

Why rehabilitate oiled wildlife?

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Abstract

A large investment of people's time and energy, and some public money, is made in efforts to rehabilitate wildlife impacted by marine oil spill events involving large numbers of seabirds from oceans and coasts throughout the world. Professionals and volunteers involved in this work confront themselves with questions about their objectives and the outcomes achieved, echoing criticisms articulated in popular or scientific forums. The debate has sometimes assumed a polarity between conservation management and economic arguments against rehabilitation versus the welfare interventions of wildlife rehabilitators and conservation activists. The questions "why or why not rehabilitate oiled wildlife?" have helped define opposed positions. Contemporary developments in applied knowledge, interrogation of past and recent outcomes, and the internationalisation of oiled wildlife response interventions have brought us to a point where the question "why rehabilitate oiled wildlife?" has lost its relevance. Instead the confrontation of this debate is being harnessed to bring energy to illuminate the questions "which wildlife, when and how can they be rehabilitated?". Collaborations of professional and lay wildlife health workers, government conservation management agencies, pollution control and response authorities, academic and scientific research institutions, industry and local communities have redefined the question.

Sollten verölte Wildtiere rehabilitiert werden?

Zur Rehabilitierung von Wildtieren, die von Ölverschmutzung betroffen sind, wird ein grosser Beitrag an Zeit, Energie und z.T. öffentlicher Gelder investiert. Die Wildtierspezies sind in der Mehrzahl Meersvogel, sowohl Küstendspezies, als auch solche vom offenen Meer. Professionelle und freiwillige Gruppen beteiligen sich an dieser Arbeit und werden dabei mit Fragen über die Beweggründe und erarbeiteten Resultate, sowie geäusselter Kritik von populär- und spezialisten-Medien konfrontiert. Die dort geführten Diskussionen schienen eine Polarisierung zwischen der Führung von Naturschutzorganisation und deren ökonomischen Argumenten gegen eine Rehabilitierung und den Eingriffen zum Wohle der Tiere von Wildtierschützern und Naturschutz Aktivisten anzunehmen. Die Fragen warum and warum nicht verölte Wildtiere rehabilitiert werden sollten, hat geholfen, die Positionen der verschiedenen Parteien zu definieren. Die heutigen Entwicklungen in anwendbarem Wissen, die Auswertung vergangener und aktueller Resultate und die wachsende Globalisierung der Ölkatastrophen-Einsätze hat uns zu dem Punkt gebracht, wo die Frage "sollten verölte Wildtiere rehabilitiert werden?" ihre Relevanz verloren hat. In Gegensatz dazu führt uns die aktuelle Debatte zu den Fragen 'welche Spezies, wann und wie können sie rehabilitiert werden?'

Durch die wachsende Zusammenarbeit von professionellen und regierungs Tierschützern, regierungs Naturshitz Organisationen, akademischen und

wissenschaftlichen Instituten, sowie industriellen und lokalen Gruppen, konnten diese Fragen neu definiert werden.

Keywords: oil spill response; wildlife rehabilitation; pollution

How much oil pollution is there, and what does it do to wildlife?

Some 1,300,000 tonnes of petroleum are estimated to reach the sea each year (NRC, 2002). Slightly more than half of this amount is a result of human activities in production and use of petroleum. Marine oil spills amount to some 474,000 tonnes each year (NRC, 2002). The impact of petroleum pollution resulting from human activities derives from the rate of discharge, the location of discharge, and the modified nature of petroleum released.

The biological effects of this pollution are widespread and varied (Giere, 2003, Camphuysen, 2003). Factors such as geography and climate influence the effects as do type of oil and loading. There are species-specific factors, and the direct effects of oil exposure on animals are influenced by degree of oiling and route of exposure. Indirect effects may be mediated by habitat degradation, including impacts on food availability. The emphasis in the literature has been attempts to quantify mortality associated with specific spill events or overall impacts (e.g. Goldsworthy et al. 2000). Examples of mortalities of seabirds associated with several spills are outlined in Table 1. Harder to quantify or determine the significance of are the sublethal effects of exposure. Laboratory models using analogue species exposed to a specific crude petroleum or product present difficulties in extrapolating to field situations (Newman et al., 1999; Clark, 1984). However the physiological stresses demonstrated in such studies suggest metabolic costs in surviving oiled animals which may assume energetic significance at the population level. The welfare implications of unremedied sublethal oiling, particularly in animals prone to repeated oiling events or exposed to chronic pollution, must be considered in assessing the impacts of oil pollution.

