



*The Prestige:  
one year on,  
a continuing disaster*





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## *Introduction*

Never in the history of Spain had an environmental disaster aroused such public outcry, exerted such a political impact or elicited such media coverage as the Prestige oil spill. Millions of people were glued to the news from the Galician and Cantabrian coast, awestruck by the gravity of the ecological and economic consequences, by the initial negligence in managing the crisis, and by the pictures flooding in of dead birds, of fishermen trying to hold back the waves of oil with their hands, of huge black slicks along one of Europe's most beautiful coastlines, and of thousands of volunteers struggling with the clean up.

One year on, these images are already history: the beaches have been pretty much cleaned up; economic compensation has been paid to the people directly affected; agreements are in sight between the administration and the fishermen's associations on outstanding indemnities; fishing has resumed along the whole of the coastline; official guarantees of product safety have been issued; and a special plan (named Galicia) has been set up to stimulate the local economy, with funds approaching €12,5 billion. In addition, Spain is awaiting funds - €171.5 million, to be distributed to all affected countries - from the International Oil Pollution Compensation Funds (IOPCF), plus €400 million from the EU.

In a way, it would be tempting to say that the initial concerns were over-alarmist, or even that local communities actually perversely gained something from the Prestige oil spill. Apparently, this is what emerges from some reports published in some media, and from the attitude and messages put out by the Spanish government. It is a common phenomena that populations under siege tend to look on the bright side.

However, WWF is not so optimistic, and neither is anyone else who understands the marine environment and the fisheries sector. From an environmental, economic and legal standpoint, the Prestige crisis is far from over. Regardless of media or political tension, issues remain to be resolved and strategies remain to be developed (and resources provided) to ease the way towards gradual recovery of the coastline and the human activities and livelihoods that depend on the quality of its waters. Much remains to be said, and, above all, to be done! It is also crucially important that we strengthen legislative and other instruments to minimize the risk of such a crisis happening again. And we need better systems and better resources for tackling the unfortunate likelihood of other oil slicks in the future.

Given the exceptionally large stretch of coastline reached by the oil slick, the long exposure time, the variety of ecosystems and resources threatened, and the fact that a year is far too short a time to develop a detailed understanding of the biological processes involved, it is obvious that we are still very much in the dark regarding the extent of the ecologic impact and the prospects of recovery. From previous experience, we know that some of the affected ecosystems and some of the commercial resources will take over a decade to recover to pre-slick conditions. And in August 2003 we discovered that the spill was much larger than initially estimated (60 percent larger, making a total of 64,000 tonnes), which obviously aggravates the ecological impact.

And then there are the 13,000 tonnes of fuel in the tanks of the Prestige; pumping began in October but it is still too early to judge the success of the operation.

Many questions remain unanswered. What is happening in the deep-sea fishing banks, or in the Galicia Bank (an undersea mountain of great ecological value), where the Prestige finally sunk? How is recovery proceeding for the coastal ecosystems and the commercial resources they support? How is the oil behaving on the platform and shallower seabed areas? What is happening with the five to ten thousand tonnes (some estimates go as high as 24,000 tonnes) still drifting offshore and periodically landing at various points along the coast? The sense of uncertainty is exacerbated by the secrecy shrouding such issues as fishing prospects and the condition of the sea bed.

Given the extent of open doubt and uncertainty following the Prestige disaster, we must apply the precautionary principle, as well as ensuring that transparency, technical knowledge, and, above all, common sense is applied. A thorough and coordinated enquiry into the long-term effects of this oil spill is an absolute necessity, especially since previous spills along the Galician coastlines met with no such investigation. Most of our knowledge on the impact of hydrocarbon pollution on the marine environment comes from spills in other countries (like the UK, France and the USA) under rather different circumstances. Having had five oil slicks in the last three decades, Galicia stands in the unenviable position of being the world's top laboratory for this kind of phenomenon, and should make the most of its extensive capabilities for marine research and its vast store of knowledge built up over the years. Much greater efforts are needed, on impact assessment and permanent environmental monitoring in particular.

Operations should focus squarely on the underlying issue, namely the ecological impact suffered by the coastline. There should be no half-measures here, and no attempts to hasten economic recovery at the expense of further deterioration to the environment. The sea has suffered very serious damage, and we must help it recover.

Looking on the positive side, the disaster did arouse an impassioned response from the public at large (witness the exemplary sense of citizenship from the volunteer workers), the fishing industry, the scientific community and various NGOs. It prompted a more acute awareness, in many sectors, of the vulnerability of our seas. Also encouraging was the extensive information supplied by various media sources on the details surrounding the accident and the complex corporate network involved.

For WWF, another positive factor is the progress achieved in EU legislation on maritime safety, which has been tightened up substantially in the last twelve months. But there remain many loose ends to tie up in EU and Spanish legislation, and methods must be developed for enforcing the new standards. Then there are a number of major problems to be solved at international level, through the United Nations and the International Maritime Organization (IMO), such as the issue of flags of convenience and the need for world-wide measures similar to those taken up unilaterally by EU and USA. This will ensure we are not just passing our problems on to the more defenceless regions of the planet.

## ***Environmental impact of the Prestige oil spill***

In ecological and socio-economic terms, the Prestige oil slick must be considered one of the most damaging in the history of maritime transport, and one of the most complex. Many authors rate it the worst since the Exxon Valdez disaster that hit Alaska in 1989.

We now know that the tanker lost most of its oil cargo during the first few days, before finally sinking after a long and erratic six-day drift. In all, 64,000 tonnes were spilled, which is 60 percent more than initially estimated. And because the tanker drifted along the coastal waters then out to sea at the mercy of the prevailing winds, spilling its cargo with it, slicks in successive waves reached virtually the whole of Spain's northern coastline, as well as stretches of the French and British coasts.

One year on, most estimates indicate that there are still five to ten thousand tonnes of spilt oil (though some estimates go as high as 24,000 tonnes). Estimates were made before the true magnitude of the spill was known, by analysing the difference between the amount of oil collected and the amount of oil believed to have been spilled. To varying degrees, the spill polluted a total of 3,000 km of coastline. By comparison, the Exxon Valdez spill lasted two months and polluted some 1,000 km of coastline.

