EuroSciCon

12th Edition of International Conference on

Oceanography & Marine Biology

December 03-04, 2018
Rome, Italy

Sara Asadi Gharabaghi, J Mar Biol Oceanogr 2018, Volume 7
DOI: 10.4172/2324-8661-C2-014

# Persian Gulf cuttlefish selects its camouflage tactic regardless of contrast of the environment

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**Introduction:** No field study has been conducted to the date on observance and analysis of camouflage behavior of *Sepia pharaonis* (*S. pharaonis*) in the Persian Gulf in coastal waters of Kish Island. In this study, author has evaluated 61 samples of camouflage cuttlefish in Persian Gulf by photography method using professional diving camera. The recorded images were analyzed later with MATLAB; the camouflage tactics and color patterns were identified and compared considering the contrast of the environment. Finally, it was found that the cuttlefish used all types of camouflage tactics regardless of the surrounding background. These included burial, disruptive, background matching and masquerade tactics. Author further categorized Background Matching (BM) into three groups; BM with high fidelity, BM with medium fidelity and BM with no fidelity. Neither tactic nor color changing pattern was influenced by contrast of environment. It seems that contrast of environment has no determining role in selecting camouflage tactic by gulf *S. pharaonis*. In 63% of cases, background matching without fidelity was dominant tactic. He thinks smart gulf *S. pharaonis* intentionally prefers to deceive its predator by being a false bite instead of not being seen at all.

**Conclusion and Significance:** In this study, types of camouflage tactics of *S. pharaonis* considering contrast of environment were investigated. To best of his knowledge it is the first study on camouflage cuttlefish in Persian Gulf. In contrast to the existing studies, his study showed that the contrast of environment had no significant role in determining the type of tactic selected by the *S. pharaonis*. *S. pharaonis* uses background matching with no fidelity more commonly than other tactics. His study is novel in considering the subgroups of background matching and being carried out in natural habitat of cuttlefish. These two features of his study might justify the inconsistency of his findings with existing similar reports. This issue must be further addressed in future studies done in natural habitats in different parts of world.

**Recent Publications**

1. Stuart Fox D and Moussalli A (2009) Camouflage, communication and thermoregulation: lessons from color changing organisms. Philosophical Transactions of the Royal Society of London. Series B, Biological sciences 364(1516):463–70.
2. Tehranifar and Akram (2011) General morphological characteristics of the *Sepia Pharaonis* (cephalopoda) from Persian Gulf, Bushehr region. International Conference on Biomedical Engineering and Technology 11:120-126.
3. Williams S B, Pizarro O, How M, Mercer D, Powell G, Marshall J and Hanlon R T (2009) Surveying nocturnal cuttlefish camouflage behavior using an AUV. IEEE International Conference on Robotics and Automation DOI: 10.1109/ROBOT.2009.5152868.
4. Mäthger L M, Denton E J, Marshall J and Hanlon R T (2008) Mechanisms and behavioral functions of structural coloration in cephalopods. Journal of the Royal Society Interface 6: S149 - S164.

## Biography

Sara Asadi Gharabaghi got her master's degree in Marine Ecology in 2013. She is also a scientific scuba diver. She is a young researcher with more than four years professional experience in field and lab studies strongly focusing on behavior of marine animals, especially cephalopods and sharks. She has also good experience as a researcher in fish farming in the cage, especially on sea bass species. Recently, she is being involved in research project regarding to migration of sharks in Persian Gulf.

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