Conservation in a time of offshore oil and gas development

What are the challenges and opportunities?

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Recent technological advances have allowed oil and natural gas extraction to reach ocean depths that were previously unexplored. This includes deep offshore marine areas, which were previously uneconomic and unfeasible for oil and natural gas operations. While deep sea areas were once deemed as biodiversity poor, it is now recognized that they hold unique habitats and many endemic species. Oil and gas extraction is already happening in many of these new areas and has major financial incentives from governments and investors (with industry and governments keen for them to expand rapidly), therefore it is important that the conservation community (both researchers and practitioners) engage with this issue more.

The 2010 Deepwater Horizon disaster in the Gulf of Mexico underlines what is at stake. This BP-operated oil rig exploded creating a major oil spill that lasted for over two months. It impacted large areas of shallow and deep waters, as well as wreaking havoc on coastal and river ecosystems and their biodiversity.

In our recent paper in *Conservation Biology*, we reviewed the risks and impacts of offshore oil and gas extraction globally, and discussed how the conservation community can be better prepared. We also reflected on some of the conservation challenges and opportunities arising from offshore hydrocarbon development (Kark et al, 2015). These challenges include threats to ecosystems and marine species from exploration, oil spills, and operations infrastructure (in both marine and coastal areas). We discussed impacts on native biodiversity from invasive species colonising drilling infrastructure, and increased political conflicts that can delay conservation actions.

However, it's not all 'downside'. The expansion of offshore operations also brings with it potential opportunities that can potentially be leveraged for conservation. Options include the use of facilities and costly equipment of the deep and ultra-deep hydrocarbon industry for deep-sea conservation research and monitoring, and the establishment of new conservation research, practice, and monitoring funds and environmental offsetting schemes. Collaborations have already begun is some regions, and in some cases involves global and local NGOs and other stakeholders.

Key messages

- Offshore oil and gas development brings with it **a range of challenges and opportunities** for marine biodiversity conservation
- The conservation community should become **more actively involved in the earliest planning and exploration phases** of oil and gas extraction
- Environmental decision-support tools can be used to **explicitly incorporate the impacts of hydrocarbon operations** on biodiversity into spatial conservation plans

We proposed that the conservation community, including conservation scientists, should become more actively involved in the earliest planning and exploration phases of oil and gas extraction. But they also need to remain involved throughout the operations so as to influence decision making and promote continuous monitoring of biodiversity and ecosystems.

A prompt response by conservation professionals across the globe to offshore oil and gas developments, not only after but also before incidents occur, can help mitigate impacts of future decisions and actions of the industry and governments. New environmental decision support tools can be used to explicitly incorporate the impacts of hydrocarbon operations on biodiversity into marine spatial and conservation plans and thus allow for better trade-offs among multiple objectives, costs, and risks.

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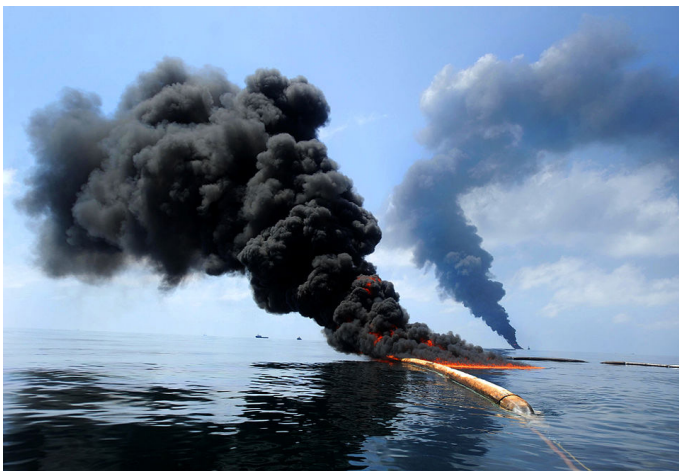
Reference

Kark S, E Brokovich, T Mazor & N Levin (2015). Emerging conservation challenges and prospects in an era of offshore hydrocarbon exploration and exploitation. *Conservation Biology* 29: 1573–1585. http://onlinelibrary.wiley.com/doi/10.1111/cobi.12562/abstract



Dark clouds of smoke and fire emerge as oil burns during a controlled fire in the Gulf of Mexico in May 2010 following the Deepwater Horizon disaster. (Image: Justin Stumberg)

An oiled brown pelican near Grand Isle, Louisiana in the aftermath of the Deepwater Horizon spill. Impacts on wildlife in some regions were catastrophic. (Image: Louisiana GOHSEP CC2.0)