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http://www.fegas.net/biologia.htm
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Preliminary analyses of the status of the Galician subtidal seabed after the *Prestige* oil spill assessed through direct observations by scuba divers

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INTRODUCTION

On the 13th of November 2002, the oil–tanker Prestige, with a cargo of 77000 tons of oil, sunk 120 miles off Islas Cies. During the shipwreck of the tanker, outstanding political and social circumstances took place which have greatly influenced the effects derived from the accident, bringing on the uninterrupted emission of oil in consecutive spills in an unusually large scale in space and time. The Federación Gallega de Actividades Subacuáticas (FEGAS) [Galician Federation of Recreative Scuba Diving], a private organisation concerned with the integral protection of the Galician marine environment, undertook fieldwork to establish the initial degree of pollution by hydrocarbons in the seabed in a series of coastal areas at a time when the the mismanagement of the authorities highlighted the need and value of private iniciatives. A total of 50 scuba and free divers, all of them voluntaries and coordinated by FEGAS, made a considerable sampling effort including 4500 m of underwater transects, covering a sampling area of 25500 m^2 (see fig.1) of seabed prospected during the 9 months (10/12/2002 to 5/08/2003).

METHODOLOGY

The Galician coast was divided in sections under the supervision of one of the diving clubs affiliated to FEGAS which was in charge of collecting the information generated by the divers. Each diver prospected a transect during 10 minutes at a constant depth

(see fig. 2), collecting standardised data about observed macroscopic pollution (fig. 3). Observations of oil were aproximated to simple geometric forms to allow the estimation of the total volume of hydrocarbons observed. These estimates used values of 0.99 $g.cm^{-3}$ provided by CSIC (2003). Sampling areas were calculated using a band of variable width for each transect, depending of the diver´s estimated visibility of the diver and an average length of 75 m by transect.

RESULTS

For all the sampling stations, the total oil found was 6064.4 kg. This quantity, estimating an average visibility of 3.15 m, would suppose 0.80 $kg \cdot m^{-2}$ both in the water column and the seabed of the sampling stations in which the presence of oil was noticed. It could be concluded that the most affected area corresponded to the Parque Nacional Marítimo-Terrestre de las Islas Atlánticas de Galicia. The quantitative results obtained in the Isla de Sálvora were especially high (see fig. 4). The dives performed in Costa da Morte showed high amounts of oil in the water column, which agrees with several pieces of information which point out that this area was the most affected coastal area (fig. 4). Considerable quantities of oil have been obtained in the Caldebarcos beach, near Carnota (A Coruña), and in the Rías de Ferrol and Aldán (fig. 4). Among the organisms affected by the acute phase of oil spill, we should highlight the high number of oiled specimens of the spider crab *Maja brachydactyla* observed during the various dives (fig. 5) and considerable extents of affected *Zostera marina* beds, a habitat protected by the current legislation (fig. 2).

LITERATURE CITED:

CSIC. (2003). Caracterización del vertido y evolución preliminar en el medio. Informe técnico "*Prestige*". http://csicprestige.iim.csic.es/desarro/informcsic/1/index.htm

