

Project Endorsement Form

1. PROJECT TITLE

Full title	Exploring the marine biodiversity of the submarine Cape Range Canyon, north western Australia
Acronym	
Website	
Keywords (up to 10, describing the project research)	biodiversity, taxonomy, systematics, phylogenetics, submarine canyons, seabed mapping
New initiative or continuing programme?	New initiative

2. APPLICANTS

Lead applicant / Project Leader / key research contact person:

First name	Nerida
Last name	Wilson
Affiliation	Western Australian Museum
Postal address	49 Kew St, 6109 Welshpool, Western Australia
Country	Australia
Telephone	+61 8 9212 3844
Email address	nerida.wilson@museum.wa.gov.au
Institutional or personal website	http://museum.wa.gov.au/research/research-areas/molecular-systematics-unit/curators-contacts/nerida-wilson

Other key participants / research team leaders: (repeat as needed)

First name	Lisa
Last name	Kirkendale
Role in the project	Mollusc collection, specimen processing, research outputs, cruise report comprising daily log, media highlights and catalogue of site metadata, compiled short video showing key expedition highlights
Affiliation	Western Australian Museum
Country	Australia
Email address	Lisa.kirkendale@museum.wa.gov.au
Institutional or personal website	http://museum.wa.gov.au/research/departments/aquatic-zoology/aquatic-zoology-curators-and-contacts/lisa-kirkendale

Other key participants / research team leaders: (repeat as needed)

First name	Michael
Last name	Bunce
Role in the project	eDNA survey methods, management and analysis
Affiliation	Curtin University
Country	Australia
Email address	michael.bunce@curtin.edu.au
Institutional or personal website	https://staffportal.curtin.edu.au/staff/profile/view/Michael.Bunce

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Other key participants / research team leaders: (repeat as needed)

First name	Rachel
Last name	Przeslawski
Role in the project	Acquisition of quality multibeam data
Affiliation	Geoscience Australia
Country	Australia
Email address	Rachel.Przeslawski@ga.gov.au
Institutional or personal website	https://www.nespmarine.edu.au/contact/przeslawski-rachel

Other key participants / research team leaders: (repeat as needed)

First name	Andrew
Last name	Hosie
Role in the project	Crustacean collection, specimen processing, research outputs
Affiliation	Western Australian Museum
Country	Australia
Email address	Andrew.Hosie@museum.wa.gov.au
Institutional or personal website	http://museum.wa.gov.au/research/departments/aquatic-zoology/aquatic-zoology-curators-and-contacts/andrew-hosie

Other key participants / research team leaders: (repeat as needed)

First name	Glenn
Last name	Moore
Role in the project	Fish collection, specimen processing, research outputs
Affiliation	Western Australian Museum
Country	Australia
Email address	Glenn.Moore@museum.wa.gov.au
Institutional or personal website	http://museum.wa.gov.au/research/departments/aquatic-zoology/aquatic-zoology-curators-and-contacts/glenn-moore

Other key participants / research team leaders: (repeat as needed)

First name	Zoe
Last name	Richards
Role in the project	Coral collection, specimen processing, research outputs
Affiliation	Curtin University
Country	Australia
Email address	zoe.richards@curtin.edu.au
Institutional or personal website	https://staffportal.curtin.edu.au/staff/profile/view/Zoe.Richards

N.B.: Please note that all these names and contact details will be added to the IIOE-2 membership database.

3. ABSTRACT– Brief description of the project: (1/4 page maximum)

This will be placed on the IIOE-2 Website after endorsement.

Until now, little attention has been paid to submarine canyons in the East Indian Ocean. The Cape Range Canyon system has recently been mapped and geologically characterized. However, nearby gas initiatives represent an ongoing threat. Modelling has shown that Cape Range Canyon is a source of larvae to downstream canyons. This survey will characterise marine biodiversity in a deep canyon adjacent to the world heritage listed Ningaloo reef. In addition to a comprehensive taxon survey, we

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will carry out experiments to assess the effectiveness of this survey methodology, by ground-truthing the surrounding waters with an eDNA survey. The resulting data will likely reveal significant but undocumented biodiversity. This collaborative project will use ROV sampling to understand the benthic community, contribute to effective conservation approaches, and provide opportunities for student participation and community engagement. Museums strive to document, describe and archive biological resources, with a long-term approach to sample and data management. The WA Museum is uniquely positioned to share outcomes and data to the public and stakeholders, and be the custodian of these valuable samples for future work.

4. LINKS TO IIOE-2 SCIENCE PLAN: (1/2 page maximum)

How do you anticipate your project to contribute to the IIOE-2 strategy and science delivery, with reference to which (either one or more) of the six IIOE-2 Science Plan themes that your project responds. Please state the specific issues and questions addressed by your project in the context of the IIOE-2 Science Plan themes and key issues.

Links to ST-1 Human benefits and impacts. The proposal speaks to this science theme given the position of submarine Cape Range Canyon with its lower reaches close to a proposed mining lease, in a habitat protection zone, which prohibits mining. Understanding what biodiversity occurs in these zones is paramount to activating effective management processes. **Links to ST-4: Circulation, climate variability and change.** The proposal speaks to this science theme as climate change has resulted in pronounced marine heatwaves, which are of concern in WA. Like most biota, deep sea fauna are threatened by climate change, but this fauna often occurs in a 'policy vacuum', unlike their shallow water counterparts. For example, many submarine canyons along Australia's continental margin have been afforded some level of protection by the Australian Marine Park system, however, a major new petroleum lease released in 2017 directly overlaps the Gascoyne Marine Park. **Links to ST-6: Unique geological, physical, biogeochemical, and ecological features of the Indian Ocean.** The proposal speaks to this science theme as the 'West' geographic region has the largest area of blind submarine canyons in Australia. No less than 46 canyons incise the Cuvier margin, and the largest of these is Cape Range Canyon, with a length of 140 km and maximum incision depth of 1,300m. Its headwall is in 1500m and lower reaches terminate near the foot of the slope in 4,600m. The submarine canyons adjacent to the Ningaloo region sit along the narrowest part of Australia's continental shelf and the canyons that extend toward the abyss are recognised as a Key Ecological Feature by the federal government.

