



International Symposium on Ballast Water and Biofouling Management
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BALLAST WATER MANAGEMENT: A BIBLIOMETRIC AND NETWORK ANALYSIS

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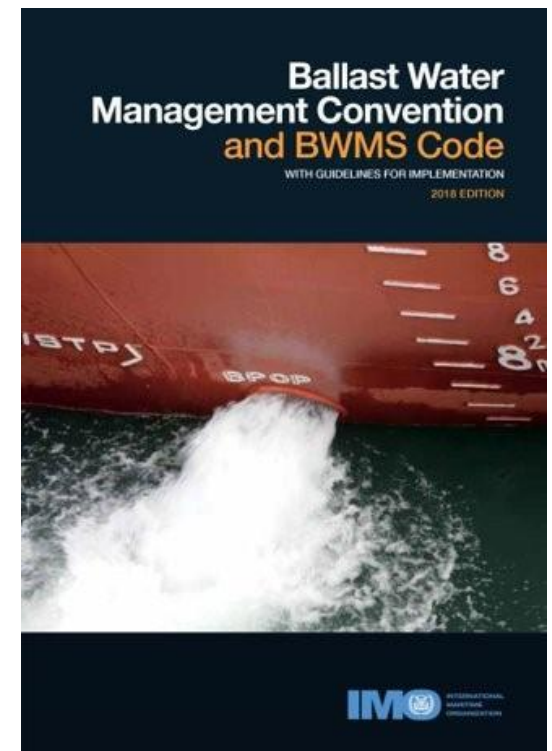
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INTRODUCTION

Ballast water transfer was recognized internationally as an important environmental issue at the United Nations Conference on Environment and Development (UNCED) in 1992, and it was targeted to bring under control of this issue with the “International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention)” which was adopted by IMO in 2004 as a result of long-term efforts of IMO and which entered into force in 2017.



MOTIVATION OF THE STUDY

With the advent of the BWM convention, ballast water management has become a research area and has been a field of interest for researchers.



It was observed that there is no bibliometric analysis study on ballast water management in the literature.



In this study, a bibliometric analysis of the studies on ballast water management was conducted.

METHODOLOGY

- Database: Web of Science
- Date Range: 01.01.2017 – 06.10.2023
- Query: "ballast water management" OR "ballast water treatment" OR "ballast water exchange" OR "ballast water discharge"
- Search field: Topic (title, abstract, author keywords, and Keywords Plus)
- Document type: Article
- Language: English