What does oiled wildlife response seek to achieve and how?

Oil spill response is a highly developed organizational and scientific challenge to attempt to limit the ecological, social and economic impacts of an oil spill. Highly competent systems where the speed of response and the logistic resources are available to permit choices in response strategy use the process of net environmental benefit analysis to test response decisions. Oiled wildlife response is a component of this sphere of activity (Stanzel & der Merwe, 2003), though there are differences in how far wildlife activities are integrated with overall spill response in different jurisdictions. Its objectives can be found within the overlapping circles of protecting the welfare of wildlife oiled or at risk of oiling, and protecting the wildlife conservation values impacted by a spill.

Where there is integration with overall spill response, wildlife response provides input into development of a response strategy, for example advising on areas or activities where mitigation work might impact sensitive species. Shoreline assessment protocols should include an oiled wildlife reconnaissance element. Capture, transport and care of oiled wildlife tends to be accomplished by the specialised wildlife responders, though ideally their activities should also be integrated with the overall response to

facilitate economies in logistics, to limit conflicting operations, and above all to facilitate responder safety.

Oiled wildlife cleaning and post-cleaning care leading to rerelease is a central process in oiled wildlife response. There are companion modalities including monitoring without intervention, euthanasia of selected animals, hazing and pre-emptive capture. In a competent response these activities will be integrated together and indications for each will guide which is pursued for any one animal, population or species. Because of the coherence of this approach and the inseparability of its components, in this paper “rehabilitation” will not be defined narrowly to exclude these other branches of the oiled wildlife response tree.

The answer to the question “why rehabilitate oiled wildlife?” can be found in the substance of both the affirmative and negative arguments. In retrospect an almost dialectic process developed over the preceding decades with conservation science and financially based arguments opposing welfare-motivated interventions. The scientific literature had been developing a case arguing against oiled wildlife rehabilitation (e.g. Clark, 1984) but more recently strong supportive evidence has been published (e.g. Nels et al, 2003). The balance emerging in the published record mirrors collaborative approaches which have developed between conservation management agencies, rehabilitators, pollution response authorities, universities, industry and the community.

What arguments are there against interventions?

One of the arguments with the strongest apparently utilitarian basis is the work effort, resources and money expended on oiled wildlife rehabilitation would be better spent on actions with predictable positive conservation outcomes. Implicit in this is the further criticism that oiled wildlife response has an unknown or negative conservation impact. Clark (1984) although admitting rescue, cleaning and rehabilitation of oiled birds had been practiced successfully, dismissed the significance of cleaning oiled birds as only serving human sentimental values. This was juxtaposed with in situ conservation measures with the example of a translocation and predator management programme for puffins in Maine.

The problem with this criticism is that the resources made available for response to wildlife in oil spills usually require the legislative environment created in a declared oil spill event to be made available, and they become available for specific activities. The legislation in each jurisdiction will determine things like the amount of money recoverable from a spiller or their insurer, usually linked to the spheres of response activities which will be covered. The United States’ natural resource damage assessment process goes beyond the provisions in other legal systems in recovering costs from a responsible party. In any jurisdiction, a spiller’s accountability often to shareholders and their insurer’s obligations to minimise exposure will contribute to a careful scrutiny of bills for cleanup costs. Wildlife response costs tap a new pool of money to that made available for other conservation activities, the triple bottom line notwithstanding.

An argument linked to this is that the scale of natural wildlife mortality resulting from simple environmental factors such as nutrient availability and predation dwarfs the

comparatively slight numbers of animals which are returned to the wild in oiled wildlife rehabilitation. Further, the proportion of animals rescued and rehabilitated is generally going to be an insignificant fraction of the overall number of casualties of a spill.

Rather than underlining any futility of oiled wildlife response, these issues point to its importance. Mortality in an oil spill event is not a naturally selective pressure, that is it is indiscriminate. Many seabird species can be characterised as having low survival to fledging and continued mortality biased to birds in the first year or more after fledging. Adult birds recruited to the breeding population generally have lower annual mortality. If breeding birds are impacted disproportionately in an oil spill this may influence the ability of a population to recover through recruitment. Marine environments and their wildlife are susceptible to adverse climate, weather and disease events. These may occur irregularly and have significant impacts on mortality, survival and breeding. Population decline may ensue if a series of catastrophic events occur with a frequency exceeding the recovery powers through recruitment or migration (Newton, 1998). Particularly in small threatened populations exposed to recurring mortality events, the contribution of oiled wildlife response may be significant.