5. INTERNATIONAL COLLABORATION(S):

Is the project part of a related multi-national activity? **YES**

If No, would you welcome international collaboration in your project? **NA**

6. REGION(S) OF STUDY

Provide a description of 'where' the research is to be conducted (for field based activities) and/or the region or regions to which the research pertains (you are encouraged to consider providing either the coordinates of the area of studies or the coordinates of the planned cruise tracks, as well as a figure as an addendum to your proposal).

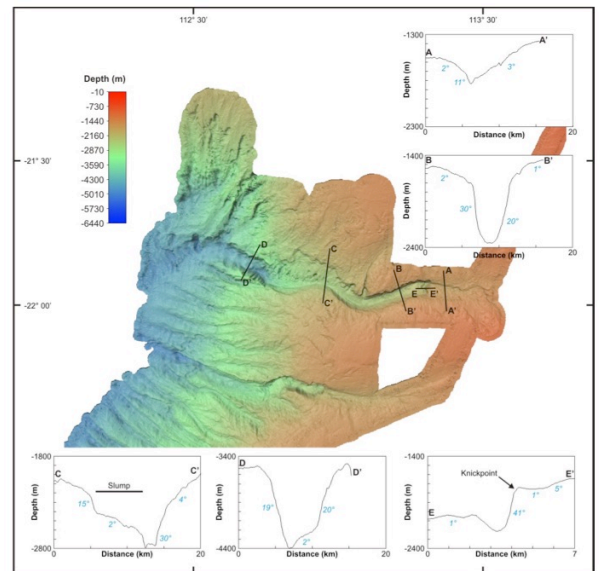
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The proposed study site, the submarine Cape Range Canyon, has its upper reaches in a multiple use zone of the Gascoyne Marine Park, of which only 44% is mapped; very little is known about biodiversity in its deep water habitats (Daniell et al 2010). However, its lower reaches are close to a proposed mining lease, in a habitat protection zone, which prohibits mining. Understanding what biodiversity occurs in these zones is paramount to activating effective management processes. Figure with false-colour imagery of Cape Range Canyon (upper) and Cloates Canyon (lower). Representative profiles of the CRC show incised canyon morphology (A-D) and knick-point in upper reaches (e) (Daniell et al 2010).



6. TIMETABLE OF THE PROJECT

Start date: March 2020 beginning of cruise

End date: April 2020 end of cruise

7. LINKAGES WITH OTHER PROJECTS / PROGRAMMES / INITIATIVES

Is the project part of a related national or multi-national activity?

If yes, provide the related activity title and website for reference, if available:

Yes. Schmidt Ocean Institute <https://schmidtocan.org/>

Is your project part of, or affiliated to, another SCOR, IOC or IOGOOS activity or project?

If "yes", please indicate which activity or project]

No

8. DATA MANAGEMENT AND SHARING

1. Will new data be collected as part of this project (yes or no?)

Yes

2. Contact information if any, of the person in charge of the data management from whom the metadata can be accessed by interested IIOE-2 stakeholders.

Please note that for all IIOE-2-endorsed projects, IIOE-2 will have developed its own metadata portal. Once the project is endorsed, the project leader will be asked to provide the metadata information of the project.

Research leader- nerida.wilson@museum.wa.gov.au. Metadata link will be provided to IIOE-2 from SOI website.

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3. Recognizing the need for an initial period of exclusive data use, would you be willing to provide timely access to all data generated under this project and associated metadata in accordance with relevant national and funding agency data sharing policies?

YES. We will be following SOI funding agency data sharing protocol.

9. FUNDING

Please note that IIOE-2 strongly encourages funded/resourced projects. However, IIOE-2 may endorse projects yet to receive funding/resourcing if IIOE-2 endorsement can be clearly shown to significantly aid in prospects for funding/resourcing.

Has funding and resources to successfully achieve and undertake the project been obtained? Indicate the sources of funding and resources that have been approached and/or secured.

Ship time allocation has been confirmed.

10. BENEFITS FROM IIOE-2 ENDORSEMENT (1/4 page maximum)

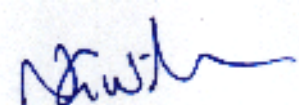
Specify why you are seeking endorsement and how the activity would benefit from endorsement, and how the IIOE-2 SC could assist in the implementation of your project.

Our research team feels that it is important to be a part of larger Indian ocean community and share intentions and opportunities in this region. We are excited to be advancing research specifically on the understudied biological components of the region and we intend to communicate work in a supportive research framework. We hope that by becoming part of the IIOE-2 community we will find partnerships we might not have otherwise found with groups conducting complementary work in the IO.

11. OPTIONAL: OTHER COMMENTS/INFORMATION/MATERIAL (length and detail may be at the discretion of and as deemed necessary by the applicant)

Please feel free to provide any other comments, information or materials that you feel relevant to your proposal for the IIOE-2 Steering Committee's information and benefit. You may provide this as general information or provide the additional comments/information/materials as relevant to any of the specific Sections above.

This represents one of few IIOE- 2 projects focused on collections of macrobiological resources specifically and the expedition is one of few to document macroinvertebrate diversity in deep sea of northwest Indian Ocean. We feel that deployment of ARMS in the deep sea is novel and collection of eDNA at depth will be an illuminating aspect of our research of interest to others.



(Signature of the PI)

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