INORGANIC ELEMENTS (CD, ZN, SE AND AS) EXPOSURE EVALUATION IN DUSKY GROUPER (EPINEPHELUS MARGINATUS) AND GOLDBLOTCH GROUPER (EPINEPHELUS COSTAE) FROM CABO DE PALOS-ISLAS HORMIGAS MARINE RESERVE OF BIOLOGICAL INTEREST

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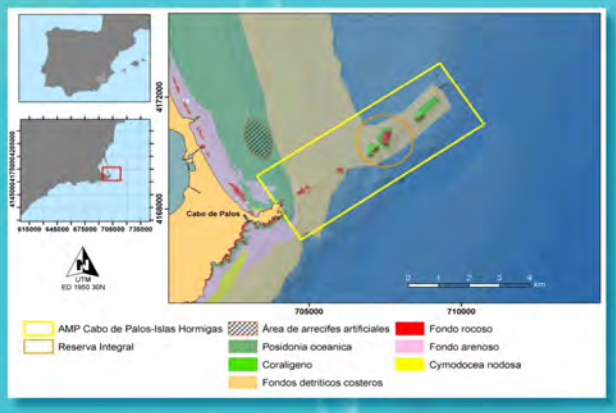
1 Departament of Toxicology
2 Departament of Ecology

INTRODUCTION

In order to establish the exposure to inorganic elements in Cabo de Palos-Islas hormigas Marine Reserve of Biological Interest, coming from close polluted areas such as Portmán Bay, concentrations of Cd, Zn, Se, and As in Dusky grouper (*Epinephelus marginatus*) and Goldblotch grouper (*Epinephelus costae*), both suitable bioindicators due to their positions in the trophic chain.

E. marginatus

E. costae



METODOLOGY

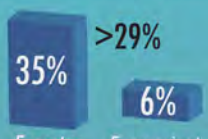
The individuals were studied over the period of September 2011 and July 2012 although differents points of the Marine Reserve. Sampling was carried out by blood extractions from the individuals, as this technique involves minimum impact to protected species in protected areas. Specimens were returned to its environment and tracked for a certain period in order to monitor possible disruptions caused.

Once sample digestion has been carried out, and therefore the organic elements have been removed, concentrations were analyzed by using ICP-MS. Afterwards, statistical analysis was carried out through SPSS 19.0.

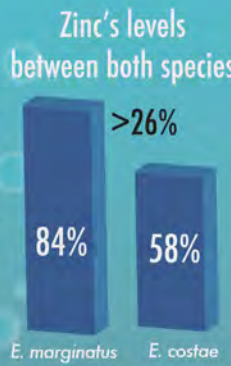
RESULTS AND DISCUSSION

Results show the absence of significant differences ($p < 0.05$) between male and female individuals neither for *Epinephelus marginatus* or *Epinephelus costae*.

Se concentration: significant differences ($p < 0,05$) have been found between both species. Se concentrations higher in *Epinephelus costae* samples in relation to *Epinephelus marginatus*. This difference of concentrations could exist owing to the different eating habits of both species. *Epinephelus marginatus* has a varied diet (fish, mollusks, crustaceans, among others) while *Epinephelus costae* consumes basically fish. Se builds up more in fish than in mollusks and crustaceans.



Zn concentration: significant differences ($p < 0.05$) have been also found; Zn concentrations higher in *Epinephelus marginatus* in relation to the levels of Zn in *Epinephelus costae*, due to the different spatial distribution among both species; *Epinephelus marginatus* inhabits in the seabed, where Zn availability is higher due to its high density, whereas *Epinephelus costae* lives in demersal areas, where Zn concentration is lower owing to its low solubility.



Regarding Zn and As, positive correlation have been established in *Epinephelus marginatus*, being 0.003 the exact bilateral significance value.

CONCLUSIONS

1. Cabo de Palos- Islas hormigas Marine Reserve of Biological Interest no significant levels of contamination by Cd, Zn, As, Se.
2. Interspecific level differences in the levels of Se, possibly due to different dietary habits.
3. Interspecific level differences in the levels of Zn, possibly due to the spatial distribution.
4. Sex doesn´t affect the distribution of elements in any of the two species.
5. There are positive correlations between Zn and As to *Epinephelus marginatus*, because in such enzymatic processes involved.

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