

## Editorial

# EFFECTS OF FISH FARMING ON MARINE ENVIRONMENT

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## Introduction

Aquaculture practices rely upon the use of natural resources such as land and water that are parts of the overall environment shared by other living beings, but...

### What are the Effects of Fish Farming on Marine Environment?

The most common negative environmental impacts that have been associated with aquaculture include: waters eutrophication, water quality, alteration or destruction of natural habitats; introduction and transmission of aquatic animal diseases (FAO, 2006a).

Fish-farming contributing to marine waters eutrophication, faeces and uneaten food pellets from fish farms alter the organic matter in the sediment, which can change the consumption of oxygen and cause local eutrophication (Mirto et al. 2009). On 2005 Zaccone et al. investigated on fish-farming impact on both pelagic and sediment environments of Mar Piccolo of Taranto (Italy), studying the distribution of microbiological indicators (heterotrophic bacteria and coliforms), in relation to physical and chemical parameters showing that the benthonic environment increased the bio-deposition of the sediment, causing changes in the abundance and the composition (heterotrophic bacteria/clostridia ratio) of microflora. New methods were developed for the detection of environmental indicators (Caruso et al. 2003; 2002a,b). In addition to the eutrofication that cause huge damages for the environment and local fauna, the spread and the outbreaks of diseases are negative consequences of the expansion and diversification of the aquaculture sector associated with globalization (Mancuso 2013a,b; Mancuso et al. 2013; Crisafi et al. 2011; Amagliani et al. 2009; Mancuso et al. 2007). The development and implementation of national aquatic animal health management plans is important to prevent, control and eliminate diseases in a timely manner and respond to consumers increasing concerns for food safety, ecosystems integrity and animal welfare.

### How to Prevent the Impacts and to Improve the Quality Product?

Aquaculture needs an enabling policy environment in order to grow in a sustainable manner and to be integrated into the coastal zone. Moreover the interactions between aquaculture and the larger system in which it occurs, in particular, the influence of the surrounding natural and social environment on aquaculture, must be taken into consideration (Subasinghe, 2009).

In my opinion only an integrated and multitasks vision can improve the aquaculture industry, in fact it's very important take account of the full range of ecosystem functions and services and should not threaten the sustained delivery of these to society.

## References

- Amagliani, G., Omiccioli, E., Andreoni, F., Boiani, R., Bianconi, I., Zaccone, R., Mancuso, M., Magnani, M., (2009). Development of a multiplex PCR assay for *Photobacterium damsela* subsp. *piscicida* identification in fish samples – Journal of Fish Disease **32**: 645-653.
- Caruso, G., Crisafi, E., Mancuso, M., (2002b). Development of an enzyme assay for rapid assessment of *Escherichia coli* in seawaters. Journal of Applied Microbiology **93**: 548-556.
- Caruso, G., Crisafi, E., Mancuso, M., (2002a). Immunofluorescence detection of *Escherichia coli* in seawaters: a comparison of different commercial antisera - Journal of Immunoassay & Immunochemistry, **23**: 479-496
- Caruso, G., Genovese, L., Mancuso, M., Modica, A., (2003). Effects of fish farming on microbial enzyme activities and densities: comparison between three Mediterranean sites - Letters Applied Microbiology **3**: 324-328.
- Caruso, G., Mancuso, M., Crisafi, E., (2003). Combined fluorescent antibody assay and viability staining for assessment of physiological states of *E. coli* in seawaters - Journal of Applied Microbiology **95**: 225-233.
- Crisafi, F., Denaro, R., Genovese, M., Cappello, S., Mancuso, M., Genovese, L., (2011). Comparison between *16SrDNA* and *ToxR* genes as targets for the detection of *Vibrio anguillarum* in *Dicentrarchus labrax* kidney and liver. Research in Microbiology. **162**: 223-230.
- Mancuso, M., (2013a). "Aquaculture advancement" - Editorial – Special Issue "Fisheries and Aquaculture advancement" to Journal of Aquaculture Research and Development (JARD)
- Mancuso, M., (2013b). "Fish welfare in aquaculture" - Editorial - Journal of Aquaculture Research and Development (JARD). **3**: 4-6.
- Mancuso, M., Avendaño-Herrera, R., Magariños, B., Zaccone, R., Toranzo A.E., (2007). "Evaluation of different DNA-based fingerprinting methods for typing *Photobacterium damsela* subsp. *piscicida*." Biological Research, **40**: 85-92.
- Mancuso, M., Caruso, G., Adone, R., Genovese, L., Crisafi, E., and Zaccone, R., (2013). Detection of *Photobacterium damsela* subsp. *piscicida* in seawaters by fluorescent antibody. Journal of Applied Aquaculture **25**: 337-345.
- Mirto, S., Bianchelli, S., Gambi, C., Krzelj, M., Pusceddu, A., Scopa, M., (2009). "Fish-farm impact on metazoan meiofauna in the Mediterranean Sea: Analysis of regional vs. habitat effects" Marine Environmental Research, **69**: 38-47.
- Zaccone, R., Caruso, G., Zampino, D., Mancuso, M., Genovese, L., Adone, R., Ciuchini, F., Manfrin, A., (2004). Early detection of *Vibrio anguillarum* in waters: a challenge experience on *Dicentrarchus labrax* in microcosm - Acts of Aquaculture Europe Special Publication n. 34: 849-850 (European Aquaculture Society).
- Zaccone, R., Mancuso, M., Modica, A., Zampino, D., (2005). Microbiological indicators for aquaculture impact in Mar Piccolo of Taranto - Aquaculture International **13**: 167-173.