



# PERSISTENT ORGANIC POLLUTANTS IN WILD SEA BASS (*Dicentrarchus labrax*) AND THEIR EFFECT ON MUSCULAR THYROID HORMONE LEVELS



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## INTRODUCTION

Previous studies have described that organochlorine pesticides and polychlorinated biphenyl residues have the characteristic to influence the endocrine system of many fish species and mammals and are thus qualified as endocrine disruptors.

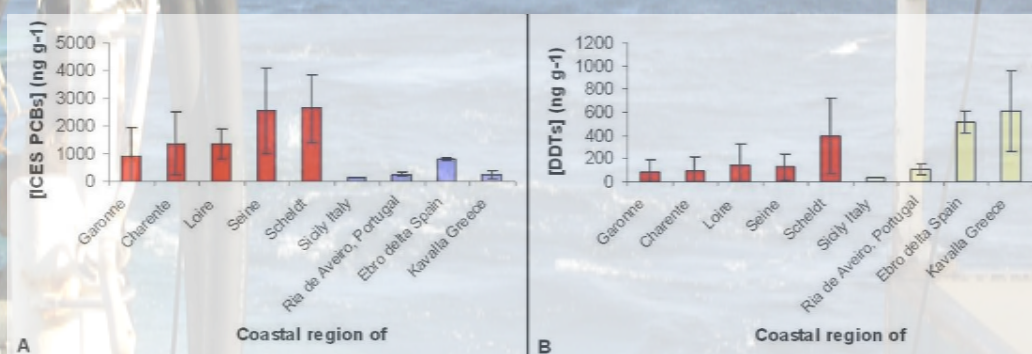


**Fig. 1:** European Sea Bass (*Dicentrarchus labrax*)

## MATERIALS AND METHODS

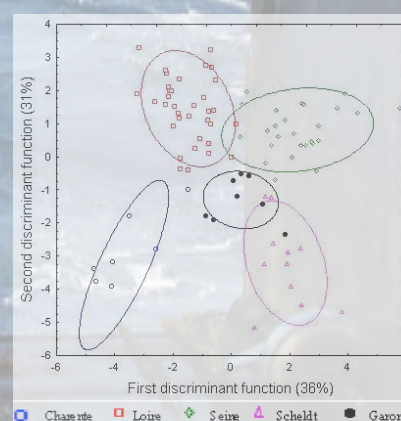
Polychlorinated biphenyls (PCBs) and organochlorine pesticides like Dichloro-Diphenyl-Trichloroethane (DDTs), Hexachlorocyclohexanes (HCHs), Aldrin and Dieldrin were analysed in the muscle of sea bass (*Dicentrarchus labrax*) (**Fig. 1**) sampled in coastal regions near several important European river mouths (Garonne, Charente, Loire, Seine and Scheldt). To highlight a potentially harmful effect of these compounds on the thyroid function of these fishes, we measured the muscular concentrations of thyroid hormones T3 and T4 by Radio-Immuno-Assay.

## RESULTS AND DISCUSSION

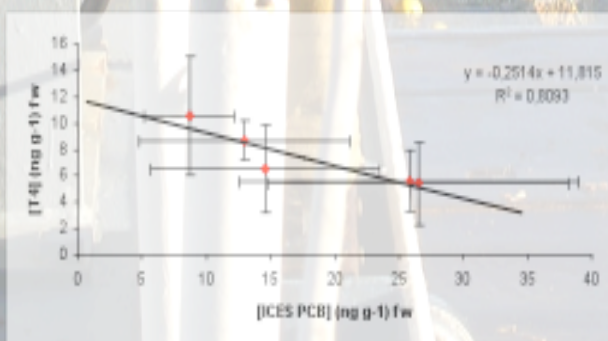


**Fig. 2:** Organochlorine pollutant contamination levels in muscles of European sea bass specimens (ng g<sup>-1</sup> lipid) Data from this study is shown in red. Sicily, Italy = (Lo Turco, 2007); Ria de Aveiro, Portugal = (Antunes et al., 2004); Ebro delta, Spain = (Pastor et al., 1996) and Kavalla, Greece = (Schnitzler et al., 2008)

- The contamination levels were as follows, the highest concentrations were measured in individuals collected from the coastal region near the Scheldt > Seine > Loire > Charente and the lowest levels were observed in sea bass from coastal regions near the Garonne (**Fig. 2**).
- The measured levels were generally higher than those reported in literature in sea bass from other regions (**Fig. 2**).
- Contamination patterns were different depending on the sampling area and thus the river input of pollutants (**Fig. 3**).



**Fig. 3:** Plot of the results of discriminant analysis for intersite comparison of contamination patterns on the basis of lipid weight normalized organochlorine compound concentrations



**Fig. 4:** Correlation between the concentration of Sum of ICES PCB and the muscular T4 concentration

- Preliminary statistical analysis revealed a significant relationship between the measured persistent organic pollutants and the muscular concentration of the thyroid hormones (**Fig. 4**). We cannot exclude the assumption that an endocrine disruption of thyroid gland related to these pollutants could be the origin of these modifications of the thyroid hormone concentrations.