

Project report, Cameroon 2015

Freya Zetl

October 18, 2015

Africa had always been a place I wanted to go to. In September 2015 I finally received a chance to make that dream come true. Within the frame of my biology studies I had the opportunity to do a field work on parasites in Cameroon. However before traveling abroad to such an unfamiliar place, it needed a lot of preparation.

First of all I had to choose a topic for my work. Together with some other students I attended a preparative seminar in order to get an impression of the research possibilities in Cameroon. Eventually I decided to work on filarial worms of the species “*Onchocerca*”, which are quite common in this part of Africa. These parasites are known to be the cause of human and bovine onchocerciasis. Additionally they are the main objects of investigation at the local Programme Onchocercoses research station of the University of Tübingen in Ngaoundéré.

The major part of my work was based on filming the movement of the worms in a medium which was supposed to imitate their natural habitat, the skin.

The idea was to study the different sizes and movements of bovine microfilariae with regard to their different location in the host (i.e. in the different compartments of the skin of various body-parts) or blood (*Setaria* spp.) and in relation to their uptake and transmission by their different local arthropod vectors:

O. ochengi - transmitted by *Simulium damnosum s.l.*

O. gutturosa - Yet unknown species of Culicoides.

Setaria spp.: Yet unknown species of Culicidae.

O. armillata: Vectors still unknown: maybe ticks(?)

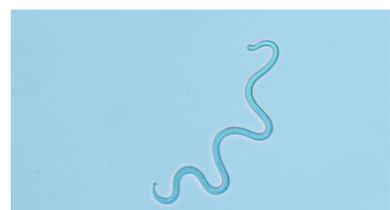
The motility of L3 would be an important parameter for assessing their viability, if kept *in-vitro*. The idea is to maintain the L3 and follow-up their development to the L4-stage in media with the addition of serum from 'susceptible' and resistant' host-animals (i.e. of cattle, man and other potential hosts, on which *Simulium* flies may feed and eventually deposit the L3s).



O.ochengi



O.gutturosa



O.armillata

Figure 1: Microfilariae of different *Onchocerca*-species

Following a practical about some laboratory methods the journey finally began.

I traveled together with PD Dr. Renz, the founder of the research station in Cameroon. It was an adventurous trip including two flights, a day in Yaounde and an overnight train-ride. After two days we finally arrived at our destination in Ngaoundéré.

Ngaoundéré is the capital of the beautiful highland-region Adamawa, which is located in the center of Cameroon. The research compound is located close to the center of the town and includes a laboratory, a main house and a very beautiful, big garden. It is guarded by a dog and a night watch, who also lives there with his family.

For the duration of my project I could stay in the main house, which was quite handy as I could use the lab at any time. We even had a cook there, who prepared local dishes for us every day.



Me and David at work



My usual camera setup

Figure 2: Laboratory work

I usually started work around eight o'clock in the morning, which was also about the time when the Cameroonian workers arrived. All of them were really nice and always helping me a lot.

Every morning, Jeremie brought fresh cattle-skin from the slaughter house. He also helped me to extract different developmental stages of various *Onchocerca*-species from it, while David taught me how to differentiate them.

I really enjoyed to share the lab with the local staff as I did not just learn many interesting things about their work but also about their culture.

In the end I was quite satisfied with my results. I did not just manage to produce some good records of *Onchocerca volvulus*-microfilariae but also of the adult worms, L3-larvae and two other species: *Onchocerca armillata* and *Onchocerca gutturosa*.

Meanwhile I learned a lot about filarial nematodes, their life-cycles, habitats and especially about their different ways of moving. My microscopy-skills also improved significantly. The movies can now be used in order to compare the different species concerning parameters like their individual speed, exact location or energy consumption.

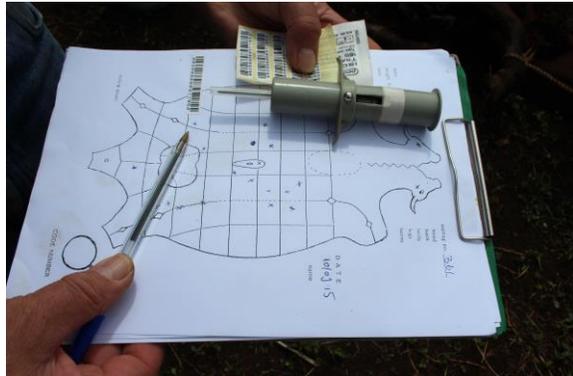
Even though my work mainly took place in the lab, I was also introduced to the field work of the onchocerciasis programme.

I really enjoyed those trips to the beautiful river bank of the Vina du Sud. It is a beautiful, still quite natural landscape out of town and the perfect breeding side for *Simulium* flies, which are the vector of the most common *Onchocerca*-species.

I also watched how the cattle herd, which belongs to the project, was examined for *Onchocerca* nodules. The field belongs to the IRZ and the cattle is owned by the IRAD, a Cameroonian research center which works in cooperation with the programme onchocercoses.



Examination of the project cattle



Implantation of RFID-transponder-chips for marking of nodules

Figure 3: Field work

I am very grateful to PD Dr. Renz, Dr. Albert Eisenbarth and Ms. Babette Abanda, for giving me the opportunity to get an insight into life and work in that fascinating country. It was a great experience, which I can really recommend to anyone, who is interested in parasites as well as in the African culture!



Programme Onchocercoses staff in front of the laboratory, Sept. 2015