## Invertebrate survey finds many endemic species surviving in the relict cloud forest of St Helena

From December 2005 to March 2006 a survey of the invertebrates of the Central Peaks of St Helena was carried out by Howard Mendel from the Natural History Museum (for the first month), Philip Ashmole and Myrtle Ashmole, with assistance in the field from Edward Thorpe. This was part of the OTEP-funded project to develop a protected area management plan for the Peaks, implemented by the St Helena National Trust.

The Central Peaks retain only about 16 hectares of the original cloud forest and much of this area has been invaded by an array of alien plants. Nonetheless, an important set of endemic trees and shrubs, along with many mosses, liverworts and hornworts (see *Forum News* 28) are still present. This fragment of tree fern thicket and cabbage tree woodland also provides habitats for many of the endemic invertebrates of the island.

In 1965 and 1966 the invertebrates of the whole of St Helena were comprehensively studied by a group of Belgian entomologists. Since then, little entomological survey work has been done, apart from our study on Prosperous Bay Plain in 2003 in relation to the proposed airport. Calculations from the Belgians' numerous publications have revealed that of the 393 invertebrates occurring on the Peaks, about 217 (55%) are endemic and, of these, about 127 may be restricted to



Cloud Forest on St Helena

the Peaks area. This makes the Peaks an exceptionally important area of invertebrate endemicity, so it seemed important to find out how many of the native species have survived the contraction of the habitat and invasion by aliens that has continued during most of the four decades since the Belgians' survey.

The recent work spanned three months, but was most intensive in December-January while Howard Mendel was on the island. Techniques included the use of flight-interception and Malaise traps, as well as pitfall trapping, litter collection and sweeping and beating of vegetation, in an effort to detect the widest possible range of invertebrates. Much of the effort during the later part of the survey was focused on insects associated with particular endemic plant species.

For most taxonomic groups, the final identifications will not be available for many months. This is because, although some specimens can be studied in London within the Natural History Museum, many have to be distributed to specialists elsewhere, often overseas and most of them overloaded. The global tendency for inadequate support for taxonomy comes home to roost in situations such as this, where development of an intelligent strategy for biodiversity conservation is constrained by incomplete understanding of the taxa involved.



An outstanding example is provided by the wolf spiders (family Lycosidae) of St Helena. As well as previously described species, two apparently new lycosids were found on the Peaks during the recent survey. Two more (in addition to the known species) play a key role in the ecology of Prosperous Bay Plain, the area threatened by the proposed airport, but so far they cannot even be securely assigned to genera. Lycosid taxonomy has been effectively in abeyance for many years and the scale of the problem is highlighted by Norman Platnick of the American Museum of Natural History, who recently commented – in response to our suggestion that some funds from the US National



Peaks lycoid spider

Science Foundation's Planetary Biodiversity Inventories project might be used on the lycosids – that "Proposals for this program must be to inventory groups that can be covered globally in 5-6 years with no more than \$3 million dollars, and the lycosids are far too large a group for that to be feasible!"

Nonetheless, preliminary identifications of our recently collected specimens demonstrate that many of the most significant endemic invertebrates of the Peaks of St Helena still have viable populations. Several species found during the survey may prove to be new to science. Many of the endemic insects are associated with particular endemic plants, so that protection of these plants is the key to longterm survival of the insects. Furthermore, many endemic invertebrates seem to depend on the humid and stable microclimate provided by a closed canopy of tree ferns and cabbage trees; open stands appear to have fewer animals and lower biodiversity. Even small relict stands of endemic trees with associated dead wood can maintain diverse communities of endemic invertebrates, but many of these animals may be lost as the number of trees in the stand declines and its structure is destroyed. Strengthening of such stands by planting more of the endemic trees within and around them should be a priority, with intensive care of the trees until established.

Clearance of New Zealand flax *Phormium tenax* and other invasive alien plants can permit restoration of lost areas of natural habitat, but as those working on St Helena are only too aware, it will succeed only if work in cleared areas is continued until native plants are fully re-established; otherwise, there is a real risk of replacing a stand of flax with a stand of some other alien plant (often the composite whiteweed *Eupatorium pallidum*). One element in the current Peaks project involves removal of flax from a more or less sheer cliff at High Peak and it is most encouraging to see the immediate response of the endemic tree ferns *Dicksonia arborescens* and dogwoods *Nesohedyotis arborea* that had survived under the flax.

Conservation and ecological restoration work on St Helena has had outstanding successes and some failures. The keys to success appear to be coherent planning and continuity in management, as well as hard work on the ground.

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"The Invertebrates of the Central Peaks and Peak Dale St Helena: Interim Report March 2006" and "The Invertebrates of Prosperous Bay Plain, St Helena: a survey by Philip and Myrtle Ashmole, September – December 2003" are available on www.kidstonmill.org.uk