N = 299 article

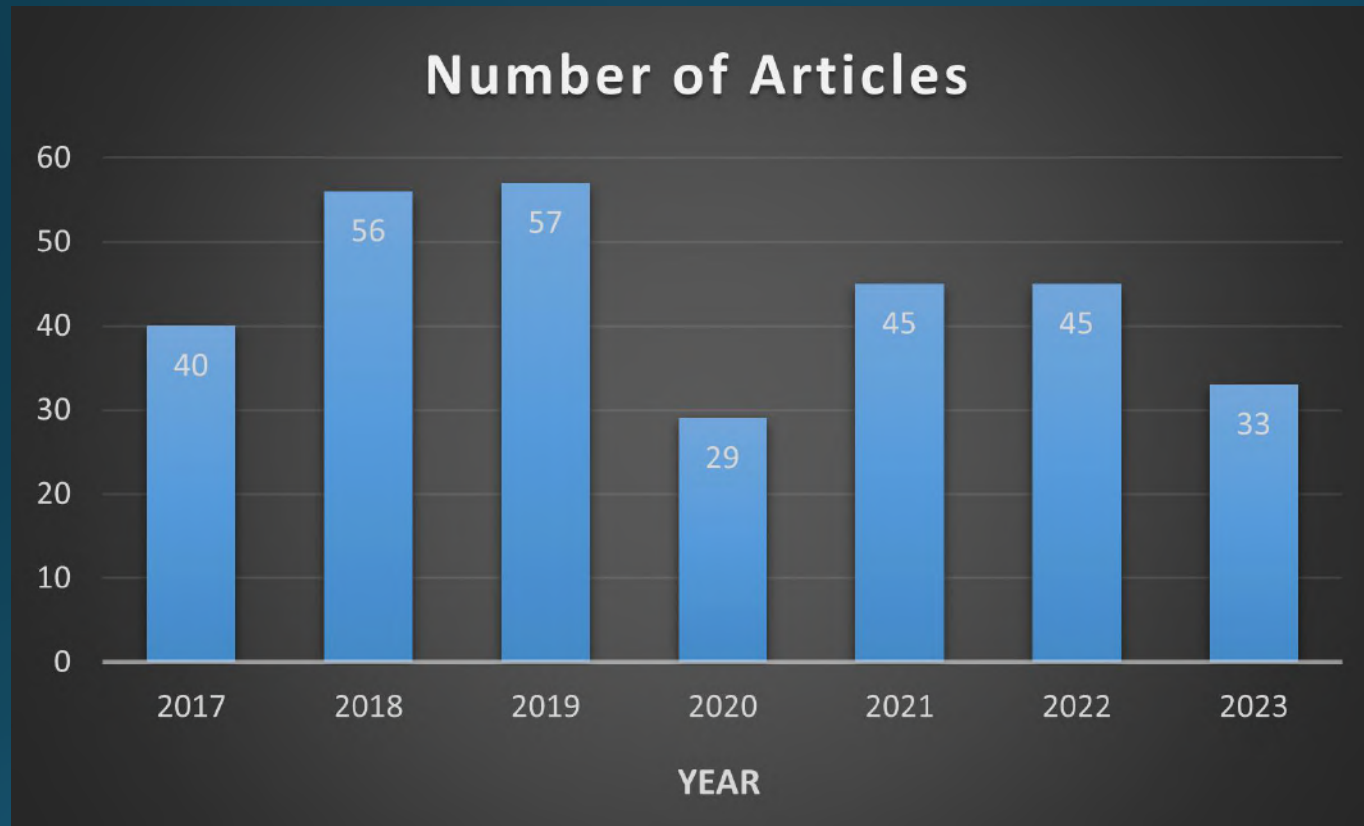
METHODOLOGY

Bibliometric and Network Analysis using VOSviewer 1.6.19

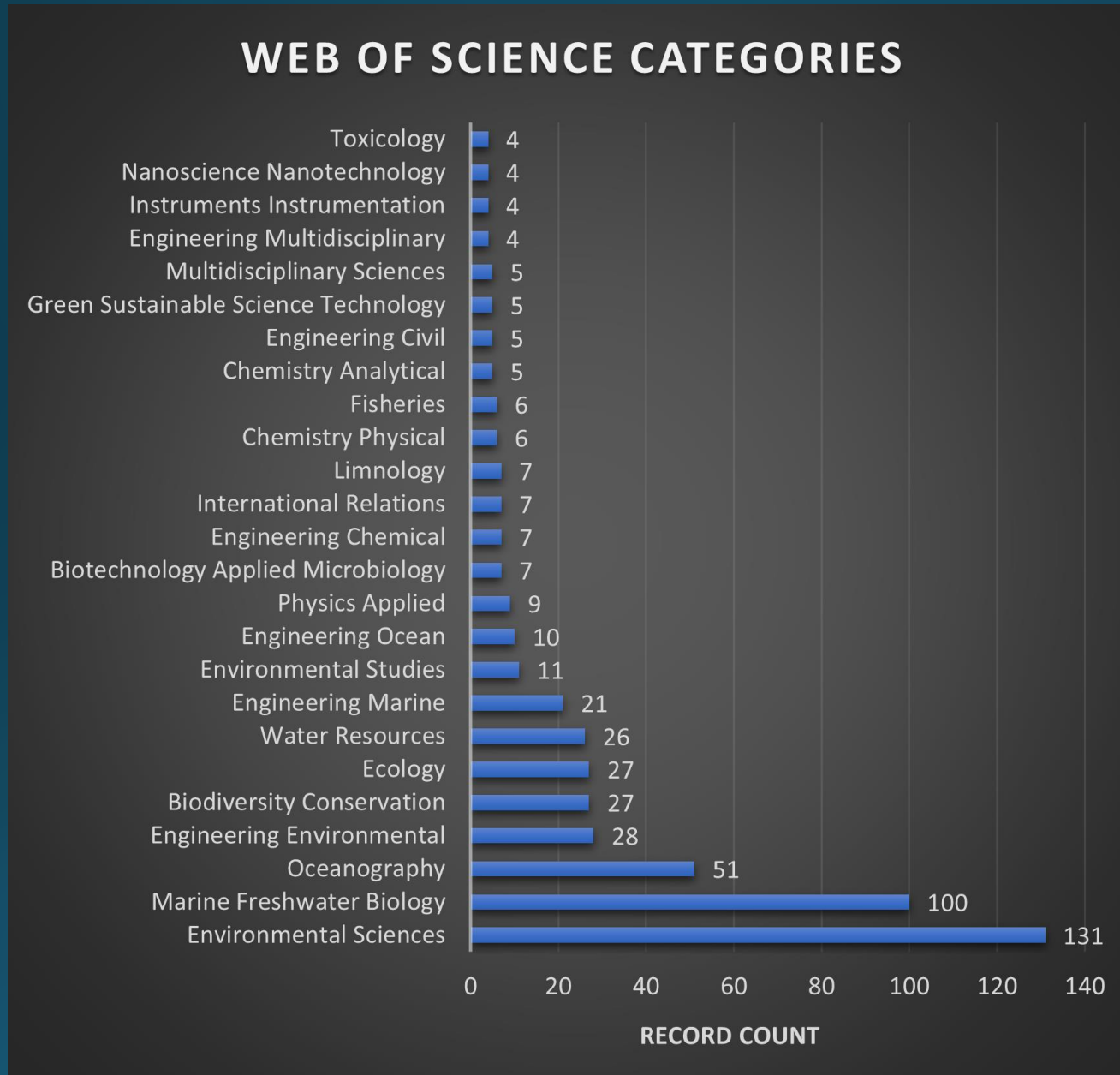
- Publication years
- Web of Science Categories
- Web of Science index
- Author network
- Organization network
- Country network
- Keyword network
- Most cited studies
- Most cited authors
- Journals with the highest number of articles
- Most cited organizations
- Most cited countries