The ecological impact of a hydrocarbon spill on marine ecosystems and commercial resources is determined by very many highly complex factors. And one year is far too short a time to detect the ecological changes brought about by pollution in the affected areas. For these reasons, the best we can do for the time being is to harness available scientific knowledge on the biological effects of hydrocarbons, along with specific information available on the Prestige oil spill, to come up with hypotheses and forecasts that will enable us to assess the probable magnitude of the catastrophe and determine research, monitoring and action priorities for minimizing the impact on ecosystems, commercial resources and food safety.

This has been the aim of works such as those published by Fundación Barrié de la Maza and Fundación Alternativas, and of research at universities like A Coruña (Freire J. et al, 2003) and Santiago. Authors agree that the ecological impact of the oil spill does not stop with removal of the most visible tar from the beaches, or an end to the catastrophic deaths of hundreds of thousands of sea birds. On the contrary, the impact of some of the compounds in the oil spilled from the Prestige will last several years, depending on many factors. And ecosystem recovery will take from two years to over a decade, depending on hydrodynamic factors, the amount of oil, the type of sediment, and the ecological structure of the affected area.

The ecological response of a marine environment to pollution attack is extremely complex, and shrouded in uncertainty. Action must therefore be guided by the principles of prudence and flexibility, responding to ecological changes as they arise. For this reason, an efficient environmental monitoring and alert system for the coastline appears fundamentally important. Concrete proposals in the wake of the Prestige disaster have been made (Carballeira A., 2003), and the red-tide early warning system set up by Galicia's *Centro de Control da Calidade do Medio Mariño* (Marine Environment Quality Monitoring Centre) appears exemplary.

On this issue, WWF is very concerned by the lack of support for research into the impact of this oil spill. Project finance is scarce, and in the year since the Prestige disaster, no efficient structure has been set up to coordinate research work and optimize exchange of information and results.

Total investment on research into the Prestige oil spill will probably not reach €10 million, compared with around €270 million for research into the impact of the Exxon Valdez spill. Indeed, much of our existing scientific knowledge comes from this work on the Exxon Valdez disaster, and the Prestige spill, because of its complexity and magnitude, holds huge potential for scientific findings of worldwide importance. Failure to conduct appropriate research will not undo the damage done, but it will prevent us from understanding the phenomena at work and from developing ways to effectively regenerate the damaged ecosystems and commercial resources.

Because of its huge geographical spread, the spill reached virtually all types of marine habitat, from offshore depths to shallow creeks. The worst affected habitats will probably be in coastal areas, and this includes land damage caused by clean-up operations (destruction of dunes, indiscriminate opening of tracks, etc.). The impact on coastal marine ecosystems is closely related to the economic repercussions on the inshore fishing and shellfish sector. Unlike other disasters, the Prestige spill has produced substantial coastal damage in nearshore and intertidal areas.

WWF has also been highly critical of certain aspects of coastline cleanup operations, especially during the first few months, when the “cleanup at any cost” mentality prevailed, with scant consideration for existing experience on the environmental impact of different cleaning systems for different coastal habitats of different ecological and economic importance.

## The Galicia Bank

The Prestige sank on a large seamount – the Galicia Bank, located about 200 km West of the Galician coast of Spain. The shallow part of the bank encompasses about 6,250 sq. km. A channel of about 2,500 m depth separates the bank from the shelf.

Seamounts such as the Galicia Bank function like an island within the ocean. Based on their three dimensional structure, they provide more microhabitats than the surrounding area and host a more biodiverse fauna on the sea bed.

The shallow parts support a rich coral growth, made up mainly of the cold water coral *Lophelia pertusa*, which hosts a wide range of fish and invertebrates.

About 86 different fish species have so far been spotted around the bank. Among others, 11 shark species including the kitefin shark (*Dalatias licha*) and the ray (*Raja batis*), a threatened species in the North-East Atlantic.

The Galicia Bank is in need of an appropriate management system to maintain its ecological and biological diversity, as well as to ensure further research is conducted without causing any unnecessary harm to it.

WWF believes that tankers and other ships carrying dangerous loads should be banned from entering the vicinity of such a fragile ecosystem.

WWF recommends the Galicia Bank and its slopes are designated as part of the envisaged system of Marine Protected Areas across the North East Atlantic.

## ***Deep-sea waters***

There is a lack of publicly available information on the condition of the deep sea floor in the vicinity of the wreck and the Galicia Bank undersea mountain. Some scientists claim that photos and film footage taken by small submarines in the area were seized by the scientific advisory committee set up by the government at the time to monitor certain aspects of the Prestige case. The Spanish Oceanographic Institute (IEO) has confirmed the presence of large amounts of oil on the continental shelf off the Galician coast, chiefly around the Islas Atlánticas national park and Costa da Morte.

From the very outset of the crisis, WWF issued an alert on the extraordinary ecological importance of the Galicia Bank, warning that every possible measure should be taken to prevent the tanker entering this area. Just a few days later, the Prestige went down precisely over the banks of this undersea mountain.

Deep-sea wildlife is much richer than most people imagine (Urgorri, V. et al, 2002), so the government's relief that the tanker sank in such deep water (3800 m) was seriously misplaced from a biological point of view. Part of the oil cargo spilled before and after the tanker sank, probably come to rest on upper and lower floors, but we do not know the impact of this pollution on the biological communities in areas including the Galicia Bank.

Little is known of the impact of hydrocarbon pollution on deep beds, but we can obtain valuable insights from information available on the impact of oil drilling activities. For example, in the vicinity of oilrigs we observe a drastic reduction in the populations of certain species that perform key ecosystem functions (Olsgard & Gray, 1995), and this phenomenon arises chiefly as a result of hydrocarbon pollution.

## ***Continental shelf and coastal waters***

An unknown, but undoubtedly large, quantity of oil sank onto the bed of shallower coastal waters, where many species of commercial value spawn, such as sea bass, octopus, crabs and shrimps. This raises serious risks of contamination by toxic pollutants such as some of the more persistent polycyclic aromatic hydrocarbons (PAHs), as, indeed, has been observed in areas affected by the Prestige spill. For an idea of the danger of this type of pollutant, consider that toxic effects on fish embryos and larvae have been observed at PAH concentrations as low as a few ppb (ng/g).

