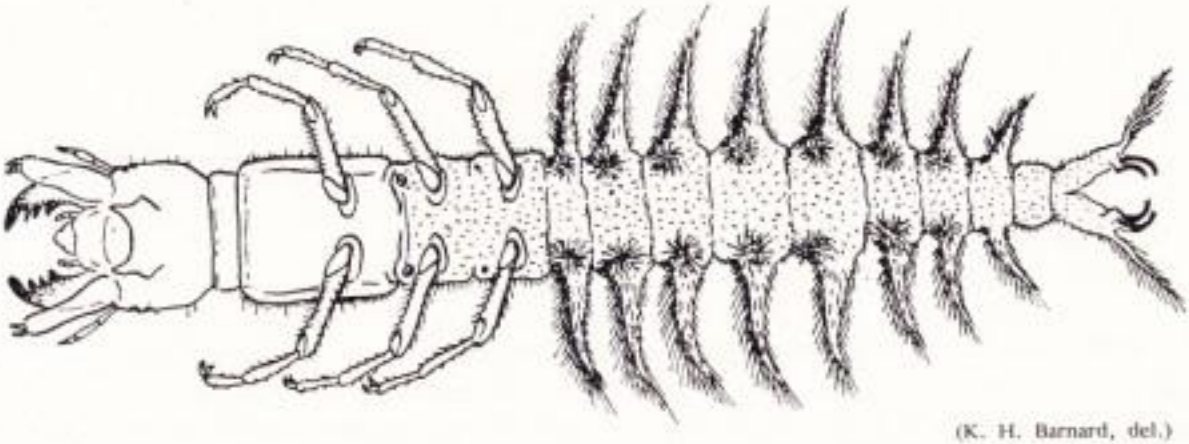


(K. H. Barnard, del.)

Ventral view of larva of *Chloroniella peringueyi*, "Toebiter". Natural size is about 1½ inches.

TROUT FOOD AND ITS IMITATION

By A. Cecil Harrison

PART 3: CAPE ALDERFLIES AND SNIPEFLIES

CAPE anglers who examine the stomach contents of their trout are likely to be familiar with the fierce-looking beast illustrated in this article. These insect larvae are of more importance in the diet of trout than are the adult flies as subjects for imitation, as adults are rarely to be seen on or over the water.

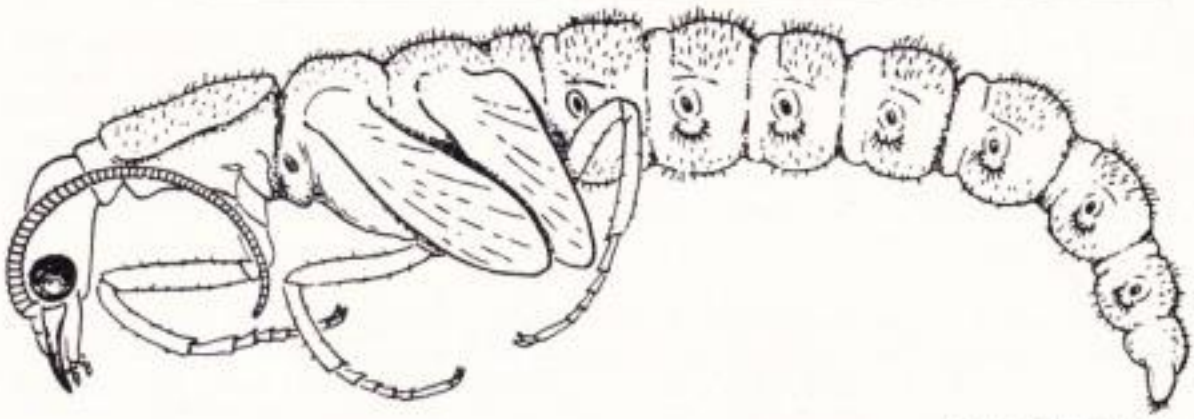
The term "Alderflies" (Neuroptera. Megaloptera.) is a general one referring to a group of insects, including the true Alder Fly or Humpback (*Sialis lutaria*) and its relatives. The insects included in the Megaloptera comprise the Sialids and the Corydalids which have aquatic larvae, and the Raphidiids or Snakeflies which have terrestial larvae. Unlike the mayflies and dragonflies which transform direct from the larval stage to the winged adult, the Megaloptera go through an intermediate pupal stage like butterflies and moths.

In Europe, the Alder Fly is well known to anglers, but at the Cape there is only one known representative of this group (*Leptosialis africana*), a dark brown fly of small size, apparently rather scarce and confined to the south-western Cape mountains. No description of its larva has been seen.