FINDINGS

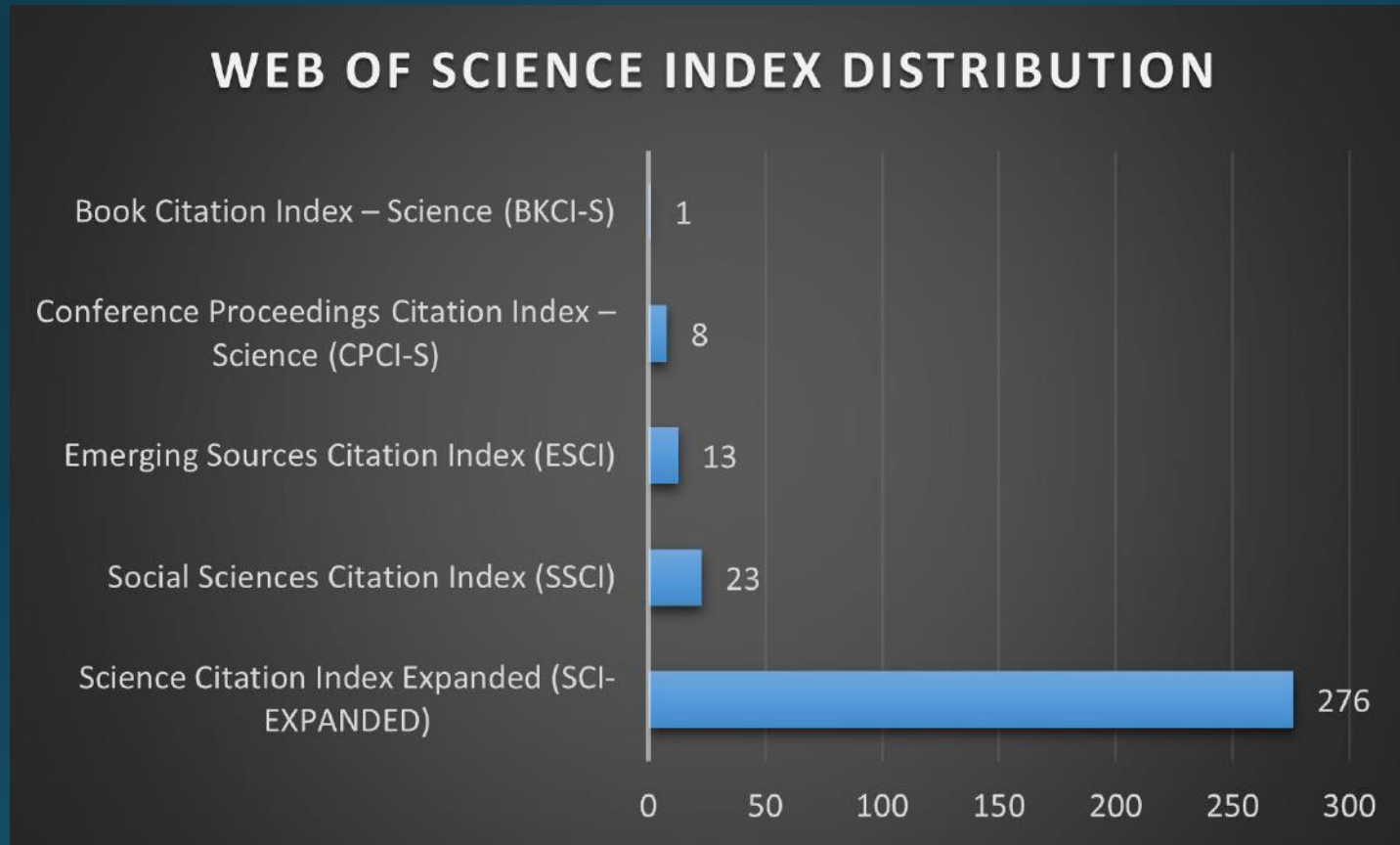
Publication Years



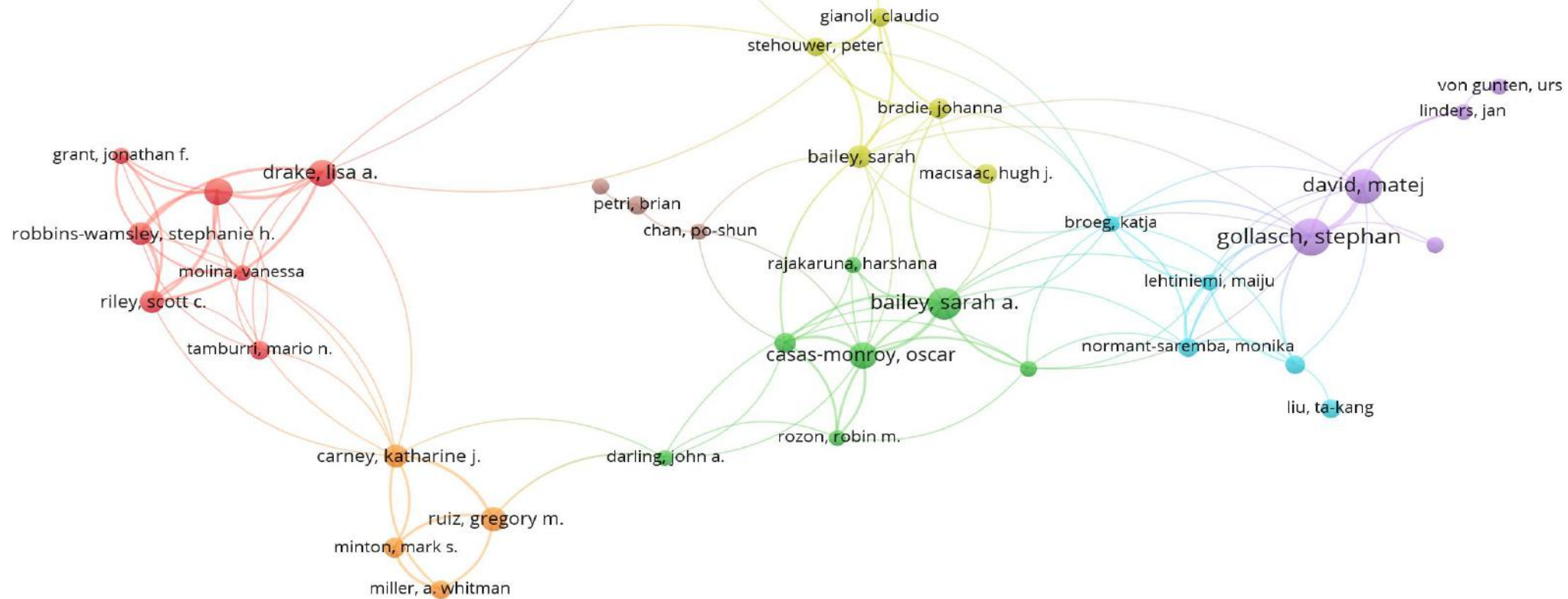
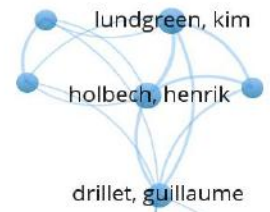
