

Editorial

This special issue of *Aquatic Living Resources* includes articles of work presented at the International Meeting on Marine Research 2016 (IMMR'16) held at the School of Tourism and Maritime Technology (ESTM) of the Polytechnic of Leiria (IPLeia) in Peniche, Portugal, on July 14–15, 2016. IMMR is an international congress held biennially, intending to communicate novel scientific knowledge on marine resources and research towards the sustainable marine activities of our planet. IMMR'16 was organized by IPLeia and MARE – Marine and Environmental Sciences Centre and gathered 128 delegates from 9 countries. The meeting covered diverse topics within marine science, from issues related with biodiversity, conservation and coastal management to oceanography and maritime technology, fisheries and management, seafood technology, aquaculture and blue biotechnology. During this two-day meeting, several international keynote speakers shared state-of-the-art knowledge on the congress main topics, and senior and young researchers communicated their latest scientific innovations, discoveries and practices on important subjects in the multidisciplinary field of marine science, through 34 talks and 128 posters.

The articles included in this issue of *Aquatic Living Resources* represent some of the works presented on three of the main topics of the meeting: (1) biodiversity, conservation and coastal management; (2) fisheries and management and (3) aquaculture.

Regarding biodiversity, conservation and coastal management, [Almeida et al. \(2017\)](#) examined the genetic structure and diversity of three sister species of brown algae of the genus *Fucus* across a known marine biogeographic transition zone in northwest France. With the use of neutral microsatellite markers, the authors investigated patterns of differentiation between populations of each species (*Fucus spiralis*, *F. guiryi* and *F. vesiculosus*) inhabiting two different bioregions. The results of this study suggest that genetic patterns are correlated with this biogeographical transition zone but this effect is highly dependent on the mating system, a determinant factor concerning population genetic variability and structure for the region, with a higher contribution for the differences observed than the physical abiotic differences. [Abecasis et al. \(2017\)](#) explored a systematic conservation planning approach based on coastal habitat information available for Portugal from the European Nature Information System to demonstrate how an ecologically coherent nation-wide MPA network could be designed, and circumvent some limitations of isolated MPAs thanks to their potential positive synergistic effects. The authors used the software Marxan to obtain near optimal

solutions for each of three pre-determined conservation targets (10, 30 and 50% protection) while maintaining the cost of including conservation units as low as possible. Marxan solutions were subsequently optimized with MinPatch by keeping each MPA above a minimum size that reflects the existing information on habitat use by some key marine fishes. The results showed that 10% protection for all habitats would only require a relatively small increase in the number (from 6 to 10) and area (from 479 to 509 km²) of already existing MPAs in mainland Portugal whereas substantial increases would be required to achieve the 50% target. The authors concluded that this rather simple approach offers the added benefit of allowing design improvement as more relevant ecological information becomes available, including deeper habitat mapping across the whole continental shelf, allowing a coherent, adaptive and inclusive optimal MPA network to be designed. Finally, [Bussotti et al. \(2017\)](#) investigated the fish assemblages associated with 16 marine caves along the coasts of Spain, France and Italy. The authors sampled caves, blind caves (one entrance) and caves with several openings, remarkably variable in morphology, overall extension, presence/absence of ceiling, and characteristics of the bottom. On the whole, they recorded 33 fish species. They found a significant variability of the distribution patterns of fish assemblages (both in terms of density and biomass) at the regional (hundreds of kilometres) and local scales (kilometres/hundreds of meters), which confirms the great heterogeneity of the cave-associated communities. Furthermore, the authors confirmed that *Apogon imberbis* is by far the most represented fish within caves in the western Mediterranean, and has the potential to fulfil a crucial trophic role within Mediterranean marine caves as a vector of organic matter.

Regarding fisheries and their management, the work of [Lamas et al. \(2017\)](#) presents a platform called SIMOcean – System for Integrated Monitoring of the Ocean, demonstrating the advantages of combining different datasets in an integrated information system. The SIMOcean project aims to improve the Portuguese marine management, monitoring and vigilance capabilities, by integrating different data relating to human marine activities (e.g. fishing records) with environmental variables (e.g. waves, wind). In the particularly demonstrative example presented, the connection between sea surface temperature (SST), chlorophyll-a (Chl-a) concentration and catch locations of sardine (*Sardina pilchardus*) and mackerel (*Scomber colias*) was explored using satellite-derived products of SST and Chl-a together with fishing activity data for the period between January 2014 and December 2015 for the south and

southwestern Portuguese coasts. The results showed that sardine and mackerel fishing areas are more strongly correlated with by Chl-a than SST. This highlights the potential value of the SIMOcean platform for the fishing industry, enabling optimization of resource allocation and investment by companies, and supporting better management of fishing operations and marine resources.

Lastly, in the field of aquaculture, Pinto et al. (2017) developed a multiplex PCR tool targeting 4 bacterial pathogens of great concern for the commercial aquaculture sector. These species can cause extensive damage and high losses in fish or shellfish cultures and their early and rigorous detection is of fundamental importance for aquaculture development. The authors have been able to successfully detect the targeted pathogens using the multiplex PCR tool they developed. If validated on farmed fish or shellfish samples, the approach could have extensive practical applications in aquaculture.

References

- Almeida SC, Nicastro KR, Zardi GI, Pearson GA, Valero M, Serrão EA. 2017. Reproductive strategies and population genetic structure of *Fucus spp.* across a northeast Atlantic biogeographic transition. *Aquat Living Resour* 30: 16.
- Abecasis A, Afonso P, Erzini K. 2017. An ecological framework for the development of a national MPA network. *Aquat Living Resour* 30: 14.
- Bussotti S, Di Franco A, Pey A, Vieux-Ingrassia JV, Planes S, Guidetti P. 2017. Distribution patterns of marine cave fishes and the potential role of the cardinal fish *Apogon imberbis* (Linnaeus, 1758) for cave ecosystem functioning in the western Mediterranean. *Aquat Living Resour* 30: 15.
- Lamas L, Oliveira PB, Pinto JP, Almeida S, Deus R, da Silva AJ, Almeida N. 2017. Fishing areas characterisation using the SIMOcean platform. *Aquat Living Resour* 30: 19.
- Pinto MF, Baptista T, Neves Afonso CC. 2017. Development of a new multiplex-PCR tool for the simultaneous detection of the fish pathogens *Vibrio alginolyticus*, *Vibrio anguillarum*, *Vibrio harveyi* and *Edwardsiella tarda*. *Aquat Living Resour* 30: 4.

Sara C. Novais
Paulo Maranhão
Guest Editors