Because the oil from the Prestige wreck is highly viscous and insoluble, we can expect very slow degradation, which means prolonged pollution of the sea bed. Experts agree that pollutant bioavailability and toxicity are likely to increase under the effect of changes brought about by various physical, chemical and biological factors (Carballeira, A. 2003). The release of toxic compounds into interstitial water and the water column heightens the risk of pollutant build up in the food chain. The Spanish Oceanographic Institute (IEO) and other authors indicate high concentrations of these compounds on the continental shelf off the Galician coastlines, and data from Galicia's regional government also points to high levels in Rías Baixas<sup>1</sup>.

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<sup>1</sup> See Xunta de Galicia website: <http://www.ccm-m-prestige.cesga.es/>



WWF considers it necessary to map the presence of oil in the most sensitive areas, and thereby determine priorities for neutralizing the adverse effects and studying developments over time. Contaminants on the sea bed can enter the food chain through organisms that ingest sediments, and eventually end up in products of commercial value (fish, crustaceans), by bioaccumulation and other processes known to operate. A detailed understanding of these threats might help us prevent oil from entering the creeks, and develop a suitable surveillance programme.

In January 2003 IEO estimated that over 526 tonnes of oil had built up on the continental shelf off the coast of Galicia. No decrease in this quantity was apparent by March 2003, which tends to confirm the high persistence and low biodegradability of this type of oil. In addition, large quantities of oil were found buried in sediments at locations close to the Islas Atlánticas national park<sup>2, 3</sup>. And IEO itself recommended that oil be removed from the sea bed at Costa da Morte, where the highest concentrations were found (over 300 kg/km<sup>2</sup>), before fishing reopened in the area.

Campaigns in April and May continued to show large amounts of oil, even in the Cantabrian sea area (where estimates indicated 347 tonnes). In addition, a northerly shift was observed, with maximum amounts of oil detected in Costa da Morte, Oriente del Cantábrico, and toward the coast of France. Curiously, no oil was reported following robot submarine observations commissioned by the Spanish Development Ministry.

### ***Impact on coastal communities***

Preliminary studies on the impact of the Prestige spill on shoreline and near-shoreline vegetation point to substantial damage, comparable to that suffered following the Amoco Cádiz spill in Brittany in 1978 (Pérez-Cirera & Otero, 2003). Damage even extends to far-shoreline regions, further away from the marine influence, with significant impact on lichens, for example, along many stretches of the coast, caused by seaspray charged with emulsified oil. In the other levels (upper, middle and lower shore) we observe the disappearance of algae belts (*Pelvetia caniculata* and *Fucus spiralis* in protected areas, plus *Fucus vesiculosus* and *Rhodothamniella floridula*).

To predict the impact of the Prestige spill on benthic macrofauna, experts refer to studies conducted following the Aegean Sea spill, examining changes over the period 1992 to 1996 compared to data for 1988 to 1989, taken as initial situation. Over the first twelve months it was found that most of the species sensitive to crude oil disappeared or declined seriously, to be replaced by opportunistic species, mostly polychaetes. The sudden decrease in biodiversity and biodensity was followed by a three-year slump, until the original communities began to remerge. Only in the fourth year did the hydrocarbon-vulnerable species reappear.

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<sup>2</sup> IEO report 2003 (2, 3, and 14): [http://www.ieo.es/Prestige/IEO\\_Prestige\\_intro.html](http://www.ieo.es/Prestige/IEO_Prestige_intro.html)

<sup>3</sup> Voz de Galicia, 30 March 2003, and La Opinión de A Coruña, 5 March 2003

## ***Marine birds and mammals***

In the media eyes, nothing symbolizes the destruction wreaked by an oil slick better than the bird struggling to free its feathers from tar. Because they are fairly large and easily observable, sea birds appear as the animals most visibly affected by this kind of pollution, and the damage caused to them by the oil can be monitored right from the start. Following the Prestige disaster, major efforts were made to save endangered fauna and to monitor the damage caused to marine birds. This involved many environmental organizations (including WWF), with support from the administration, universities, many volunteers, and specialists in oil-polluted fauna from all over the world. SEO/Birdlife performed remarkable work, fielding thousands of volunteers to cover the polluted coastline, and issuing monthly reports to evaluate the impact of the slick on bird life.

Since the start of the Prestige disaster, around 25,000 sea birds have been found dead or injured as the result of exposure to the pollution (records show 23,428 birds found by May 2003). Of these, 75 percent of the animals were found dead. The remaining 25 percent were found live, but only 10 percent of the total were saved. Given the broad geographical extension of the pollution, and the long timespan, overall mortality is estimated at some 250,000 to 300,000 birds (Domínguez, J. 2003), and this doubtless errs on the low side. Most of the casualties are alcidaes (with common guillemot accounting for half of the victims, plus Atlantic puffins and razorbills), gannets, shags and various species of gull. Most of the bird casualties were found during the first two weeks of January 2003, two months after the start of the catastrophe. Then in February there was a substantial increase in the number of individuals found on the Cantabrian and French coasts, as the oil advanced toward these regions. If current estimates are confirmed, the Prestige disaster will compare with the Exxon Valdez spill in terms of bird mortality, and rank as one of the non-natural events most deadly to wildlife ever to have occurred in Europe.

A programme for monitoring nesting species and their reproduction parameters is needed, given the high mortality caused by the Prestige disaster, which actually threatens the very existence of certain species, such as the Iberian guillemot (*Uria aalge*) along the Spanish coast. (Before the Prestige wreck, there were just ten nesting couples at the heavily affected areas of Islas Sisargas and Cabo Vilán.) (Domínguez, J. 2003).

Because of their mobility, marine mammals and turtles are not usually excessively vulnerable to hydrocarbon pollution, though ingestion or epidermal exposure can prove lethal in the short or medium term. In the first month after the disaster, the bodies of 27 cetaceans of seven different species were found washed up, though in only one case did oil pollution appear the direct cause of death (Alonso & López, 2002). In addition, 16 turtles were found (five live): 13 loggerhead sea turtles (*Caretta caretta*) and three leatherback sea turtles (*Dermochelys coriacea*).

