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The subfamily Rivulinae

Until 1955, the killies related to Rivulus were placed within a certain tribus called Rivulinii inside the subfamily Fundulinae as a result of Myer's division of the killies in 1931. In 1955 however Myers (Tropical Fish Magazine, Mar. 1955) reconsidered this division and formed several new subfamilies from the genera inside the Fundulinae. One of these new subfamilies and indeed the most interesting to aquarists is the Rivulinae. This subfamily distributes its various genera in Central and South America, Africa and Asia. All African and Asian genera are kept as aquarium fishes, whereas we still have not seen representatives from some of the South American genera.

In the Old World we find:

Aplocheilus in Asia (India to Indonesia)
Epiplatys in Africa (central and western tropical part)
Pachypanchax near Africa (on islands east of Africa)
Nothobranchius in Africa (scattered distribution)
Aphyosemion in Africa (rainforest, central and mostly western part)

In the New World live:
Rachovia South America (Rio Magdalena Basin) Colombia-Venezuela
Austrofundulus South America (Rio Orinoco Basin) Venezuela
Neofundulus South America (Rio La Plata Basin) Paraguay
Pterolebias South America (scattered) Venezuela-Brazil
Cynolebias South America (eastern coast: 5-35_ Southern Latitude)
Cynopoecilus South America (eastern coast: 20-30_ Southern Latitude)
Rivulichthys South America (La Plata Basin) Brazil: Matto Grosso
Rivulus South America, Central America and West Indies
Trigonectes South America (Rio Amazonas Basin) Matto Grosso

Myers (1955) considered this subfamily of killies to be the most primitive one and within its genera, the Aplocheilus to be the most primitive of all killies. This group of killies has for a long time been placed between the killies related to Fundulus, the Fundulinae subfamily, and the killies called "lampeyes": the relatives of Aplocheilichthys (formerly called Aplocheilichthyinii, now Procatopodinae, named after

Procatopus). From an aquarists point of view the Rivulins stand not as far from the Fundulins and their Cyprinodon relatives as from the "lampeyes".

In previous issues of Killie Letters I delved into some of the Rivulid genera "with my eyes closed", knowing very well that it is impossible for the amateur to render an account of the genera. However, some genera I did not mention, and here they are:

Pachypanchax
The species in this genus live on the islands east of Africa: Madagascar, the Seychelles Islands and maybe also Zanzibar and some places at the eastern coast of Africa. "playfairi" from the Seychelles has, for a long time, been a not very popular aquarium fish. Certainly it has a handsome coloration, but it is not suited to living together with other fish, because it bites their fins and tries to eat the smaller ones. "homolonotus" (omolonotus) from Madagascar was introduced as an aquarium fish, a few years ago and is now kept here and there by aquarists who like killies. "playfairi" is "yellowish and red" whereas this species is "brown and bluish", but it behaves just like "playfairi" and bites the fins of other fish. Maybe there are two more species which we still have not seen: "nuchimaculatus" (described by Guick in 1866) from Madagascar and "sakaramyi" (Holly 1928) from Sakaramy, 30 km inland from Diego Suarez on Madagascar. "homolonotus" was described by Dumeril in 1861 and "playfairi" by Gunther in 1866. Myers (1955) says: Pachypanchax is much closer to Aphyosemion, Rivulus and Cynolebias than to Aplocheilus. This is surprising. Crossings however have not been made yet. I and many other aquarists have "homolonotus", Jacobsen (South Africa) has "playfairi", so we may go right into crossings with Aphyosemion, Epiplatys and Aplocheilus and see what happens.

Rachovia
Rachovia was separated from Rivulus by Myers in 1927. The typical species is Rachovia brevis that is found in the basin of the Rio Magdalena in Columbia. Here it probably lives like a real annual fish in the flooded lands along that river. This interesting species was imported to Germany in 1906 and described by Regan in 1912. I cannot find anything pointing to later importations, at least not after 1945. The species looks much like a robust species of Rivulus. The male is bluish greenish and each scale has a violet or bluish edge. Dorsal and anal greenish blue with dots and streaks of dark violet color. Caudal fin same color but this fin is edged with dark color, its upper and lower rays a little pronounced. Eggs in water did hatch after about 60 days. Another species Rachovia hummelincki was described in 1944 (by de Beaufort) and lives on the Paraguana peninsula, Poza de San Antonio east of Carirubana in Northern Venezuela. I have not yet collected the description. Hoedeman (1958: Bulletin of Aquatic Biology) notes that "hummelincki" might belong to another genus. Not imported yet.

Austrofundulus
This genus is unknown to aquarists. First specimens were found by Dr. Fr. F. Russell in a

pond in the State of Guarico, in the Orinoco Drainage of Venezuela. Myers described the species (*A. transilis*) in 1932 and noted: "this Venezuelan fish so closely resembled Adiniops (this is Nothobranchius in modern sense) that in the absence of comparative material I could assign it to no other genus, and I suggested to Mr. Bean the possibility of an importation. ...50 mm long with caudal fin...badly faded... indications of darker spots on the D and A". In 1949, however, Schultz described a new species and subspecies also from Northern Venezuela, *A. transilis limnaeus*, from ponds 15 km west of San Felix, Estato de San Felix, which is at the western border of Estado de Falcon, Venezuela (in lower Rio Cocuiza which empties into the Gulf of Venezuela). More specimens have been collected at Pozo del Arroyo de Aparo, El Cardon, Goajira. That is on the other side of the Gulf of Venezuela. Maximum 73 mm without caudal fin. Coloration (in alcohol) pale tan with dark spots anteriorly on adult males, a dark bar below the eye more prominent in males, several very faint small pale grayish spots on the dorsal fin, none on other fins. Caudal fin of adult males is blackish. Drawing shows a fish, not so very near a typical Nothobranchius. Profile of the head in adult male is concave. Schultz also described A. stagnalis from stagnant ponds or pools in such localities near Rio Misoa-Lagunillas, Maracaibo basin and near Rio Cociuza, El Mene, Venezuela. Rio Misoa is situated 20 km south of Lagunillas on the eastern shore of lake Maracaibo in the state Zulia. 228 specimens 9 to 34 mm without caudal fin. Do not differ very much from the two other forms in coloration, but the shape of the head (in drawing) is by far not so concave, that will say "more Notho like". The localities of these species are not far from the locality of R. hummelincki.

