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Aphyosemion cognatum

This handsome "red" *Aphyosemion* was found by the Belgian Dubois and imported by Hartel, Cresden and Griem, Hamburg 1950. Meinken described this fish as a new species in 1951 using material from the importations. Later, in 1955, Werner from Muenchen had another importation (another variation, possibly). My stock came from Griem in 1954, but in 1956 I got a new stock from the USA which now is mixed up into the "old" stock. Meinken wrote that this fish possibly was closely related to *Aphyosemion striatum* and *Aphyosemion calliurum*, but it may also stand close to the "cameronensis" and "schoutedeni".

Both sexes will grow up to 50 mm, rarely more than 60 mm. The shape of the body is like "australe", also the fins remind you of "australe" but even as the caudal fin very often has prolonged upper and lower rays, these never form a "lyretail" as in "australe". Also the hindmost part of the anal fin is less pointed. The male is overall reddish on body and on fins. On the body the red color comes from small, red dots on practically all scales on the sides. In some of the importations the males did not have so many red dots (easily seen from the various photos in literature), but in my present stock only very few scales have no red dot. The ground color also is reddish yellowish. The vertical fins often have an overall reddish to pure yellow color and lots of red dots. The dorsal, anal and caudal fin have thin red edges, by far not as marked as in most other *Aphyosemion*. The common bluish to greenish brilliance on the sides of the male you only may see on the gill covers. The female like other females in this genus is plain brownish but she has many dark brown dots on the scales, just the same regular pattern as we find in the male, and you easily may take out any female of "cognatum" from a mixed population of *Aphyosemion*. Her anal fin often shows a bluish cast.

The species have only been caught near Leopoldville in Belgian Congo. Werner bought this stock from the Negroes in the village of Kinsuka, near Leopoldville. They brought him the fishes in bottles, but he did not see the place where it was caught. The Belgian zoologist and connoisseur of the fish fauna of Belgian Congo, Dr. M. Poll, writes that the fish is common around Leopoldville. An unnamed German collector caught this fish in small pools, ditches and creeks, near Leopoldville. He also found the species on deep waters in the Stanley Pool in drifting plants. Stanley Pool has rather soft water - maximum 2 German degrees, pH 6.4-6.7 and a brownish color from humus. In the forest creeds the water very often is more acetic, pH values down to 3.4 are found according to the information of the collector Pierre

Brichard (Tropical Fish Hobbyist Oct. 58). We certainly feel a need of further chemical information about the River Congo. The landscape around Leopoldville has a rather even mean temperature of about 25.5 C. The annual rainfall is not very big - 1340 mm a year. The dry season falls in the months June-July-Aug., and July and August together only have 5 mm. There are two maxima: March (193) and Nov. (218 mm). In the Stanley Pool the water level changes about 4 meters within the year. The geological conditions are not very easy to survey and in some places there are marine deposits. Water conditions may change very much within local geological formations.

The "cognatum" used to be a very shy fish during the first days or weeks after the transfer to a new tank. Very often the fishes are terror struck in a way that in a panic they rush around in the tank and -just like the "labarrei" (calabaricus and others)- take their own lives by wounds from rocks, stones and gravel. If peat bottom is used, they will dive into this soft material and rest there for some days and after this they get more and more accustomed to the tank and also they may be a little tame in time. If you want to accustom this fish to the life on mineralic bottom layer, you certainly should keep the fish for some time in tanks without any bottom layer at all. The male "cognatum" you very often will find at a certain place in the tank - under some Cryptocorynes, in a corner and at other dark places. Young fishes often are not very shy and if you keep quite a lot, you often will see many swimming around in the "free" water. "Cognatum" is an excellent jumper and he will find any small leak at the aquarium cover. A leap of 15-20 cm vertically he easily will make during night. Like (all?) other Aphyosemion it very easily may be accustomed to live in very lighted tanks if it has some dark places to hide itself. You will often see it out in the bright sunshine. The "cognatum" very often is swimming in a particular way, he will swim a very short distance and then stop, then swim again and so on, jerking through the tank. He is a very good swimmer indeed.

This species will take any food offered - dry food or live food. I have raised several good stocks on dry food, with only one feeding of live food a week. But dry food very often will make the water cloudy, and like most other Aphyosemion it does not like this and folds its fins. Then also often the Oodinium will make an attack. In 1955, I had some old males in a tank which was placed in the sun and had lots of green algae. This stock was found to be infected with the severe internal disease, Ichthyophonus, and I had to kill some of the diseased fish. This showed me that the intestine often was filled up with green algae, so possibly this food may play a role in the nourishment of this species.

