

Spotlight on: WGMARS

Presented by: Jennifer L. Bailey, Chair
MIRIA & MIACO

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International Council for
the Exploration of the Sea
Conseil International pour
l'Exploration de la Mer





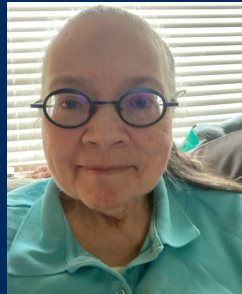
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Current ToRs (2026-2028)

- **ToR A:** Identify barriers to participation and informed observation for non-modelling scientists Compile measures to empower them to engage and interact with stock assessment models
- **ToR B:** The role of workshops in achieving significant change (such as the establishment of EBM) in ICES.
 - sociology of organizations approach
- **ToR C:** Be on call for special request from ICES leadership (Secretariat, or leaders of ACOM, SCICOM, or SGs)
 - A project on DEI (particularly gender) may be in the cards

Key results and conclusions

Patricia Clay, lead author

Identified conceptual, capacity, expertise and stakeholder involvement issues that might account the uneven achievement of IEA among the IEA groups

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Implementation of integrated ecosystem assessments in the International Council for the Exploration of the Sea – conceptualizations, practice, and progress

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With increasing activities of multiple sectors in marine spaces, management of marine social-ecological systems requires more holistic approaches. Adopting such an approach, however, presents difficult institutional and disciplinary challenges. Here, we use the International Council for the Exploration of the Sea (ICES) as a case study on the implementation of ecosystem-based management (EBM) and integrated ecosystem assessments (IEAs). ICES includes EBM and IEAs in its Science Priorities and established IEA Working Groups (WGs) carry out regional IEAs. But to what degree does this IEA WG work follow best practices? We examine policy documents, academic literature, and interview data from chairs of all IEA WGs. Results indicate mixed success. All groups acknowledge the holistic goals of IEA, and many use the IEA model as laid out by Levin et al. However, we found a significant variation in the degree to which the full model is applied. We identified two primary areas for improvement: (1) integration of social and economic issues and (2) involvement of stakeholders. We offer examples of how WGs have been making progress towards full IEAs, discuss how ICES can further support this transition, and suggest lessons with respect to the adoption of EBM and IEAs more broadly.

Keywords: International Council for the Exploration of the Sea (ICES), Integrated Ecosystem Assessments (IEAs), Social Science Methods, Semi-Structured

Behavioural Economics in Marine Fisheries Management: A Systematic Review

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Keywords: behavioural economics | fisher behaviour | fisheries management | interventions | policy

ABSTRACT

Targeted management interventions can influence marine resource user behaviour, yet some remain ineffective. Behavioural economics may offer valuable insights on this topic by identifying which interventions can effectively change human behaviour and how they can be applied. This systematic review ($N = 140$) synthesises evidence from behavioural economics studies conducted in a fisheries context. The results include a table of behavioural mechanisms and examples of evidence for behavioural interventions changing environmental, economic, and social outcomes. There is a growing body of evidence that interventions that activate mechanisms such as social norms or risk aversion can impact environmental outcomes. However, there is a general lack of explicit reporting of the link between behavioural mechanisms, interventions, and outcomes, revealing weak conceptualisation in the field. This hinders the ability of scientists, practitioners, and policymakers to derive actionable insights from the research. Furthermore, the ethics of intervening in human behaviour as well as thorough analysis of unintended consequences need significant attention. To resolve these issues and guide the field forward, this systematic review offers recommendations for both science and policy as well as a conceptual framework that can improve the design of future studies that aim to understand human behaviour in a fisheries setting.

1 | Introduction

Fisheries management is a complex task where human behaviour is both the most important driver of uncertainty and the key to achieving sustainability. Historically, fisheries management has focused primarily on limiting fishing mortality to prevent overfishing. This strategy calls for input from biologists, ecologists, and other natural scientists to set fishing limits. However, sustainable fisheries management

may remain elusive without understanding the behaviour of fishers and other resource users (Branch et al. 2006; Hilborn 2007; Wilen 2006). Understanding the complexity of human behaviour is challenging because causal mechanisms are difficult to isolate or predict, and interventions attempting to change behaviour can lead to unintended consequences (Abbott and Haynie 2012; Eikeset et al. 2011). The field of behavioural economics (Box 1) offers conceptual and methodological tools to better understand this complex subject.

