HUMANE SOCIETY INTERNATIONAL
AUSTRALIA

Policy Brief

Mitigating Offshore Wind Farm Risks to Seabirds

Summary

Humane Society International Australia (HSI) is strongly supportive of Australia's transition to a decarbonised economy. There are grave threats to biodiversity as a consequence of climate change and there is an urgent need to take action to prevent catastrophic global temperature rises. However, it is essential that the rush to build renewable energy infrastructure does not have adverse impacts on biodiversity. This brief relates specifically to actions that can be taken to reduce Offshore Wind Farm (OWF) impacts on seabirds, particularly albatross. It is important to note that additional actions will be required to reduce the impacts of OWFs on other animals and habitats and this brief should not be taken as a comprehensive review of mitigation actions that will be required for OWFs.

A key issue of concern for seabirds, and albatross in particular, is a failure to undertake upfront planning and design for Offshore Wind Farms (OWFs) as it relates to their likely interactions with seabirds. Poorly located wind farms with inappropriate turbine design can pose a significant risk to populations of conservation concern. Other jurisdictions, such as the European Union, have had over 20 years of experience in regulating and monitoring the impacts arising from the development of OWFs. Australia must learn from these jurisdictions as well as developing better, local information to ensure that the roll out of renewable energy avoids adverse impacts on seabirds.

The Government must take a proactive approach policy approach to guide any OWF development in a way that will minimise risks to seabirds. Key actions that should be taken now, based on currently available knowledge, include:

1. Strategic planning for OWF placement must consider the risks associated with introducing renewable energy infrastructure into areas that have to date experienced relatively little infrastructure development, versus building infrastructure in already degraded landscapes and seascapes.
2. Accurate risk assessment data must be urgently developed and applied as the foundation for informed planning and OWF placement.
3. A precautionary approach to the selection of OWF pylons and blade heights to minimise collision risks must be implemented. It will be difficult to retrofit engineering mitigation after impacts become evident.
4. Complementary seabird management measures must be undertaken to ensure that seabirds are not attracted to OWFs, and to ensure that seabird populations are as healthy as possible to better cope with any OWF seabird interactions.
5. Consistent guidelines should be applied for monitoring and there must be a requirement for proponent and government data sharing.
6. Adaptive management and ongoing research must be required to improve the understanding and management of OWF design and operation over time.

PO Box 439, Avalon NSW 2107, Australia
Telephone +61 2 9973 1728 Email admin@hsi.org.au
www.hsi.org.au

Context

Seabirds are among the most threatened of all groups of birds globally.[i] OWFs threaten seabirds as a consequence of fatalities resulting from direct collisions; displacement from preferred habitats caused by disturbance from operating turbines and associated ship and helicopter traffic; barrier effects that impact preferred movement / migration routes; and increasing interaction risk arising from attraction of seabirds by provision of artificial resting sites and the potential for increased food availability associated with the creation of new substrate at turbine bases and the associated fishing bans near sites.[ii,iii] There is potential for unmitigated impacts to create significant negative impacts for some species.

A risk assessment of OWF impacts in Australia[iv] found that the following species are at high risk in inshore and coastal environments of Bass Strait, South Australia and Tasmania: orange-bellied parrot *Neophema chrysogaster*, Furneaux white-fronted tern *Sterna striata incerta*, swift parrot *Lathamus discolor*, shy albatross *Thalassarche cauta*, far eastern curlew *Numenius madagascariensis,* and Anadyr bar-tailed godwit *Limosa lapponica anadyrensis*. In offshore sub-regions of southern Australia, high risk species include all albatross species known to be present, including northern royal *Diomedea sanfordi*, eastern Antipodean *D. antipodensis antipodensis*, Gibson's *D. antipodensis gibsoni*, wandering *D. exulans*, Amsterdam *D. amsterdamensis* and grey-headed albatross *T. Chrysostoma*. We note that this is a conservative list and a much broader range of species will likely be impacted by OWFs as the spatial extent of these facilities increase.