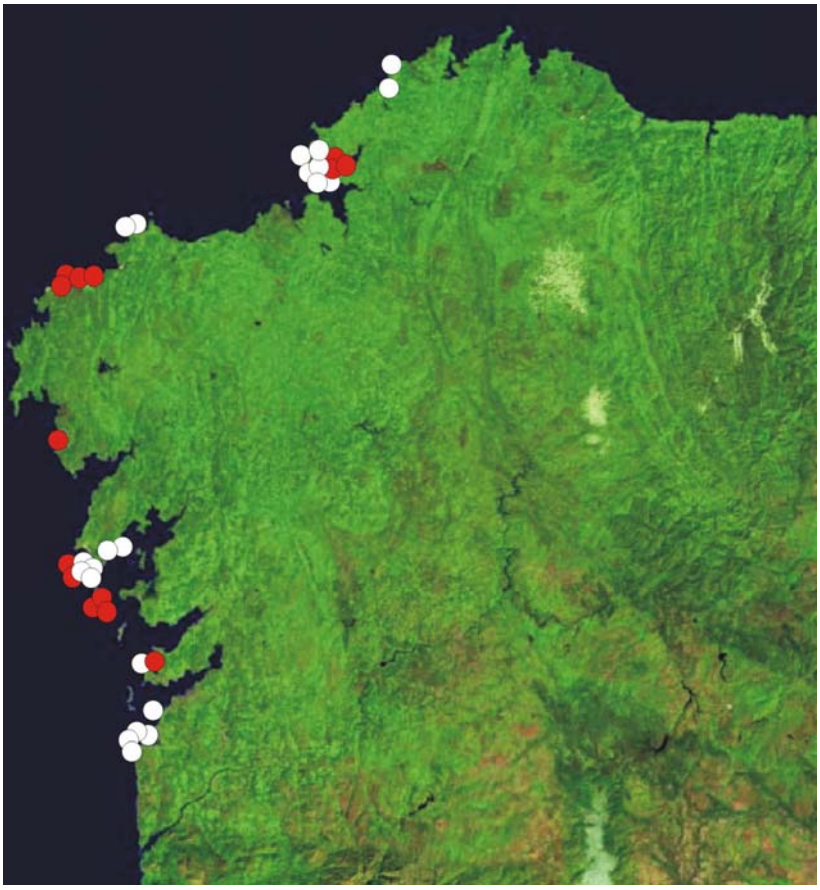

Figure 1: Map of the Galician coast showing the situation of the transects. Red circules represents transects with hidrocarbon pollution. White circules represents transects without hidrocarbon pollution.

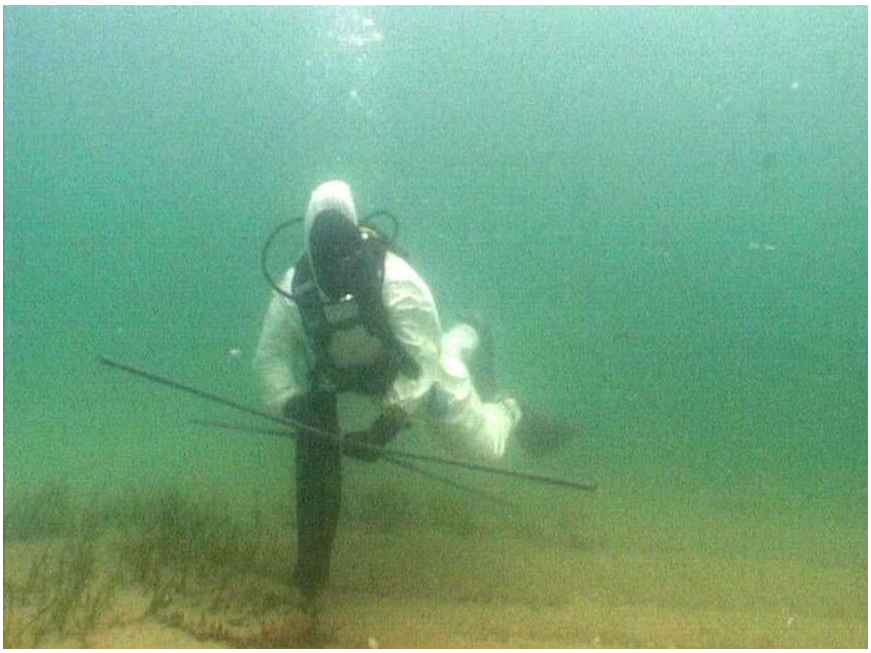

Figure 2: Scuba-diver performing an underwater transect.

Figure 3: Aspect of hidrocarbon mass deposited over the sediment surface of the sea bottom.

