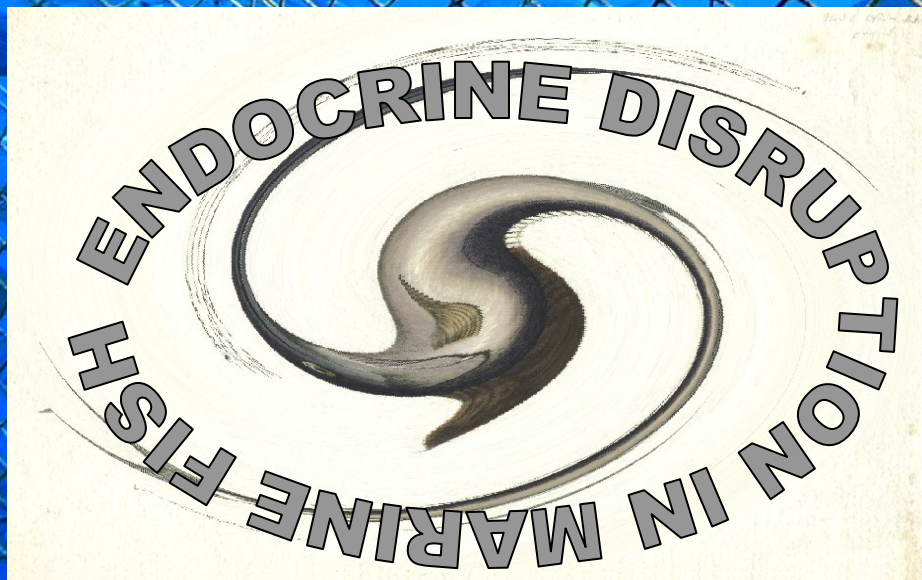




Alarm Signals in the Mediterranean - A Case for Concern for Future Generations

C.R.Bridges Fish Ecophysiology Unit HHU Düsseldorf Germany



Do endocrine disrupting chemicals threaten Mediterranean swordfish? Preliminary results of vitellogenin and *Zona radiata* proteins in *Xiphias gladius*

M. Cristina Fossi^{a,*}, Silvia Casini^b, Stefania Ancora^b,
Alessandra Moscatelli^c, Antonella Ausili^d,
Giuseppe Notarbartolo-di-Sciara^d

^aDepartment of Animal Biology and Marine Ecology, University of Messina, Messina, Italy

^bDepartment of Environmental Science, University of Siena, Siena, Italy

^cInstitute of Botany, University of Messina, Messina, Italy

^dICRAM, Rome, Italy

Eggs found in testes

MALE swordfish in the Mediterranean are producing eggs as well as sperm in their testes. It's the first direct evidence that pollution may be "gender-bending" fish in the sea.

The eggs were found in 40 of 162 dead males examined by a pan-European research programme led by Gregorio De Metrio of the University of Bari in Italy. Reporting their findings in the *Marine Pollution Bulletin* (vol 46, p 358), the researchers suggest that chemicals such as heavy metals and pesticides are to blame, and say they might prevent the fish reproducing.

In moderation, swordfish from

the area are safe to eat, but fishers who regularly eat their catch could be at risk, the researchers say.

„Some of the Facts In the Mediterranean for the influence of gender bending chemicals“

26 | NewScientist | 5 April 2003

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MARINE
POLLUTION
BULLETIN

Evidence of a high percentage of intersex in the Mediterranean swordfish (*Xiphias gladius* L.)

G. De Metrio^{a,*}, A. Corriero^a, S. Desantis^a, D. Zubani^a, F. Cirillo^a, M. Defflorio^a,
C.R. Bridges^b, J. Eicker^b, J.M. de la Serna^c, P. Megalofonou^d, D.E. Kime^e

^a Department of Animal Health and Welfare, University of Bari, S.P. per Casanassima km. 3, I-70010 Valenzano (BA), Italy

^b Institut für Zoophysiology, Lehrstuhl für Stoffwechselfysiologie, Heinrich Heine Universität, D-40225 Düsseldorf, Germany

^c Centro Oceanografico de Malaga, Apartado 285, 29640 Fuengirola, Malaga, Spain 4 IEO Fuengirola, Malaga, Spain

