

courtesy of

ARK - Arizona Rivulin Keepers

The Scheel Letters, No. 48

West African Rivulins: *Epiplatys grahami* (Boulenger); Draft (Aquarium Journal)

During November 1905, a steamer from West Africa arrived at Hamburg Germany. This ship brought the first recorded shipment of aquarium fishes to Europe from this part of the tropical world. The live fishes were taken by W. Schroot and were soon inspected by amateur zoologist J.P. Arnold who provisionally identified the four Rivulins contained in the shipment. These Rivulins were caught near Warri situated at the western part of the Niger River Delta. There were two sorts of *Epiplatys* (*Haplochilus*) that Arnold identified as *H. sexfasciatus* and *H. spilargyreus*. However, he was not able to identify the two species of *Aphyosemion* (*Fundulus*), and they were later on described as *F. arnoldi* and *F. gularis* var. *blau* (= *A. coeruleum*). As far as the identification of one species of *Haplochilus* is concerned, the *E. sexfasciatus* was correctly identified. This is easily seen from the descriptions and pictures of this fish in the aquarium magazines of that time. Arnold's *H. spilargyreus* however needs further investigation.

Poecilia spilargyrea was the first West African Rivulin to be described. It was named by Dumeril in 1861. For this description he had two individuals said to originate from the Mandingue Coast which corresponds to the coast of Senegambia. Dorsal 10/anal 14. Dumeril's species may be identical with *E. senegalensis* or *E. fasciolatus* or some *Aphyosemion* which all live inside this area and which, like *Poecilia spilargyrea*, have a rounded and rather short snout. As the type material in Paris is known to be in a very poor condition and because the description does not give away sufficient information, Dumeril's species could not at present be identified with any known West African Rivulin.

The new *Epiplatys* were soon distributed to German aquarists. A report from a meeting of the Dresden Aquarium Society of 03 Feb. 1906 says that the well known breeder of aquarium fish of that time, Mr. Thumm, presented both species to the members and also reported that he already had offspring from both. Mr. Thumm's fine ink drawings of aquarium fish of that time are most valuable when one is trying to identify such old aquarium fish.

During 1909 discussions about the name for the strain of so-called *H. spilargyreus* were started in Germany by Thumm. He rejected Arnold's identification and claimed that the name *Haplochilus infrafasciatus* should be used. *H. infrafasciatus* was described by the English zoologist Guenther back in 1866 and the description was based on a single individual only. This specimen originated from Old Calabar situated in the eastern part of the Niger River Delta. In 1915, Boulenger however placed

Guenther's species as a synonym of *Epiplatys sexfasciatus* Gill. H.S. Clausen has examined the type specimens of both *E. sexfasciatus* and *H. infra fasciatus* and found that Boulenger was quite right in his idea about Guenther's species. Thumm's idea did not change the name of the aquarium strain. About 1911 the name *H. spilargyreus* was no longer used in German aquarium magazines as the strain probably became extinct - as it was not a popular aquarium fish.

During 1911 Boulenger, in London, described a new Haplochilus (read Epiplatys) under the name of *H. grahami* and he based his description on many specimens collected by Dr. W.M. Graham in swamps near Lagos in SW Nigeria. In 1912 this name was used for an aquarium Rivulin in Germany. It is however rather questionable that Boulenger's new species and the German aquarium fish are identical. After the description of *E. grahami*, very few zoological reports of this species were published. In 1933, Pellegrin described *Panchax grahami* var. *decemfasciata* on 3 individuals from Haute Volta and the northern part of Ivory Coast. If this description is compared with that of *Epiplatys senegalensis* Steindachner, Pellegrin's subspecies seems to be a typical *E. senegalensis* that is known to live inside the area where Pellegrin's material originated from. In 1925, Pellegrin reported *H. grahami* from Ouesso on the Sangha River. At present it is impossible to verify this identification. We have been unable to find further reports of *E. grahami* inside the zoological literature.

Among aquarists the name *Epiplatys grahami* has been used frequently. A closer study of the information given about the Rivulins on which this name was placed makes it quite clear that the aquarists confuse Boulenger's species with Nigerian strains of *Epiplatys sexfasciatus*.

