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Evaluating perceptions of job roles in marine research and raising awareness of digital twinning of the oceans to promote diversity and inclusivity in the marine sciences

Dr Anna McGregor

School of Life Sciences & Institute of Biodiversity, Animal Health & Comparative Medicine
Employability Coordinator

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Project Team

Dr Anna McGregor*
(University of Glasgow)

Dr Chelsey Baker*
(National Oceanography Centre)

Ben Fisher
(University of Edinburgh)

Natasha Simmonds
(University of Aberdeen)

Prof. Carol Robinson
(University of East Anglia)

Dr Gillian Damerell
(University of East Anglia)

Dr Sophie Fielding
(British Antarctic Survey)

Pilvi Muschitiello
(British Antarctic Survey)

Dr Cecilia Liszka*
(British Antarctic Survey)



*Challenger Society Council



**British
Antarctic Survey**

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Oceanography
Centre**

UEA

University of East Anglia





Motivation

- Fieldwork is seen as entry-way into marine science career
- Limitations of fieldwork may create barriers
- Is this true for both incoming and established scientists?
- How can we raise awareness of alternative routes into the discipline?





Family

- Inaccessible to those with caring responsibilities *[Giles et al. 2020]*

Disability

- Intensity and long hours are physically and mentally demanding *[Giles et al. 2020]*
- Physical mobility and negotiation of vessels *[Stokes et al. 2019; Hall & Healey, 2005]*

Mental Health

- Removal from familiar environments and support structures *[Stokes et al. 2019; Hall & Healey, 2005]*
- Hostile environment (extreme cold, isolated), social anxiety, fear of failure *[John & Khan, 2018]*



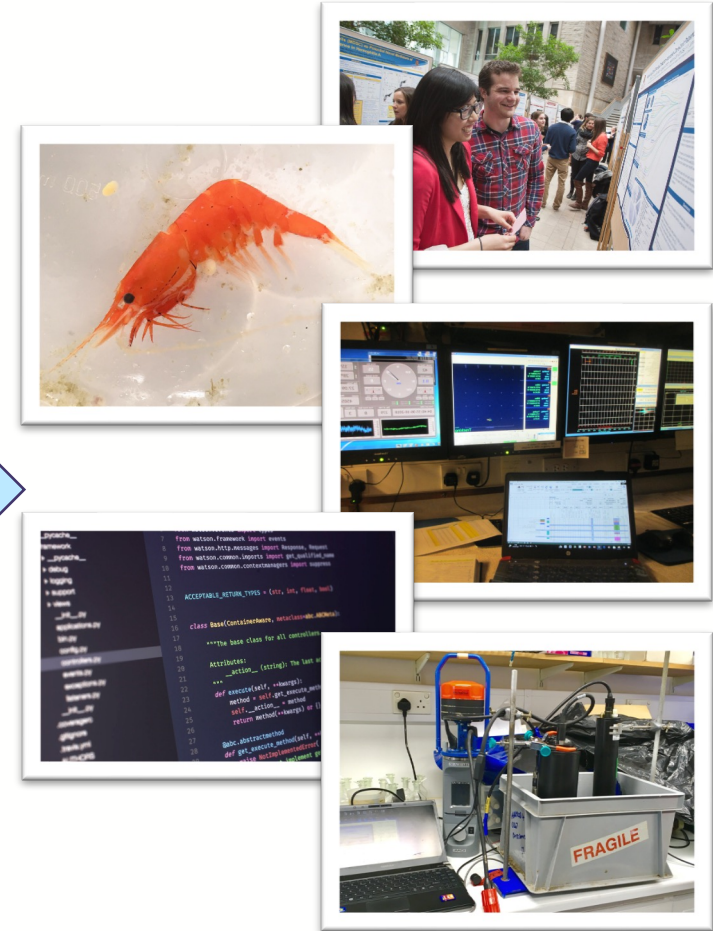


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Perceptions of Marine Science



In reality...



Marketing of the discipline does not match up with the range of skills required [Mol & Atchison, 2019]



Study Themes & Outcomes

How does the field appear externally?

- Review of job adverts
- Image analysis of websites

What do people entering the field think is required?

- Student questionnaire & focus group

What do those IN the field expect for a career?

- Questionnaire
- Workshops

How do we raise awareness of other aspects of the career?