Web of Science Categories



Web of Science Index



Author network



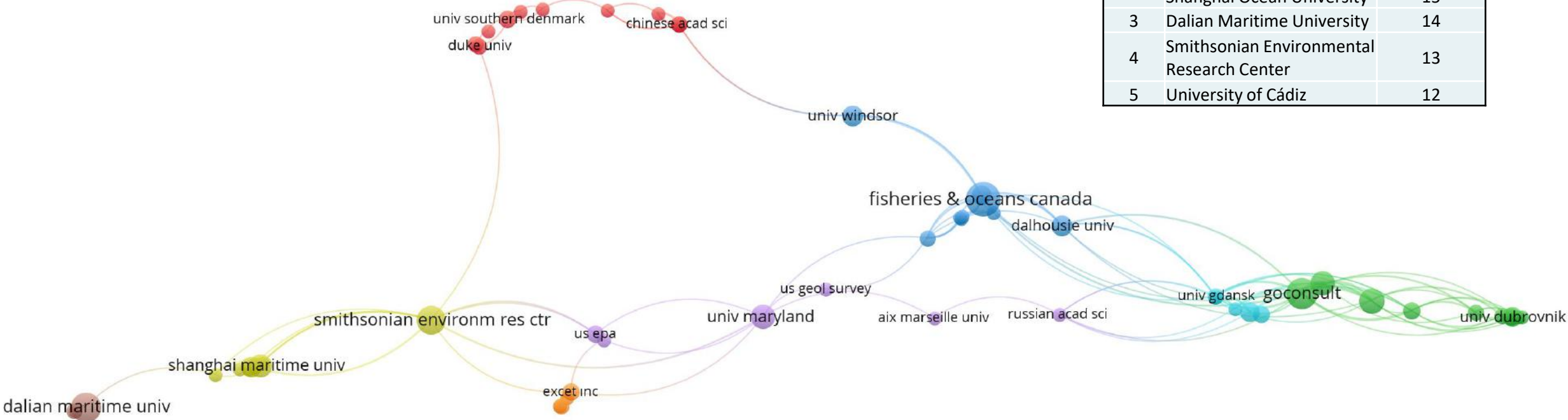
Authors with the highest number of articles

