

The importance of the ecosystem approach in management of the marine environment

Tseliou F.^{1,*}, Tselepides A.²

¹ Secretary's General Cabinet, Ministry of Maritime Affairs and Insular Policy, Piraeus, Greece.

² Department of Maritime Studies, University of Piraeus, Greece.

*corresponding author: e-mail:ftseliou@hotmail.com

Abstract

The present paper focuses on the importance of the Ecosystem Approach (EA) for the preservation and conservation of the marine environment. Marine ecosystems are complex entities that contribute significantly to the sustainable well being of people by providing a wide range of goods and services. The economic benefits acquired, due to their function, are enormous and to a large extent impossible to estimate. Thus, due to the extensive and irrational use, and overexploitation of marine resources, arises the need for an integrated, holistic, approach in order to achieve sustainable management. The EA is based on the deeper understanding of the ecological, economical, societal and cultural interactions and constitutes the ultimate tool for the implementation and achievement of sustainable development. EA is the key for balancing out a number of users of marine resources and stakeholders so as to promote the critical role of the green economy and (sustainable) blue growth, which includes maritime activities, fisheries, renewable energy, blue biotechnology etc. The objective always remains to optimize the benefits provided by the oceans while at the same time the EA contributes to minimize the pressures of human activities.

Keywords: ecosystem approach, blue growth, sustainable shipping, marine spatial planning

1. Introduction

Ecosystem Approach (EA) and ecosystem-based management is actually a response to today's deepening biodiversity crisis (Grumbine, 1994). It is also inseparable from the concept of ecosystem health. EA also requires management measures to be based on the precautionary principle, which is a part of the EA. Setting clear goals that aim to reduce this crisis is crucial to the success of the adaptive management. Marine Spatial Planning, as a tool for implementing the EA, is also a sine qua non condition, a 'vessel' through the road to sustainable Blue Growth. The result will depend both on the quality of the adopted strategy and the intention of the Stakeholders. The Conference of the parties to the CBD has elaborated 5 points of operational guidance and 12 principles of the EA.

2. The Challenges

2.1. Consensus choice

What is really challenging today is the effectiveness of the measures. We need feasible measures and the consensus choice will always have better effectiveness. EA, as a fundamental delivery mechanism, requires all sectors to become engaged (Laffoley et al, 2004). Regarding the challenges of sharing ocean resources with the industries (shipping, fisheries, deep sea mining etc.) EA is the key for balancing out a number of users of marine resources and stakeholders. Furthermore, ecosystem – based management is the management that brings all stakeholders together. The process is dynamic due to the diversity of stakeholders and governmental organizations involved. Interagency and interministerial coordination is a major obstacle that requires strong political will and appropriate incentives to develop the willingness among agencies, ministries and scientific communities to be brought together to promote better marine and coastal management (UNESCO, 2006). Furthermore, stakeholder engagement, particularly with local people, can have substantial positive implications for the success of conservation projects. A more integrative approach to ecosystem management alongside increasing public engagement could be key factors in the development of effective marine conservation initiatives (Easman et al, 2018).

2.2. Good decisions require good data

There is a knowledge gap which needs to be addressed. Research should be done on preparation of the best practice guidance on how to undertake integrated assessments. High quality scientific information should be powered by data specific to the problem and location. Scientific information should also be analyzed in conjunction with stakeholders, because research that is inclusive and balanced by a diversity of interests provides results that stakeholders view as more credible and acceptable (Wiley et al 2013). A way to speed up conservation measures is to develop a social process as early as possible (Constantine et al, 2015). Such success story is the *Transit Protocol for Commercial Shipping*, for the protection of the whales from ship strikes in the Hauraki Gulf, New Zealand(see 3.2).

A gap in implementing the EA is also the lack of monitoring data for key indicators (ecological, economic, social). In addition, there are no standard criteria for measuring the effectiveness of the measures and the managers' performance in achieving the Sustainable Development Goals (SEAMBOR, 2010). Adopted measures require follow-up to test their efficiency.

3. Responsibility

3.1 Responsibility as a core principle

For environmental, economic and social sustainability to occur simultaneously it is crucial to understand that each one has the innate responsibility for the actions taken. Actions that have to be holistic: environmentally sustainable, technologically feasible and economically viable and with spatial and temporal coherence. Often, change in one's behavior is not spontaneous but needs to be done consciously because different outcomes need different actions to be taken. To achieve efficiency and effectiveness in the management of the marine environment is to understand that each side (scientists, policymakers, managers, citizens) and each one who has interests that affect the marine environment should consider their own objectives with respect to a larger set of objectives (Burgess et al, 2018).