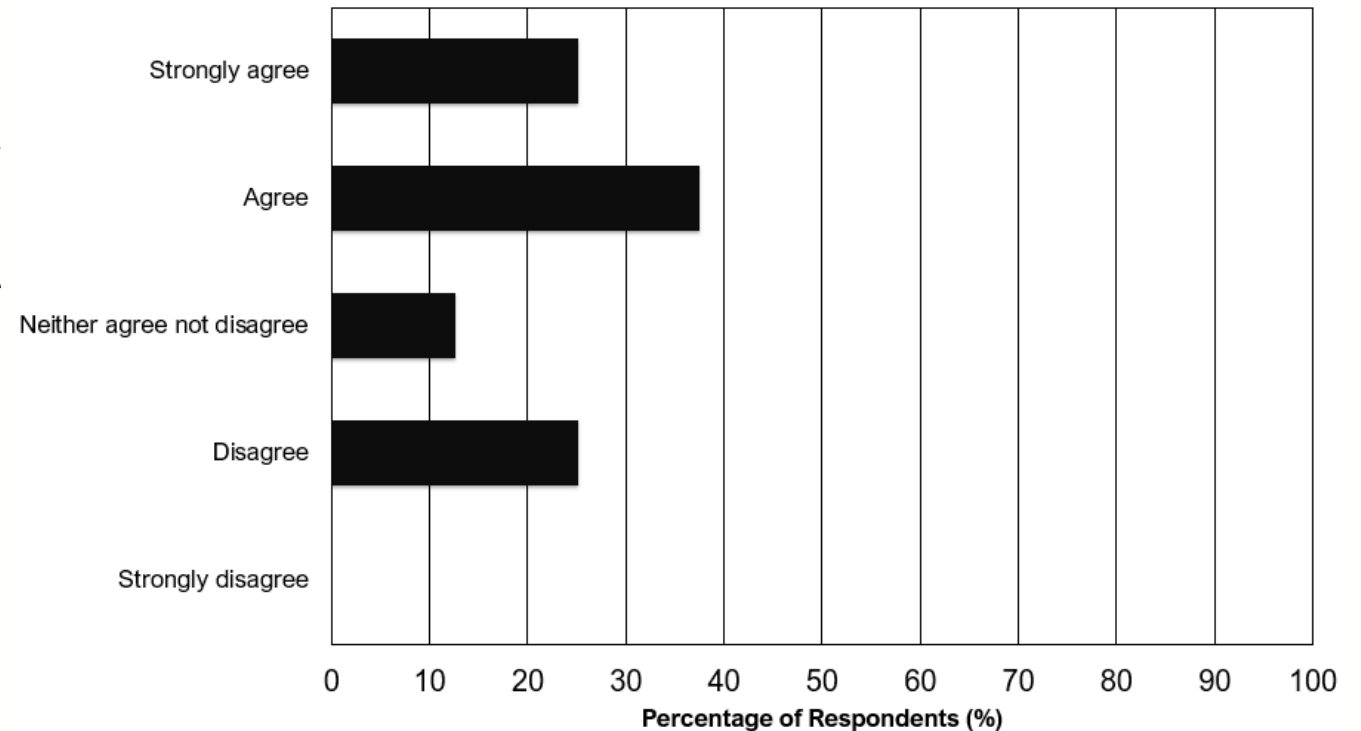
- Online course



Perceptions of Current Marine Scientists

- Fieldwork is seen as an entry-way into a marine science career
 - *‘Participating in fieldwork isn't needed for a career in marine science - that's not the barrier to EDI&A. The barrier is the perception amongst ECRs that you can't be a marine scientist without doing fieldwork.’*

Question: In order to completely understand marine science, some time spent at sea is essential.