However, the associated family, Corydalidae, includes insects of considerable importance to anglers in the south-western Cape—as well as in America and Australasia where the larvae are known as Hellgrammites, Toebiters, Toescorpions and Creepers.

In the U.S.A. the corydalid larvae of the Dobson Fly, known as hellgrammites, are "eulogised by many anglers as the supreme live bait for smallmouth bass, particularly in the eastern states" (*Iowa Fish and Fishing*, 1956. State Conservation Commission), They are collected in streams, by turning over stones to wash the hellgrammites into a net. Such natural baits are of course illegal in Cape trout streams, but they could be used for bass in general fish areas. The American Dobson Fly is about three inches long, carrying formidable pinchers on the head. The Cape corydalids are not so large.

Descriptions of about six different corydalids have been seen from South Africa, all large or moderately large and all from the south-western Cape mountain areas. Of



(K. H. Barnard, del.)

Lateral view of pupa of *Chloroniella peringueyi*. Natural size is about 1⅛ inches.

these, two species are likely to be encountered by anglers, as they appear to occur at somewhat lower levels than the others.

Our most familiar corydalid larva is found in rocky trout streams such as the upper Eerste River, Lourens, Groot Drakenstein Dwars, upper Berg system, Smalblaar, Holsloot, Witte and upper Breede river system. This is the "Toebiter" (*Chloroniella peringueyi*, Esben-Petersen). The larva of this corydalid grows to a length of 40 mm. (1.57 inches). As will be seen from the drawing it has the formidable mandibles of a fierce predator. The clasping hooks at the "tail-end" of the abdomen are used for attachment in the fast-running streams in which it lives. It has eight pairs of unjointed lateral abdominal processes, densely furred, and employed in progression. This species (unlike the second mentioned) has seven pairs of external tracheal gills under these lateral processes, but not under the eighth process. In general, these Cape toebiters resemble the American hellgrammites, and if handled attempt to bite.

As a rule, toebiters are to be found under stones in the more permanent channels of the rocky streams, but they often appear in trout stomachs, particularly after the bed has been disturbed by spates. The American hellgrammites are said to take 35 months under water to develop from the egg to the pupation stage and then to spend three weeks as pupae. In the Cape, the corydalids probably develop at a faster rate, although no tank experiments are on record.

The corydalid larvae leave the water for pupation, which has been described as taking place in clumps of aquatic moss growing alongside a stream or waterfall; but on the Groot Drakenstein Dwars River A.C.H. found the pupae in cells of damp earth underneath stones on the wet bank of the river a little above the water line, possibly in a position occupied when the water was higher.

The toebiter pupa, as illustrated, has discarded the larval lateral processes except for remnant tufts of bristles below the air-breathing spiracles. The large adult eyes and long serrated antennae, the wing cases and hooks on the head can be descried.

As Ebsen-Petersen's name of *Chloroniella* seems to imply, the adult of our trout-stream species gives the general impression of being yellowish-green, in comparison with the brownish species; although the official description of dried specimens says that the head and thorax are pale yellowish-brown. The field notes of A.C.H., referring to the rarity of the winged adult, called the adults "yellowish insects with long serrated feelers, certainly night-flying or crepuscular to some extent". Specimens captured in the woods alongside the Dwars River in the evening were very sluggish during the day. When the

lid of a live-box was raised when night fell, one came to life with startling energy and whizzed around the room and was lost to sight during the following day. On the following evening, however, it appeared again on the wing and was recaptured. It menaced a camel-hair brush with its mandibles, but this seemed to be just bluff as it did not close them on it. It was noted that the huge mandibles of the adult of the large American *Corydalus cornuta* gave it a most formidable appearance, but were considered to be quite harmless.

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The larva of the commonest brown species (*Taeniochauliodes ochraceopennis* Esb.-Pet.) resembles that of *Chloroniella*, but has no external tracheal gills and does not grow so large. Dr. K. H. Barnard considered this species to be the most widely-spread of the Cape Alderflies, but his localities were those of the mountaineer and not of the trout angler. The whole body of the larva is less furred, bristly and hairy than in *Chloroniella*. He found the egg-masses of this species on Keeromberg in January on rocks overhanging a stream, and the larvae in a number of mountainous localities, ranging from 1,500 feet to 5,000 feet, including Table Mountain. This species was also recorded from Cathkin Peak, Drakensberg, Natal, at 6,000 feet.

The adults of three other species of corydalids were described by Esben-Petersen from mountain localities in the south-western Cape. He placed them in a genus *Platychauliodes*, but their larvae had not been found.