Rank	Author	Number of Articles	Organization	Country
1	Sarah Bailey	18	Fisheries & Oceans Canada	Canada
2	Stephan Gollasch	16	GoConsult	Germany
3	Matej David	14	University of Rijeka	Croatia
	Huixian Wu	14	Shanghai Ocean University	Peoples R China
4	Asuncion Acevedo-Merino	10	University of Cádiz	Spain
	Enrique Nebot	10	University of Cádiz	Spain
	Qiong Wang	10	Shanghai Ocean University	Peoples R China
5	Javier Moreno-Andrés	9	University of Cádiz	Spain

Organization network

Organizations with the highest number of articles

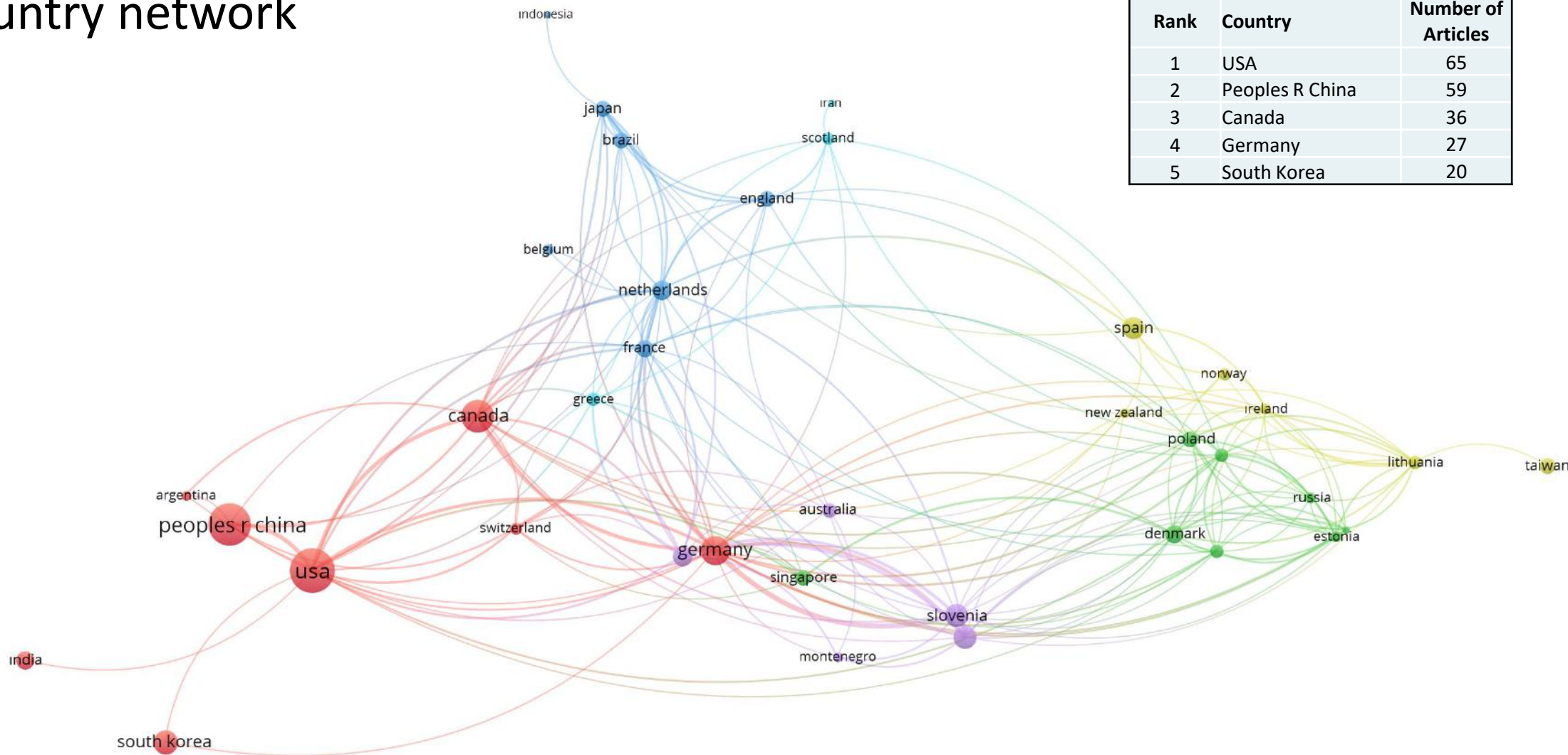
Rank	Organization	Number of Articles
1	Fisheries & Oceans Canada	18
2	GoConsult	15
2	Shanghai Ocean University	15
3	Dalian Maritime University	14
4	Smithsonian Environmental Research Center	13
5	University of Cádiz	12



