

Thursday, December 2, 2010

Workshop

From discovery to conservation of marine biodiversity

16:00 - 18:00

[Parallel Workshop](#) related to plenary session 2

Oral presentation

Microbes in the Sea: Biodiversity, Resources and Management

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Marine microorganisms provide 50% of the global primary productivity and 90% of the ocean biomass and diversity. Considering their global relevance, we know far too little of their distribution, and how they were and will be affected by global change. However, their provision of goods and services include most important functions such as remineralization of detritus to nutrients, detoxification of seawater, control of climate gases. How we rely on their contribution to remediation of impacted marine ecosystem was recently evident in the aftermath of the Deep Horizon Oil spill. Their role in biological interactions such as symbiosis is huge, and probably a main driver of animal and plant diversity in the sea. Furthermore, some of their capacities in producing energy sources such as methane, ethanol or hydrogen have provoked hope that their genomic potential could be exploited in blue technologies such as bioengineering and biotechnology. At the same time, we are facing emerging diseases mediated by marine bacteria in response to globalization, warming and pollution of the ocean. Nevertheless, due to their small size, abundance, diversity and dispersal capacities, there are no concepts to develop any type of management of microbial resources, nor their protection from human impact on the ocean.

This presentation summarizes recent results from the Census of Marine Life and other international programs, to discuss the role and distribution of microbes in the sea. We found that the oceans and coasts host unique bacterial communities inhabiting different biogeographic realms. Marine bacterial diversity is controlled by oxygen availability and ocean productivity, and is related to fisheries capture, even in the greatest depths of the sea. Marine microbes may thus be sensitive to global changes, and vice versa, humans to microbial processes and their dynamics. Finally, this presentation will also highlight the need for future research and concepts, to include the small and unseen into the assessment of ecosystem health, management and protection.