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To summarise: the aquatic larvae of the Cape corydalids inhabit swift-flowing mountain streams, but one at least (*Chloroniella peringueyi*) occurs within upland areas where trout are established. The adult flies do not stray far from the streams of their origin, and those at the higher altitudes settle on objects near the water or on rocks in the stream, choosing sheltered positions thereon. The resting flies hold their wings laid flat or enclosing the abdomen—not arched over the back as in the "humpback" European Alder Fly. When perched on a twig, the wings may wrap around the twig as well as the body.

If flushed from a selected "hide" by day, their flight is rapid but erratic, and they do not fly far before settling again. Normally, they fly only at dusk, but have been noticed to be attracted to light like moths, for instance to a streamside camp fire.

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ATHERIX SNIPEFLIES (DIPTERA RHAGIONIDAE)

Reference to this item in the diet of trout is taken out of systematic order because there are so many enquiries from anglers each season about the black masses of flies seen on the tops of rocks in our trout streams.

As far as imitation is concerned; well, a small black gnat or any other dry fly may serve when there is a rise to these insects, or if the trout are really stirred to interest, any small wet fly. When are they stirred to interest? When the angler brushes them off a rock at the head of a rapid, and goes downstream to await developments!

A quotation from the field notes of A.C.H. may open this explanation:—

"Dwars River, Groot Drakenstein, November 10th, 1930.

"A few days ago it was noticed that large boulders in the running water, but with perfectly dry tops, were black with swarms of these flies. This seems to have been a preparatory swarming, as they all rose in the air when disturbed.

"Today, they were to be found on nearly every suitable rock for miles along the river. Now they could not be disturbed and most of those still alive could only crawl. Mating was taking place on the rocks and ovipositing was well underway. The eggs are laid on these large boulders well above water level, and it seemed that the side of the boulder which faced *downstream* was always chosen. The eggs are laid in masses in a regular pattern; one end of the long egg adhering to the rock and its sides to the surrounding eggs. These masses covered several inches in some cases, and were evidently the work of more than one female. When first laid, the eggs are yellow, but the exposed end soon becomes quite black, so that the masses have the appearance of a black lichen on the rock.

"The specimens collected included dead flies, and eggs, some freshly laid and some with black ends. White maggots were found in the stomachs of all trout caught. The black masses were found on other boulders out of the main stream, sometimes over quite stagnant water."

Dr. K. H. Barnard identified these flies as *Atherix androgyna*, Bezzi. There were several species in the genus, which are all typical of mountain stream flies. He had not seen this species ovipositing, but found another species in the River Sonderend mountains hard at it covering the leaves of trees overhanging the stream with eggs. European species were known to have the same habits. The females, when spent, add their bodies to the egg-masses, the product of many females and the whole mass quite large. He had a leaf of 3 inches long covered with such masses of eggs and females from the River Sonderend. The family was formerly known as Leptidae—Snipe-flies, but nowadays *Atherix* and allied genera are included in a separate family, Rhagionidae.

Prof. M. Bezzi, the specialist who worked on the collection sent from the S.A. Museum (Ann. S.A. Mus. XXIII, pt. II, 1926, S.A. Rhagionidae—Diptera), remarked that the species of *Atherix* were unique in habits, the females congregating in dense clusters for oviposition, after which the young larvae feed first on the cluster of their dead bodies before reaching the water. Prof. Bezzi in that paper gave names to the four new species of *Atherix* which he listed: *peringueyi, barnardi, androgyna* and *incompleta*. In the detached attitude of overseas specialists in those days, he gave no reason for his selection of the name *androgyna* (suggesting hermaphroditism).

A. D. Imms (*A General Textbook of Entomology*, Methuen, 1925), stated that the larvae of *Atherix* are aquatic, with minute head and a pair of pseudopods capped with spines on each abdominal segment. The sides of the body are fringed with numerous filamentous processes which have been regarded as gills. Females of *Atherix* deposit their eggs in masses on dry twigs etc. overhanging water, into which the larvae fall upon hatching out. Many individuals lay their eggs on the same cluster and afterwards die on the spot, often in numbers. As their dead bodies adhere together, large encrustations are thus formed. He quotes J. M. Aldrich, 1905, *Cat. N. Amer. Diptera*, that in Oregon the Indians once collected these masses of eggs and flies for food.

LOST FLY BOX

Rudy Mayer is greatly distressed. In October, at Compagnies Drift on the Eerste River at Faure, he lost a small aluminium fly box. It is not the intrinsic value of the box and contents that matters, but the fact that the flies contained were all of his own tying during the close season—new ideas which he had dreamed up, and never got down to trying out! Can anyone help?