The Government must take a proactive approach to identifying the areas and design features that will minimise the risks to seabirds resulting from OWFs and use this information to develop policy that will guide any OWF expansion. There is precedent for such an approach, for example through the *EPBC Act Policy Statement 2.1 - Interaction between offshore seismic exploration and whales: Industry guidelines* which provides guidance to seismic exploration proponents about their legal responsibilities and practical standards to minimise negative interactions with whales.

Avoidance

The long-term nature of OWF operations (potentially 40-50 years) and the limited adaptive management measures available, mean that preventing harm from the outset, rather than attempting to mitigate problems post construction, is the only way OWFs and seabird interactions may be effectively managed. In the first instance, the Government must consider the risks associated with introducing renewable energy infrastructure into areas that have to date experienced relatively little infrastructure development, versus building renewable energy infrastructure in already degraded landscapes and seascapes. This is an important strategic consideration for Government that can not and will not be made by individual proponents at the individual project level.

Where OWFs proceed, seabird risk minimisation through avoidance must be the primary strategy, and OWFs must be situated to avoid collisions with seabirds to the greatest extent possible. Pre-site surveys are essential and identified migratory and dispersive routes should be avoided. For example, at least three of the six current priority OWF sites in southeastern Australia intersect with critical flyways of terrestrial bird species. Around the more southward Australian coastline in particular, it could prove difficult to select OWF locations that don't intersect with seabirds in abundance either seasonally or routinely. It will be important to require that large areas of ocean in areas of high seabird abundance remain free from OWFs to ensure that species have sufficient OWF free area available to meet their biological needs.

Environmental impact assessments for OWFs in Brazil found that the coastal zone to 50m in depth presented the least risk for seabird species, whereas the area between 200m and 1,000m in depth presented the greatest risk.[v] Much of Australia's Exclusive Economic Zone (EEZ) is data deficient, lacking quantitative survey effort for equivalent information. Obtaining equivalent local knowledge as quickly as possible should be a key priority for Government. The Birdlife Australia AVISTEP wildlife sensitivity mapping is a technique whereby spatial data are used to identify areas where renewable energy infrastructure would likely impact wildlife negatively and where it should therefore be avoided. This type of mapping work must be urgently completed for Australia and incorporated into Government decisions around OWF priority areas.

Mitigation and turbine designs

Even with careful site selection collision risks will remain. For example, procellariforms (albatross, petrel and shearwater species) do not follow narrow, predictable migratory or dispersion pathways. Their foraging range is vast. For this reason, it will be critically important to use OWF pylon design and blade heights that seek to minimise collision risks in a precautionary way.

The height at which birds fly, relative to the rotor swept area of turbine blades, is the strongest influence on the risk of collision with wind farms.[vi,vii] Empirical flight height data are lacking for almost all Australian birds.[iv] Research using tracking technology and at-sea surveys is urgently needed to understand bird flight heights and movement patterns over a full range of weather conditions, as differing weather conditions are known to influence flight paths. It will also be important to identify flight behaviour characteristics that are specific to certain age classes or life history stages in some species, as this could increase their vulnerability to OWFs at different times of year or stages of their lifecycle. Significant numbers of individuals could be impacted by turbine blade interactions. For example, millions of flight inexperienced shearwater fledglings could pass through an area of turbines in a matter of days and this may be an appropriate time to require a mandatory shut down of turbines

While the necessary local research is being undertaken, it may be possible to use data obtained elsewhere for some migrants and globally distributed taxa (e.g., gulls, terns and gannets) to inform decisions about turbine design. Albatross typically use a flight technique known as dynamic soaring that uses the wind shear stress near the sea surface. Building taller turbines (with a greater distance between the sea-surface and the bottom of the rotor swept area) could provide a potentially effective mitigation approach that would also be effective for shearwaters and some petrels that have similar flight height profiles to albatrosses.

