

Theme Session L – Stock identification – applications for aquaculture and fisheries management

Conveners: Terje Svåsand (Norway) and Steve Cadrin (USA)

Introduction

Advances in methods for identifying specific stocks have been significant in recent years and provide better possibilities for stock-specific catch advice (at regional, river, and tributary level). Furthermore, new genetic markers for aquaculture species are being developed, which may identify escapes to a specific fish farm and determine if or how escapees are incorporated into wild stocks. The same methodological advances that are being developed for aquacultural objectives can also be used to study stock structure of capture fishery resources. The theme session allowed the potential for these applications to be reported and the implications for fisheries management to be discussed with the scientific community, stakeholders, and resource managers.

Overview

The session consisted of 15 oral papers and 9 posters, most of them addressing applications for fisheries management. A wide diversity of papers were presented, addressing several topics on *methods for stock identifications* and *application of stock identifications in aquaculture and fisheries management*:

i) Genetic interactions between aquaculture and wild populations

During the past 10 years, worldwide production of farmed fish has more than doubled, with farming activities now producing half of the fish directly consumed by humans. The potential genetic effects of aquaculture on natural fish populations have aroused a great deal of concern among scientists as well as the general public. The perceived risks are often associated with the possible interactions between cultured and native fish with harmful consequences on ecosystem dynamics. Paper L:06 reviewed the status of genetic impact of aquaculture activities on native populations, with a focus on genetic tools for stock identifications (for further information see: <http://genimpact.imr.no>). Another paper (L:08) reported loss of genetic variability in juvenile hatchery reared Atlantic salmon, released in three Spanish rivers to support the natural populations.

ii) Stock identification in fisheries management

Several case studies were presented that had implications for managing fisheries. Presentations were grouped taxonomically, but many advances can be applied across a wide range of fishery management issues. For example, genetic techniques and statistical mixing models developed to identify aquacultural brood stocks can be applied to stock composition of mixed-stock fisheries, particularly those with rare components. As a side note in this discussion was the critical need to determine F_{ST} , as an indicator of whether there is enough genetic difference among groups to support stock composition analysis. Despite the excitement about genetic developments, several presentations illustrated how a range of stock identification techniques should be applied to fishery management issues. For example, parasites were useful for determining stock identity of horse mackerel, morphological variation was valuable for cod, herring and whelk, and tagging is important for reconciling large scale coherence of cod stocks and fine-scale genetic structure.

One practical issue that emerged from several presentations and discussions is the need to sample and archive tissues for genetic analysis. Incorporating tissue samples into routine survey and fishery sampling will provide valuable exploratory samples for examining genetic

diversity and stock structure as well as the potential for baseline data for stock composition analysis of mixed stock fisheries.

Conclusions

The presentations and posters addressed the objective of the theme session and continued to show that stock identification is an important issue in fishery science and management. The session continued a successful series of theme sessions at ICES Annual Science Conferences that have served as a way for scientists from diverse disciplines to interact and learn of advances in related fields. The conveners hope that the proposed theme session on life cycle diversity for the 2008 ASC will help to extend this successful series of sessions