Neofundulus

Neofundulus lives in southern South America. The typical species is *N. paraguayensis* described as a "Fundulus" by Eigenmann & Kennedy in 1903. This species lives in Laguna, near Arroyo Trementina in Paraguay. Not as deep bodied as Cynolebias, closer to Cynopoecilus (Myers 1924). *N. ornatipinnis* was collected by Carter & Beadle in 1926-27. Described by Myers in 1935. Taken in a swamp at Makthlawaiya, Paraguayan Chaco (23 degrees 25' S, 58 degrees 19' W, about 60 miles to the West of Rio Paraguay). Myers places this fish within Neofundulus with considerable hesitation. "In fact the only thing that prevents placing "ornatipinnis" in Cynopoecilus is the compressed form of the latter. It would seem that, for the present, the body form alone must constitute the sole distinguishing feature of Neofundulus. *N. ornatipinnis* is much more like *N. paraguayensis* than *C. melanotaenia* in general appearance and form". This species was first considered to be Rivulichthys rondoni, which has a posteriorly placed dorsal fin (originating over the 9th anal fin ray). In "ornatipinnis" the dorsal and anal fins origin opposite and this is also the case in "paraguayensis". Color of "paraguayensis" is brownish. 4 dark brown ill-defined longitudinal streaks running forward from the caudal base and fading a little before the dorsal and anal origins. These stripes make the lighter ground color between them look like light lines. The caudal is boldly marked with irregular series of brown spots. Other fins as in "ornatipinnis". There is no humeral blotch in "paraguayensis". "ornatipinnis": body plain brownish (in alcohol), paler on belly. A conspicuous black vertically elongated

humeral spot just behind and somewhat above the base of pectorals. Dorsal nearly clear basally, rest of fin marked with 3 series of brown spots on the membrane between the rays, the outer series near the edge of the fin. Caudal plain dusky, anal darker at the base, this being followed in outward succession by a wide clear stripe, a dark line formed of a series of brown spots on the membrane between the rays, and a broad brownish edging of the fin. The brown edging takes up nearly half the height of the anal, and a short distance out from the series of brown spots this marginal brown is faintly aggregated into another such series of spots. Pelvics are almost clear. Pectoral with several irregular series of brown spots, crossing the fin on the membranes (according to Myers 1935). Not imported yet.

Rivulichthys

This genus lives in Brazil in the state of Matto Grosso. Only a few preserved specimens from Caceres are known. The sole species, R. rondoni, was described by Ribeiro in 1920 (1923). The genus Rivulichthys was formed in 1927 by Myers who noted: "coloration has dark longitudinal bands." The biggest Rivulini, 15 cm. I have not been able to collect the original description. In 1927 Myers remarks that this fish has the same coloration as *Neofundulus paraguayensis, Trigonectes strigabundus* and *Rivulus rogoaguae*. Also that *Rivulus balzanii* might be identical with *R. rondoni* or belong to Rivulichthys or Trigonectes. *R. balzani* comes from Villa Maria, Matto Grosso in the Rio Paraguay Basin. It has 4 or 5 brownish longitudinal stripes. Dorsal and anal with 3 series of brown spots. Described by Perugia in 1891. R. rogoaguae described by Pearson & Myers in 1925 comes from Lake Rogoagua in Bolivia (Rio Amazonas-Madeira Basin). The same locality that I can find in Matto Grosso that is named Caceres is situated within the basin of the Rio Paraguay. Not imported yet.

Trigonectes

This genus also lives in Brazil and also in the state of Matto Grosso. The sole species is *T. strigabundus* and the genus was described by Myers in 1927. This fish was imported to Germany (Toni Dunker, Solingen) in 1959, but so far there has not yet been established an aquarium stock. The locality given by Myers is "Donna Franciquinha, a low water rivulet into the Riberao, into the Rio Tocantins" (Porto Nacional, Rio Tocantins, Goyaz, Brazil). That means that the fish lives near upper Rio Tocantins in the Amazonas Basin. The generic name comes from the wedge shaped shoal that the fish forms while swimming near the surface. Toni Dunker in the Nov. issue of DATZ 1959 gives a lot of information about his importations. Eggs were spawned near the bottom into Amblystegium, but only in the parts of the moss that were near the bottom. Eggs about 2 mm. Tough. None developed. Foersch had one female and 3 males. Spawning in swimming plants, after 3 weeks there was no development in the egg. Fechter, Vienna, who also had this species from Dunker, had 80 eggs that after 4-5 weeks only showed traces of development. This species has 5 narrow longitudinal stripes running out from the base of the caudal fin, in front of the dorsal fin I can count 9 such lines on a fine photo made by Foersch. The ground color of the live fish is metallic greenish in the male. Meinken gives much information on this species in DATZ Aug. 59. The form is something between Rivulus and Epiplatys. Up to 9

cm total length.