

SHORT COMMUNICATION

On the occurrence of Coralligenous algae in the Johnston Bank (Aegean Sea)

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Abstract

Coralligenous formations, referred to as Maërl beds, are important habitats for some fishes, molluscs, crustaceans and act as nursery areas for the juvenile stages of these commercial species, analogous to kelp forests in the oceans and sea grass beds in the coastal Mediterranean waters. Despite their ecologic and economic importance, there is no sufficient data on the distribution of coralligenous substrata in the high sea areas of the Mediterranean Sea. This study provides contribution to presence of Coralline algae which are the major coralligenous builders in the high sea areas in the Aegean Sea.

Keywords: Maërl beds, Coralligenous algae, high sea areas, Johnston Bank, Aegean Sea.

Introduction

Coralligenous formations, referred to as Maërl beds, are important habitat for commercially valuable molluscs, crustaceans and act as nursery areas for the juvenile stages of commercial species of fish, crabs and scallops (Kamenos *et al.* 2004; Hall-Spencer *et al.* 2010), analogous to kelp forests in the oceans and seagrass beds in the coastal Mediterranean waters.

Coralline algae are the main coralligenous builders (SAP BIO 2003). There are many abiotic and biotic factors affecting algal growth. However, the main physical factors regulating life in marine systems, such as light, water movement, temperature, sedimentation and nutrient availability are depth-related. Depth can be given as one of the main limiting factor in vertical distribution of marine organisms, especially photosynthetic organisms. Algae, both encrusting corallines and green algae, usually dominate in horizontal to subhorizontal surfaces, although its abundance decreases with depth or dim light condition (SAP BIO 2003).

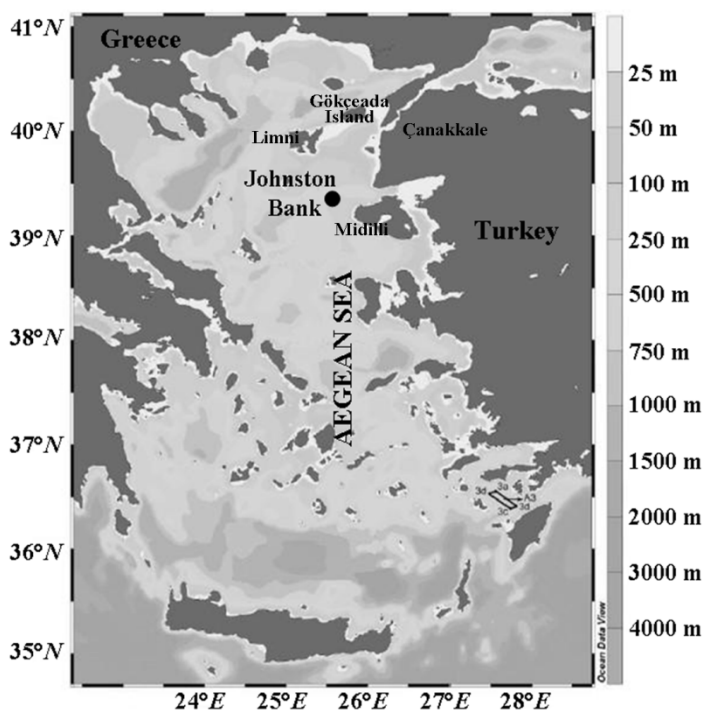


Figure 1. Geographical position of sampling area (Johnston Bank) in the Aegean Sea

Results and Discussion

The field observation revealed that main habitat of this area was coralligenous. In the coralligenous beds of the Johnston Bank, six coralligenous algae were found: *Lithophyllum racemus* (Lamarck) Foslie, *Lithophyllum stictaeforme* (Areschoug) Hauck, *Lithothamnion corallioides* (P.L. Crouan & H.M. Crouan) P.L. Crouan & H.M. Crouan, *Lithothamnion minervae* Basso, *Neogoniolithon* sp., *Spongites* sp. Although *L. stictaeforme* and a *Spongites* species (*S. fruticulosus* Kutzing) (from the coast of Bozcaada by Aysel *et al.* 2005) and a *Neogoniolithon* species (from the coast of Mersin by Aysel *et al.* 2006) were listed for the Turkish coasts, the occurrence of above mentioned six coralligenous algae were recorded first time from high sea part of the Aegean Sea. There are many records on distribution of these species (*L. racemus*, *L. stictaeforme*, *L. corallioides*, *L. minervae*) in the Western Mediterranean (Guiry and Guiry 2012) and it is well known from previous study that these species are the major maërl-forming species in these habitats (UNEP/MAP 2007).

Coralligenous communities constitute the second most important ‘hot spot’ of species diversity in the Mediterranean, after the *Posidonia oceanica* meadows (Boudouresque 2004; Ballesteros 2006) compared to other habitats substrate. In the study done by Topaloğlu *et al.* (2010) the macrozoobenthic invertebrate fauna of two banks (Johnson and Sinaya Bank, North Aegean Sea) were compared in the same geographic areas. The results of this study showed that Johnson Bank (51 taxa and 2288 organisms in total density) with coralligenous habitat has highly diversified macrozoobenthic invertebrates when compared to the Sinaya Bank (17 taxa and 490 organisms in total density) with mud-sand substrate. Öztürk (2009) have presented some proposals on marine protected areas in the high seas of the Eastern Mediterranean including the Johnston Bank in the Aegean Sea to ensure protection of the marine biodiversity according to criteria in the Convention of Biological Diversity. This unique habitat with high biodiversity (coralligenous habitats and mäerl beds) is protected by *EU Fishing Legislation EC 1967/2006* for the sustainable exploitation of fishery resources in the Mediterranean Sea. However, unfortunately, the location of coralligenous substrata in the high sea areas of Mediterranean is mostly unknown and so these conventions are not being enforced. In addressing this shortcoming, intergovernmental agencies such as Regional Activity Center for Specially Protected Areas (RAC/SPA) can take the initiative for regional surveys and monitoring.