Source: SEO/Birdlife, <http://www.seo.org/2002/prestige>

## ***Fishing after the Prestige spill***

The impact of the Prestige spill on fishing—an activity that depends on the quality of the marine environment—is directly related to the impact on ecosystem structure and productivity, which varies with many factors, including the species (reproduction and

feeding habitats, etc.) and the concentration of harmful compounds. Fishing is also affected (often very seriously so) by dwindling markets caused by loss of consumer confidence, which highlights the crucial need for clear, trustworthy government information and rigorous controls to guarantee the safety of products on sale. Other adverse effects include preventive closure of fishing operations and deterioration in fishing gear caused by oil impregnation.

WWF believes that following the Prestige spill, the fisheries were reopened far too early. In addition, WWF was surprised that trawling beyond 12 miles offshore was not suspended, despite reports from the Spanish Oceanographic Institute (IEO) confirming the presence of oil on the sea bed and despite the known existence of oil traces between water layers and on the surface. The closure period in Galicia (two to eight months) contrasts starkly with those following other spills. In Braer (Shetland Islands, 1993) crustaceans (except lobsters) were only fished after 22 months, molluscs (except mussels) after 25 months, and lobsters and mussels after seven years. And following the Erika spill off Brittany in 1999, closure lasted two to eighteen months.

Analysis of the drop in yield in the years following the Aegean Sea spill off A Coruña in 1992 reveals the impact that this kind of catastrophe can have on the shellfish and inshore fishing sectors. Yield at the main port affected (A Coruña) started a steep decline from year one, and stood at just a third of the pre-spill annual average (30,000 tonnes from 1988 to 1992) six years later. Fishing at A Coruña was still suffering the economic impact of this spill when the Prestige sank (García Negro, M. C. et al 1999). Since no long-term biological studies were carried out, there is no way of precisely apportioning responsibility for the economic decline between the spill itself and other environmental or economic factors.

While it is still too early to properly assess the current situation of fish catch, numerous local fishermen's organizations have reported a significant decline in their catch, after the fisheries were reopened. Some of the local organizations on the Costa da Morte say they now only catch 20 percent of their normal catch (shellfish and coastal fishing) - an 80 percent drop.

Depending on mobility and habitat, we can expect moderate impact on mobile coastal species (fishes such as eel, sea bass, pouting; cephalopods like octopus and squid, and decapod crustaceans like crabs and shrimps) fished by inshore fleets and individual fishers. The impact will probably be higher on sessile and sedentary organisms consumed by shellfish: inter-tide communities of barnacle and spat, subtidal species like sea urchin and abalone, and bottom sediment species such as bivalves (clams, cockles, razors, etc.) (Freire, J. et al, 2003).

Unpublished data from the fishing biology team at the university of A Coruña points to high PAH levels in sessile and sedentary coastal animals such as bivalves, barnacle and sea urchin (January-March 2003). These organisms, at the bottom of the trophic chain, have poor capacity for metabolic degradation of the pollutant compounds. In the same areas, lower but still high PAH concentrations have been found in animals higher in the trophic chain: predators like fish, decapod crustaceans and cephalopods. Levels are especially high in digestive glands, which authors claim as evidence that PAHs are

entering the trophic chain. Lower pollutant levels are found in fishes and cephalopods on the continental shelf, but the pattern is similar to that observed in the coastal region.<sup>4</sup>

Experts are especially concerned for species like goose barnacle (*Pollicipes pollicipes*) and mussel (*Mytilus galloprovincialis*), whose juvenile form (spat) is fundamental for the mussel fishing sector. The habitats of these sessile species have been seriously affected by tar. Excessive mortality has not been observed in adult forms of the barnacle, but there are indications of problems with larva fixation, which may ultimately lead to problems with stock recruitment. Active recovery measures may be needed, but will not be developed before gradual resumption of extraction. In May 2003, high concentrations of hydrocarbons (700 µg/kg dry weight, well above the legally permitted limit of 200 µg on saleable product) were found in banks at Camelle, and though this situation had greatly improved by September 2003, concentrations had still not dropped below the legal threshold in all banks<sup>5</sup>.

Demand for spat stands at around 4,250 tonnes per year (Cáceres Martínez, 1994) compared with a total biomass of 4,400 tonnes in the provinces of A Coruña and Pontevedra (Fernández Pulpeiro et al., 2000). Small variations in uncontrolled mussel production could jeopardize part of commercial punt production.

Lobster is also under threat, since it is less mobile than other species, and largely confined to the sedimentary areas where oil has accumulated. Changes in distribution were observed during the first IEO campaign following the spill (December 2002 to January 2003), with a definite drop in density in the most affected areas opposite Costa da Morte.

Compared with a campaign conducted two months before the Prestige oil spill<sup>6</sup>, the December-January IEO campaign revealed no great change in the biomass or distribution of species of benthic and demersal fishes on the continental shelf. This may be explained by the high mobility of the species in question, and by fact that the study was conducted such a short time after the spill. And there is no data available for assessing time-space variability of particular species.

Octopus yields were high immediately after fishing had been reopened (doubtless owing to high growth during the closure period), but dropped to the lowest level ever recorded just a few weeks later.

To sum up, though there appears little motive to cry catastrophe, there are definitely sufficient grounds for caution. Many of the impacts of the spill are insufficiently understood, owing to lack of scientific data, and may well give rise to a drop in yields, with slow recovery of ecosystems. Triumphalist claims, with calls for a rapid return to

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<sup>4</sup> Freire J., Fernández L., González-Gurriarán & Muiño R. Environmental impact of Prestige oil slick: effects on marine ecosystems and fishing resources. Paper from scientific community in response to crisis.

<sup>5</sup> La Voz de Galicia, 25 September 2003, Carballo edition

<sup>6</sup> IEO report 2003 (n° 6): [http://www.ieo.es/Prestige/IEO\\_Prestige\\_intro.html](http://www.ieo.es/Prestige/IEO_Prestige_intro.html)

normality at any cost, will not solve any of the current problems, but could, on the contrary, exacerbate them in the future.