During summer 1961 our young friend, Ulf Hannerz from Sweden, made a private expedition to Nigeria in order to collect fishes studied for the tropical aquarium. Near Benin City, situated in the western part of the Niger River Delta, he caught several specimens of Epiplatys that he sent to us for further study. In accordance with aquarists' tradition he used the name *Epiplatys grahami* for the whole lot. After a few days of inspection we were able to divide these Epiplatys into three forms. Two of these could be identified as *E. sexfasciatus* and *E. longiventralis*, whereas the third form, represented by a single small female, remained unidentified. This small individual was very much like a young individual of *E. sexfasciatus*. Only a close inspection disclosed minor differences. The body was somewhat more slender and had 6 conspicuous rather broad dark crossbars distributed like the bars of young *E. sexfasciatus*. The nature of the crossbars however was not quite like that of young *E. sexfasciatus*. Further differences were found in the color of the eye. Within *E. sexfasciatus* the eye does not possess much brilliance. The unidentified specimens however had a strong light green brilliance at the lower part of the eye. The suspicious specimen was isolated and had an especially heavy feeding and was soon raised to maturity. During this period a surprising change of the specimen took place. After maturing the resemblance with *E. sexfasciatus* was lost. Instead the female looked very much like a female of *E. macrostigma*, however it also had resemblance with *E. "chaperi"* (see draft on article about *E. dageti*). The dark crossbars of (female) *E. sexfasciatus* tend to disappear on the upper part of the body sides when the fish is about to mature. Adult female of this species normally develops rather short dark crossbars which only at the most posterior part of the body are seen above the midline. The crossbars of the unidentified female grew more and more narrow and decomposed into vertical rows of dark spots which however were not reduced in their height and still reached the back. Also the shape of the body differed more and more from that of female *E. sexfasciatus*.

During summer 1962, H.S. Clausen caught samples of live Rivulins at many localities inside Ghana and Nigeria. From receiving young *E. sexfasciatus* taken in swamps near Lagos two individuals with shining green eyes were separated. These individuals were smaller than Ulf's individual and it was impossible to notice any difference from *E. sexfasciatus* except for that shining eye. During the growth of these individuals, the same transformation described for Ulf's specimen occurred. Ulf's female died soon after the maturing, whereas these two individuals which both were females lived a long time after maturing, so their whole development could be studied. When fully matured these females could not be distinguished from females of a probable Congo Epiplatys (which we had from W. Foersch) which most probably is *E. macrostigma* or at least a very closely related form. In order to separate these two strains one has to handle the fish in such a way that the Lagos females develop their dark crossbars (-lines) which are not visible on adult females normally. We have had the probable *E. macrostigma* female "as egg" from Foersch and dark crossbars have never been seen on its sides. Both forms have a very thin black line across the upper third of the anal fin. This line corresponds to the dark longitudinal band seen in the anal fin of female *E. dageti* and *E. sheljuzhkoii* (not on males). Both have the characteristic marbled pattern of black dots just above the root of the anal fin.

When the two Lagos females had matured we tried to identify this form with some known Epiplatys from West Africa. We found that they corresponded very well to Boulenger's *H. grahami*, except for a somewhat higher number of dorsal rays (9-10 versus 7). As we use close up photos for such counting of dorsal rays we normally are able to count more rays than mentioned in descriptions. The collections of H.S. Clausen of preserved Epiplatys from southern Nigeria contained numerous individuals belonging to this species from different localities within the Niger Delta area, from forest swamps inside the coastal part of western Nigeria. H.S. Clausen also has inspected the type material at the British Museum and found our material to be identical with *H. grahami* Boulenger.

The two Lagos females of *E. grahami* never entered into any natural spawning with any male of another Epiplatys or with an Aphyosemion. Males and females were not at all interested, not even when kept together for months. Ulf's young female from Benin City was much more willing. First it was crossed to a male *E. sexfasciatus* from Benin City. Eggs were fertile and the development of the embryos apparently was normal. However, about the time when the fry should hatch out most embryos died inside their eggs. Some fry however hatched, but also these fry died after a few days. It is likely that such hybrids can not be raised.

The next cross was prepared with a male *E. "chaperi"* (the aquarium strain). The number of fertile eggs and the development of the embryos was quite normal. The young hybrids were very viable and some were raised to maturity and reached *E. grahami* size. They probably were intersexes with dominant female characters, but also some male characters (coloration). Dr. Sick prepared electrophoresis spectrals of the blood haemoglobines and found that the hybrids mentioned above and the Lagos female both had a normal 4 line spectrum just as *E. senegalensis*, *E. fasciolatus*, *E. dageti* and *E. "chaperi"* (aquarium). *E. sexfasciatus* however has a 6 line spectrum.

The *E. "macrostigma"* mentioned above was imported into Germany in 1963 together with the so-called Aphyosemion striatum (also known as *A. cameronense* or *A. lujae* in Europe and the USA since 1960),

said to originate from the Congo River above Leopoldville. Foersch sent us some fertile eggs, but as these hatched within the mail we were only able to save a single specimen. This individual was a female and it never developed any "sexfasciatus-like" appearance at all. No transverse nor a longitudinal black band has been seen. H.S. Clausen recently inspected the type material of *E. macrostigma* at the British Museum and found that the type specimen had many very thin dark transverse lines across the body sides and that these lines were just like those on preserved specimens of *E. grahami*. However, the form known as an aquarium fish under the name *E. macrostigma* does not develop dark crossbars at least on juveniles, it is likely that this form does not develop such bars. After all we do not think that the resemblance between *E. grahami* and *E. macrostigma* (the zoological species as well as the aquarium forms) is a matter of convergence. Most probably it indicates a close relationship. When crossings have not been prepared, it is impossible to say if these forms represent good species or should be joined into one single species.

