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Title: Marine pollution impacts on seabirds – understanding and managing the risks

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Over the years, the impacts of major oil spills on marine fauna, particularly seabirds, have been well-documented and widely reported. Meanwhile, operational discharges have until recently received far less attention. A growing body of research suggests, however, that the effects of such chronic pollution may be considerable.

Even small volumes of oil can have negative impacts on marine fauna, with seabirds being particularly vulnerable to slicks on the sea surface, where many species spend a large amount of time. True seabird species, which spend the majority of their life on the open sea and are only found in proximity to the coast for short stages of their life cycle, may be especially vulnerable. Oil on the sea surface has a dampening effect; to a bird in flight, an oil slick can look like an area of calm water, and it will often preferentially land there. Species that raft in large numbers in open water will be particularly vulnerable in this respect.

A study conducted in 2005 by the International Centre for Exploration of the Sea (ICES) concluded that seabird mortality following several major spills could not be correlated to the volume of oil spilled. Highest seabird mortalities were recorded following the STYLIS spill, where 600 MT of carbon black feedstock oil were spilled off Skagerrak in December 1980, in a deliberate operation to clean tanks between Rotterdam and Norway. In this case, 45,000 dead guillemots, auks and little eiders were found, and total mortality was estimated at up to 300,000. Contrastingly, following the AMOCO CADIZ incident in March 1978 – where 223,000 MT of crude oil and 4,000 MT of bunker oil was spilled off the coast of Brittany – a total of 5,000 dead puffins, razorbills and guillemots were collected, with total mortality estimated at 22,000.

The location and time of year may be more important for determining the threat to seabirds. For example, the spatio-temporal overlap of the ERIKA spilled oil drift trajectory with one of the main European auks wintering area above the continental shelf and slope of the northern bay of Biscay in December 1999, and the towing offshore and subsequent breaking up and sinking of the tanker during the response to the PRESTIGE incident in November 2002 resulting in an increased oil sweep area may have increased the impacts on seabirds, with total mortalities estimated at up to 300,000 for ERIKA and up to 200,000 for PRESTIGE.

ITOPF's database of reported accidental spills from tankers, and spills from non-tankers which ITOPF either attended or provided remote advice on, shows that between 2000 and 2014, 80% of spills in the North Sea and the Baltic occurred within 3 nautical miles of the coast. Meanwhile, although the discharge of oil into the marine environment as part of routine operations is heavily regulated under the MARPOL 73/78 Convention, it is not prohibited on the high seas in some cases, as long as concentrations of oil are below 15 parts per million, regardless of the quantities being discharged. Furthermore, although MARPOL Special Area (Annex I – Oil) status forbids all discharges of oil or oily mixtures from tankers or any other vessel over 400 GT, including tank washing, it is apparent from

aerial surveillance that small volumes of oil are frequently lost from vessels in the North-West European and Baltic MARPOL Special Areas.

EMSA CleanSeaNet data from the Bonn Agreement aerial surveillance programme indicate that in 2012, 136 mineral oil slicks were reported in North-West European waters. Of these, 111 could be quantified: sixty-eight were less than 100 litres; thirty-one were between 100 litres and 1 m^3; eleven were between 1 and 10 m^3; and one was between 10 and 100 m^3. In the Baltic, the HELCOM aerial surveillance programme reported 139 oil spills in 2012, of which 137 were less than 1 m^3, with the largest estimated at 3.3 m^3. The total estimated volume of oil spills observed amounted to 16 m^3. In 90% of these cases, the polluting vessel could not be identified. Just two spills in European waters are included in the ITOPF database for 2012. These were a spill of 6 MT of lubricating oil/ diesel from a tug in Holyhead Harbour (UK), and an unquantified spill of bilges from a crude oil tanker off Estonia. These are not included in the CleanSeaNet or HELCOM data.

Given the discrete and often widely-reported nature of major oil spills, post-incident monitoring programmes may be implemented in an effort to quantify impacts on seabird populations. The specific impacts of chronic, operational discharges from unpredictable and often offshore discharges may be more difficult to characterise. In most cases, it is not possible to establish whether there are any long term effects on wildlife resulting from chronic pollution caused by vessels intentionally discharging oil at sea, as the necessary baseline data do not exist. In the Netherlands, beached bird surveys have been organised since the 1950s, to record and describe bird corpses – including the presence of oil in the feathers. Overlaying these data with information on the incidence of accidental releases and illegal discharges in the region (using ITOPF and Bonn Agreement data) allows a qualitative assessment to be made of the relative impacts of larger accidental spills and small-scale, but chronic operational releases on these ecologically important seabird populations.

Recent incidents highlight the complexity of understanding and minimising the environmental impacts of maritime activities. In 2013, widespread seabird mortalities along the English Channel were attributed to the discharge of high-viscosity polyisobutene/polyisobutylene (PIB, butyl rubber), a non-petroleum fuel additive, previously classified under MARPOL as Category Y (Noxious Liquid Substances which, if discharged from tank cleaning or deballasting operations, present a hazard to marine resources or human health and therefore justify limitation of the quality and quantity of discharges at sea). When it emerged that PIB may form a waxy, glue-like substance in seawater, and that under certain conditions the discharge of PIB had the potential to cause significant environmental impacts, the International Maritime Organization promptly took steps to reclassify PIB as MARPOL Category X, thereby prohibiting its discharge into the marine environment. In addition to intergovernmental efforts to ensure that adequate provisions are in place to protect the marine environment from potentially negative impacts of maritime activities, ITOPF works closely with the shipping industry to raise awareness of ongoing and emerging marine environmental issues, and to ensure that the impacts of shipping are well-understood and mitigated.

REFERENCES

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ITOPF BACKGROUND

Over the past 40 years, ITOPF's technical staff have responded to over 700 ship-source spills in 97 countries in order to give objective, technical advice on clean-up measures, environmental and economic effects, and compensation. Whilst most of these incidents have historically involved crude oil spilled from tankers, ITOPF is increasingly called upon to respond to spills of bunker fuel, chemicals and bulk cargoes from all types of vessel. Advice is also occasionally given in relation to oil spills from pipelines and offshore installations, and physical damage to coral reefs resulting from ship groundings.

The first-hand experience gained by our staff through direct involvement in pollution incidents is put to good use during contingency planning and training assignments, as well as in the production of technical publications.

ITOPF is a not-for-profit organisation funded by the global shipping industry. Over 90 percent of our income comes from subscriptions paid by P&I (protection and indemnity) insurers on behalf of their shipowner members, who are enrolled with ITOPF as either Members or Associates. This gives them access to the organisation's full range of technical and information services, usually at no cost.

ITOPF's Membership comprises over 6,500 tanker owners and bareboat charterers, who between them own or operate about 11,200 tankers, barges and combination carriers with a total gross tonnage of about 344 million GT. This represents virtually all the world's bulk oil, chemical and gas carrier tonnage and so it is extremely rare for the owner of any such ship engaged in international trade not to be a Member of ITOPF. Associates comprise the owners and bareboat charterers of all other types of ship, currently totalling some 714 million GT. This reflects ITOPF's increasingly important role in recent years in responding to bunker spills from non-tankers. ITOPF's activities are overseen by an international Board of Directors representing the organisation's independent and oil company tanker owner Members, its Associates, and P&I insurers.

Since its establishment in 1968, ITOPF has evolved into the maritime industry's primary source of objective technical advice, expertise and information on effective response to ship-source pollution. ITOPF has observer status at both the International Maritime Organization (IMO) and the International Oil Pollution Compensation Funds (IOPC Funds) and we regularly contribute to discussions on matters relating to ship-source pollution.