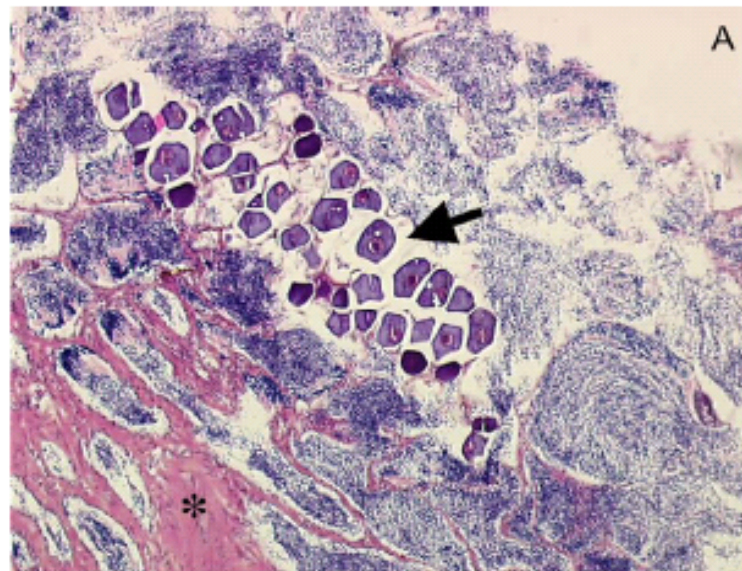
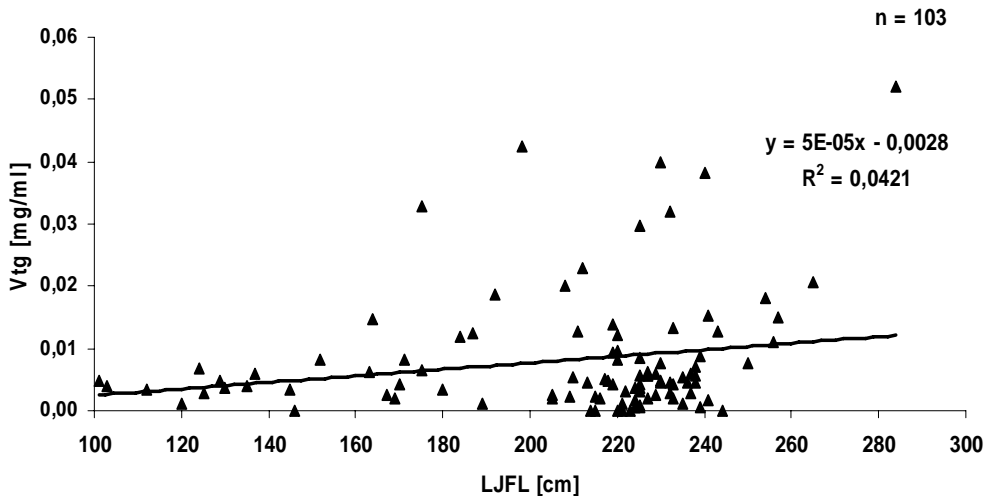
^d Department of Zoology, Marine Biology, University of Athens, Panepistimiopolis GR 15784 Athens, Greece/Spain

^e Department of Animal and Plant Sciences, The University of Sheffield, Sheffield S10 2TN, UK



