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The Genus *Aplocheilus*

Thanks to Thung Kim Tek my collection of *Aplocheilus* increased during the latest months and now comprises 3 of the possible 3-4 species in this purely Asian genus. Very often the species in *Aplocheilus* are called *Panchax*, and this latter name, for many years, was commonly used by zoologists as the name for this genera. At that time, *Aplocheilus* was used for the species of *Oryzias*. See about the use of these names in the previous article on *Oryzias*.

Aplocheilus stands in the subfamily of Rivulineinae (formerly known as the tribus of Rivulinii) within the family of Cyprinodontidae. In 1955 Myers considered the Rivulineinae as the most primitive killies and also *Aplocheilus* to be the most primitive genus within this subfamily. Myers also expressed the opinion that *Aplocheilus* are very close to the *Epiplatys* of Africa but not very close to the *Aphyosemion*. He also considered the small genus *Pachypanchax* to be much closer to *Aphyosemion*, *Rivulus* and (even) *Cynolebias* than to *Aplocheilus*.

To the common aquarist all *Aplocheilus* appear to be very close to the biggest group within *Epiplatys*, the group comprising "chaperi", "sexfasciatus", "multifasciatus", etc, but not so close to, for example, the "duboisii" which is much more like an *Aphyosemion*. However even though I have kept only 2 of the *Pachypanchax* species, I found them to be not very different from *Aplocheilus/Epiplatys*. Crossings possibly will help us in determining the right classification for the few aquarium-kept *Pachypanchax* ("playfairi" and "homolonotus"). If a breeder is keeping "playfairi" I will gladly appreciate receiving a few eggs as in 1960 I dropped my stock of this handsome but very rapacious fish years ago.

Aplocheilus has been known for very many years. In 1822 Hamilton-Buchanan described the "panchax" species as *Esox panchax* on specimens from Bengal. In 1839 once more it was described by the zoologist McClelland as *Aplocheilus chrysostigmus* and here it got the generic name now used for the whole genus. In 1846 Cuvier & Valenciennes described it again, but now as a new species named *Panchax buchani* and the generic name of *Panchax* was then fixed on the genus and kept for many, many years. Cuvier & Valenciennes also described "lineatus" that year. Cuvier & Valenciennes' "kuhlii" of 1846 is *Aplocheilus panchax*, too. In 1850 once more this widespread species was described by Bleeker as *Panchax melanopterus* (possibly on Java specimens). Jerdon described "rubrostigma" which now is considered as "lineatus" in 1849 (and also "vittatus" and "affinis"?). Also the name "rubropictus" has been used on this fish (Stansch 1910).

The species "dayi" was described by Steindachner in 1892. There are too many "???" on this species in the literature. In 1940 Job used the name "dayi" in connection with the Indian Aplocheilus, but also he used the "???". The species "blocki" was described in 1911 by Arnold as a subspecies of "panchax". In 1933 Myers considered this fish to be a real species. Myers thought that the "parvus" described in 1916 might be identical with "blocki". As far as I can find out from the various literature at hand the following species occur in nature:

A. blocki Arnold 1911 India (east coast near Madras)

A. dayi Steindachner 1892 Ceylon

A. lineatus Cuvier & Valenciennes 1846 India and Ceylon (southern)

A. panchax Hamilton-Buchanan 1822 India, Burma, Siam, Malaya and Indonesia

In "lineatus" and "panchax", the principal species, there are some subspecies or races known. Here is some zoological data (see before):

