

# 2002 oil spill caused changes in the cell structure of mussels

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The oil spill from the Prestige petroleum oil tanker in 2002 caused serious damage to the ecosystems in the Bay of Biscay. A PhD thesis at the University of the Basque Country (UPV/EHU) has studied the consequences of this spill for the mussels inhabiting this northern coast of the Iberian peninsula.

The author of the PhD thesis is the biologist Ms Larraitz Garmendia Altuna, who entitled her work, *Monitoring of the [biological effects](#) of the Prestige oil spill, based on the biomarker approach: [mussel](#) watch from Galicia to the Basque coast*. The director of the thesis was Mr Ionan Marigómez Allende from the Department of Zoology and Animal Cell Biology at the UPV/EHU's Faculty of Science and Technology. In order to undertake the thesis Ms Garmendia visited the Haskin Shellfish Research Laboratory, belonging to the Institute of Marine and Coastal Science of Rutgers State University (Port Norris, New Jersey, USA).

To analyse the biological effects of the oil spill from the Prestige tanker, the researcher studied the *Mytilus galloprovincialis* mussel. The samples for the research were taken at 22 points between the Galician coast (Finisterre) and Gulf of Biscay between 2003 and 2006. In order to observe the impact suffered by the mussels a number of biomarkers were controlled.

The study showed there had been changes at cell level in the mussels. Up to 2004 it could be seen that the lysosomes — organs responsible for cellular digestion — suffered drastic changes in size and the cell membrane had destabilised. From 2004 on the situation showed signs of recovery and the size of the lysosomes had returned to their reference values, although in 2006, the stability of the cell membrane in some samples were still not high.

At a tissue level, Ms Garmendia studied the cell

types of the tissues from the digestive gland of the mussel. Between 2004 and 2005, serious changes were observed in these tissue in the samples from all the locations studied - atrophy of certain parts of the digestive gland, for example

The health of the mussels was studied through the control of certain biomarkers. Thus, as a result of the Prestige oil spill, the study showed that the state of health of the mussels had been seriously affected. Signs of recovery were observed in 2004 in the samples from Galicia and in 2005 in those from the Gulf of Bizkaia.

Moreover, changes in the immune response were observed in mussels during the first years of the study and, although this has improved somewhat, the 2006 samples indicate that it still has not recovered the situation prior to the oil spill.

Apart from the mussels, their environment was also studied. In 2003 environmental conditions prejudicial to the health of mussels were recorded. In 2004 the first signs of recovery were noted but, on terminating the research in 2006, they still had not reached conditions of a healthy ecosystem.

Source: Elhuyar Fundazioa

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