Fishing is a valuable resource, and fishing communities (along with the people who study them, like fishing sociologist Antonio G. Allut) are naturally very worried about the consequences of the oil spill on the structure and future of the inshore and shellfish sector. Since this sector is largely subsidized, it is already heavily dependent on government aid, and the Prestige catastrophe only aggravates the sense of being abandoned to an uncertain future. Pollution, overexploitation of many resources and inefficient coastal management are serious problems that are not being appropriately tackled. WWF calls for urgent, in-depth measures (beyond the purely cosmetic) to speed full recovery of the coast and its economic resources. And these measures should be backed by long-term studies on the impact of the oil spill, and efficient systems for monitoring the environmental effects.

In addition, Spanish and EU regulations should be tightened to address the problem of oil slicks more effectively. Compared with the situation in the USA and Canada, for example, current legislation is not thorough enough with regard to certain hydrocarbon compounds. Above all, full recovery of such a precious shared heritage requires a long-term outlook, with policies based on solid technical criteria rather than political and PR considerations.

## ***Maritime safety***

The Prestige oil spill resulted in rapid intervention by many social organizations, and a huge public outcry, with massive demonstrations, prompting Spanish and EU legislators to take measures on improving the safety of transport for dangerous substances. While supporting the legislative progress achieved over the last year, WWF is only too aware that with the inevitable drop off in social pressure, media attention and NGO scrutiny, there is a risk that the reform process will grind to a halt. In this section we take a look at recent legislative developments on maritime safety in Spain, the EU and worldwide, and pinpoint the most serious shortcomings detected by our organization.

### ***1 – Spanish regulations***

In Spain, the Prestige oil spill prompted many new regulations, which can be categorized as follows:

- 1.1 – Ratification of international conventions
- 1.2 – Acceptance of amendments to international conventions
- 1.3 – Updates through incorporation of MARPOL protocols
- 1.4 – National legislation enacted as the outcome of international conventions
- 1.5 – National legislation in advance of international conventions
- 1.6 – National legislation specifically addressing the consequences of the Prestige spill

### ***2 – European Union regulations***

Following the Erika oil spill, the European Commission identified two main needs: to step up the phase-out of single-hull oil tankers, and to tighten up traffic control in European waters.

Regulations prompted by the Erika spill fall into two groups:

- Measures to tighten up government control at the port (with more extensive and more thorough inspections), with stricter quality requirements demanded of certification companies and a schedule for the phase-out of single-hull tankers
- Measures for setting up a European Maritime Safety Agency, a system for monitoring traffic in European waters, and improvements to the system for paying compensation to oil-spill victims

The Prestige spill confirmed the need for these measures, and led to determined action on implementation, with the following Commission initiatives:

- 2.1 – Member states were asked to step up inspections of vessels in their ports.
- 2.2 – The Council of EU Telecommunications, Transport and Energy ministers of 6 December 2002 decided to accelerate the phase-out of single-hull tankers, with a new regulation (1726/2003 of the European Parliament and Council of 22 July 2003) amending regulation 417/2002 on accelerated introduction of

regulations on double-hull vessels. This imposes stricter limits and follows on from regulation (EC) 2099/2002 of the European Parliament and Council of 5 November 2002, which set up the Committee on Safe Seas and Prevention of Pollution from Ships (COSS) and introduced new maritime safety rules. The new regulation stipulates that “No oil tanker carrying heavy grades of oil, irrespective of its flag, shall be allowed to enter or leave ports or offshore terminals or to anchor in areas under the jurisdiction of a member state, unless such tanker is a double-hull oil tanker.” The schedule for phase-out of single-hull tankers distinguishes between various categories of vessel, by product type, tonnage and age.

2.3 – Encouraged by the mounting awareness of oil-spill dangers at the International Maritime Organization (IMO), the Commission wishes to push through an amendment to the MARPOL Convention at the December 2003 meeting, to achieve the accelerated phase-out of single-hull tankers and the rapid introduction of a ban on single-hull tankers carrying heavy oil. WWF considers this fundamental if we are to avoid the export of substandard vessels to countries with weaker legislation. On this issue, member states should mandate the Commission to negotiate on their behalf at IMO. The Commission has also suggested it should become a full member of IMO, instead of just an observer, as at present. This is important if the Commission is to negotiate on behalf of Member States.

Regarding the second group of measures, the European Maritime Safety Agency (set up by regulation EC 1406/2002 of the European Parliament and Council of 27 June 2002) held its first meeting on 4 December 2002. The scope of this Agency’s operation was adjusted by regulation EC 1644/2003 of the European Parliament and Council of 22 July 2003.

2.4 – Other proposals include the following:

- A European traffic monitoring system —Equasis, for “European Quality Ship Information System”— has been set up, using advanced technologies to improve maritime safety by providing fleet charter and operator organizations with free, reliable information on vessels in the world merchant fleet. The system is currently operational in Spain, France and Portugal, and should be extended to the whole of Europe by February 2004. Spain joined the European maritime system on 5 September 2003.
- Addressing the issue of compensation for oil-spill victims, regulation EC 2372/2002 of the Council of 20 December 2002 sets out special measures on compensation for the Spanish fisheries, shellfish and fish farming sectors affected by the Prestige disaster.
- Progress appears to have halted on the Directive on responsibility for illegal discharge, with provision for penal sanctions. WWF has estimated that 0.7 to 1.4 million tonnes are discharged illegally every year in the Mediterranean, and considers it unacceptable that countries should discreetly shelve the measures initially adopted with the consequence that the issue of pollution falls down the public's agenda. The transfer of the Directive from the Transport Commission to the Justice Commission has been a step backwards in the battle to highlight

responsibility for illegal discharges. A similar fate was met by the Directive on compulsory public audits.

- The Directive on refuge ports is still to be transferred into national legislations. Spain is demanding that all states name their ports simultaneously, to prevent an abuse of the system; otherwise, the first state to act would attract all ships in poor condition and thus take on unlimited responsibility for any damage caused. The idea is that the measure should apply to safe ships (compliant with regulations) and not junk ships. A draft law 121/000174 on financial, administrative and social measures introduces the notion of financial guarantees applicable to ships seeking access to refuge ports.

Other major initiatives include the Council Decision of 18 November 2002 authorizing member states to subscribe to or ratify, in the interest of the Community, the 1996 International Convention on responsibility and compensation for damage in connection with maritime transport of hazardous and noxious substances (HNS Convention).