It stands temperatures from 18-23 C very well, but both colder or hotter waters will not hurt it. I have kept some stock in alkaline waters (pH above 7.6, below 8.2, temporary hardness about 15 German degrees) and I certainly was able to keep the stock alive. But no doubt this water type is not the best one for this rain forest fish. The "cognatum" is a rather peaceful fish, I do not remember any difficulties even when many adults were kept in small tanks.

This species is very easy to spawn. My half grown females (in the various crossings on perlite where eggs always are counted) gave away up to 60 eggs in each spawning of 2-4 hours. At least you may get about 10 eggs per female and day on good feeding. The egg is one of the biggest among aquarium kept Aphyosemion - 1.4-1.5 mm. The surface of the membrane has many thin filaments. In one pole of the egg the filaments seem to be more concentrated and prolonged. The spawning act takes place among fine plants or roots near the surface or near the bottom. Spawning may take place just over the bottom mud.

Eggs hatched after 10 to 21 days at room temperature. I never saw any "resting eggs" or "resting fry", but the German breeders report that at least some "resting fry" often occur in their spawnings. The eggs are rather tough and you may collect them using your fingers, I prefer to cut them out of the perlon. My fry measured about 5.0 mm just after the hatching. During the first few days I often found the fry near or at the surface, but soon they were seen everywhere in the tank. As they are rather big they will take big food as newly hatched brine shrimp (*Artemia salina*), micro worms, etc. I use to feed a little small sized dry food every day in order to accustom the fry to this food. The spawning takes place at all temperatures above 18 C. I breed at 22 C. You should keep the water very clear as the fry does not like cloudy water at all. Oodinium may then be a problem. During the first weeks the fry grows rather quickly, but after the beginning of maturity, which is seen in rather small fishes in this species, the growth is very slow. As in most other killies the growth of a certain brood is very irregular and some fry very quickly grow to a size making them able to eat their younger or smaller brothers. But very often I had broods unsorted and I never saw any of the bigger fry trying to eat their smaller brothers.

Crossings:

This species I have tried in many different crosses because during the winter of 1957/58 I had a female that spawned with all males I placed her together with.

Aphyosemion calliurum ahli male / *Aphyosemion cognatum* female: (this was one of the males imported from Nigeria) 10 Sep. 57: 34 eggs. I had to go away for about 14 days and had to keep the eggs dry on moist perlon for that time. 25 Sep. 57 they were placed in water. No fry hatched. 27 Sep. 57 I added dry food. From 9 ripe eggs 9 sound fry hatched out within 10 hours. Only 2 were able to live. One was a normally developed fry and grew up to be a big male "lab/cog", but did not have the handsome caudal fin of this hybrid, nor the same brilliance as these. The other fry had badly deformed under-jaw and this jaw grew out to form a spoon. He could not close his mouth. He learned to eat using his gills and grew up to be a very handsome male. The body colors were the same as in his brother, but (possibly, or no doubt from the "ahli" father) he had a handsome yellow (very bright) color in the upper part of the dorsal fin, the lower part of the anal fin and at the upper and lower parts of the caudal fin. He was much more handsome than his brother, but more feeble. He lived for more than half a year. 90 days old he measured 27 mm.

Aphyosemion calliurum calliurum / *Aphyosemion cognatum* female (also an imported male from Nigeria) 30. Oct. 57: 58 eggs in one spawning. Fry hatched without any help like this: 14 Nov. 3 fry, 15 Nov. 11 fry, 16 Nov. 12 fry, 17 Nov. 21 fry, plus 11 and after some days 1 fry. 26 fry were placed in one 16 liter all glass tank (usual conditions) on 22 Dec. 57 only 12 were still alive. Of these only 3 had a normally developed underjaw. The other ones were "spoon-jawed". The smallest measured 7-8 mm, the biggest 21-22 mm. The other part of this brood was kept in another 16 liter tank. On 22 Dec. 57 these were also caught. 25 fry (have been 43 fry) 9 normally developed fry, 13 fry clearly "spoon jawed". This tank also had some fry of the same cross type (10 fry from a spawning on 08 Nov. 57, hatched 23-29 Nov. 57). After 45 days the biggest fry began to show colors. About 24 mm. Later all deformed fry died (Oodinium and weakness) but many of the normal ones lived to maturity and some were sent alive to Amsterdam. I now keep only one (05 May 59) of these hybrids. About 55 mm. None of these many males had any yellow color in their fins. They were like the biggest fry of one cross. They often suffered

from attack by *Oodinium*. All these fry grew up to be true males (in coloration) but all were 100% sterile. On 01 May 58 I had only about 8 of these hybrids left from hatching of about 80 fry. Very bad indeed.