Country network

Countries with the highest number of articles

Rank	Country	Number of Articles
1	USA	65
2	Peoples R China	59
3	Canada	36
4	Germany	27
5	South Korea	20

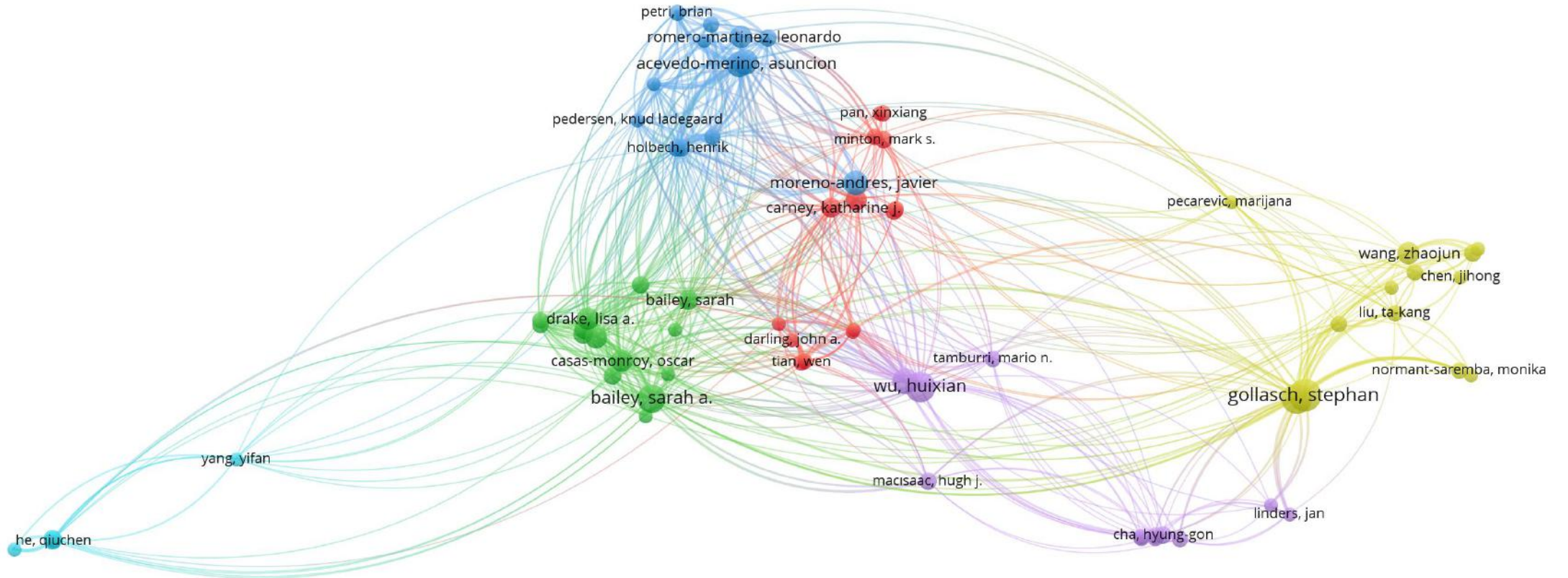


Articles with the highest number of citations

Rank	Article	Author(s) / Year	Citations	Journal
1	The application of the AHP-TOPSIS for evaluating ballast water treatment systems by ship operators	Karahalios (2017)	85	Transportation Research Part D: Transport and Environment
2	Technology selection for ballast water treatment by multi-stakeholders: A multi-attribute decision analysis approach based on the combined weights and extension theory	Ren (2018)	53	Chemosphere
3	An overview on the treatment of ballast water in ships	Lakshmi et al. (2021)	49	Ocean & Coastal Management
4	Bacterial Diversity in Ships' Ballast Water, Ballast-Water Exchange, and Implications for Ship-Mediated Dispersal of Microorganisms	Lymperopoulou and Dobbs (2017)	45	Environmental Science & Technology
5	Inactivation of marine heterotrophic bacteria in ballast water by an Electrochemical Advanced Oxidation Process	Moreno-Andrés et al. (2018)	39	Water Research

