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tuaient une dernière mue, donnant naissance aux insectes adultes. Les vols des imagines avaient exclusivement lieu lors des journées chaudes et ensoleillées directement au-dessus du cours d'eau. C'est là également que s'effectuait la ponte des œufs.

Summary

During eight months populations of *Ecdyonurus venosus* FARBRICIUS (Ephemeroptera, Heptageniidae) of two streams of the Canton of Fribourg (Switzerland) with very different geomorphological, topographical and ecological characters were investigated using ecological and biochemical methods. Of the two streams the Gotteron River, situated in a narrow, V-shaped, shaded valley, shows only few flat zones with slowly running water. In contrary, the Sarine River is characterized by large lentic zones and also by a much higher population density.

In both streams two periods of emergence could be observed, one in spring and one in autumn. But it was very astonishing, that already before the autumn period young larvae could be detected, which did not reach the nymphal stage in the same year. That means, that in each of the two places (Gotteron and Sarine River) exist two populations of *E. venosus* with shifted developmental times. As however isoenzyme electrophoresis showed a very similar genetic pattern of all these populations it must be assumed, that inside both places is still a possibility of interbreeding. That means, that these populations are partially bivoltine. After our investigations the existence of only one purely bivoltine population in each place as described by RAWLINSON (1939) and RIEDERER (1981) must be ruled out.

As to the larval distribution pattern in the benthos at least for the individuals emerging in spring always a grouped distribution could be proved. The grouped character increased with the age, i.e. towards the period of emergence (increasing of the index $1/k$ of ELLIOTT, 1977). The older larvae and the nymphs concentrated near the border in stony, flat zones of slowly running water.

Here the subimagines emerged under water and climbed on such stones which stood out of the water's surface. The emergence depended mainly on the temperature of the water with a limiting lower and a limiting upper level. After a subimaginal life of about 3,5 days in the bushes bordering the stream, the imagines swarmed mainly during warm and sunny days directly above the running water, where also the oviposition took place.

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