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Johnston Bank’ ta (Ege Denizi) Korallijen alglerin varlığı

Özet

Maerl yatakları olarak bilinen Korallijen oluşumlar, okyanuslardaki kelp ormanları veya Akdeniz’in kıyısız sularındaki, deniz çayırları yatakları gibi bazı balık, yumuşakça ve kabuklular için önemli habitatır ve birçok ticari türün juvenil dönemleri için büyüme alanı olarak rol oynar. Bu alanların ekolojik ve ekonomik önemlerine rağmen, Akdeniz’ in açık deniz alanlarındaki korallijen substratlar hakkında yeterli veri yoktur. Bu çalışma Ege Denizi’nin açık deniz alanlarında başlıca korallijen üreticileri olan Coralline alglerin varlığına katkı sağlamaktadır.

References

Aysel, V., Erduğan, H., Okudan, E.Ş., Erk, H. (2005) Marine algae and seagrasses of Bozcaada (Çanakkale, Aegean Sea, Turkey). *EU Journal of Fisheries & Aquatic Science* 22 (1,2): 59-68 (in Turkish).

- Aysel, V., Okudan, E.Ş., Erduğan, H. (2006) Marine algae and seagrasses of Mersin shore (Mediterranean, Turkey). *J. Black Sea/Mediterranean Environment* 12: 79-97.
- Ballesteros, E. (2006) Mediterranean coralligenous assemblages: A synthesis of present knowledge. *Oceanography and Marine Biology: An Annual Review* 44: 123-195.
- Boudouresque, C.F. (2004) Marine biodiversity in the Mediterranean: status of species, populations and communities. Scientific Reports of Port-Cros National Park 20: 97-146.
- Casellato, S., Stefanon, A. (2008) Coralligenous habitat in the northern Adriatic Sea: an overview. *Marine Ecology* 29: 321-341.
- Ferdeghini, F. Acunto, S. Cocito S., Cinelli F. (2000) Variability at different spatial scales of a coralligenous assemblage at Giannutri Island (Tuscan Archipelago, northwest Mediterranean). *Hydrobiologia* 440: 27-36.
- Gerovasileiou, V., Sini, M.I., Poursanidis, D., Koutsoubas D. (2009) Contribution to the knowledge of Coralligenous communities in the NE Aegean Sea. The 1st Mediterranean Symposium on the Coralligenous Conservation and other calcareous bio-concretions. RAC/SPA, Tabarka, Tunisia: 14-16 January 2009.
- Guiry, M.D., Guiry, G.M. (2012) AlgaeBase. World-wide electronic publication, National University of Ireland, Galway. Available at <http://www.algaebase.org> (accessed 17 February 2012).
- Hall-Spencer, J.M., Kelly, J., Maggs, C.A. (2010) Background document for Maërl beds. OSPAR commission. The Department of the Environment, Heritage and Local Government (DEHLG), Ireland, pp. 36.
- Kamenos, N.A., Moore, P.G., Hall-Spencer, J.M. (2004) Attachment of the juvenile queen scallop (*Aequipecten opercularis* (L.)) to maerl in mesocosm conditions, juvenile habitat selection. *Journal of Experimental Marine Biology and Ecology* 306: 139-155.
- Kisseleva, M.I. (1983) Comparative characteristics of the benthos at the some banks in the Aegean Sea. *Thalassographica* 6: 107-118.
- Maneveldt, G.W., Chamberlain, Y.M, Keats, D.W. (2008) A catalogue with keys to the non-geniculate coralline algae (Corallinales, Rhodophyta) of South Africa. *South African Journal of Botany* 74: 555-566.
- Öztürk, B. (2009) Marine protected areas in the high seas of the Aegean and Eastern Mediterranean Seas, some proposals. *J. Black Sea/Mediterranean Environment* 15: 69-82.
- SAP BIO (2003) The coralligenous in the Mediterranean Sea. Definition of the coralligenous assemblage in the Mediterranean, its main builders, its richness

and key role in benthic ecology as well as its threats. Project for the preparation of a Strategic Action Plan for the Conservation of the Biodiversity in the Mediterranean Region. (SAP BIO) RAC/SPA- Regional Activity Centre for Specially Protected Areas, pp. 87.

Sciberras, M., Rizzo, M., Mifsud, J.R., Camilleri, K., Borg, J.A., Lanfranco, E., Schembri, P.J. (2009) Habitat structure and biological characteristics of a maerl bed off the northeastern coast of the Maltese Islands (central Mediterranean). *Mar Biodiv.* 39: 251-264.

Topaloğlu, B., Öztürk, B., Topçu, E.N., Gönülal, O. (2010) A preliminary study on the macrozoobenthic invertebrate fauna of two banks in the North Aegean Sea. *Rapp. Comm. Int Mer Médit.* 39: 682.

UNEP/MAP (2007) Draft Action Plan on Protecting the Coralligenous and Other Calcareous Bio-concretions in the Mediterranean. UNEP/MAP Athens, pp. 25.

UNEP-MAP RAC/SPA (2010) The Mediterranean Sea Biodiversity: State of the Ecosystems, Pressures, Impacts and Future Priorities. (Eds. H. Bazairi, S. Ben Haj, F. Boero, D. Cebrian, S. De Juan, A. Limam, J. Leonart, G. Torchia, C. Rais), RAC/SPA, Tunis, pp. 100.

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