The argument against oiled wildlife rehabilitation with the most far reaching potential is the risk posed by an unrecoverable negative outcome such as introduction of a novel disease to a naïve wild population. Rehabilitation facilities present an opportunity for unusual exposure of different species stressed by captivity and oiling, complicated by medical procedures, serial human contact, logistical challenges to hygiene measures, and shared resources such as air, water and food. The Hippocratean admonition “do no harm” is embraced in the protocols of all organizations involved in oiled wildlife response. Throughout the animal health world measures of absolute exclusion are being replaced by management measures driven by risk analysis. The challenge in addressing this criticism of oiled wildlife rehabilitation is to ensure a positive balance between this risk and the welfare and conservation benefits of interventions. The reality is that relatively little is known of the health status of seabirds and therefore what risks are posed. Some species share their environments in a way that mimics the mutual exposure in a rehabilitation facility, for example razorbills *Alca torda* and guillemots *Uria aalge*. Also of great importance is the implementation of measures to protect human health in oiled wildlife response.

What are the arguments for interventions?

In societies where public opinion can be gauged and relatively freely expressed, it is normal for there to be outrage and compassion for wildlife affected by oil pollution events. This is coupled with an expectation that a concerted intervention be mounted to restore the environment and its wildlife. At its simplest this reflects the obligation to assist an animal when it is within your capability to prevent its suffering. There is a moral imperative that a human-induced catastrophe and its effects on wildlife, such as in an oil spill, should be remedied by people. Human’s stewardship role in nature and increasingly widespread influence in environmental management and change counter the argument that people and oil are part of nature also so “natural” factors. Much of the long term recovery of oil-impacted environments is due to the capacity for natural recovery of the environment itself.

An inescapable reason for oiled wildlife rehabilitation is that it is what society wants as reflected in its laws and government policy. There is currently strong support for oiled wildlife rehabilitation from risk-source interest groups such as shipping transport, fisheries and the oil industry. There is also community support as reflected in volunteer participation and donations in spills and the subscriber bases of NGO's. If we get the media we ask for, their focus on wildlife impacts and rehabilitation reflects further community support.

At least in the United States there is a strong legal basis for wildlife rehabilitation following oil spills. The situation varies in other jurisdictions and as many are familiar with the effect of the United States' federal Oil Pollution Act 1990 and California's Lempert-Keene-Seastrand Act 1990 (see Nordhausen, 2003), the situation in New Zealand will be outlined briefly. Laws controlling response to wildlife affected by oil spills can be broadly categorized as those controlling maritime activities, those conferring conservation management and stewardship obligations, and those protecting animal welfare.

In New Zealand the Maritime Transport Act 1994 provides a funding base for national preparedness and response contingencies through levies on transport, production, storage and use of petroleum. The Act empowers the National On-Scene Commander and delegates during declared oil spill response events. However oiled wildlife response activities are only inferred indirectly from the Act's reference to mitigation of the effects of oil pollution in the marine environment. The Act does however create two statutory documents, the New Zealand Marine Oil Spill Strategy and the National Marine Oil Spill Contingency Plan. The Strategy and the Plan are explicit in mandating interventions to protect and rehabilitate wildlife affected by oil spills. Staying with the example of New Zealand's legislation the remaining two areas of conservation and welfare can be considered together and provide equivocal measures for wildlife in oil spills. The conservation management and stewardship legislation is quite dispersed but essentially gives the national conservation management agency, the Department of Conservation, powers and obligations to protect wildlife and some designated areas. The middle tier of government, the Regional Councils administer legislation controlling pollution in the inshore zone. At this level there is not the clear mandate for wildlife response legislation provides at the national level. Likewise animal welfare legislation tends to protect the interests of farmed, laboratory and companion animals rather than wildlife species.

A reflection of the new collaborative approach to wildlife in oil spills is the support from industry for oiled wildlife rehabilitation. Again taking an example from New Zealand, the oiled wildlife response contingencies developed at the national and regional levels are supported by a part of the levy on shipping and oil mentioned earlier. A joint government and industry group, the Oil Pollution Advisory Committee approve the allocation primarily via a contract for oiled wildlife response services with Massey University. Measures of the further support from industry for oiled wildlife rehabilitation are grants above this from both the committee as well as from shipping and oil companies to foster the development of Massey's oiled wildlife response programme.