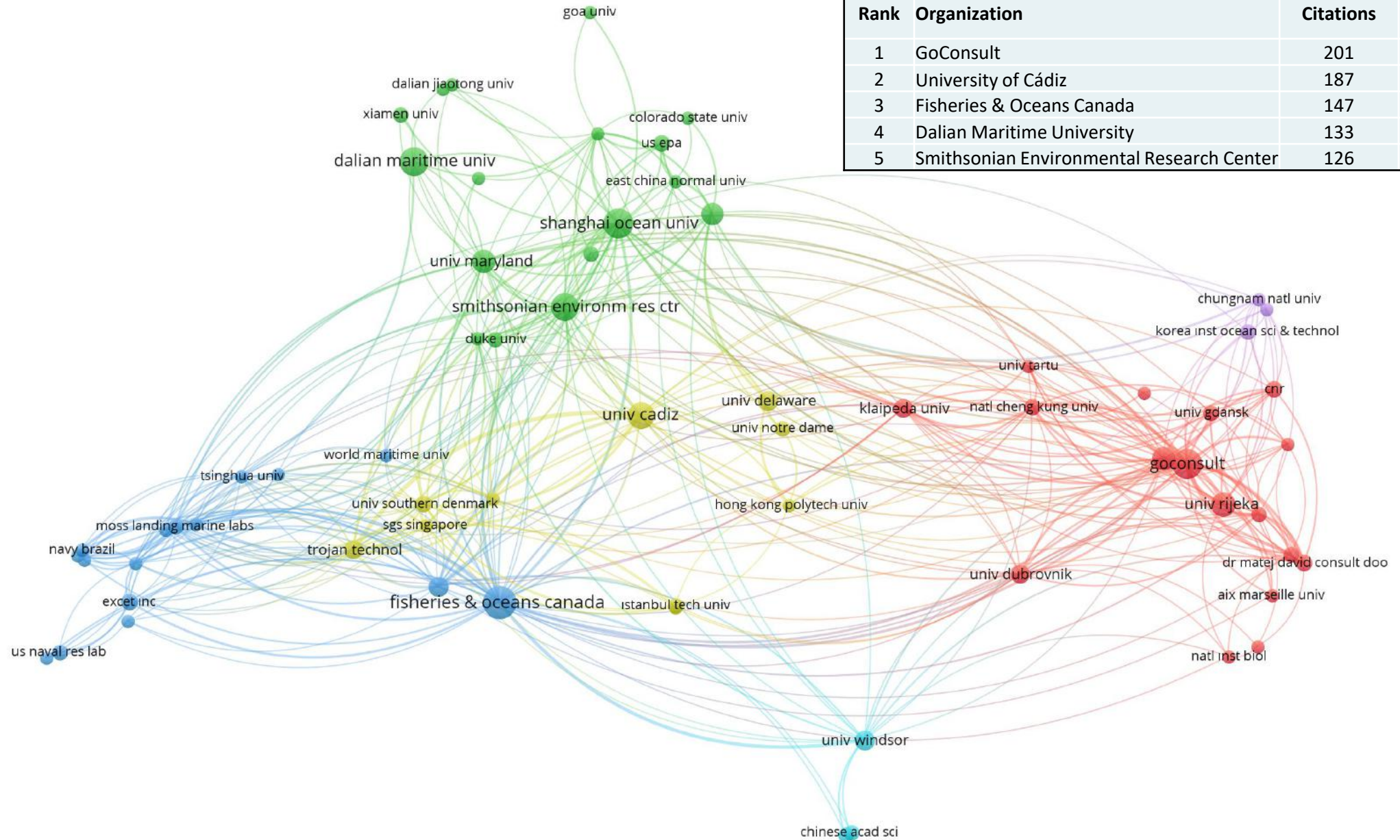
Authors with the highest number of citations

Rank	Author	Citations	Number of Articles	Organization	Country
1	Stephan Gollasch	207	16	GoConsult	Germany
2	Asuncion Acevedo-Merino	163	10	University of Cádiz	Spain
	Enrique Nebot	163	10	University of Cádiz	Spain
3	Javier Moreno-Andrés	157	9	University of Cádiz	Spain
4	Matej David	148	14	University of Rijeka	Croatia
5	Sarah Bailey	133	18	Fisheries & Oceans Canada	Canada