### ***3 – Spanish initiatives with regard to the international community***

Major Spanish initiatives with regard to international organizations began with agreements adopted at the Spanish-French summit in Málaga on 26 November 2002, and with the Council of European Union Telecommunications, Transport and Energy ministers of 6 December 2002, which led to proposals being submitted to the International Maritime Organization (IMO). Two fundamental proposals were adopted, concerning the international phase-out of single-hull tankers carrying heavy oil, and the declaration of a Particularly Sensitive Sea Area (PSSA) covering waters off the coasts of Portugal, Spain, France, Ireland, the UK and Belgium.

Other, more technical, proposals concern a new system for separation of maritime traffic in Finisterre, a compulsory audit plan, an international compensation fund for the victims of hydrocarbon pollution damage, an international list of refuge ports, and restrictions on shipping carrying dangerous goods within a 200-mile limit, forming an exclusive economic area.

3.1 – As already discussed, the proposal for the international phase-out of single-hull vessels carrying heavy oils was submitted to IMO on 11 April 2003 and will continue to be discussed in December 2003.

3.2 – Spain's most ambitious initiative regarding maritime navigation concerns the declaration of a Particularly Sensitive Sea Area (PSSA) covering a stretch of water up to 130 nautical miles wide, including the Galician fishing bank. Following an EU agreement, Spain (along with France, Portugal, UK, Ireland and Belgium) submitted a proposal in this respect to the IMO Marine Environment Protection Committee on 11 April 2003. The proposed Western European PSSA was approved in principle in July 2003, after the six proposing States agreed to withdraw their proposal for a single hull carriage ban applicable to ships carrying heavy oils through the PSSA. They retained their proposal for a 48-hour notice period for vessels entering the area. Approval in principle was accomplished only after great debate and a voice vote. Russia and several other states and industry organizations questioned the appropriateness of the size of the area, and raised the issue again at the Legal Committee in October 2003. The



48-hour notice period now has to be considered by the IMO's Navigation Subcommittee.

WWF approves of this initiative, while emphasizing the need for stronger support measures to improve maritime safety and identify areas of major ecological and fishing importance with a view to enforcing stricter protection. Spain is also working on a joint proposal with Morocco to declare a PSSA covering the waters of the Canary Islands archipelago. WWF has been requesting this for the past six years.

3.3 – On 25 February 2003, Spain approached the IMO Subcommittee on Navigation Safety (NAV-49) with a proposal for a new maritime traffic separation system off Finisterre. This would include a corridor 42 nautical miles from the coast for ships carrying dangerous goods in bulk. The subcommittee accepted the proposal on 4 July 2003, and referred it directly for final approval at the 23<sup>rd</sup> IMO General Meeting. In addition, the IMO Subcommittee on Navigation Safety was asked to extend the area within which ships navigating off the Galician coast are required to notify the Finisterre Maritime Traffic Control Centre.

On this subject, we note that in December 2002, the IMO Maritime Safety Committee approved maritime traffic separation systems in Cabo de La Nao (Alicante) and Cabo de Palos (Murcia), in response to Spanish proposals to the Subcommittee on Navigation Safety submitted on 8 and 12 July 2002. The systems became operational on 1 July 2003.

3.4 – Because Spanish proposals to IMO on a compulsory public audit plan have not been endorsed by other countries, audits will remain voluntary and the results confidential to all but the state under audit.

3.5 – The international fund for compensating victims of oil pollution currently stands at €175 million. The Spanish Maritime Administration proposed setting up an international compensation fund of €1 billion to meet claims for damage by hydrocarbon pollution caused by accidents at sea. This proposal was accepted at the International Diplomatic Conference held by IMO in London from 12 to 16 May 2003, and will be implemented through an existing protocol.

On this issue, WWF is seeking recognition of unlimited responsibility along the whole hydrocarbon transport chain, from carrier to cargo owner, including insurers and certification companies. And compensation for damage should extend through to recovery of ecosystems rather than covering direct impact only.

3.6 – Spain has submitted various proposals on refuge ports to IMO, with a view to developing international directives. These will be discussed at a meeting to be held in November 2003.

One unresolved matter of major importance concerns flags of convenience (the Greek-owned Prestige was registered under the flag of the Bahamas). The only way to combat this problem is to insist on a genuine connection between the vessel and the state issuing its flag, and conduct inspections accordingly. At the present time, inspections by flag-issuing states are voluntary. WWF considers that this matter requires a global agreement implemented through the United Nations (UN) and the agencies involved.

To sum up, WWF advocates an effective European and worldwide legal framework on maritime safety, capable of guaranteeing that dangerous substances are transported in such a way as to ensure maximum protection for marine ecosystems and for the livelihoods of the millions of families that depend on them. And this framework should be backed by effective measures to enforce applicable legislation.

## ***Socio-economic impact of the Prestige oil spill***

### ***Talking money***

In economic terms, the ecological catastrophe caused by the Prestige oil spill is comparable with that caused by the Exxon Valdez. The study published by Fundación Barrie de la Maza on the impact of the Prestige spill estimates the coastal cleanup operation as costing around €2,5 billion over the next few years, with around €2,2 billion spent during the first two years. If we include aid to fishing, shipowners, etc, the total approaches €3 billion.

Medium- and long-term damage to fishing and related economic sectors, tourism, and the natural heritage is difficult to assess, but these aspects must be examined if we want to know the real social, economic and environmental cost of the Prestige catastrophe. The total economic damage over the next ten years has been estimated by various authors (Professional Economist Associations of Galicia) at around €5 billion, compared to around \$7,5 billion, at current prices, (around €6,5 billion) for the Exxon Valdez disaster.

Economic analysis obviously breaks down when we come to aspects such as the emotional impact of the oil spill across broad sections of the population, and the disruptive effect of the disaster on the fishing sector. But these phenomena do, of course, exist, and they have been analysed by specialists including Pedro Armas o Antonio G. Allut, in works such as *“El Prestige: teoría social de la catástrofe”* and *“El Prestige y las comunidades pesqueras”*.

What is already evident is that the International Oil Pollution Compensation Funds (IOPCF) will only cover a small proportion (€175 million) of the losses suffered, with society at large paying the rest. This explains the insistence of environmental organizations to have the shipping nations - through the International Maritime Organization (IMO) - implementing a liability system, which includes full environmental responsibility (covering not only clean up but also impact on, and restoration of an affected area).