Community support for oiled wildlife rehabilitation is reflected by people volunteering at rehabilitation centres, and donations of money and materials to assist these centres.

It is appropriate here to refer to welfare in oil spills and in so doing invert the meaning of community support. Oiled wildlife rehabilitation provides a real and valuable outlet for community anxiety in oil spill events. The scale of environmental damage in an oil spill can lead to feelings of hopelessness and victimisation. Shoreline cleanup and other resource-intensive response actions may not be open to volunteers for safety, contractual or organizational reasons. Members of affected communities coming forward to assist in wildlife rehabilitation centres under the supervision of professional wildlife teams have expressed the feelings that “at least we feel we can help here”. The approach of the International Fund for Animal Welfare in fostering local involvement in internationalised oiled wildlife response through their key goal of information transfer also facilitates this process. This empowerment must be a valuable step in healing communities which may also be economically affected. The foregoing ethical, legal and sociological aspects of the benefits and importance of oiled wildlife rehabilitation are joined by supporting conservation factors. Contrary to the view that oiled wildlife rehabilitation has no conservation value, it has wide reaching benefits which can extend beyond the temporal and geographical limits of individual oil spills.

New Zealand has a number of endemic species of seabirds susceptible to oil pollution which have limited population sizes, restricted distribution, or are subject to other pressures such as predation. Conservation management of small threatened populations of taxa such as the yellow-eyed penguin Megadyptes antipodes, the fiordland crested penguin Eudyptes pachyrhynchus, shoreplover Thinornis novaeseelandiae or the southern population of the New Zealand dotterel Charadrius obscurus are cognizant of the threat that unusual mortality events pose, including oil spills. A competent system to rescue and rehabilitate individuals of these species is an important conservation contingency. In order for the oiled wildlife response system to develop and maintain competence it must be experienced and regularly exercised. Therefore practising oiled wildlife rehabilitation techniques even on other species of low conservation significance is valuable.

A byproduct of well-resourced oiled wildlife rehabilitation programmes and contingencies can be fostering of broader wildlife health initiatives. Massey University operates a wildlife disease surveillance and diagnostic programme in New Zealand whose veterinary interns have been funded through oiled wildlife rehabilitation work. There have been important outcomes from diagnostic work on freelifing wildlife and animals in native species recovery programmes, the conservation benefits therefore accruing beyond the marine environment. Massey University also was able to use resources from the oiled wildlife response programme to develop a wildlife clinical service providing sophisticated medical and surgical care. The clinical service is primarily targeted to native species, especially in species management programmes, but also provides a welfare-oriented medical programme for sick and injured wildlife. As another element of the New Zealand Wildlife Health Centre at Massey University, the oiled wildlife programme has significantly contributed to the Centre’s critical mass fostering research and teaching aimed at conservation goals. The leadership of the University of California at Davis in providing a model for this collaborative approach under their Wildlife Health Centre and the Oiled Wildlife Care Network needs to be acknowledged.

Conservation advocacy is another far reaching outcome of oiled wildlife rehabilitation. Members of communities given the opportunity to see up close, handle, and care for wild animals express privilege, fascination and awe at the experience. There is the opportunity for simple information transfer on conservation issues which may have local benefit. Networks can develop involving people who may otherwise not have come into contact.

Concluding these compelling reasons for oiled wildlife rehabilitation is the view that the pioneers in this field such as International Bird Rescue Research Centre and Tristate Bird Rescue built a foundation over many years from which they and others have begun the new phase of scientific enquiry into the effects of oil on wildlife and response techniques. Prospective studies during spill events are yielding valuable insights improving outcomes (Mazet et al. 2002). Extending post-release survival studies through telemetry, further development of the range of species for which haematological indices can assist triage decisions, and refinement of techniques for oiled reptiles are some areas of investigation. Continuing to rehabilitate wildlife allows the opportunities for this improvement to continue.

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Table
Table 1

Source	Year	Oil spilled $\times 10^3$ tonnes	Birds found dead $\times 10^3$	Est. total dead $\times 10^3$	Predominant species
<u>Amoco Cadiz</u>	1978	233	4.6	15 - 20	alcids
<u>Exxon Valdez</u>	1989	55	30	100 - 300	alcids
<u>Iron Baron</u>	1995	0.3	1	7 - 17	penguins
<u>Treasure</u>	2000	1.3		3.5	penguins