Meetings International
SciTechnol
Daniel D Benetti, J Mar Biol Oceanogr 2018, Volume: 7
DOI: 10.4172/2324-8661-C1-010

International Conference on

AQUACULTURE & MARINE BIOLOGY

June 25-27, 2018 | Rome, Italy

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Overview on advanced technologies of marine finfish aquaculture in the Americas

Advances in hatchery, nursery and growout technologies of high-value marine fish are presented. Some of the important marine fish species whose aquaculture technologies are available in the Americas are cobia (*Rachycentron canadum*), hamachi/kampachi (*Seriola rivoliana, Seriola lalandi/ Seriola dorsalis*), pompanos (*Trachinotus carolinus*), Pacific red snapper (*Lutjanus guttatus*), mahi (*Coryphaena hippurus*), hirame or Japanese flounder (*Paralichthys olivaceus*), Nassau grouper (*Epinephelus striatus*), totoaba (*Totoaba macdonaldi*), red drum (*Sciaenops ocellatus*) – among others. Progress towards full cycle farming of bluefin tuna (*Thunnus thynnus*) and yellowfin tuna (*T. albacares*) is also being reported, as well as efforts to develop technology to close the cycle of blackfin tuna (*T. atlanticus*), a new species for aquaculture. Modern hatcheries using advanced technologies are beginning to produce mass quantities of juveniles for grow-out primarily in exposed, high-energy area of the open ocean using both submersible cages such as Sea Stations and Aquapods and improved models of traditional gravity cages. Recently, progress in Recirculating Aquaculture Systems (RAS) and flow-through methods are allowing the development of land-based commercial nursery and grow-out operations. The potential has been identified, investments are solid, and the industry is growing and posed to expand exponentially in the next few years. Recent relevant technological advances and the most important challenges faced by researchers and the industry are presented. Recent developments in hatchery technology of a large number of commercially and ecologically important species are resulting in the availability of high quality fingerlings and juveniles for stocking ponds tanks, RAS and cages. Cobia, snapper, Seriola, grouper, mahi-mahi, bluefin and yellowfin tuna, among others, are now routinely stocked for growout to market. Closing the life cycle of these species and gaining control over the microbiology of the hatchery systems including water quality, live feeds and the microbiome of early development stages of sensitive larvae are enabling the producing of juveniles to stock cages or land based system to be grown to market size along with the potential for restocking the oceans. Evidence is presented to support the statement that aquaculture is not only about producing wholesome seafood for human consumption and providing jobs and other socio-economic benefits. Beyond all that, aquaculture has been playing, and will continue to play, a major role in conservation of the species. Indeed, responsible aquaculture will ensure the future of tuna fishery stocks conservation as well as those of other commercially and ecologically important species.

Biography

Daniel D Benetti is the professor and director of aquaculture at the University of Miami's Rosenstiel School of Marine and Atmospheric Science. He has over 30 years experience in aquaculture worldwide. He specializes in developing and advancing hatchery, land-based (recirculating Aquaculture Systems and flow-through) and open ocean grow-out technologies of marine fish, including but not restricted to, cobia, Seriola, mahi, tuna, snapper, grouper, pompanos and flounder. He has published over 130 articles in aquaculture technology and production, has extensive experience with the industry and has been a consultant for the private and government sectors in several counttries in Latin America, US, Europe, Asia, Caribbean, Africa, Australia and the Middle East.

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