As is widely known, the fishing and fish-farming sector is crucial to the economic and employment prospects of the Galicia and Cantabria regions of Spain. The fishing sector provides direct employment for around 42,000 people, the shellfish sector for 9,200, and the fish-farming sector for 13,400. Direct and indirect employment across these sectors totals an estimated 120,000 people in Galicia alone (12.2 percent of overall employment). And this dependence can be much higher in some of the areas worst hit by the oil: fishing accounts for 47.2 percent of employment in Fisterra, 39.9 percent in Ribeira, and 27.9 percent in Camariñas.

The fleet that fishes in Galician coastal waters is made up of 8,000 boats, including 6,500 weighing under 10 tonnes (TRB). Of these boats, 7.5 percent provide 25 percent of the total employment, working the continental shelf using gear like seines, trawls and longlines. The remaining 92.5 percent are small boats that leave the port and return the same day, using a wide variety of gear and fishing species of high commercial value. In the long term, we expect greater impact on boats working the coastal waters (inshore

and shellfish), where the ecosystems have suffered most damage. And as we have seen, this kind of boat accounts for the bulk of the fishing sector in Galician.

In all, around 30,000 people in the fishery and shellfish sectors have been directly affected by the closure of fishing in Galician waters (González Laxe, F. 2003), but the long-term consequences of the spill may eventually affect many more who were able to continue working. Rapid and fair compensation by the administration for those affected by the closure has gone a long way to soften the social impact of the spill during the first year, and the administration seems to be nearing agreement with the fishing sector on outstanding compensation.

Under a royal decree approved by the government, beneficiaries who receive compensation without having to go to court (a lengthy process, as we saw with ten-year waits after the Aegean Sea spill) undertake not to make claims to the administration for losses that were not initially considered but for which eligibility might eventually transpire for environmental reasons. This puts people in a serious dilemma, since to legitimately obtain prompt compensation for losses suffered to date, they must forego the right to compensation for other damage that might well be suffered in the future. The risk is very real, and in the section on fishing, we note concrete examples of the possible medium-term repercussions of the spill on the fishing sector, regarding, for example, yields at the port of A Coruña following the Prestige oil spill.

Another form of damage is the risk of a decline in market image (and thus in market price) for fishery products, since Galicia's traditionally excellent reputation for quality produce is bound to suffer. Similar considerations apply to tourism, which inevitably suffers from environmental deterioration. The ensuing losses must also be included in economic studies into the Prestige disaster.

The Prestige spill should be taken as a European reference point on the rigorous estimation of environmental damage, as was the case with the Exxon Valdez in North America (Nogueira, E. et al, 2003).

The Spanish government's economic recovery plan —Plan Galicia— lists five objectives: environmental recovery of the affected areas, encouragement for productive private investment, sectorial diversification in economic activity, territorial cohesion, and stimulus for the image of Galicia. The plan has a budget of around €12,5 billion, which brings total recovery funds up to €14 billion, if we include the plan set up by the regional government of Galicia in January 2003. At first sight, the allocation of such substantial funds to such seemingly relevant objectives should inspire satisfaction across the society at large. But a closer look at the projects listed in the plan, from the standpoint of sustainable development, reveals such a serious environmental threat as to arouse a deep sense of alarm at WWF and in the ecologist movement as a whole. With its exclusive emphasis on crude economic development, the plan overlooks the principles of sustainability altogether, and disregards the need for Galicia to recover its damaged ecosystems and resources, and promote its productive fabric sustainably. Without going into a detailed analysis of the projects in the plan, we simply note that 80 percent of the budget is allotted to large-scale, environmentally obtrusive infrastructures, many of which are unnecessary and socially unprofitable. It has been commented that the appalling black tide has a grey and most unappealing wake.

## *The coastal clean-up operation, little more than a cosmetic exercise*

Right from the start, the handling of the oil-spill crisis suffered from a lack of resources, expert guidance, equipment and coordination. This resulted in chaotic attempts to remove the oil arriving on the Galician coast. There were some very serious environmental errors such as the use of heavy machinery on the sand banks and dunes, and clean up teams trampling tar into the sand. This caused damage to sensitive coastal formations. It was crucially important to remove as much of the tar as possible, so that it could not spread to unaffected areas. However, the teams were overwhelmed by the scale of the task and unable to operate efficiently.

Thousands of fishermen and volunteers, together with personnel supplied by the government, contracted companies and the armed forces, started cleaning the coast without appropriate personal protection. Eventually, university and NGO experts came up with basic guidance on sandbank cleaning operations and personal protection measures. A total of 750 beaches were affected, along 2890 km (60 percent rocky) of the Iberian coastline.

Working methods were gradually improved, but serious shortcomings persisted. After the beaches, attention turned to cleaning up the rocky and more inaccessible areas. During the winter, the Spanish administration promised that 90 percent of the coastline would be clean by 1 June 2003. Because that left a great deal of cleaning to do in very little time, a hasty decision was taken to bring in high-pressure sprayers and remove oil from the more inaccessible areas. However, operations were guided primarily by cosmetic considerations, with little regard to technical criteria.

In response to the many errors observed during the coastal cleanup work, and mounting concern from the fishing community on the resulting damage to commercial resources, WWF Spain issued a report on the cleaning of heavy oil from the Northern coast of Spain (January 2003). This included guidelines for different habitats, along with many recommendations, derived from experience at previous spills, on how to prevent environmental damage.

The cleanup guidelines for rocky coastal areas issued by the Spanish Environment Ministry (MIMAM)<sup>7</sup> were the first attempt to systematize cleanup operations along the coastline hit by the Prestige spill. They included many of the recommendations listed in the WWF Spain report, but they left a number of serious omissions. These omissions could result in serious damage to coastal fauna and flora, and jeopardize or seriously delay proper recovery.

