

Impact of oil spills on seabirds



An international Workshop and manual preparation

CEIDA, Castelo de Santa Cruz, Oleiros (A Coruña, Galicia, Spain), 7 - 9 September 2006

Proceedings

A total of 23,181 birds of 90 species were collected during the Prestige Oilspill: 11,803 Guillemots - 3,876 Razorbills - 3854 Puffins - 795 Gannets - 748 Yellow-Legged Gulls - 408 Shags - 133 Kittiwakes - 93 Cormorants - 86 Black-Headed Gulls - 83 Black Scoters - 78 Little Auks - 65 Great Northern Divers - And 78 more species.

A Coruña, 7- 9 September 2006

Workshop Proceedings



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Introduction

Between 7 and 9 September 2007, 20 delegates; government officials, scientists and NGOs from 11 European countries (10 EU Member States and Norway, see Annex 1) gathered in A Coruña, Spain, to discuss best practices on data collection and analysis for the assessment of impacts of oil spills on seabird populations and the anticipated contents of a handbook. The workshop was organised by Royal NIOZ, the University of A Coruña and Sea Alarm Foundation, with a grant from the Community Framework for Cooperation on Accidental and Deliberate Marine Pollution (Grant Agreement no.07.030900/2005/429207/SUB/A5). Grants to pay for the participation of some North American scientists were provided by Fundación Arao and the use of the venue was co-sponsored by Xunta de Galicia.

Objective

The workshop was convened to agree on protocols that can be laid down in a manual or set of guidelines, tentatively called “**The Handbook on Oil Impact Assessment**” that is to be made available on the internet for future consultation and updates. The manual is intended to guide scientists and other responders in future oil incidents. It will be made available as PDF documents at www.oiledwildlife.eu. The handbook should be easy to use and should describe methods and tools that can be applied even under the most difficult and stressful circumstances.

Programme

The workshop started with an informal session of two introductory lectures in the evening of Thursday 7 September followed by a one day seminar on Friday. This seminar included the formal opening session and eleven lectures on various subjects. Saturday September 9 was spent on in-depth discussions on the proposed contents of the Handbook during three parallel sessions. An overview of the programme is presented in Annex 2.

Welcome of participants

In the morning of Friday 8 September, the participants were welcomed by **Concepción Herrero** (Vice-chancellor of Research, University of A Coruña), **Carlos Vales** (Director of CEIDA) and **Manuel Vázquez** (Galician Ministry of Environment). **Kees Camphuysen** (Royal NIOZ) summarised the workshop aims, its set up, the anticipated output and the follow-up activities scheduled in the project.

Lectures Thursday 7 September

Introduction of the workshop

Roberto Bao (Universidade A Coruña) introduced the workshop by highlighting the important issues of impact assessments and how the present EU project aims to contribute to internationally agreed standard methodologies to assess the impact of oil spills. The *Prestige* spill has been presented as a reminder and as an example of the effects of a spill in terms of wildlife casualties. For marine wildlife, the amount of oil spilled during an event is of less importance than the type of oil, prevailing weather and, most importantly, the *presence and abundance* of sensitive taxa in an area. Briefly introduced are issues that determine the sensitivity of seabird species and of entire sea areas to oiling and what difference there between species and areas throughout Europe.

The Prestige spill – a reminder

Antonio Sandoval Rey (Terranova Interpretación y Gestión Ambiental S.L.) highlighted the presence of dense tanker traffic in combination with high numbers of migratory seabirds of the Galician coast. A list (and map) of oil spills over the past 50 years was presented, and the importance of shipping density and bad weather circumstances were discussed. The *Prestige Spill* was in some way just another spill in a series of events, but bad practice was responsible for the scale of the event. Casualties were found for many months after the *Prestige* sank and estimates of total mortality were provided.

European Seabirds – what is it we are protecting?

