



## Observations on the Artificial Sex Inversion of Dusky Grouper (*Epinephelus marginatus*) from the North-East Mediterranean Sea, Turkey

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### Abstract

The present study explores the artificial insemination possibilities for the production of dusky grouper, *Epinephelus marginatus*, being one of the most valuable species among groupers for aquaculture due to its high market value and critically endangered status. The dusky grouper is a protogynous hermaphrodite species. The sex change from female-to-male in this species occurs after exceeding a certain age and body size. This makes capture and maintenance of male brooders in captivity difficult due to their older age and large size. Thus, this study investigates the areas of broodstock husbandry, controlling and accelerating sex inversion of captive dusky grouper in a controlled environment. Accelerating sex reversal studies were conducted for two years and the findings from each period were compared to investigate differences over time. Both oral methyl testosterone (MT) and MT implant administrations (A: 1.5 mg/kg MT oral, B: 1.5 mg/kg MT oral + 2000 IU/kg/30 days/ip HCG, C: 11.5mg/kg/30days MT implant, D: 11.5mg/kg/30days MT implant + 2000 IU/kg/30 days/ip HCG) induced sex change with a positive effect and produced all-male groupers in all treatment groups (Sex inversion were detected at the end of the 120 days after the oral MT treatments for A and B groups, 60 days in group C and 60-90 days in group D). However, all male individuals in the oral MT administration group without continuing MT application in the second year re-transformed to females whereas all male groupers in the MT implants administration group permanently maintained their sex throughout the study (TUBITAK project No: 106O545).

### Keywords:

Dusky grouper, *Epinephelus marginatus*, broodstock husbandry, artificial sex inversion

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