

Dynamic aspects of ovogenesis in an asynchronous fish, the gudgeon

Dynamic aspects of an asynchronous cyprinid's ovogenesis, the gudgeon *Gobio gobio* L., were examined by a histo-morphometrie approach and effects of two factors, temperature and photoperiod, were investigated in respect to the stage of maturation. Four stages of maturity (one protoplasmic or vacuole free oocyte, two vesicle stages, also called in endogenous vitellogenesis and one vitellogenic or in exogenous vitellogenesis) were identified and compared to macroscopic characteristics of maturity (gonadosomatic index and condition coefficients, K and K₁). Growth and relative proportion to the entire ovary of each oocyte stage was measured on the different experimental groups. Relative importance of temperature and photoperiod were clearly dependent on the gametogenic stage (recrudescence, final maturation and ovulation, and regression). Under constant temperature and photoperiod conditions, a strong vesicle stage oocyte regression was observed; a periode of low temperature or decreasing photoperiod seemed necessary to allow gonad recrudescence to be initiated. An annual cycle contracted into 6 months accelerated gametogenesis and produced off-season spawnings. Contraction of the reproductive cycle did not entail a reduction of oocyte growth or the yolky oocyte proportion. During the spawning period, females ovulated several times with a 15-day interval between successive spawnings. Vesicle and globule stages were induced by increasing temperature or photoperiod, but final maturation and ovulation were primarily dependent on temperature. The regressive stage was caused by a decreasing photoperiod and/or temperature. From a group synchronous distribution of oocytes at the start of recrudescence, the gudgeon's ovary changed to a totally asynchronous distribution at the end of vitellogenesis.

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