provided them with hands on experience in herpetology, encouraging them to participate in the conservation of Sri Lanka's reptiles and amphibians in the future. Whilst the majority of the students were aiming to continue their studies in herpetology and zoology, four of the students from the University of Peradeniya were set to graduate in Veterinary medicine. In addition to giving these students hands on experience in dealing with injured reptiles, it also assisted their skills in snake identification, important when dealing with animals which have been bitten. The students of Eastern University and the University of Jaffna are Tamil speaking. Project Knuckles has therefore provided training to members of both of Sri Lanka's principal linguistic groups. It is hoped that this knowledge will thus be passed on in both languages.