Priority should be assigned to evaluated seabird-safe Vertical Axis Windfarm Turbine (VAWT) types that could prove to have the least collision risk for seabirds, and also for terrestrial species in migratory and dispersive situations (e.g. trans-Bass Strait migrants). Minimum seabird-safe turbine blade clearance above sea surface must be determined, particularly for Horizontal Axis Wind Turbine (HAWT) types, especially in floated structures in deeper water situations. If it is not possible to have a specific blade clearance parameter for Australian seabirds established in advance of OWF development, a precautionary approach suggests 40m HAWT blade clearance should be set as the minimum. The best available, though as yet unpublished, vertical flight data suggests at least 30m is required. We recommend a precautionary approach is taken given the gravity of the risks involved and irreversibility of the engineering, and the projected lifespans of individual OWF projects to 50 years.

Certain seabird species are particularly at risk from artificial light sources. Nocturnally-active seabirds can become easily disorientated by intense sources of artificial light and can be drawn to the lights of structures, increasing collision risks with OWFs.[viii] There will need to be conditions placed on turbine lighting practices along with strict industry vessel compliance to seabird safe light regulations, including prohibition of night illuminated work decks under higher risk conditions (fog with wind in particular). Collision risk could increase if the infrastructure serves to attract marine life.

It should also be noted that birds flying below rotor height are still likely to be impacted by OWFs through displacement and/or barrier effects.[iv] The area around OWFs will need to be managed holistically to minimise the risks. This means fisheries management arrangements will need to be in place to ensure that fishing vessels are not attracting seabirds towards OWFs thereby increasing the risk of collisions.

Monitoring and adaptation

Australia is currently envisaging a massive roll out of new technology for which very little site-specific data are currently available, and only very limited data have been generated. This means it is essential that any approval conditions for OWFs are precautionary, require independently verifiable monitoring and adaptive management to promptly arrest significant and cumulative impacts. Adaptive management must include the ability to shut down OWFs if there are unforeseen and unacceptable impacts on seabirds. Early warning systems will need to be developed for increased collision risk events, such as an influx of at-risk species. Triggers for adaptive management must be pre-determined for all high risk species, as well as ensuring management is responsive to unforeseen impacts.

Seabird collisions with ships and other marine infrastructure are known to be more frequent during periods of poor weather and/or poor visibility, such as fog and misty conditions, and during storms with high wind speeds. In the case of OWFs, this means that the conditions that create an elevated collision risk also make it impossible to make visual observation of collisions.[iv] Monitoring techniques will need to be developed to take account of these factors.

Data sharing and transparency

Given the paucity of data on seabird flight distributions and heights it will be important for the data gathered by proponents and OWF operators to be shared with each other and regulators in real time. Further, the impacts on OWFs on species will be cumulative and a strategic approach to adaptive management will be necessary. Data sharing and transparency requirements should be a condition of any approvals. Data sharing and open access data is currently implemented in other jurisdictions, including the European Union, and is being undertaken by wind farm proponents in jurisdictions as such as New Zealand.

Data sharing should be supported by the development national survey guidelines and impact assessment guidelines for seabirds. The current Australian Government *Survey guidelines for Australia's threatened birds*[ix] includes limited information on seabirds and it will be important to provide greater guidance to proponents and researchers to ensure the development of a shared knowledge base on seabirds. The subsequent data collected will also be helpful for improving management of Australia's EEZ.

Building resilience

To face the rapidly emerging threats of climate change and threats arising from OWFs, seabird populations need to be as resilient as possible. This means governments, including Australia, must double down on mitigation strategies for the existing threats to seabirds, such as industrial fishing and plastic pollution.

There are well known and long proven mitigation measures for reducing the threat of longline fishing and trawling that have not been implemented or complied with. For example, the Agreement for the Conservation of Albatross and Petrels (ACAP) has developed Best Practice Advice for longline and trawl fishing. Australia should ensure it is fully compliant with ACAP Best Practice Advice in its domestic fisheries, at both the state and federal level, and redouble its efforts to advocate for the application of ACAP Best Practice Advice at the tuna Regional Fisheries Management Organisations (RFMOs). Australia's Threat Abatement Plan for Longline Fishing should be renewed, and efforts continued to reduce seabird bycatch to zero in both longline and trawl sectors.

