

Letter to the Editor regarding “Ovarian fluid plays an essential role in attachment of Eurasian perch, *Perca fluviatilis* eggs”

In their paper on the attachment of Eurasian perch eggs, Mansour, et al. [1] state that a fibrous jelly-like structure leading to the attachment of eggs among each other is only formed when the eggs come into contact with water. From their laboratory experiments, in which several combinations of eggs, ovarian fluid and water were tested for the induction of egg attachment, this conclusion follows logically, but it cannot be considered representative of what occurs during natural reproduction of perch.

All authors who have commented on the reproduction of Eurasian perch, and “the biologically overwhelmingly equivalent” [2] yellow perch *P. flavescens*, agree that the eggs are shed “in a single strand” [3] in a “highly distinctive egg-strand . . . forming a hollow, twisted cylinder” [2], in a “unique, transparent, gelatinous, accordion-folded string or tube” [4]. Hence, the authors’ conclusion “eggs attach with each other in the free water and form egg ribbons . . .” is seriously flawed. Furthermore, it is difficult to imagine any mechanism by which the eggs would always form the same typical three-dimensional structure were they spawned singly.

Mansour, et al. [1] cite three references (their references 17–19) at the end of the sentence “Eggs attach with each other in the free water and form egg-ribbon which is entangled to the substrates by the female fish with one end as soon as spawning is finished”. These references may partly support the second part of the sentence, even though the entanglement is not performed by the female after spawning but “the egg strand becomes twisted around and attached to the spawning substrate” [5]. The first part of the sentence, however, is definitely not backed up by the references. Instead, both Thorpe [2] and Treasurer [3] explicitly state that the eggs are spawned in form of a strand (cf. above), while Smith, et al. [6] refer to a very similar statement by Maitland and Campbell [7]. In summary, the egg strand of perch is already formed in the ovary and is released as such during natural spawning.

In artificial reproduction experiments with perch that had attained ripeness under ambient conditions, we could

always strip a single strand from each female. When immersed in water, the strand would then unfold and reveal its characteristic three-dimensional structure. In the study by Mansour, et al. [1] in contrast, the eggs were obtained after artificial induction of ovulation by hormone application. Even though the authors took great care not to include incompletely mature eggs into their experiments, the hormone treatment has probably impeded the formation of the gelatinous egg strand, which occurs before spawning under natural conditions. The contribution found in this study of ovarian fluid and zona radiata externa proteins to the jelly-like structure may be similar or even the same during natural reproduction. The activation of their interaction inside the ovary, and the mechanism by which the complicated three-dimensional structure is formed, however, remain to be studied.

Reiner Eckmann*

Limnological Institute

University of Konstanz

D-78457 Konstanz, Germany

E-mail address: reiner.eckmann@uni-konstanz.de

(R. Eckmann).

References

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