

Reprotoxicity of global warming in marine species Elisabetta Tosti

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Abstract :

The fast growth of industrialization and other anthropogenic activities is generating chemical pollution posing at risk the entire marine environment. In particular modifications of either marine temperature or pH are creating a crescent alarm in the scientific community. le accumulation of greenhouse gases in the atmosphere resulted from the last 40 years in the Earth's average temperature increase of 0.75°C/1.4°F which is the global warming that is changing the planet climate. Among the ellects generated by temperature increase literature reports melt of artic ice, desertification of some areas and change of weather accompanied by precipitations and increased flooding. lese changes in turn may exert serious repercussion on the sea level rise and the frequency of strong cyclones. Global warming is a process induced by a change in the chemistry of carbonate. In normal situations carbon dioxide is produced by either photosynthesis and respiration and in long term scale by geological processes, however an excess of CO2 is generated by fuel burning, manufacturing applications and deforestation. Temperature increase may impact physiological cell processes, cellular homeostasis and metabolic pathways of living organisms. In recent years, many studies have been addressed to demonstrate that high sea water temperature induces physiological and reproductive disorders in marine biota even threating the survival of the species. Reproduction is a complex process of cell to cell interaction which leads to the formation of a new individual. Reproductive success, mainly based on the gamete physiology, is essential to ensure the persistence of future marine populations.

Introduction :

It is now well known that, in the coming decades, the loss of biodiversity will have a dramatic impact on the life cycles of organisms. Anthropogenic human activities and xenobiotics released into the environment such as metals, pesticides, herbicides, drugs, antifouling compounds, nanoparticles, and plastics directly influence migration, seasonal breeding, and reproduction. These factors also have secondary deleterious effects contributing to climate change, as evidenced in global warming and ocean acidification, raising an alarm in the scientific community and government environmental agencies about reprotoxicity. In particular, there is growing evidence on how higher temperatures can act together with even low chemical concentrations of pollutants to elicit significant effects, undermining the traditional risk assessment paradigm for establishing threshold conditions below which a compound is not considered a threat. Furthermore, "environmental endocrinology", focusing on active hormonal compounds, is bringing to light the hormonal mechanisms acting in response to changing environments.

In this context, climatic warming is causing alteration of the diurnal temperature range, as well as altered precipitation patterns. These patterns have relevant effects on biodiversity, ecosystem function, and community structure. Moreover, physiology and life history traits such as thermal tolerance, growth rate, and reproduction are severely affected

Conclusion :

Today's society benefits from the exploitation of marine resources. Impacts related to global warming on marine environment are growing up in many important sectors as fisheries rearing and aquaculture of fishes crustaceans, mollusks, and other organisms. However, the main worrying adverse effects are those that influence reproductive fitness and survival of all the marine species in turn threatening the whole marine ecosystem. Charles Darwin who is considered "the father of evolution" was used to say that the species able to survive is not the strongest but the most responsive to change. In this line, the aim of many scientists in the close future would be not only to collect data on the negative impact of climate changes on living biota but mainly to study as counteract the sources of thermal pollution together with identifying the rate of tolerance and adaptation capability of species to new climatic conditions.