

Bericht über die Kamerunexkursion 2012 mit Workshop

## Medical Entomology Workshop No. 2:

### *Simulium* breeding sites at river Vina du Sud

David Ekale, Programme Onchocercose

Two bush taxis were hired every day from Ngaoundere to bring the students to the bridge (Vina pont) where we traced our way to the *Simulium* fly-breeding sites down-stream. These breeding sites are characterized by fast flowing water with plenty of substrates to permit the flies to gain access in water, for attachments of the eggs and the development of the juvenile stages. Two breeding sites are clearly distinct in the river Vina du Sud near the waterfall: One above the fall and the other just below.

We collect a hand full of substrate at a time from the water (sites) and examined it with simple eyes. In a good sample, thousands of larvae and pupae are found attached on the substrate, which are mostly water plants.

Closer examination of a typical *Simulium* larva with a microscope will reveal scales and hairs of various proportions and to some extent also tubercles on their outer surfaces. Most species like *S. squamosum*, *sirbanum*, *damnosum* ss, and *S. yahenei* have moderate tubercles compared to those of *mengense* which are very prominent.

For cytotaxonomic identification of the polyploidy chromosome banding patterns of the salivary gland nuclei, larvae are fixed in Carnoy (3:1 alcohol: acetic acid) and kept cool to permit good staining of the chromosomes. The Carnoy fixative should be changed after an hour or two. For PCR and molecular work, larvae are fixed in 70% alcohol.

Adult female flies are collected with a sucking tube ("pooter", see photo). We expose one leg and flies will come naturally for a blood meal. As soon as they land, we briefly allow them to settle before sucking them up to avoid transmission.

In the laboratory, the flies were dissected with over a 60% parous rate and an filarial infection rate of up to 20% of parous flies. However, over 90% of these filariae belong to the bovine filarial parasite *O. ochengi* and only very few to *O. volvulus*. Simply because *S. damnosum* prefers to bite on cattle than on man and there is an abundance of cattle blood-hosts on the Adamaoua plateau.

Students were always excited how such little flies could penetrate such strong currents of water to deposit their eggs. This is also true for the adult fly, which hatches under the water and is immediately driven away by the torrent. I then explained the objectives of our epidemiological and entomological studies in North Cameroon and why we catch and dissect these flies since more than 35 years: To follow-up the transmission dynamics of human and bovine onchocerciasis. In particular, with a view to eliminating human onchocerciasis by the ongoing mass-treatments of the human village-populations with Ivermectin. As our data show, transmission is much reduced after 25 years of treatment, but still, the reservoir is not extinct.

The natural cave just below the water-fall created a lot of sensation and interest. The descent was steep but worthy if you could make. A place to relax after a hard day's work and an experience one will never forget.

PHOTOS:



Vina du Sud waterfall near Ngaoundéré



*Simulium* breeding site



Collection of larvae



*Simulium* larvae and pupae on waterplants



*Simulium* fly-catching



Adult fly of *Simulium damnosum* s.l.



Vina du Sud water fall



Natural cave under the waterfall