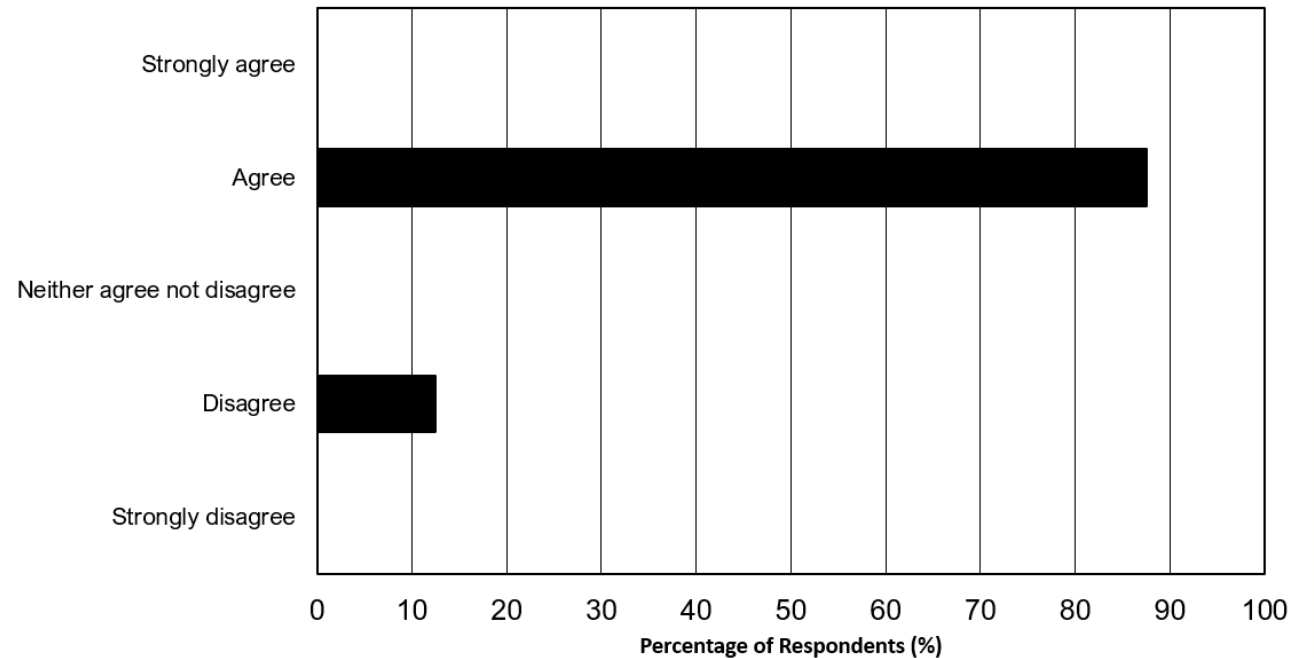




Digital twins to complement traditional marine science fieldwork

- Digital twins will provide a more accessible ocean both to those in the marine science and those who interact with it
- Incorporating digital twins has to be included at the proposal stage
- Raising awareness at the senior scientists/ PIs level

Question: I can see aspects of my research that would become accessible to more individuals from diverse backgrounds through involving digital twinning.





I don't really think this is a new thing. There have been ocean modellers or remote sensing oceanographers for decades and we don't think of them as any less worthy or "unreal". It seems to me that this is just an old name for something we've done for years?

Participating in fieldwork isn't needed for a career in marine science - that's not the barrier to EDI&A. The barrier is the perception amongst ECRs that you can't be a marine scientist without doing fieldwork.

development funding

Better internet on ships.

Better understanding of how processes are included in the digital Twin. How do we contribute? How are feedback mechanisms included etc etc

A training resource to introduce people to this technology with examples and contacts of people who are familiar with it to advice on incorporating it at the planning stage. need to be contingency planning for if/when the technology fails

Online platforms to increase availability of all data sources, and cloud processing capability to be able to interrogate data without downloading. Wider access for contributing to fieldwork planning, without having to be formal partners within projects themselves



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Thank you!

anna.mcgregor@glasgow.ac.uk
@AENMcGregor

References

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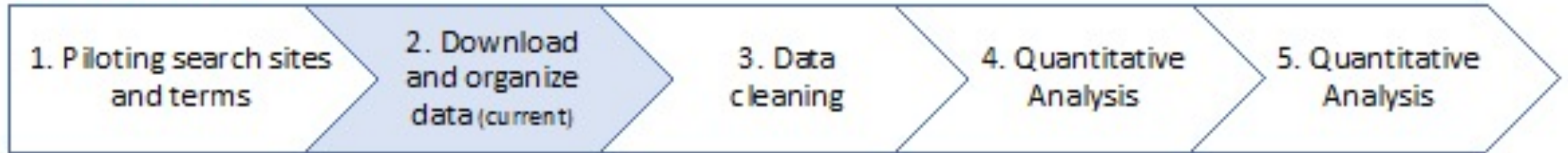
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Systematic Review Progress



Key Search Terms:

- "marine science"
- "ocean science"
- "marine biology"
- "marine ecology"

850 jobs downloaded
(+ an additional 301 supplementary documents)

Logos included: Schmidt Marine Technology Partners, Institute of Marine Engineering, Science & Technology, LinkedIn, Earthworks-jobs.com, FindA PhD, environmentjob, Scottish Government, Gov.UK, Marine Alliance for Science and Technology from Scotland, CMS.



How to 'Close the Loop'

- Communicating skills development back to students & programmes
- Skills Award or Accreditation scheme?
- Agreement of relevant staff or organisations