H/L D A L I T

A. blocki about 4s 7-8 15-19 26-30 50 mm

A. dayi 3.5-4.25s 6-7 15 29-30 90 mm

A. lineatus 4.0-4.5s 7-9 15-17 32-34 100 mm

A. panchax 4.5s 7-8 15-17 29-33 80 mm

Aplocheilus are "pike like" fish that have adopted to life at the surface of the water. The dorsal fin is small and placed far back on the back of the fish. This fin is more or less pointed in the adult males (except in "panchax" -all forms?). The anal fin is much bigger and also pointed in the males of "lineatus" and "dayi" and also to some extent in the females of these species. In "panchax" and "blocki" pelvic fins are small and rounded. The males show the brilliant metallic colors so common in killies on the sides of their body and head. The guanin runs also out into the fins of the males. Metallic colors are described as green blue golden and very often the cast is concentrated into very many small gleams on the body sides and not as an even brilliance as in most other killies. In "dayi" and "lineatus" there are more or less obvious black crossbars (7-8 in "dayi", 6-10 in "lineatus") but these bands fade away in the maturing male, whereas they remain in the female. We also find this in many "cross-barred" Epiplatys, but not in all. Crossbars are most distinct on the lower part of the body and behind the anus. A black dorsal spot is present in "panchax" and "blocki", and is biggest in "panchax". Red orange yellow pigmentation is present in all species particularly in the anal and caudal fins. In "blocki" and "dayi" the lips are surrounded by a red line. The edge of the anal fin and lower caudal fin is brilliant red to blackish in the species (except "blocki"?). Ground color of the fins -in particular, the lower ones- is yellow to reddish.

A. blocki has been found in the vicinity of Madras on the eastern coast of India. It lives in stagnant freshwater ponds as well as in rivers, both when filled with vegetation. It is considered to be more feeble than the "lineatus" and "panchax". Job reports that an egg is often hanging from the anus of the female for some time after the spawning act. Captain Block, who brought the live fish to Arnold (1909), found his specimens at Cochin and Tellicherry. This species has been imported to Europe since the war.

A. dayi has very little known about this species. The "yellow form" of "panchax" often is called by this name. I am raising Tek's stock now.

A. lineatus, called "piku" or "poochaatie", is found in rice fields, ponds, canals, in freshwater, but also in brackish waters, near Bombay. It has been found on the Malabar coast, Coorg, Mynaad and in the states of Cochin and Travancore, and in Ceylon ("Irri Nalla Handhaya"). Job wrote that the offspring may contain up to 90% males. He found the eggs to measure 1.4-1.7 mm (in my stock eggs mostly are 1.9 mm and do not vary much in size). The membrane is provided with many slimy filaments, the longest are concentrated at one pole. Job found that this species has considerably more short filaments on the egg membrane compared to "panchax". In this species the female is rather colorful. It is said that the forms from the western coast of the Indian peninsula are the most colorful.

A. panchax represents the genus in the northern parts of India and spreads further into Burma, Siam, down through the Malaya and into the islands of Indonesia - Sumatra, Borneo and Java and some of the smaller islands. It is also found on the islands of the Andamans and the Nichobars. Job gives the following information on the distribution in India: Bengal, Behar, Orissa, Assam, Punjab, United Provinces, Sind, Cutch, and Central provinces. There are three color forms: blue, red, and yellow. But these forms do not breed true. The ovaries of a female might contain about 100 eggs visible and under development. Normally only about a dozen are ripe. Under the microscope another 1000 traces of eggs might be seen. 500 eggs spawned within 3 months may be normal. Job collected eggs on 01 May 1939 long before the Monsoon in a municipal drain running along the eastern border of the Superintendent's private compound, outside the temple gate of the Pulta water works in the 24 Perganas. The drain is a "semi-pucca" that is practically a "cutcha" when overgrown with vegetation as it was in May, but the few inches of water were clear and there was a very gentle flow. The main source of the water was underground seepage and drainage from a "cutcha" drain running along the north of the compound. Thus while the water was by no means pure, it could still be classed as "sweet" or fresh. Of the submerged vegetation, the filamentous algae "Tribonema" was most important. Roots of *Mikania scandens* crept along the sides and dipped themselves freely in the water. The water supported a rich fauna consisting of larvae and insects, such as mayflies, dragonflies etc., ostracods and micro-organisms, young of *Cyraululus* and other Molluscs, etc., while ants and other insects moved about the marginal vegetation. Eggs were found fastened to the long filamentous algae and on dipping roots of *M. scandens*. The species breeds all year. Most fry are seen in June, July, and Aug. during the SW Monsoon. Even on the hottest days of the summer spawning has been seen. Eggs measured 1.5 mm (stock from Djakarta measured 1.65-1.75 mm, whereas Tek's "dayi" measured 1.60 mm (6 eggs) all of them). There are many long slimy filaments at one pole and some short filaments all over the surface (all eggs from the 3 species which I have show a rather unregular net pattern on the surface, less pronounced in "panchax"). Most of the eggs Job measured were only 1.4 mm. The longest filaments extended to 20 mm. They remind of eggs from *A. lineatus* (Travancore stock). They hatch within 9-12 days normally, but during cool weather they needed 11-14 days. Norlund (USA) reports up to 25 days during winter. The fry measured 4.4 mm. After 2 weeks they measured 10.8 mm.