International responsibilities

Australia is party to a number of agreements for the conservation of seabirds and other similarly at-risk bird species. This recognises that Australia's responsibility for the conservation of a large number of species is shared with other countries. These agreements include:

- Japan-Australia Migratory Bird Agreement (JAMBA);
- China-Australia Migratory Bird Agreement (CAMBA);
- Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA);
- Agreement for the Conservation of Albatross and Petrels (ACAP);
- Convention for the Conservation of Migratory Species (CMS);
- Convention on Biological Diversity (CBD); and
- East Asian Australasian Flyway Partnership.

It will be critical for Australia to cooperate with the other countries with whom we share species' migratory pathways and foraging ranges in the design, planning and management of OWFs. Australia has reciprocal obligations with these countries not to harm species with whom we share a range. Australia must both assist and learn from these countries with proactive exchange of information on migration routes, flight heights and adaptive or avoidance behaviours, as well as the location and design of structures and adaptive measures to avoid collisions.

A strategic approach to adaptive management will also need to be applied at an international level for relevant species. Substantial impacts to a species in a part of its range outside of Australia should have consequences for how the species is managed within our jurisdiction.

Next Steps

In our view, the Minister for the Environment has sufficient power under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to implement a proactive EPBC Act Policy Statement covering the issues outlined above to guide avoidance on Matters of National Environmental Significance (MNES), and should create such a policy statement immediately. A Policy Statement should be in place before project level approvals are considered and to give appropriate investment signals to industry.

For further information contact:

Nicola Beynon
Head of Campaigns
Humane Society International/Australia
nicola@hsi.org.au

+61415954600

6 July 2023

---

[i] Dias, M.P., Martin, R., Pearmain, E.J., Burfield, I.J., Small, C., Phillips, R.A., Yates, O., Lascelles, B., Borboroglu, P.G., Croxall, J.P., 2019. Threats to seabirds: a global assessment. *Biol. Conserv.* 237, 525–537. https://doi.org/10.1016/J.BIOCON.2019.06.033.
[ii] Bailey, H., Brookes, K.L. & Thompson, P.M. 2014. Assessing environmental impacts of offshore wind farms: lessons learned and recommendations for the future. *Aquatic Biosystems*, 10(1), 1–13.
[iii] Best, B.D. & Halpin, P.N. 2019. Minimizing wildlife impacts for offshore wind energy development: winning trade offs for seabirds in space and cetaceans in time. *PLoS One*, 14(5), e0215722.
[iv] Reid, K., Baker, G.B., and Woehler, E.J., 2023. An ecological risk assessment for the impacts of offshore wind farms on birds in Australia. *Austral Ecology* 48: 418-439. https://doi.org/10.1111/aec.13278
[v] Lemos, C.A., Hernández, M., Vilardo, C., Phillips, R.A., Bugoni, L., SousaPinto, I., 2023. Environmental assessment of proposed areas for offshore wind farms off southern Brazil based on ecological niche modeling and a species richness index for albatrosses and petrels. *Glob Ecol Conserv* 41, e02360. https://doi.org/10.1016/J.GECCO.2022.E02360.
[vi] Band, W. 2011. *Using a collision risk model to assess Bird collision risks for offshore windfarms*. London: SOSS Report, The Crown Estate. Available from: http://www.bto.org/science/wetland-and-marine/soss/projects
[vii] Cook, A.S.C.P., Johnston, A., Wright, L.J. & Burton, N.H.K. (2012) *Strategic ornithological support services project SOSS-02: a review of flight heights and avoidance rates of birds in relation to offshore wind farms*. BTO research report No. 618. Thetford: BTO.
[viii] For more information see the Australian Government *National Light Pollution Guidelines for Wildlife*, available at: https://www.dcceew.gov.au/environment/biodiversity/publications/national- light-pollution-guidelines-wildlife
[ix] Available at: https://www.dcceew.gov.au/sites/default/files/documents/survey-guidelines-birds-april-2017.pdf