



## Pôster – Ecofisiologia marinha

### Can phenanthrene change the behavior and physiology of the marine protogynous dusky grouper *Epinephelus marginatus* (Serranidae: Perciformes)?

Honji, Renato M. (1); Campos, Mariana F. (2); Araújo, Bruno C. (2); Mello, Paulo H. (2); Lo Nostro, Fabiana L. (3); Cuña, Rodrigo H. (3); Moreira, Renata G. (2)

(1) Centro de Biologia Marinha da Universidade de São Paulo (CEBIMar/USP), São Sebastião, SP, Brasil; (2) Instituto de Biociências da Universidade de São Paulo (IB/USP), São Paulo, SP, Brasil; (3) Departamento de Biodiversidad y Biología Experimental da Universidad de Buenos Aires, UBA, Buenos Aires, Argentina.

This study is part of a program that aims to develop and improve the production potential and conservation status of the dusky grouper through a better knowledge of its biology. This species is a protogynous hermaphrodite, typical of rocky bottoms and listed as endangered in the Red List of Threatened Species of the International Union for the Conservation of Nature. The reproductive complexity makes this species vulnerable to environmental degradation, as well as overfishing, due to its great commercial value. These fish mature first as females; later in adult life, the ovaries are replaced by testes, changing the fish into reproductive males (protogynous species). This process is modulated mainly by steroid pattern modification, started when  $17\beta$ -estradiol (E2) levels decrease whereas testosterone (T) and 11-ketotestosterone (11-KT) levels increase, promoting masculinization. Phenanthrene (Phe) is the main hydrocarbon in crude oil (with high toxicity) and in the São Sebastião Channel, harboring Brazil's greatest oil port, environmental monitoring (2004) of the area registered up to 79mg/L of oil waste in the water and 16.2ng/g of Phe in sea sediments. Animal biology can be altered in some way when individuals are exposed to Phe and, therefore, we investigated the effect of Phe exposure on the general behavior and reproductive physiology of the dusky grouper. Specimens were captured along the São Sebastião coast and held in fiberglass tanks with running sea water for at least 15 days before bioassays. To evaluate Phe effects on behavior/physiology, a 96h sub-lethal bioassay was performed. Fish were exposed to Phe at nominal concentrations of 0.1mg/L (PHE1) and 1mg/L (PHE2) and control groups were also carried out, with ethanol (ETOH, 0.004%) and without vehicle. During the exposure to Phe, animals were evaluated by video recordings (3 to 5min) for their general behavior at 4, 24 and 96h. At 4h, control, ETOH and PHE1 showed a normal behavior, i.e., natural opercular beats and swimming, normal mucus production and fed normally. However, the PHE2 treatment caused changes in behavior. Fish became inactive ("lying" in the bottom of the tank), with high mucus production (water became "cloudy") and did not feed (they regurgitated the food of the previous day). After 24 and 96h, fish behavior in the PHE2 treatment worsened. Fish lost their orientation, with their abdomen facing upwards. Also, some fish remained on the bottom while others floated on the surface, suggesting a change in the swim bladder and, along with the tremor of pectoral fins, an impairment of the nervous system. Continuous production of mucus and lack of feeding activity also differed the PHE2 group from the other treatments. No such effects were observed in the T and E2 plasma concentration during the experimental period, but 11-KT decreased in all groups compared to the control. These results may support future studies on anthropogenic contamination by this hydrocarbon in marine fish.

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