Mackessack (The Aquarium, 1958) studied the native stock at Jaipur, the lakes in the Champaran district of Bihar, India. The species hugs the shore line, not venturing out at any time more than about 15 feet or so away from it. In nature it is a top swimmer that does not take cover in the weeds along the shore, as does Chanda lala and the Barbs that also live there. It stands a wide range of temperatures. In winter the temperature in the air drops during night to freezing and frost is a frequent visitor. Water temperatures

hardly however drop down below 40 (4 ½ C). In the summer with air temperatures higher than 130 F, the water remains comparatively cool on account of the high rate of surface evaporation. This species stands 40-100 F in nature (4 1/2-38 C). Its eggs hatch after 12-14 days. Roloff found "panchax" (common form) at many places in Siam, in pools at Bangkok, in flooded rice fields, in the streams of the continent and on the islands in the Bengal Gulf, and also in brackish water. They tend to stay in groups, hunting insects. They mostly were very large and weakly colored. In the southern part of the country in the vicinity of Patalung, Roloff found a variety of *A. panchax* that was brilliantly colored and did not reach the length of other species encountered. This variety reaches a length of 2 1/2 inches with the males showing bright coloration at a length of 1 1/2 inch. He took two pairs back to Germany and they promptly multiplied in his tanks. It differs considerably from the variety found in India as well as from the variety described by Dr. Smith from Thailand. Dr. Klausewitz ("Senckenbergiana" vol 38) described this form as a new subspecies.

Aplocheilus panchax dorsimarginatus is distinguished by black edging of the dorsal fin (not very distinct in the photo in "The Aquarium" Sep. 57). The species lived in water holding 6 German degrees of hardness. Eggs hatch after 12 days. Herms (DATZ Dec. 53) often saw "panchax" in his garden pool after the rainy season had started, but he never saw the species at that place during the dry season. He lived near Bangkok. The fish is called "Bla Hua Takua" by the natives. He found it everywhere in ditches, canals and pools, also in brackish water. Now and then he also saw this fish in the jungle. Marsack (The Aquarium and Pondkeeper, Aug. 49) found "panchax" in Johore, Malaya.

Ruttner found "panchax" in Ranu Klindungan (Eastern Java). This lake is situated some 40 km NE of Klakah and about 13 km SE of the town Pasuruan at the coast. In this very deep lake (130 m!!) he found *Eichhornia crassipes*, *Najas falciculata* and *Hydrilla*. The native name for *A. panchax* is Wader petak or Ikan kepala. Temperature at surface 27.3-31.4_C (4 analysis), CO2 free = 0.6-20 ppm, alkalinity 3.00-3.68 or temporary hardness 8.7-10.4 German degrees. pH at the surface 8.1-8.96, electrical conductivity 264-306 rec. megohms. Chloride 5 ppm. Also present in this lake was: *Rasbora argyrotaenia*, *Barbus bionatus*, *B. orphoides*, *B. javanicus*, *Dermogenys pusillus*, *Anabas testudineus*, *Trichogaster trichopterus* and other less known species. See Tek's information previously (under *Oryzias javanicus*).

Crossings

As I did not keep more than one species of this genus, I was not able until now to attempt cross-breeding. The only cross outside the genus that gave fertile eggs was the cross *Epiplatys chaperi* male/*Aplocheilus lineatus* female: 18 Nov. 58 8 eggs; on 25 Nov. (27 Nov.) embryo visible, the net of blood circulation system finely developed, but embryo is too small and curls up its tail. Embryo very pigmented as in "lineatus". 21-22 Nov. 58: another spawning gives 17 eggs. On 27 Nov. 58 12 of these are fertile. Not very promising. On 30 Nov. 58 most fry in this brood is dead or dying. Circulation of blood nearly stopped. First brood (18 Nov.) on 30 Nov. 58. Not all embryos are badly developed, some might hatch indeed. There are big differences in the development of blood system and fine circulation in some eggs. Embryos are however rather small (compared with egg size) and most curl up tails. On 02 Dec. 58 dead or dying. Preserved all material from 18 Nov. 58. 04 Dec. 58 the same treatment to second brood.