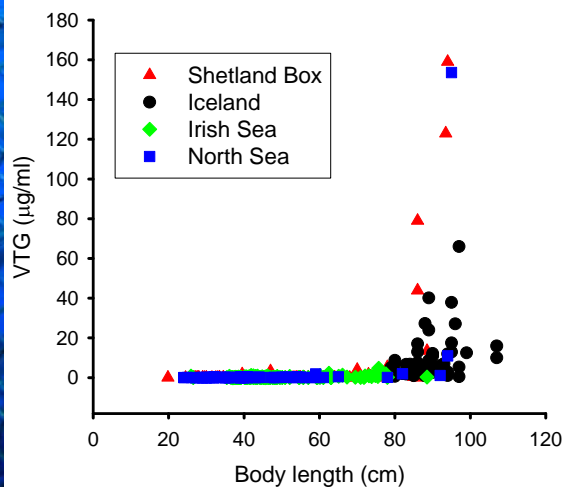
„Some of the figures“

TUNA Males Caught in the Wild



Vitellogenin Biomarkers of EDC

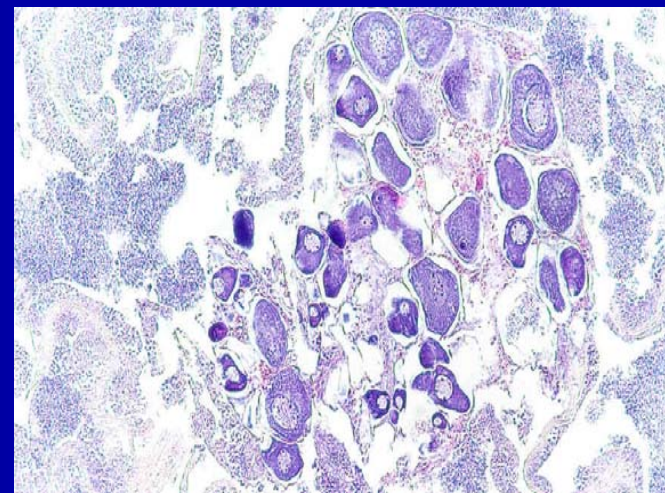
Vitellogenin (VTG) in plasma of male cod



Scott and Thain CEFAS (unpublished data)

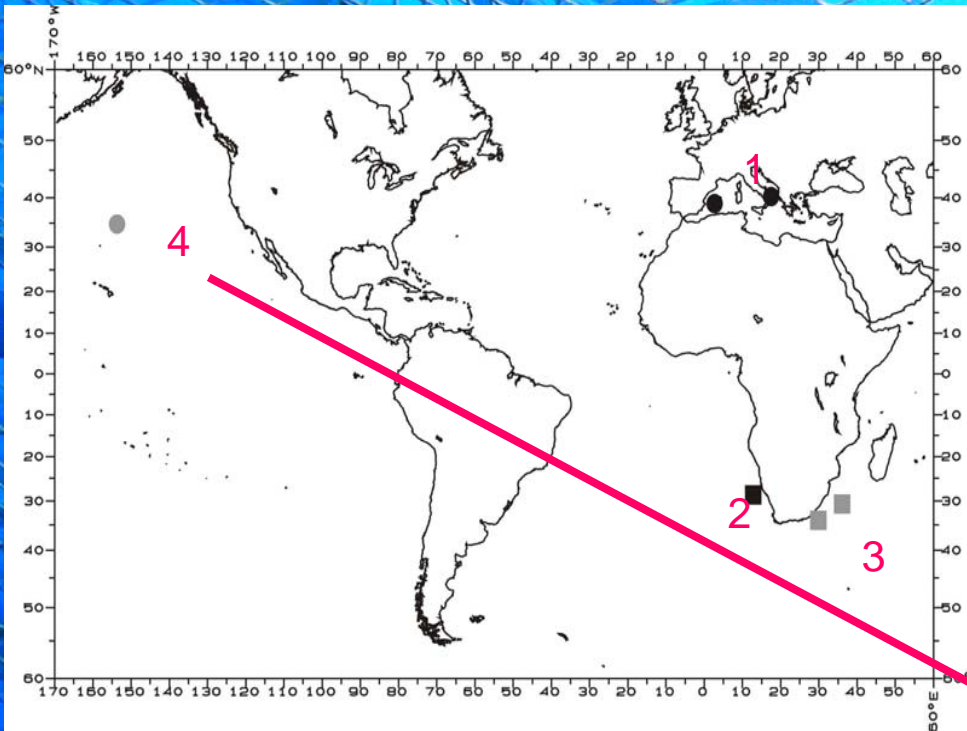
Ovi-testis in the Red Mullet

XI 621



Ovi-testis in the Swordfish

„the good news is its clean in Hawaii“



“and we know from Framework 6 some of the mechanisms and have ED tests for future chemicals“

