

Submitted on Wednesday, September 20, 2017 - 13:29 Submitted by anonymous user: 49.196.10.165
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Which sector do you represent? Research Which draft plans are you commenting on?

- North-west Network
- South-west Network

Which marine park(s) are you commenting on? Ashmore Reef, Argot-Rowley Terrace, Ningaloo, Eighty Mile, Roebuck, Abrolhos, Jurien, Perth Canyon, Geographe, Southwest Corner What topic(s) or activity(s) are you commenting about? Oil, gas, or mining What part of the plan(s) are you commenting on? Part 3 - Zoning Which program are you commenting on? Park protection and management program Please tick this box if you would like to keep up to date with all the latest information on Australian Marine Parks by subscribing to our email updates. :

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Does your comment relate to the renaming of marine parks? No Please type your comments below:

This submission identifies key areas where the proposed zonation does not provide adequate protection from mining/development-related noise impacts and pollution risk for critical habitats used by several EPBC listed and commercial species. A high proportion of marine fauna have evolved to sense and use sound and vibration in the marine environment for survival and reproduction. These species are particularly susceptible to impacts from sound and vibration produced by human activities, including mining, construction and shipping activities. Prolonged exposure to high levels of noise such as seismic and pile driving, and construction/shipping noise can cause either physical damage to the sensory organ and/or noise-induced hearing loss. This physical damage and/or hearing loss compromises the ability for wildlife to function, and reduces their chances of survival and reproduction. If the exposure is intense enough from an impulsive signal, resonance of air spaces in organs (and it is thought that dissolved nitrogen gas bubble growth within tissues) can result in ruptured tissues or organs.

Other impacts also occur (and are known to occur of course in humans from high level and/or long-term exposure to noise), such as physiological changes associated with stress. Underwater noise can also cause masking of sounds animals produce for communication and navigation, or which are biologically important cues for survival and reproduction. Masking is akin to being in a loud work-place where it becomes difficult to communicate to co-workers, or hear activities/dangers around you. In addition to noise impacts, human activities related to mining and construction are associated with risk of spill and other impacts to water quality and habitat health. There is clear scientific evidence that these impacts can occur. For this reason, Habitat Protection Zones excluding activities such as mining-related (and

construction/development) are effective in protecting significant species in critical and important locations. It is critical that these zones are mapped with a 'buffer' zone. For instance, underwater noise produced by seismic exploration or pile driving (and a range of other sources) outside of a mining-exclusion zone does not necessarily 'stop' at the boundary of the zone. Rather, noise underwater can transmit very long distances and enter these zones. Similarly, buffer zones are required when considering the risk of oil spill. Among the areas with proposed zonations that do not provide the protection required and/or buffer zones to a number of protected species are Ashmore Reef, Argot-Rowley Terrace, Ningaloo, Eighty Mile, Roebuck, Abrolhos, Jurien, Perth Canyon, Geographe, and the Southwest Corner.

The areas of Geographe, Abrolhos, Jurien, Perth Canyon, Ningaloo, the Argo-Rowley Terrace, Eighty Mile Beach, and Roebuck are zoned to allow mining activities with authorisation. Geographe Bay is a

critical resting and migratory area for EPBC listed humpback whales, pygmy blue whales and southern right whales. The latter two species continue to occur in very small numbers and are endangered. They require a maximum protection to ensure their populations recover. The Perth Canyon is a critical foraging area for Pygmy blue whales, and Ningaloo is a migratory area for humpback whales with their young calves. In Ningaloo, new research (Irvine & Salgado Kent 2017) indicates that a large number of neonates occur within state waters off of North West Cape. It is unknown how many of these may occur in Commonwealth waters in the area as research evaluating the current population distribution/demographics has not been yet conducted in these waters.

Likewise, Eighty Mile Beach and Roebuck are areas within the calving grounds of humpback whales. While only Camden Sound has been designated as a humpback whale sanctuary zone, the calving ground for the Western Australian humpback whale population is broad in area (Camden is a small portion of the calving area), and there are many unprotected areas that consist of critical habitat. Recent work (Irvine & Salgado Kent 2017) suggests that areas as far down as Ningaloo are important for calving. Eighty Mile Beach is also significant for pearl oyster larvae (for which there is clear scientific evidence that seismic has impacts on plankton; McCauley et al. 2017; Salgado Kent et al. 2017 unpublished). Further down south, the Abrolhos and Jurien have critical breeding and foraging grounds for EPBC listed Australian sea lions. This species is endemic to Australia (only occurring in Western Australia and South Australia), is endangered and evidence indicates that most breeding colonies are in decline. Currently, the future is tenuous for these breeding colonies. Any impacts from mining activities on them directly or to their prey will put further pressure on their declining numbers. The Argot-Rowley Terrace is likely critical foraging ground for a range of listed species due to the underwater canyons present. Nutrient upwelling likely provides foraging habitat for pygmy blue whales on migration to calving grounds, beaked whales, and sperm whales, among many other significant species. Sufficient research has not yet been conducted in this area to report this, however, the Bremer and Perth Canyons are prime examples of their importance in supporting abundant and high species diversity assemblages.

Much of the area around Geographe Bay and the Southwest Corner effectively limit exploration mining activity, however pipelines are still allowed which bring risk of pollution and construction activity noise (reduced habitat quality and increased pressure/stress). Geographe and Flinders Bay regions are key calving grounds for endangered southern right whales, and migratory areas for other baleen whale species (endangered pygmy blue whales, and vulnerable humpback whales). Southern right whale calving grounds require protection to ensure that sensitive groups such as mothers with their young calves are not exposed to additional pressures that could impede their population recovery.

This submission outlines the need for Habitat Protection Zones to be designated to areas where aggregations of pygmy blue whales, southern right whales, humpback whales, and Australian sea lions occur for calving, resting, and foraging and in key narrow migratory corridors (particularly where there is a bottleneck where a significant proportion of the population 'funnel through'). In addition, areas where there is likely to be key habitat sustaining significant species and their prey and have high biodiversity values (such as underwater canyons) need to be protected from impacts. Likely locations that have not been researched yet can be identified using science in other similar locations. In summary, for the effective functioning of a Marine Reserve/Park, an adequate level of protection based on accurate allocation of zonations must be based on scientific evidence. The proposed zonations in Ashmore Reef, Argot-Rowley Terrace, Ningaloo, Eighty Mile, Roebuck, Abrolhos, Jurien, Perth Canyon, Geographe, Southwest Corner currently do not align with the scientific evidence for areas needing to be zoned as Habitat Protection Zones (or zones that exclude mining activities and other major construction/development-related activities). Habitat Protection Zones are either lacking, are too small, or don't have sufficient buffer zones at these locations.