The MIMAM guidelines correctly defined priorities and the order of work. However, much information is missing, which is a serious shortcoming when we consider that this

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<sup>7</sup> [www.mma.es/prensa/informacion/prestige/costas.pres/borderocoso.htm](http://www.mma.es/prensa/informacion/prestige/costas.pres/borderocoso.htm)

is the only document available to personnel responsible for carrying out the cleanup with high-pressure sprayers. The main shortcomings are as follows:

- In the conclusion, much emphasis was put on socio-economic aspects (primarily tourism), at the expense of environmental considerations. This led to a shift in approach, favouring high-powered machine cleaning methods rather than encouraging manual cleaning and natural regeneration.
- No mention was made of the best time of day (with regard to tides) for cleaning operations using high-pressure sprays.
- There was no characterization of habitats, and no guidelines to help personnel make in-the-field decisions to avoid unnecessary damage.

The most serious shortcoming observed by WWF Spain comes in the most important item of the guidelines: in the section entitled “Instructions for using high-pressure sprays” (B.6) and the section on applying high-pressure sprays on living organisms. The only instructions given to personnel are that water should be at ambient temperature, and the spray applied perpendicularly to the rock.

According to Mauseth et al (1997), *Cthamalus dalii* (barnacle) suffers higher mortality at closer spray distances (20 percent at 22.65 cm, 60 percent at 11.33 cm and 90 percent at 7.55 cm). We consider it a serious error that this section did not give any recommendations on a suitable distance for spraying in the presence of living organisms.

The guidelines recommend a spray angle perpendicular to the rock, whereas studies indicate higher mortality of living organisms at 90° than at 45°. Admittedly, statistically significant differences are only found in around half of the cases studied, but in the absence of conclusive evidence, the MIMAM guidelines hardly erred on the side of safety.

We know that the main biological parameter governing recolonization of rocks by the organisms that attach to them (mussel, barnacle, limpet, algae, etc.) is recovery of the biological film of embedded algae covering the rock. Various works highlight the biological importance of this film to emphasize the need for a precise assessment of the impact of high-pressure sprays. But because it has been shown that areas cleaned by high-pressure sprays take longer to recover than control areas recovering naturally, we can probably assume that the impact has been high, on top of the impact of the oil itself on commercially valuable organisms that attach to the rock, like goose barnacle and mussel.

According to a report by ADEGA (*A hidrolimpeza no litoral galego tras a catástrofe do Prestige*, August 2003)<sup>8</sup> and information obtained by WWF Spain, personnel did not even apply the instructions outlined in the guidelines, and committed serious infringements, such as using higher pressure, not properly fitting (if at all) the waste collection equipment (thus spreading the pollution to clean areas or sending it out to

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<sup>8</sup> [www.adegagaliza.org](http://www.adegagaliza.org)

sea), increasing the spray temperature, using freshwater instead of seawater, and opening new tracks for the entry of heavy machinery.

Though the guidelines did include many of our recommendations, based on work by prestigious governmental agencies commissioned with tackling oil spills, we consider that the serious omission regarding procedures for operation in areas with living organisms may have major ecological and socio-economic consequences. WWF Spain has insisted on the need to apply environmental criteria and conduct biological monitoring of the effects of the cleanup operation. But it appears that cosmetic criteria again prevail over technical and environmental considerations.

## *Conclusions and recommendations*

1. The Prestige oil spill is one of the biggest in history along with that of the Exxon Valdez in Alaska in 1989. From an environmental, economic and legal point of view, the crisis is far from over. The disaster continues today. For example, in August, it was discovered that, in all, 64,000 tonnes were spilled - 60 percent more than initially estimated - which obviously aggravates the ecological impact. Between 5,000 and 10,000 tonnes of oil are still drifting in the Atlantic and periodically ending up at various points along the coast. In addition, there are still 13,000 tonnes of fuel in the tanks of the Prestige. WWF urges the Spanish authorities to manage the consequences of the oil spill in a more transparent and responsible way than it has done until now.
2. Until now the management of the catastrophe has not been driven by environmental criteria. WWF calls for an efficient environmental recovery plan for the affected areas. This is urgently needed to facilitate the restoration of these areas.
3. It will take between 2 and 10 years for the affected ecosystems and resources to recover. It is crucial to investigate more deeply the impact of the Prestige oil spill on the marine environment. Such an oil spill should become a reference point worldwide in terms of scientific knowledge. However, WWF is very concerned by the lack of financial support on this issue. Total investment on research into the Prestige oil spill will probably not reach €10 million, compared with around €270 million for research into the impact of the Exxon Valdez spill. WWF calls for the implementation of a well-oriented and well-coordinated investigation policy on the ecological and socio-economic consequences of the Prestige oil spill. This policy should be adequately funded.
4. In one year, enough evidence of major environmental damage has been found. WWF is therefore calling for the implementation of more effective systems to monitor the environmental changes in the affected areas.
5. Accumulation of oil on the sea bed has been spotted in many areas along the coast and on the continental shelf. WWF calls for more monitoring of this problem, including mapping of the most sensitive zones, such as the shallow areas, for the presence of oil.
6. While WWF welcomes the advances made over the past year on maritime safety, it still believes that the inevitable drop off in social pressure, media attention and NGO scrutiny, could slow down or hamper progress. WWF calls on EU governments to act on their commitment to strengthen shipping security in Europe. This relies on effective control systems being put in place to ensure the measures that have been decided are enforced.
7. Long-term damage to the economy is estimated to be at least €5 billion by the Professional Economists Associations of Galicia. The International Oil Pollution Compensation Funds (IOPCF) will only cover a maximum of €175 million. WWF is calling on the shipping nations - through the International Maritime Organization (IMO) - to implement a liability system, which includes full environmental



responsibility (covering not only clean up but also impact on, and restoration of an affected area).

8. WWF calls on the International Maritime Organization (IMO) to approve world-wide measures similar to those taken up unilaterally by the EU and the US, to reinforce the maritime security.
9. WWF believes it is crucial to solve the problem of flags of convenience if maritime security is to be reinforced (the Greek-owned Prestige was registered under the flag of the Bahamas). WWF calls for a global agreement on flags of convenience adopted by the United Nations and concerned parties.
10. Although several proposals to declare Particularly Sensitive Sea Areas (PSSA) in EU waters have been made to the IMO, some countries are still reluctant to go in that direction. In addition, some of the proposals fail to offer sufficient guarantees on maritime safety. WWF urges the shipping nations - through the IMO - to identify the world's most sensitive and vulnerable areas, with the aim to declare them PSSAs. These areas, in conjunction with stricter shipping regulations, will help reduce the impact of further oil and other spills.