Aphyosemion australe male / *Aphyosemion cognatum* female (still the same female) 14 Nov. 57: 32 eggs. 07 Dec. 57: many of these eggs have developed a small embryo, but this is not at all normal to look at. Cannot possibly live. 17 Dec. 57. Only a few eggs left, embryos dead in all eggs, one embryo taken out of its egg. 1.2-1.3 mm, preserved. 27 Dec. 57: not a single unbroken egg left in the glass. 30 Nov. 57: 35 eggs (perhaps another male used). No eggs got fungus. Much better development of fry inside the eggs, also much better development of blood system.

Second cross "*australe*" male / "*cognatum*" female: apparently no egg was attacked by fungus. 27. Dec. 57 embryos in eggs are apparently dead. Took one fry out of the egg using needles. Fry is not quite dead, slow circulation of blood elements, movements of pectorals. Fry measured 2.5--2.6 mm, died on 29 Dec. 57. No fry came out of this cross.

Aphyosemion labarrei male / *Aphyosemion cognatum* female: (same female as in the other crosses) 05. Dec. 57 50 eggs spawned within a few hours. 09. Dec. 57: embryo moves his tail in egg, no eggs got fungus. 16 Dec. 57: very fine development of embryo. 18 Dec. 57: they seem to be ready for hatching. 22 Dec. 57: 4 fry hatched without any help. 24 Dec. 57: 3 fry. 25 Dec. 57: 1 fry, then added dry food: after 2 hours 9 fry, after 2 1/2 hours (totally): 4 fry, after 3 hours 4 fry, later 6 fry. Once more in "dry food water" on 26 Dec. 57: 17 fry hatched. Totally 48 fry. The fry measured 5.0 mm, all had that size. These fry had "shining eyes" as have fry of *labarrei*. 17 Mar. 58 the fry were caught and counted, I found 44 sound fry. They looked like young "*cognatum*". These hybrids grew up to be very sound fishes, no diseases at all, also they were most handsome, possibly the most handsome of all *Aphyosemion*. Most were males, the rest were not females as none ever spawned a single egg. These "intersexes?" were colored in same way as young males "*cognatum*" but like the real males there were by far not so many red dots on the sides. The males took on that very brilliant blue cast on the whole body which we find in matured "*labarrei*". But they were all "*Haplochilus*" as "*cognatum*" (dorsal fin inserted behind anal fin). In particular the caudal fin was of very fine shape and very close to the shape and colors we find in "*schoutedeni*". Live and preserved specimens were mailed to Dr. Hoedemann. I still keep (29 may 59) some of the males and a few "females" which tomorrow will be mailed to Dr. Foersch to be photographed. Several males and "females" were tried in back crosses to females "*cognatum*" and "*labarrei*" but I did not see any fertile eggs. So possibly these hybrids were as sterile as most other hybrids in *Aphyosemion*. 17 Dec. 57: same cross 5 eggs. First fry hatched on 03 Jan. 58.

Epiplatys chaperi male / *Aphyosemion cognatum* female: (same female) 01 Feb. 58: 7 eggs spawned, 03 Feb. 58 one egg got fungus, 6 eggs are fine. 06 Feb. 58 5 eggs left, these show very promising development, the development of blood system is very fine. 08 Feb. 58 all eggs are OK, the eyes are now fully pigmented. 11. Feb. 58 now some of the eggs apparently stop the development and the development is not at the same state in the eggs. 15 Feb. 58 all 5 embryos are alive, the heads are deformed, they possibly will not live for any long time. 7 Feb. 58 embryo dead in one of the eggs, other embryos are dying: preserved.

Aphyosemion (?) *petersi* male / *Aphyosemion cognatum* female (same female) 18 Jan. 58 7 eggs. 21 Jan.

58 one egg inspected. Embryo "180 degrees", transparent. Eyes unpigmented. 26 Jan. 58 the eye is pigmented, the development of blood system is very weak. 29 Jan. 58 development of blood system is much better now. 01 Feb. 58 the circulation of blood elements has stopped, the egg was preserved.

Aphyosemion sjoestedti male / Aphyosemion cognatum (same old female) Indeed I was not very optimistic because the male was much larger than the female and "sjoestedti" does not like to spawn on perlon. But the good old female at once invited the big male and certainly after a few minutes this grotesque "pair" was spawning normally. After a few hours I cut 57 eggs out of the peron. 17 Feb. 58 53 eggs were lifted out, not fertile. 4 eggs may be fertile, but they are all very green from the Euflavine/Methyleneblue mixture. 19 Feb. 58 only one egg left in the glass. The yolk ball is unbroken and has not taken up the green color. This egg was then kept until 22 Apr. 58 and inspected on 21, 25, 28 Feb., 13 Mar. and so on. But it did not change. There was a formless mass of cells over 180 degrees of the yolk.

Crosses in which "cognatum" male was used will be referred to in connection with the female species used.