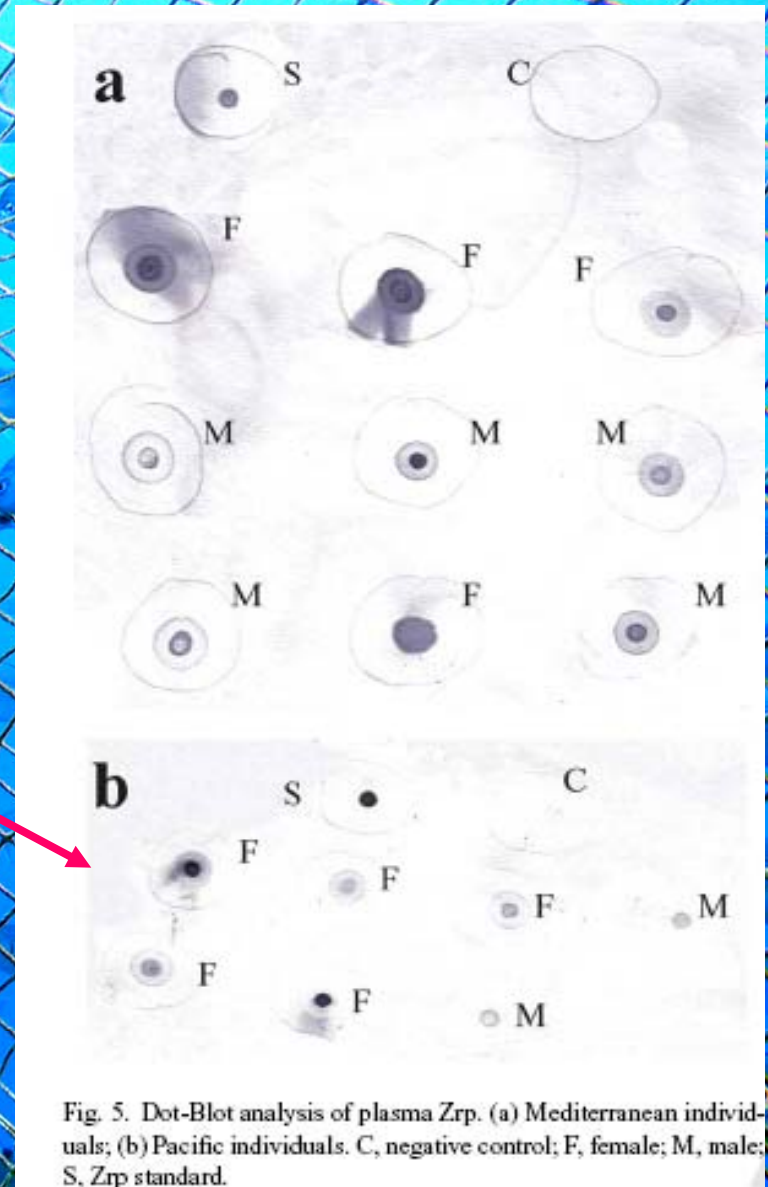


Fig. 5. Dot-Blot analysis of plasma Zrp. (a) Mediterranean individuals; (b) Pacific individuals. C, negative control; F, female; M, male; S, Zrp standard.

Concerns for Future Generations



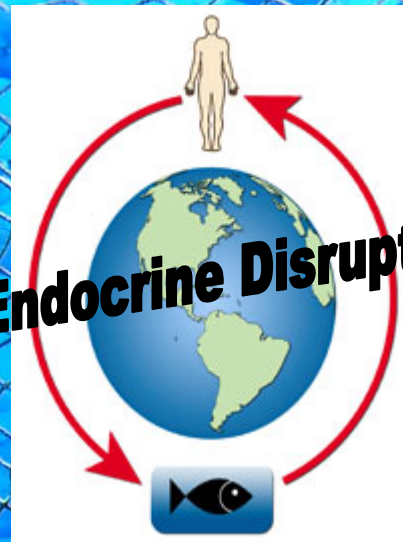
For Fish ENVIRONMENT

We know little or nothing of the geographical extent of the problem within european seas but we do know we have problems at both ends of the food pyramid

We know nothing of the effects on fish stocks or future sustainability of any species.

In FP6 much time and money has been spent on EDC's and their mechanism and prevention of release of future chemicals but our knowledge base of both the marine Environment and Human Health epidemeology and the risks involved are lacking.

The alarms bells have been ringing for some time, can we afford to disregard them in the future for both the fish and ourselves?



For Humans HEALTH



We know nothing of the effects on human reproduction of these fish in high risk populations such as the fishermen or the lower risk to the public in general. Consider the dioxin, heavy metal load concerns.