WESTPAC Ocean Oxygen Network (O_2NE)

Gil S. Jacinto

Marine Science Institute, University of the Philippines Diliman

National Academy of Science and Technology - Philippines

1. Justification

(Why this programme/project/working group is needed for the Sub-Commission)

- “The Ocean is Losing Its Breath” and the WESTPAC region is particularly vulnerable.
- Deoxygenation may be the most important stressor in coastal systems and is difficult to reverse even with well-funded management programs. Population growth is a major factor that contributes to the problem and, along with increasing agricultural production, limits the success of nutrient reduction efforts.
- Deoxygenation will have a significant impact on aquaculture products availability, as the region accounts for 80% of global aquaculture production.
- The region is known for having the world's highest marine biodiversity, which could be jeopardized if low-oxygen areas were to expand.

2. Objectives

- Integrate the disparate research efforts on deoxygenation and offer a regional and multidisciplinary view of the problem
- Facilitate communication with established networks and various stakeholders to stimulate the awareness on the deoxygenation issue
- Promote scientific development and cooperation and identify emergent fields of research
- Increase research capacity and knowledge transfer

3. Major activities, outputs & outcomes

Latest accomplishment, particular those during 2023 to 2024

Major activities in 2024

- Dr. Denise Breitburg (Smithsonian Environmental Research Center) – Keynote Speaker
- Scientific Session C1 -
  - Deoxygenation in the Western Pacific: Implications for coastal and open ocean ecosystems – 15 paper presentations; Keynote talk by Prof. Rudolf Wu, HK
- Decade Incubator Workshop –
  - Deoxygenation Effects on Fisheries and Aquaculture: Linking Ecological Changes to Human Welfare in the Western Pacific

Outputs & Outcomes

- Necessity for enhanced networking and collaboration through the reactivation of the WESTPAC O2NE network.
- Contribute to GO2NE seminars by nominating or self-nominating speakers from the region and initiate a monthly or quarterly series of WESTPAC O2NE seminars on deoxygenation in the region.
- In 2025, GO2NE and OA will hold a summer school at Universiti Sains Malaysia, hosted by Dr. Aileen Tan and should benefit WESTPAC O2NE members.
- Revive initiative to publish review deoxygenation papers to highlight the magnitude and impacts of deoxygenation with focus on impact on fisheries and aquaculture – Lead authors were identified

Timeframe

Project start year: 2019

3. Major activities, outputs & outcomes

Latest accomplishment, particular those during 2023 to 2024

Incubator Workshop Participants

Timeframe

Project start year: 2019

4. Problems encountered & recommended actions

Problems encountered

- Need to identify and encourage more people interested and working on deoxygenation with institutional backing to lead/catalyze the WESTPAC O2NE network

Actions

- Augmented list of WESTPAC O2NE members to start and maintain an email group
- A coordinator/coordinating office will make a significant difference; and a core group with representatives from countries in WESTPAC could help move things forward.
- Identified lead authors for two review papers discussed during the workshop
- In 2025, GO2NE and OA will hold a summer school at Universiti Sains Malaysia, hosted by Dr. Aileen Tan which will benefit WESTPAC O2NE members.

Timeframe

Project start year: 2019

5. Strategic considerations/thoughts for future development

- Program proposal to select a site or sites in the region for cross-sectoral research studies (e.g., eutrophication, OA, deoxygenation, HABs) that are co-designed, incorporating best practices and interventions, with a focus on aquaculture and fisheries.

- A network of scientists working on hypoxia and deoxygenation in the WESTPAC in the region is needed, beginning with those individuals who joined Session C3 and expanding on their own contacts.

- A web presence of WESTPAC O2NE through the WESTPAC website sharing the latest activities, publications, policy notes and similar resources will be helpful.

6. Potential action plans for future implementation

for the period of 2025-2026 and beyond

- Together with other WESTPAC WGs and Decade endorsed projects, explore sites in the region for cross-sectoral research studies (e.g., eutrophication, OA, deoxygenation, HABs) that are co-designed, to include best practices and interventions, with a focus on aquaculture and fisheries.
- Two high-profile journal publications:
  - On the prevalence and severity of hypoxia in the region
  - Effects of deoxygenation on fisheries through measurable impacts such as landings, food security changes, and value, are discussed
- WESTPAC O2NE members attend the 2025 GO2NE and OA summer school at the Universiti Sains Malaysia
- Network members hold quarterly virtual seminars to highlight deoxygenation issues and ongoing researches.

Planned activities

Program	Plan				Funding Required		Remarks
	Activities	Objectives	Expected outputs/outcomes	Date and place	IOC	Other sources (i.e. from national or international)	
	1. Review papers	Assess the scale and causes of deoxygenation, especially in nearshore areas, and evaluate its effects on marine organisms, fisheries, and human communities.	Greater attention and interest on the issue of deoxygenation Identification of priority research areas and questions on deoxygenation in the region Policy brief	2025	Publication fee?		
	2. Summer school	Enhance capacity among researchers in the region	Sharing knowledge and best practices. Networking with researchers and program leads	2025, Malaysia	Travel and related fees for 3- 4 participants	Institutional and personal funds	
	3. Periodic seminars	Opportunity for senior and junior researchers to share previous and ongoing work and obtain feedback	Enhanced networking and collaboration Revitalization of the WESTPAC O2NE network.	2025-26 Region	N/A		

ThankYou

Gil S. Jacinto

gjacinto@gmail.com