Kees Camphuysen (Royal NIOZ) introduced the European seabirds and why there are differences in sensitivity to oiling. Largely aerial, dispersed species usually suffer limited losses during spills, whereas seabirds that are mostly swimming and particularly those that form large concentrations are highly susceptible to oiling. Within areas, one or the other (of both) types may occur, but in many coastal seas and oceans there a clear seasonal patterns in the distribution of marine wildlife, leading



to major fluctuations in the abundance and densities of sensitive taxa and, hence, in clear patterns in area sensitivity to oiling. Only some parts of Europe have been studied in sufficient detail to produce seasonal vulnerability maps to oiling. It is striking several of the Special Areas under MARPOL are data deficient (e.g. Black Sea, Mediterranean), whereas large parts of the arctic and subarctic waters need urgent attention.

Lectures Friday 8 September

Predicting the ability of seabird populations to recover from oil spills: contributions of molecular genetics

Vicki Friesen (Queens University, Kingston Ontario) gave an introduction to the use and analysis of mitochondrial DNA versus nuclear DNA in population studies of seabirds (size, dispersal and evolutionary history). The potential use of this technique includes the identification of genetic structure in local populations. The differences between separate populations are expressed in the F_{ST} index. The presented examples included guillemots, of which populations appeared quite homogenous (F_{ST} 0.01), and Kittlitz Murrelet of which populations are highly structured, with many apparent sub-populations (F_{ST} 0.91).

Measuring population level effects of oil spills, a European perspective

Martin Heubeck (SOTEAG, UK) approached the issue by asking the question: if a spill happens on your coast.....what would be best practice to deal with that? He provided guidance as to how to work during spills, what data are needed, and how that data need be collected and gave some examples of difficulties that are involved this kind of work. He explained that live birds such as oiled gulls flying inland should be included in the assessments, as well as the beached birds survey (BBS) input, the losses in the rehabilitation activities and the birds collected by oil spill clean-up contractors. Drift experiments, which may include tagged dead birds tossed into the slick, could help to assess the fraction of the casualties that drift ashore in relation to the total number of birds affected by the incident. In order to assess impacts at population level for many species would require necropsies in order to collect biometric data. Carrying out a beach bird survey requires the commitment of local experts (knowledge of area and species distribution) and logistic support.

Evaluating the effects of chronic oil pollution: a Baltic experience

Kjell Larsson (Gotland University) explained that two years ago IMO classified the Baltic as a particularly sensitive sea area (PSSA). His presentation highlighted the oceanographic peculiarities of the area and the adaptations of animals to that stressful environment (salt versus fresh, water versus ice), as well as the shipping traffic that is going through the system. A total of nine million seabirds of 30 species is concentrated in only 5% of the area. For example 4 million Long-tailed Ducks are concentrated in three main areas, including the coastal waters of Germany, Gotland and the Gulf of Riga. Shipping lanes for shallow ships (less than 12 m) lead straight through highly important areas for wintering waterfowl. Shipping traffic is already intense and will further increase, mainly due to increasing export of oil by Russia. Large oil spill incidents so far have not happened, but risks are significantly increasing and the effects on seabird populations may be huge.

BOAS – Birds oiled at sea

Patrick O'Hara (University of Victoria, Canada) presented the Birds Oiled At Sea (BIOS) programme which is carried out by a consortium of universities, CWS and environment Canada and various governmental bodies and NGOs. BIOS is situated at the British Columbian coast and includes a range of activities, including aerial surveys, beach bird surveys, telemetry studies, satellite detection of pollution, remote sensing, etcetera, of which the results are fed into a GIS database. The database supports a system of prevention and response. Prevention includes education, monitoring and enforcement, legislation; response including mitigation, assessment and enforcement and legislation. The EEZ of British Columbia is extremely large, and large areas are uninhabited. Oil spill response may be delayed in remote areas. A model simulates carcass drift and demonstrates that only very few carcasses actually wash ashore, suggesting that beached bird surveys are thus poor indicators of actual mortality.

On the spot descriptions of the sensitivity of sea areas regarding oil spills and forecasting shifts in the abundance of the most sensitive species

Kees Camphuysen (Royal NIOZ, NL) provided an example of the kind of information that is relevant for oil spill authorities and wildlife responders to respond appropriately to an acute threat of oil pollution. In the aftermath of the oil spill incident in Estonia (January 2006), Camphuysen carried out an on-site area assessments to inform Estonian Ministry of Environment and ITOPF with updated,



high quality data to predict potential damage in case oil would re-appear later in the season (prioritising clean-up operations).