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- Amanda Schadeberg, lead author
- Systematic review ($N = 140$).
 - Pathbreaking
- Uncovered a wide variety of approaches, and  degrees of success
- Also uncovered difficulties in establishing linkages between BE measures and outcome
- Ethical challenges and unintended consequences

- Ellen Johannesen, lead
- ICES' Annual Science Conference, 2015-2019
- Structural challenges for women in participating in the ASC, linked among other things to their tendency to be Early Career Scientists competing against established scientists.

Gender and early career status: variables of participation at an international marine science conference

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Conference participation is an important part of academic practice and contributes to building scientific careers. Investigating demographic differences in conference participation may reveal factors contributing to the continued under-representation of women in marine and ocean science. To explore the gender and career stage dimensions of participation in an international marine science conference, preferences of presentation type (oral/poster) as well as acceptance and rejection decisions were investigated using 5-years of data (2015–2019) from an International Marine Science Conference. It was found that early career scientists were more likely to be women, while established scientists were more likely to be men. Although overall, gender did not show a significant effect on the decisions to “downgrade” requests for oral presentations to poster presentations, early career scientists were significantly more likely to be downgraded than established scientists. Given that more women were often early career scientists, more women than men had their presentations downgraded. Other indicators and evidence from conference prize-giving and recognition awards point to a gender gap remaining at senior levels, highlighting the need for further actions as well as monitoring and researching conference participation from a gender perspective.

Keywords: abstract acceptance, early career, gender, marine science, ocean science, oral poster, presentation, science conference participation, scientists.

Introduction

Gender

Science has been historically dominated by men (Jones, 2019), although with important advances for women achieved over the past 100 years (Saini, 2017; Horrocks, 2019). Despite these positive trends, women continue to be under-represented in sciences, including marine and ocean sciences (UNESCO, 2015; Huang *et al.*, 2019; IOC-UNESCO, 2020; Giakoumi *et al.*, 2021), and face a multitude of challenges for career progression and in leadership positions (Shellock *et al.*, 2022). Such challenges may be observed in a variety of scientific opportunities that women may access during their careers, such as scientific conferences. Scientific conferences are an important part of academic practice, with a tradition dating back at least to the 17th century (Hauss, 2020). Conferences can provide the venue for communication processes that have been shown to lead to the production of scientific knowledge [Latour *et al.*, 2013, and can provide participants with increased visibility, new skills, ideas, and contacts (Cherrstrom, 2012; Oester *et al.*, 2017)]. Conferences bring scientific communities together, facilitate networking with others working in the discipline or field, and provide opportunities for the initiation of new collaborations and career development (Walters *et al.*, 2019). International conferences provide opportunities to engage with a more geographically and/or culturally diverse group of people than in a local setting. They therefore have a multitude of scientific and societal implications (Hauss, 2020).

Early career

People in early career stages also face discrimination and bias [Implicit or unconscious bias is a phenomenon that recognizes behaviours and attitudes may not always operate consciously, and can lead to discrimination of specific groups, with negative stereotypes unknowingly influencing associations with e.g. gender, race, or age (Greenwald and Banaji, 1995).] in marine and ocean science. A survey of Early Career Ocean Professionals (ECOPs) (Here we adopt the term Early Career Ocean Professional in an effort to be as inclusive as possible, recognizing people in early career stages may be pursuing various career paths and in the literature are variously referred to as Early Career Scientist, or Early Career Researcher.) reports major economic barriers, including unpaid work and harassment, contributing to mental health issues (Osiecka *et al.*, 2022). These types of structural challenges faced by ECOPs have been exacerbated by the COVID-19 pandemic, and access to networking opportunities is an important part of ECOP well-being (Schadeberg *et al.*, 2022). Conference attendance for early career participants may be influenced by demographics, where participants from minoritized groups may face systemic or other types of bias and discrimination, as well as issues related to accessibility and the purpose or value of attending (Timperley *et al.*, 2020). ECOPs help to develop marine and fisheries science, with important contributions to the peer-reviewed literature (Smoliński *et al.*, 2022). Valuing and ensuring ECOP representation in scientific societies is important, given their important contributions and

