
The Scheel Letters, #2

Resting Embryo

When working with very small batches of eggs, in which the number of eggs were counted and where each egg was inspected under the microscope, and all information noted on the "card" for each batch, in 1958, I found something that pointed in the direction of the existence of a state of development which may be called "Resting Embryo". In these eggs, in the microscope, it was very easy to find an unpigmented embryo, which also had no blood-system developed. These early states of the development of the embryo had a distinct segmentation of the long and slender body and also traces of what later on should be the eyes. The full length of such embryos was about 180_ that is to say that the whole body occupied half the circumference of the yolk ball. But these embryos apparently did not develop further. I thought that they were dead, but as the eggs did not get fungus, or decomposed inside, I thought that this possibly could be a new type of "dormant life of eggs". These "apparently dead or sleeping" states of development I first saw in several batches of eggs of *Nothobranchius palmquisti*, later in the different crosses in this genus, but I had not time enough to explore this matter further. Then my friend Claus Petersen gave me a few eggs of another Nothobranchius, which he called "kuhntae" (possible "orthonotus" or something like that). These eggs had been in water (rather dirty to my opinion) for some time, perhaps a month or so. I got them during the first days of Oct. 58. After some days in water, where they showed no change, I dried them up in a little peat.

- First watering on 09 Nov. 58, no fry hatched. I washed out 11 eggs, 10 of those had that small transparent embryo, and one egg only had no trace of an embryo. Dried up in the same peat once more.
- Second watering on 12 Dec. 58. No fry. Eggs are unchanged. Dried again on 14 Dec. 58.
- Third watering on 16 Feb. 59. Three sound fry hatched (these are now 2 males and one female, typical "kuhntae", the first of these in my fishroom). I washed out 6 eggs, 5 still were unchanged and had that transparent embryo, no decomposition of the yolk, egg still transparent. Only one egg did not have this small embryo or ???. difficult to see.
- 18 March 59. Fourth watering, no fry, one" white egg", 5 transparent eggs of which still had the small transparent embryo. One egg had no embryos. They are now in their peat once more.

Summer 1958 I spawned *Nothobranchius melanospilus*, from the stock that Jack mailed me (Henry Hansenstock). Here are the data of one of the batches of eggs spawned by my young fishes. The egg of that species is much bigger than eggs of *N. guntheri* and *N. palmquisti* and these eggs are easily

recognizable if they should be mixed up with other eggs. I did not find any other eggs in that peat. Peat out on 17 Jul. 58, eggs concentrated by washing in little and coarse peat. On shallow water until 02 Aug. 58. Then dried up.

- First watering on 02 Sept. 58, no fry. Second drying up on 14 Sept. 58.
- Second watering on 26 Nov. 58, 10 fry, peat washed out and only one egg was found. Not inspected under microscope (at least not noted on the card of this brood) but it was transparent. Dried in a little peat alone on 28 Nov. 58.
- Third watering on 25 Dec. 58. No hatching, egg washed out (for which I keep in a separate box, I then place the eggs in a little amount of peat in a large drop and put lid on. Not all eggs seem to stand this very quick drying up). Egg inspected under microscope. An 180 degree non-pigmented embryo was seen in egg.
- Fourth drying on 30 Dec. 58. Still fine and transparent, no decomposition of yolk.
- Fifth drying on 24 Feb. 59. Fifth watering on 14 Mar. 59. No fry. Egg washed out. Now there was a big embryo inside egg. Good circulation of blood-elements, heavy pigmentation. Very close to the hatching point.
- Sixth drying on 15 Mar. 59. Still in peat. (I have one pair and need no more fry of this species).