Vulnerability atlases: from seabirds distribution data to advice

Zoe Crutchfield (JNCC Aberdeen) gave an introduction into OVI according to JNCC and using baseline seabirds at sea data to transform densities into area sensitivity and vulnerability atlases. The information on OVI and species density are combined into vulnerability maps. Communication is the tool to get the data across into the world of managers and responders and get high quality data used by 'non-ornithologists'. Examples are provided including licensing rounds and the highlighting of marine environment high risk areas. Material also used to advice in case of licensing oil and gas exploration and times during which drilling should for example not take place because the area is particularly sensitive in a particular season. During a response, OVI can be used as an initial indication by non-specialist to determine response priorities. Keeping the data up to date is a main problem of the database. The online contingency planning tool Magic is presented (www.magic.gov.uk) which gives entry to metadata of various datasets for the North Sea. Maps can be called on screen to check for vulnerability immediately.

Impact assessment in the aftermath of the Tricolor incident

Francis Kerckhof (MUMM) and **Eric Stienen** (IN) Explanation of the Tricolor spill, showing casualties came in waves with onshore winds plus waves of live-birds that came even in offshore winds by active swimming. Shows totals of other countries. Shows shipping and pre-spill vulnerability maps available.

Impact assessment in the aftermath of the Erika incident

Bernard Cadiou (Bretagne Vivante) showed different pathways of live and dead casualties via rehabilitation centres or other facilities towards release or destruction and highlighted significant loss of data during such trajectories. Guillemots dominated the records while other seabird species only appeared in rather trivial numbers, hence most attention in the analysis was directed to guillemots. Of all casualties recorded in the incident 75% stranded in first two weeks. Over 42,000 dead and 32,000 live casualties were found. Of the live casualties treated in rehabilitation centres, 2150 were released. The total estimated number of stranded animals was 74,000, excluding the birds that were removed during beach cleanup activities. Another estimated 16,000 birds must have been missed from counting due to several causes, therefore close to 100,000 casualties are assumed to have been stranded. Depending on stranding rates (90% - 5%), over 1.5 million or as "few" as 90,000 birds may have been affected. The figure of 110,000-150,000 casualties has been adopted in formal reports on the incidents.

Impact assessment in the aftermath of the Prestige incident

Roberto Bao (Univ A Coruña), **Antonio Sandoval Rey** (Terr. Int. Gest. Amb.) and **Martin Heubeck** (SOTEAG) Roberto will put emphasis more on procedures associated with the Prestige oil spill. Offer of a lab and a team of eager students to be of help in the crisis situation surrounding the Prestige spill, so that scientific work (impact assessments) could be properly organised and conducted, as well as dragged further after experts had left. The scientific work was effectively put in place in the entire response.

Oil spill management and financial compensation

Franck Laurelle (ITOPF) gave an overview of the different options for oil spill response and management. Apart from combat at sea, measures should prevent damage to and the degradation of natural habitats. Post-spill studies normally are related to assess effects on population dynamics. Although not described in so much detail in the IOPC Fund's Claim Manual, beached bird surveys and studies to assess population damage (biometry, genetics) should be assumed acceptable for compensation. Drift experiments and extrapolations are most likely not, as they are too speculative. Compensation may also be available for reasonable measures aimed at accelerating natural recovery of environmental damage.

Invitation of P&I Clubs, the IOPC Fund or ITOPF to participate in the planning and design of impact assessment studies in the aftermath of an incident would be a very good step to enhance chances of compensation (avoid unexpected claims). Basically, everything is open to discussion and good arguments may change current viewpoints on which parts of scientific activities would or would not be successful in a claim for financial compensation. It was generally stressed that claims have to be submitted within three years.