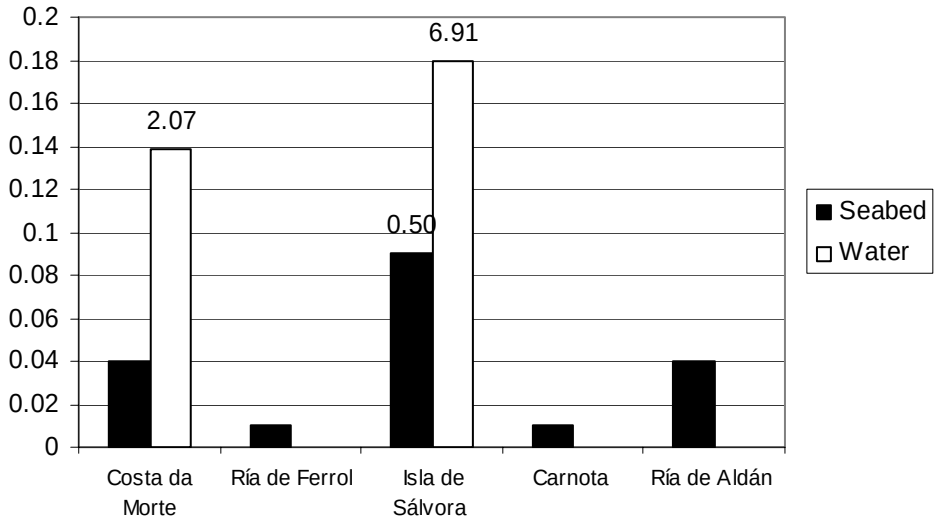

Figure 4: Maximun quantities of oil measured in $kg.m^{-2}$ present on the sediments and in the water column of the most representative stations.

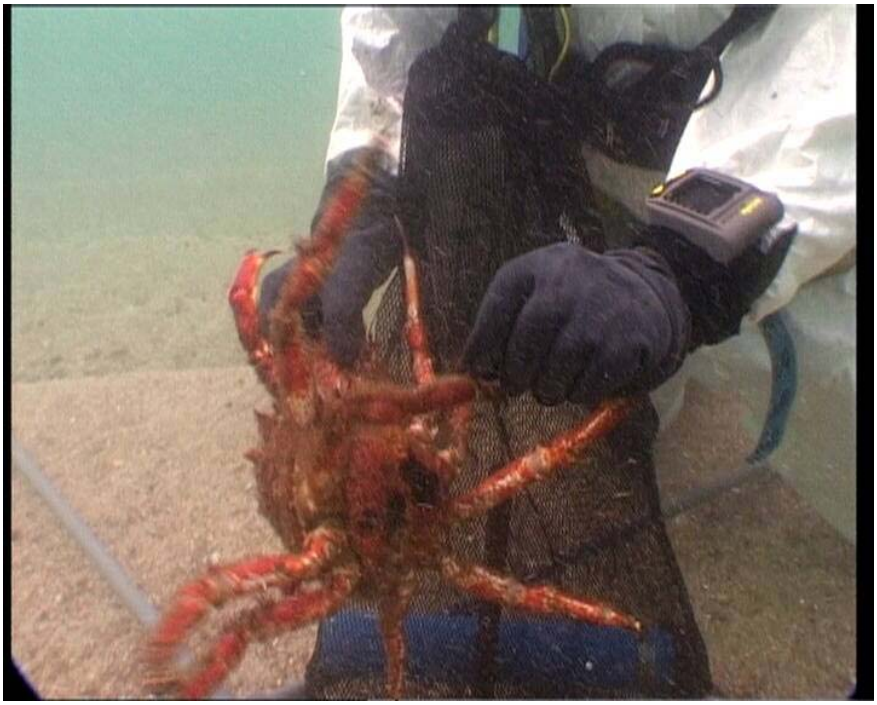

Figure 5: Scuba-diver showing an adult female of spider crab (*Maja brachydactyla*) spoted with fuel-oil.