J. Lambert from Belgium collected live Rivulins etc. near Lambarene in Gabon (Ogooue River area) in 1962. He brought home some Epiplatys resembling both *E. grahami* and *E. macrostigma* very much. As no crossbars developed on these specimens they were referred to *E. macrostigma*. Bruce Turner in the USA has also sent us pictures showing some "odd balls" sorted out from shipments said to originate in Nigeria. Also these individuals are very much like *E. macrostigma* and *E. grahami*.

In 1928 in Germany Ahl described a certain *Panchax ornatus*. His description was based on aquarium kept specimens without known origin. From the description and the pictures in aquarium magazines etc. of that time it is quite clear that also this form belongs to the group mentioned here. As there is no reference to any dark crossbars, not even on juveniles, this form probably belongs to the aquarium form called *E. macrostigma*, or a closely related form. Also a number of the species described by Ahl from West Africa apparently also belongs to this group, but the very short and insufficiently detailed descriptions do not make this idea sure. We hope to be able to make this question clearer when the type material has been inspected.

The information harvested so far for *E. grahami* and *E. macrostigma* and their probable relatives suggest that the former is restricted to a rather narrow area inside the coastal forest of western Nigeria and the Niger Delta area, whereas the latter seems to be centered somewhere near the mouth of the Congo River and the coastal areas up to former French Congo. Inbetween, in the Ogooue River area there is a closely related form (Lambert's specimens). Ecological information on *E. macrostigma* is unknown to us. We know that the adult *E. grahami* prefers biotopes like forest swamps and that this species, in this respect, corresponds with *E. dageti* west of the Dahomey gap when compared with the chosen biotopes of *E. sexfasciatus* and *E. sheljuzhkoii* respectively. However, we are at present unable to explain why juvenile individuals of *E. grahami* prefer to shoal together with juvenile *E. sexfasciatus*. Mimicry or protective resemblance???

Finally we have to take one more look on the aquarium Rivulin called *H. spilargyreus* by Arnold back in 1905. We are quite sure that this form is identical with Boulenger's *H. grahami*, but it is difficult to prove this. Facts that support our idea is that the strain came from Warri and that juveniles were so much like juveniles of *E. sexfasciatus* that it was quite impossible to separate these two forms at that stage. Several reports are given about the odd transformations of appearance when the fish matured. Thumm's drawing

of that time does not show exactly Boulenger's form, but the fish pictured is closer to this species than to any other known *Epiplatys*. Also the weakly developed sexual difference between male and female is mentioned which also characterizes Lambert's strain from the Ogooue. The most conspicuous character of the male is said to be the pointed anal fin.

Live females of *E. grahami* are reddish brown on the back whereas the belly is nearly white. The big perfectly rounded spots on the body sides are red, however those close to the anal fin root are reddish black or even black. Numerous very small brilliantly red spots are hardly seen by the naked eye on the posterior part of the dorsal and on the upper part of the caudal fin. There are no red edged scales on the back as on *E. sexfasciatus* and many species of *Epiplatys*. The unpaired fins are pale yellowish, however the anal fin has a rather powerful yellow color below the fine black longitudinal stripe across this fin. The hybrid produced with male *E. "chaperi"* (aquarium form) often had a broad completely black longitudinal band from the gill covers to the root of the caudal fin. Only once (photographically recorded) such a (pale) band has been seen on one of the Lagos females.

The pigmentation of the female's throat is very weakly developed and there is no conspicuous throat pattern. According to the aquarium literature, the male has a red lower lip and perhaps a red transverse throat line behind the lower lip. This means that *E. grahami* possesses the two basic systems of black body side signals (longitudinal and transversal bands), whereas the black throat signal system seems to be absent and is replaced by a permanent system of red lines not unlike that of *Aphyosemion*. This is not the only trait pointing towards *Aphyosemion*, also the whole appearance of this species (when matured) is rather "Aphyosemion-like".

Our specimens of *E. grahami* were very stagnant fish and in tanks containing more vivid fish they tend to hide themselves, mostly near the surface. The two Lagos females were very hardy fish and gave no problems. They seem to reach a total length of approximately 45 mm. The egg (Benin strain) is small, 1.0 mm. The egg size thus corresponds to that of *E. dageti*, *E. macrostigma* (Foersch and B. Turner's strains). The egg membrane has no conspicuous pattern.