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CAPE MAY-FLIES

BY A. CECIL HARRISON.

Part VII. THE FAMILY BAETIDAE (Continued)

THE winged stages of the next species, *Acentrella capensis*, Barnard, so closely resemble those of *Baetis harrisoni* as to be practically indistinguishable; but those of *A. capensis* are slightly smaller (body of imago 5-6 mm.; wing 6.5-7.5 mm.) and the colour-pattern is reduced. Indeed it seems almost impossible to separate the flies of the two species with certainty unless they are bred-out from nymphs.

The nymph of *A. capensis* also resembles that of *B. harrisoni*, with a very important exception — its central tail appendage is reduced to a mere, minute conical point at the apex of the abdomen, and the two visible lateral cerci are very feebly haired. The tail is obviously not an efficient swimming "fin" like that of the latter, and this is associated with the very different modes of progression and habits of the two species.

In fact, *A. capensis* deviates from the usual rule in this family, and its nymphs are stone-clingers and runners instead of swimmers and darters like the majority.

The Cape species was discovered in 1931, being found by Dr. Barnard in a stream at Lilyfontein on the Kamiesberg in September, and by the writer on October 5 in the Hex River, Worcester.

On the latter occasion numerous adults were correlated with the nymphs, and the habits of the latter and the sub-aquatic egg-laying of the female imagoes were observed.

It was noted that when a stone was lifted from the river bed all the *Baetis* and *Centroptilum* nymphs darted away "like lightning", but those of *Acentrella* remained upon it with the other "clingers"—*Lithogloea*, *Afronurus*, *Tricorythus* and small *Leptophlebiids*.

The swimming action of the *Acentrella* nymphs is slow and laboured, in great contrast to that of the other Baetids, which is almost too quick for the eye to follow.

The female imagoes of *A. capensis* enter the water for ovipositing. Wherever a large stone protruded from the flowing water, some individuals could be found just above the waterline on its sides. If the stone was lifted out, swarms of the female flies were revealed on its submerged surfaces. Their wings were folded along the abdomen; but if the stone was placed on the bank, the flies were seen to dry them again in a short while, cock them and take to the air.

The yellowish egg-masses adhering to the submerged parts of the stones never seemed to overlap, but in the peak of the spring season nearly all available underwater space on favoured stones was occupied. The masses were usually quadrangular or pentagonal in shape and up to a quarter of an inch in greatest length.

The females could therefore crawl down through the surface film of the water on the side of a protruding object, but it was also noted that their underwater journey could be continued along the bottom, as egg-masses were found on adjacent stones which were completely submerged away from the bank. No males were noted in company with the ovipositing females in this instance.

Some eggs obtained on October 6 were hatched in a jar of water on October 19/20—therefore incubation takes not less than 14 days. The newly-hatched larvules had only two visible cerci. Rearing was not successful.

In October, 1931, this species was also found to be plentiful in the Dwaars River at Groot Drakenstein. On the 31st, swarms of females were found egg-laying underwater like those in the Hex. Eggs were again taken for experiments and hatching commenced on November 11. It was noted that the larvules rose to the surface by buoyancy, and then swam downwards by flexions of the body

without horizontal progression—perhaps in conformity with their usual method of dispersal from the hatching points.

The mature nymphs of this species were found to be intolerant of confinement, and died in the tanks after a day or two. All correlation of nymphs and subimagoes was done at the riverside. As the mature nymphs crawl partly out of the water on the sides of stones just before the emergence of the subimago, this presented no difficulty.

“Small Rusty” (*Centroptilum sudafricanum*, Lestage)

Small, but very abundant and widely distributed, this little May-fly is of considerable importance in the food of trout, but is rather too minute to be represented in the average fly-box.

It was one of the very few Baetids that had been identified from South Africa before 1929, and Lestage's record was from Zululand.

The nymph is 5 to 6 mm. long, greyish-brown to chestnut-brown in general colour, with pale V-shaped marks on the rear segments of the abdomen. The terminal segment appears to be wholly white, as are the cerci which are plumed to form a “tail-fin”—the central cercus being only half the length of the outer ones. There are only 6 pairs of gills—the first pair being absent.

The chevron markings of the nymph are continued in the subimago. The front wing of the fly has the single intercalary nervules of the genus, and the small hind-wing, present in both sexes, has a notched “spur”.

It was observed that the flies have the habit of emerging from the nymph on the undersides of stones above the waterline at the margin of the stream, i.e. when one stone was leaning against another.

This species is common in mountain streams (even in the smallest rill) and trout rivers in the Western Province; and Crass reports it to be most abundant and widespread all over the Eastern Cape Province and Natal in spring and early summer.

“Rusty Dun” (*Centroptilum excisum*, Barnard).

This is a larger species than the above (body of male adult 5-5.5 mm., wing 5.5-6 mm., and cerci 8 mm. and female, body 6-6.5 mm., wing 7 mm., and cerci 6 mm.)—resembling the smaller individuals of the Yellow Dun (*Baetis harrisoni*) in size.

The flies are also easily confused with the small Leptopheblid—the Elegant Dun (*Euthraulius elegans*) when the species are “hatching” together. This was noted in September, 1950, on the Elands River near Boston, Natal, in company with Mr. Crass—as the stream was dotted with sailing subimagoes with smokey wings, which were getting onto the water from the protruding stones, up which the nymphs of both these unrelated species had crawled. (It must be confessed that a wet No. 12 Invicta fly was used to hook a few brown trout—not a dry Blue Quill, which would have been more appropriate!)

The female subimago of *C. excisum* has very minute hing-wings, which are completed aborted in the final moult, and so absent in the imago. The hing-wing of the male is normal, and has a typical hooked “spur”. The general impression given by the body colours of the adult flies is of a rusty brown, with white tail-whisks and clear wings in the imago.

The nymph is brownish, with pale chevron marks and flanking dots on the top of the abdominal segments, the chevron in the form of an inverted V or U. There are 7 pairs of single gills in this case.

The Rusty Dun is very common in the streams and rocky rivers in the Cape Peninsula and Western Area. Extensive collections were made in the watercress beds along the lower Silvermine River at Kalk Bay; and in this type of habitat, many nymphs were seen to rise to the surface film for the emergence of the subimago. Crass records that it is abundant in Natal, chiefly during winter, the nymphs favouring still backwaters in rocky streams.