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## Improved Induced-Spawning Protocol for the Spotted Rose Snapper (*Lutjanus guttatus*)

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### Abstract

An improved protocol for hormonal induction of spawning in spotted rose snapper (*Lutjanus guttatus*) resulted in increased spawning efficiency in newly-caught wild breeders and wild-caught adults maintained in captivity for more than a year. A controlled-release delivery system (implant) based on an ethylene-vinyl acetate copolymer (EVAc) matrix was loaded with gonadotropin-releasing hormone agonist (GnRHa). The required GnRHa dose was established in two stages. The first stage included meta-analysis of our earlier experiments with wild spawners; the second stage included new experiments with wild and captive breeders. A nomograph was developed to calculate the required GnRHa implant dose, taking into account the origin of the female (wild vs. captive), the initial mean oocyte diameter, and body weight. The effective GnRHa dose was greater in wild than captive females and, in both cases, inversely related to mean oocyte diameter. Using this nomograph, over half the wild females with a mean oocyte diameter of  $\geq 425 \mu\text{m}$  and over half the captive females with a mean oocyte diameter of  $\geq 350 \mu\text{m}$  responded to GnRHa implant treatment (producing multiple spawning events in captives), with mean total relative fecundity ranging  $80\text{-}278 \times 10^3$  eggs/kg body weight and 51-85% fertilization success. The nomograph can be used to calculate the GnRHa implant dose required to induce spawning in this species under commercial aquaculture conditions.

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