3.2 Case study

Collisions between vessels and whales are a significant source of whale mortality and an issue of growing concern. The *Hauraki Gulf Transit Protocol for Commercial Shipping* is an agreement between the Ports of Auckland and the shipping industry. Specifically, it is worthwhile mentioning that it is the outcome of the collective effort of the Ports of Auckland (POAL), the commercial shipping industry, New Zealand's Department of Conservation (DOC) and Auckland University. It contains reasonable and practical measures to reduce the number of whale deaths caused by vessels. Furthermore, though it has a voluntary nature (it consists of recommendations that have been agreed upon) it showed that the threat of ship strike to the whales' population has been vastly reduced due to the lowered speeds of vessels in the Hauraki Gulf. Actually, there has not been a reported ship-strike mortality since September 2014. The astonishing part of this case study is how a dynamic group is capable of making decisions and have a positive impact on conservation.

4. Conclusions

Where are we now, with regard to the sustainable world goals of 2030? The growing demand for ocean resources has augmented the number of human activities and cumulative impacts on marine ecosystems. There is much still to be done globally to bring the human dimensions more fully into consideration in implementing EA and to

effectively protect the marine environment (FAO, 2008). Responsibility comes with the improvement of current awareness. The collective mind-set about how oceans should be treated has to change in accordance with the U.N.'s SDG 14: "Conserve and sustainably use the oceans, seas and marine resources for sustainable development". Progress towards sustainable development can be achieved through the adoption of the EA, considering that EA does not aim for short term economic gains, but aims to optimize the use of an ecosystem without damaging it. The consensus between stakeholders and all interested parties will allow policy decisions to be made by taking into account the fundamental principles of sustainability.

References

- Burgess M. G., Clemence M., Grant R. McD., Costello C. and Gaines S.D., (2018) Five rules for pragmatic blue growth, *Marine Policy*, **87**, 331–339.
- Constantine R., Johnson M., Riekkola L., Jervis S., Kozmian-Ledward L., Dennis T., Torres G L. and Aguilar de Soto N., (2015) Mitigation of vessel-strike mortality of endangered Bryde's whales in the Hauraki Gulf, New Zealand, *Biological Conservation, Elsevier*, **186**, 149–157.
- Easman S.E., Abernethy K. E. and Godley B. J., (2018) Assessing public awareness of marine environmental threats and conservation efforts, *Marine Policy*, **87**, pg. 238 – 239.
- Ehler Ch. and Douvère F., (2009) Marine Spatial Planning: a step-by-step approach toward ecosystem-based management, IOC, Commission and Man and the Biosphere Programme, *IOC Manual and Guides* no. **53**, ICAM Dossier no.6. Paris: UNESCO
- FAO, (2008) Human dimensions of the ecosystem approach to fisheries: an overview of context, concepts, tools and methods, Rome, *FAO Fisheries technical paper*, **489**.
- Grumbine R. Ed., (1994) What Is Ecosystem Management? *Conservation Biology*, Vol. **8**, No. 1, pp. 27-38 Published by: Blackwell Publishing for Society for Conservation Biology
- Laffoley D.d'A., Maltby E., Vincent M.A., Mee L., Dunn E., Gilliland P., Hamer J.P, Mortimer D. and Pound D., (2004) The Ecosystem Approach. Coherent actions for marine and coastal environments, A report to the UK Government, Peterborough, *English Nature*, 65pp.
- SEAMBOR, (2010) Science dimensions of an Ecosystem Approach to Management of Biotic Ocean Resources, *European Science Foundation, Marine Board-ESF Position Paper*, **14**.
- UNESCO, (2006) The Ecosystem Approach to Integrated Ocean and Coastal Management, The Global Forum on Oceans, Coasts, and Islands Reports: from *the Third Global Conference on Oceans, Coasts, and Islands*, January, **23-28**, 2006, Paris.
- Wiley D., Hatch L., Schwehr K., Thompson M. and MacDonald C., (Fall 2013) Marine Sanctuaries and Marine Planning: Protecting endangered marine life, *Proceedings*, the USCG Journal of Safety and Security at Sea, Vol. **70**, Number 3, 10-15.