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Maturation and spawning of tropical and subtropical marine finfish by environmental manipulations

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Abstract — *Circannual, diel, and lunal periodic mechanisms in naturally reproducing stocks of tropical and subtropical fishes are reviewed. Manipulations of biological clocks, used to control reproduction in captive broodstocks, are detailed. Experiments to induce controlled maturation and spawning in fishes either test efficacy of changing environmental conditions (regimes), or constant environmental conditions (controlled). Data has been generated in experimental/scientific studies, as well as applied research. Generally, photoperiod and temperature are the major controlling factors in gonadogenesis. Each parameter seasonally affects various stages of the reproductive cycle. Condensed and protracted regimes can alter the natural spawning season of captive broodstocks by advancing or delaying maturation and spawning. Controlled long and short photoperiods, and cool and warm water temperatures, initiate various cytological changes in the gonads of marine fish, respectively. These changes are different for different species. Effects of controlled environmental regimes on serum steroids, gametogenesis, spawning, fry performance and egg quality are summarized for selected members of* ***Centropomidae, Serranidae,*** *and* ***Sciaenidae.***