Planning for impact assessment as an integrated part of oil spill response

Hugo Nijkamp (Sea Alarm) explained the need to integrate oiled wildlife response into the overall oil spill response. This is the best way to ensure health and safety of responders and the cost-efficient use of resources. As part of the actual incident response, geographical aspects need to be considered as to where to plan for the various facilities. In larger scale response, the facilities needed for an impact analysis could be integrated into facilities that are needed for other parts of the wildlife response, such as a rehabilitation facility. In order to meet the management requirements under different scales of incident magnitude, the tiered response system for wildlife response was introduced.

Discussions Saturday September 9

On Saturday, the workshop broke up into three parallel sub-sessions, each focusing on a distinct part of the anticipated handbook, respectively Impact Assessment, Area Assessment and Planning Issues. The results of the morning discussions in each of the sub-sessions were plenary presented before lunch break. After lunch, participants had the opportunity to switch to another session if they wanted to. In the afternoon, the overall results were presented and discussed (see Annex 3, 4 and 5), and some conclusions from the Workshops were drawn. The reports of the sub-sessions and the conclusions will be used for the drafting of the Handbook.

Workshop conclusions and recommendations

- Oil spills still occur, shipping gets more intense, local increases in the risk of oil spills have been highlighted (notably in the Baltic)
- Some areas in Europe are well known for their sensitivity to oil spills. It is important to map these areas and identify gaps in information.
- The issue of on-the-spot area assessment during a spill (to minimise further damage) needs to be addressed in a practical way. Lists of scientists must be drawn up.
- Biometric and genetic techniques are available to define population characteristics of vulnerable species. In addition to ring information, these techniques can be applied to identify the origin of animals that have been found as a casualty of oil pollution. As they come with different costs and opportunities, it would be useful to have a centralised database of species specific information that may help to define which techniques have proven to be effective, how they are deployed, which data should be collected and in which way. The database, that should eventually be available on line, should contain addresses where specialised analysis (e.g. molecular studies) can be carried out.
- International cooperation is needed to define best practices to impact assessment, i.e. which questions need to be answered and which approach and (set of) methodologies would lead to the most satisfactory results
- Post release survival of rehabilitated animals and the monitoring of effects on the long term need the involvement of scientists who observe seabird colonies.
- Developing and applying methods of good practice needs cooperation between a large number of stakeholders, including universities and scientific institutes, NGOs, authorities and industry in and outside of Europe.
- Many lessons can be learnt from recent oiled wildlife incidents. Ways should be identified by which these learnt lessons can be shared between stakeholder groups.
- Training of local dedicated ornithologists, students, volunteers in the methods and activities of an impact assessment is needed. Training opportunities on developed standards of good practice need to be created
- Financial compensation for carrying out an impact assessment need to be considered. Authorities responsible for oiled wildlife response need to consider setting up an emergency budget that would need the financial demands of the early response and eventually the mobilisation of trained and experienced personnel from in and outside the country.
- There seems to be (some) scope for financial compensation for at least for a part of the impact assessments. Responders involved in the assessment should aim to involve representatives of P&I Clubs, the IOPC Fund and/or ITOPI in the design and mobilisation of activities in the immediate aftermath of an incident.
- Future work on scientific data collection in the aftermath of oil incidents should also consider rehabilitation as a tool to minimise impacts at population level and find ways to provide scientific advice to the benefit of these attempts.



Closing remarks

Kees Camphuysen (Royal NIOZ) closed the workshop by concluding that the two-days event had made a lot of progress in finding a way how best practices with regards to impact assessment and area assessment can be identified and further developed. The next step would be to make sure that these best practices are adopted and applied by the authorities in de different European countries. The Handbook will be instrumental to achieve these goals. By presenting the state of the art in an accessible on-line format will enhance the use of good practices in future incidents and training. The availability of an agreed Handbook might also be considered as an invitation to authorities to include impact assessment as one of the strategies of an oiled wildlife incident response. The workshop has made a good start with bringing all the necessary information together and these efforts will be continued in the months to come when the Handbook should be given shape.

Word of thanks

On behalf of all participants, Kees Camphuysen thanked Roberto Bao and his staff, as well as the staff of “the castle” for all their efforts to make the workshop a successful event.