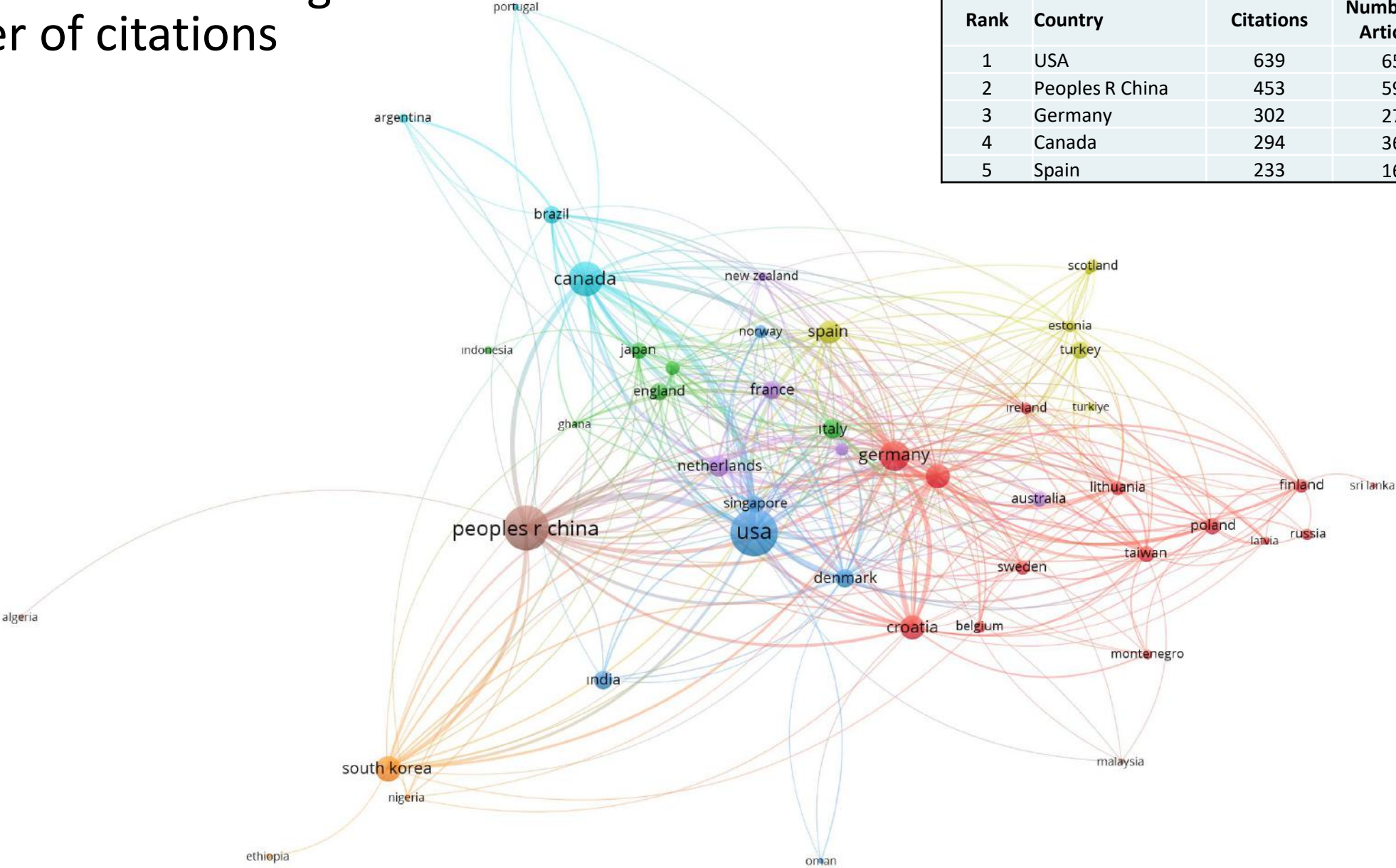
Organizations with the highest number of citations

Rank	Organization	Citations	Number of Articles
1	GoConsult	201	15
2	University of Cádiz	187	12
3	Fisheries & Oceans Canada	147	18
4	Dalian Maritime University	133	14
5	Smithsonian Environmental Research Center	126	13



Countries with the highest number of citations

Rank	Country	Citations	Number of Articles
1	USA	639	65
2	Peoples R China	453	59
3	Germany	302	27
4	Canada	294	36
5	Spain	233	16



CONCLUSION

- When we consider the number of publications and citations, it is seen that countries such as the USA, China, Canada, Germany, etc. come to the fore.
- There is no bibliometric study on the subject of BWM in the literature. In this respect, this study is important in filling this gap in the literature.

CONCLUSION

- Only the Web of Science database was used in this study. It is recommended that articles also in the Scopus database be taken into consideration in future studies.
- A more comprehensive bibliometric analysis can be performed by expanding the date range.
- Bibliographic coupling links and co-citation links of publications can also be analyzed.

THANK YOU