The role of genetics in fisheries management under the E.U. common fisheries policy

Abstract:
Exploitation of fish and shellfish stocks by the European Union fishing fleet is managed under the Common Fisheries Policy (CFP), which aims to ensure that fishing and aquaculture are environmentally, economically and socially sustainable and that they provide a source of healthy food for E.U. citizens. A notable feature of the CFP is its legally enshrined requirement for sound scientific advice to underpin its objectives. The CFP was first conceived in 1970 when it formed part of the Common Agricultural Policy. Its formal inception as a stand-alone regulation occurred in 1983 and since that time, the CFP has undergone reforms in 1992, 2002 and 2013, each time bringing additional challenges to the scientific advisory process as the scope of the advice increased in response to changing objectives arising from E.U. regulations and commitments to international agreements. This paper reviews the influence that genetics has had on fish stock assessments and the provision of management advice for European fisheries under successive reforms of the CFP. The developments in genetics since the inception of the CFP have given rise to a diverse and versatile set of genetic techniques that have the potential to provide significant added value to fisheries assessments and the scientific advisory process. While in some cases, notably Pacific salmon Oncorhynchus spp., genetics appear to be very well integrated into existing management schemes, it seems that for marine fishes, discussions on the use of genetics and genomics for fisheries management are often driven by the remarkable technological progress in this field, rather than imminent needs emerging from policy frameworks. An example is the recent suggestion to use environmental (e)DNA for monitoring purposes. While there is no denying that state-of-the-art genetic and genomic approaches can and will be of value to address a number of issues relevant for the management and conservation of marine renewable natural resources, a focus on technology rather than policy and management needs is prone to widen the gap between science and policy, governance and management, thereby further impeding the effective integration of genetic and genomic information into the fisheries management decision making process. Hence, rather than focusing on what is technically achievable, this review outlines suggestions as to which modern genetic and genomic approaches are likely to help address some of the most pressing fisheries management challenges under the CFP.

URI:

Authors:
CASEY John
GAMITO JARDIM José Ernesto
MARTINSOHN Jann