TURNING THE SCREWS ON BOG BUGS

Genlisea, a carnivorous genus

by Neil Crouch, with photographs by Rogan Roth

Wrote Charles Darwin: ‘Take a narrow ribbon and wind it spirally round a thin cylinder ... like a thread round a screw. If the cylinder is now removed, we shall have a tube like one of the spiral arms.’ This was how, in 1906, the famous naturalist described the two-pronged spiral tips of the trap, or pitcher leaves of Genlisea, a little-publicized carnivorous plant. The genus is small, mainly tropical, and represented worldwide by nineteen or so African and South American species. In South Africa, our only indigenous species is Genlisea hispidula Stapf, which grows along the Eastern Transvaal escarpment and the Natal/Transkei coasts. This widespread species also extends its range northwards as far as Nigeria and the Cameroon.

When encountered, specimens are always in marshy situations, and often overlie wet sheet-rocks. At first glance, G. hispidula appears quite innocuous, for on the surface, only a small rosette of spoon-shaped leaves presents itself, sometimes topped by a delicate inflorescence of mauve or pink flowers. Yet when one digs a little deeper, a bizarre chamber of horrors is revealed. Descending into the swampy substrate are trap leaves which superficially look very much like roots. However, Genlisea plants are rootless and are dependent on a permanently moist habitat for their water needs. Yet this same restrictive environment provides these oddities with a year-round supply of micro-organisms: prey to their trap leaves, and a nitrogen-rich supplement for their diet.

Genlisea is often found in the company of its close relatives, the bladderworts (Utricularia species). Although both genera belong in the Lentibulariaceae, and both are carnivorous, the mechanisms by which they trap their prey are fundamentally different. The digestive bladders of Utricularia literally suck in their prey through an active and com-
plex mechanism. In contrast, the traps of *Genlisa* may be likened to lobster-pots or eel-traps for they rely on small animals (like eelworms, copepods, planarianis and mites) moving passively into the helically twisted arms (a) or orifice (o) of the submerged leaves. The spiral form of the arms quite simply presents potential prey with trap entrances in all directions. Once inside, the passage of victims toward the utricle (u) or 'stomach' of the leaf is encouraged by rows of stiff inwardly-directed hairs, which also prevent escape. Secretions from glands which line the main passage (p) to the utricle may further entice the creatures to their directed fate. Different glands located in the utricle secrete enzymic juices which kill the vic-

tims, and later digest their soft parts before the nutrients are absorbed by the plant.

These extraordinary semi-aquatic plants are attracting increased interest by carnivorous plant collectors worldwide. However, pressure on native populations is likely to remain small, for specimens of *Genlisa* are hard to find. This is especially true of plants in the non-flowering state as they are small and superficially insignificant; insignificant that is, if you aren't a small and (upwardly) mobile bug.

Further reading:

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A mouse trap intended as a model embodying present ideas of the *Utricularia* trap as a mechanism (with apologies to Heath Robinson). From Lloyd (1942).

A mouse trap design which tangibly expresses the passive trapping mechanism of *Genlisa* pitcher leaves. From Lloyd (1942).