

**Artificial reproduction of wild European silver eel (*Anguilla anguilla* L.): Oocyte developmental stages during final maturation.**

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A long history of research on artificial reproduction of Japanese eel *A. japonica* lead to the establishment of a successful hormonal induction protocol. Especially the use of 17,20  $\beta$ -dihydroxy-4-pregnen-3-one (DHP) for ovulation induction resulted in high fertility and hatching rates (Ohta et al., 1996, *Aquaculture* 139: 291-301). Application of this protocol on European eel was not successful (Bezdenzhnykh et al., 1983, *Dokl. Akad. Nauk SSSR* 268 (5) 1264-1266; Pedersen, 2003, *Aquaculture* 224: 323-338; Palstra et al., *Biology of reproduction* submitted). We assume that priming and inducing ovulation at a particular stage of oocyte maturation is crucial for high fertility and hatching rates. We therefore determined the different stages of oocytes during final maturation. In this study, we induced maturation of 151 male and 62 female European silver eel from Lake Grevelingen (the Netherlands) with respectively Human Chorionic Gonadotropin (HCG) and Carp Pituitary Extract (CPE). During final maturation, biopsy of the ovary of individual females was regularly performed to study histological changes of oocytes. After 9 weeks of treatment, males released high motility sperm (80-90%). Twenty-three females fully matured after 12-25 injections resulting in gonadosomatic indices of 28-60. Oocyte development was categorized in 7 stages composing an identification key. In contrast to Japanese eel, European female eels show delayed and individual responses to hormonal induction of maturation. In addition shorter ovulation times were found for European eel showing oocytes more sensitive to DHP. The developed tools proved valuable in individual fine-tuning of final maturation and ovulation.

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