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Tourism and its hypersensitivity to oil spills

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ABSTRACT

The sinking of the *Don Pedro* merchant ship in 2007 near the island of Ibiza is a good example of the extreme sensitivity of the tourism sector to oil spills. Despite the limited scale of the spill (only some 20 tonnes), its minimal ecological impact, and the rapid deployment of personnel and equipment to contain it, the accident nonetheless caused significant economic damage to the island's tourism sector. This particular case demonstrates the importance of the beach as a factor of production in the holiday tourism sector, and the capacity of even small amounts of oil to render it unusable and cause heavy losses to holiday firms.

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1. Introduction

This paper discusses a relatively rare occurrence: an oil spill which released only a very small volume of pollutants into the sea and caused negligible damage to the environment, but which, nonetheless, had a totally disproportionate impact on the economy of the local tourism sector.

Most of the literature on the subject of oil spills tends to focus on major accidents, those that release thousands of tonnes of fuel into the sea. Only a handful of studies have analysed the effects of potentially harmful but small-scale discharges. Studies quantifying the ecological impact of small spills are scarce (Edgara and Barrett, 2000), though some accounts have stressed the ability of these low-level events to generate huge economic costs (Ventikos and Sotiropoulos, 2014) or, more rarely, have reported the serious damage caused to the environment through complex transmission mechanisms of contaminants (Wikelski et al., 2002).

As for the second component of our study – sun and sand tourism – the strong negative impact of an oil spill on this economic activity is well known. In fact, almost all the assessments of the economic effects of oil spills include the tourism sector, together with fishing and aquaculture. Once again, however, the literature tends to focus on the analysis of the extensive damage caused by events involving large-tonnage oil tankers such as the *Exxon Valdez* (McDowell Group, 1990), the *Braer* (Butler and Fennell, 1994) and the *Prestige* (Loureiro et al., 2006), or platforms like the *Deepwater Horizon* rig (Choi and Liu, 2011; Crotts and Mazanec, 2013; Ritchie et al., 2013).

In this paper we analyse a relatively little-known spill of limited environmental impact. We begin with a description of the accident itself and of the marine anti-pollution systems deployed to try to reduce its impact on the coast of Ibiza. In Sections 3 and 4 we identify the coast affected by the spill and then assess the impact of the contamination on Ibiza's tourist industry. Maps are included to show the distribution of tourist accommodation establishments and to determine the volume of existing business in each of the areas affected by the spill. The spill not only disrupted the holidays of the tourists on the island at the time, but also severely damaged the image of Ibiza as a tourist destination. In Section 5 we analyse the impact of the coverage of the accident in the Spanish and European media. With all these data in hand, we then quantify the economic costs of the *Don Pedro* spill and assess the costs that it might have caused if it had not been accompanied by a set of favourable circumstances.

2. The *Don Pedro* – the accident and the spill

At 2.52 am on 11 July 2007, the merchant vessel *Don Pedro*, operated by the shipping line ISCOMAR, ran aground on an islet called Dau Petit as it left the port of Ibiza. The collision caused a leak in the port side of the bow of the ship which the crew were unable to repair; nor were the two rescue boats from the port of Ibiza able to keep the vessel afloat. At 4.04 am, the *Don Pedro* sank. The crew were rescued unharmed by the survival craft *Salvamar Markab*. At the time of the accident the weather was excellent, the waves were less than 0.5 m high, the winds were calm and visibility good. The ship sank about 500 m from the point of impact, 1.2 nautical miles from the port and about two nautical miles from

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the beaches of Talamanca, Figueretes and Platja d'en Bossa. Water depth at the site is 43 m (Fig. 1).

According to the report by the official commission of inquiry (Ministerio de Fomento, 2009), the causes of the accident were poor planning of the voyage and crew fatigue. The crew had been overworked because another ship belonging to the same company had been detained by the Spanish authorities a few days previously due to its poor health and safety conditions. This incident obliged the company's other ships to step up their activity.

The *Don Pedro's* cargo consisted of two trucks, five cars and 98 platforms which were empty or were carrying empty containers. A few containers were carrying used items that were being sent to the mainland for recycling, such as batteries and automotive oil filters. So the ship's cargo had a low polluting capacity. However, the *Don Pedro* was carrying fuel for its own use, consisting of Intermediate Fuel Oil IFO 180 Bunker B (FO), and diesel oil (DO) along with lubricating fluids, hydraulic transmission fluids and paints. The shipping company stated that the vessel was carrying 150 tonnes of FO, 50 tonnes of DO and nine tonnes of lubricants, although later the rescue teams found that the actual numbers were higher.

Of the various estimates of the volume of fuel carried by the *Don Pedro*, the most reliable are probably the ones published by the head of rescue operations, Núñez (2007), and the head of the divers' team, Juijn (2008). Both estimated the total volume of oil on board at between 266 and 275 cubic metres, of which the rescue teams recovered between 92% and 94%. Thus, the estimated volume of hydrocarbons eventually discharged into the waters of Ibiza was very modest: about 15 cubic metres of FO, four cubic metres of DO, and two cubic metres of lubricants – around 20 tonnes in total. Most statistical analyses do not consider a spill of such a small size to be of interest – in fact the limit is usually set much higher, at 200 t (Eckle et al., 2012).

The fuel tanks of the *Don Pedro* were not damaged by the collision, and since the ship sank slowly in shallow water and the tanks were completely full, they did not collapse under the pressure and retained their contents. The hydrocarbons discharged came from intermediate tanks and the ship's engines, and flowed into the sea immediately at the moment of the sinking. Diver rescue teams began work on the same day, the 11th, and quickly sealed the wreck, preventing any significant additional leakage.

The equipment available to combat oil spills on the island of Ibiza at the time was very limited and was designed for use in the protected waters of the harbour, not in open water. By a lucky chance, the *Clara Campoamor* rescue ship was sailing just 48 miles from the port of Ibiza and was immediately called. It arrived at the scene of the accident at 7.00 am., at which point the work to recover the oil began. The *Clara Campoamor* belongs to the state-owned Spanish Maritime Safety Agency; it is 80 m long and it was built after the sinking of the *Prestige* oil tanker in north-western Spain in 2002. It entered service in 2007, and is specially designed for the rescue, collection and storage of all types of waste dumped at sea. Within three hours of the accident, a vessel fully equipped for the containment of marine pollution was at work in the waters affected by the spill.

Generally speaking, the response of the authorities was swift and the resources deployed were impressive in terms of both their quantity and their quality. On the morning of the 11th, helicopters and airplanes with sophisticated electronic methods for hydrocarbon detection were mobilized to map the evolution of the discharge. Throughout that day and the next, military aircraft transported diving teams and several kilometres of barriers of different kinds to the island, and the local authorities brought in over a dozen *Pelikan* and *Viro*t, light boats specialized in marine pollution control. Over the next few days another large salvage and pollution containment vessel, the *Miguel de Cervantes*, joined the operation.



Fig. 1. Coastal areas affected by the *Don Pedro* accident, indicating the position of the hotels and apartment blocks (dots). In bold, the beaches directly affected. In dark gray, the built-up tourist areas within five minutes' walk from the nearest beach.

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