Tracking integrated ecosystem assessments in the ICES network: a social network analysis of the ICES expert groups

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The advice the International Council for the Exploration of the Sea (ICES) provides to its member countries is crucial for the sustainable management of shared marine resources, and the conservation of relevant marine ecosystems. In 2014, ICES made a strategic decision to integrate marine and social sciences in a new type of assessment framework called “integrated ecosystem assessments” (IEA) to deliver advice on societal trade-offs between different policy options. The IEA-focused expert groups formed before and after this period now cover all major ecoregions. To track the progression of IEAs in the ICES network over time, we conducted a social network analysis (SNA) on expert group attendance for the years 2015–2019. The IEA-focused expert groups generally ranked lower in the overall ICES network. Our study shows that some IEA-groups become more connected over time, while others decline. We also evaluated the role of workshops in the ICES network, particularly their role in the development of IEA knowledge. Our study shows that workshops play an important role in ICES network connectivity. The study demonstrates how social network analysis can be used to study an organization such as ICES and determine the effectiveness, or impact, of that organizational function.

Keywords: expert groups, ICES, information-sharing, integrated ecosystem assessments, social network analysis.

Introduction

Since its founding in 1902, the International Council for the Exploration of the Sea (ICES) has focused on meeting societal needs for impartial science and research on our oceans and the sustainable use of the marine resources within. Central to its work is the aim to “advance and share scientific understanding of marine ecosystems and the services they provide” (ICES, 2022b). This work is coordinated by the ICES Secretariat and supported by a network of over 6 000 marine scientists from over 700 institutions in 60 countries. Much of the ICES network is comprised of 150 Expert Groups that meet annually to conduct the scientific work that is used to generate high quality advice for conservation, management, and sustainability goals.

Over 100 years after its naissance, ICES leadership made a strategic choice in 2014 to integrate marine and social sciences in a new type of assessment framework called “integrated ecosystem assessments” (IEA), a framework with success in other large national marine science and advice organizations in North America (e.g. the National Oceanic and Atmospheric Administration; NOAA) and Australia (e.g. the Commonwealth Scientific and Industrial Research Organisation; CSIRO). The broad aim of ICES IEAs was to provide scientific knowledge and advice to ICES member countries for specific objectives on sustainability, adopting a holistic and comprehensive perspective to include information on

physical, chemical, ecological, human, and environmental processes affecting regional seas and their ecosystems. To do so, ICES structured the IEA geographical areas using a regional seas approach and capitalized on existing interdisciplinary (social science and marine science) research groups within its network in Northern Europe.

IEAs are “a formal synthesis and quantitative analysis of information on relevant natural and socioeconomic factors, in relation to specified ecosystem management objectives” (Levin *et al.*, 2009), and have become a core component to the work of ICES. ICES itself defined IEAs at the 2012 Workshop on Benchmarking Integrated Ecosystem Assessments (WKBEMIA) as an interdisciplinary process of combining, interpreting, and communicating knowledge from diverse scientific disciplines in such a way that the interactions of a problem can be evaluated to provide useful information to decision-makers (ICES, 2013; Dickey-collas, 2014). What sets IEAs apart from other ecosystem assessments is the integrated nature of the information analyzed, which aims to “underpin guidance on meeting ecological, social, and economic objectives” (ICES, 2022a) (*emphasis Author's own*). Given the growing interest in IEAs within the scientific and management communities, it becomes necessary to understand not just how IEAs are, or can be, conducted, but also how emerging knowledge on them is, or can be, shared between groups for enhanced critical analysis on the assessments

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Jessica Fuller, lead author

- SNA: connectivity CAN assist flow of knowledge
- Tracked recorded attendance at EGs 2015-2019
- Connectivity of IEA groups varies greatly but is generally weak with the rest of the ICES EG network
- Workshops play important role

Relevance for sustainable management of Marine Ecosystems

- Sustainable management requires management of both human and natural systems (Socio-ecological systems - SES)
 - Interdisciplinary & transdisciplinary work required
- This is not easy 
- Institutional/informational/capacity barriers
- Knowledge barriers

Our “(WG)MARS Mission”: uncover such barriers

- Studies of ICES but applicable beyond