Aquaculture Biosecurity
Prevention, Control, and Eradication of Aquatic Animal Disease

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Aquaculture loses millions of dollars in revenue annually to aquatic animal diseases. In response, stakeholders in aquaculture, from the individual farmer to policy-makers, are promoting and implementing biosecurity programs to combat the diseases responsible for these losses. Oceanic Institute (OI) and the American Veterinary Medical Association (AVMA) brought these diverse stakeholders together for a 3-day special session, “Aquaculture Biosecurity 2004,” at the World Aquaculture Society (WAS) annual conference in Honolulu, Hawaii, March 1–5, 2004. The goal of the special session was to update information on the various approaches being taken and to identify what next steps are needed for implementing effective biosecurity programs from the farm level up. This book contains 12 of the 30 presentations given by the diverse stakeholders in their areas of expertise. This activity was conducted under a grant from the National Oceanic and Atmospheric Administration (NOAA) Office of Oceanic and Atmospheric Administration (NOAA) Office of Oceanic and Atmospheric Research (Grant #NA17RG2076) to OI and was supported by the AVMA and WAS.

To be effective, aquaculture biosecurity needs to establish an integrated approach between the farms and governments to exclude and combat aquatic animal diseases. Approaches being integrated and implemented at the international (World Organisation for Animal Health [OIE] and the Food and Agriculture Organization of the United Nations [FAO]) and the regional level (Network of Aquaculture Centres in Asia–Pacific [NACA]) are covered in Chapters 1–3. The OIE, with a membership of 166 countries in March 2004, publishes the Aquatic Animal Health Code and Manual of Diagnostic Tests for Aquatic Animals and updates them annually. The FAO has developed Codes of Conduct and best management practices throughout the world that result in increased profitability. The NACA works in conjunction with the OIE and the FAO to formulate biosecurity policy, with programs that focus on reducing the risk of disease transmission.

Canada’s national Aquatic Animal Health Program (Chapter 4) was developed through partnerships at the national, regional, and producer levels, working together to address the health of both wild and aquaculture species. Their biosecurity issues include new species diversification and domestication and the potential for newly emerging diseases, the increased number of facilities and live transfers, a growth in consumer demand for healthy products, and more challenges from environmental groups.

In the United States, many government agencies are involved in aquaculture in different ways. The U.S. Department of Agriculture regulates all animal health, including aquatic animals. The NOAA Fisheries promotes good stewardship of national fisheries resources, and is calling for a dramatic increase in aquaculture in the next 20 years that may involve animal health. The U.S. Fish & Wildlife Service is responsible for threatened and endangered freshwater species, and has developed diagnostic procedures, husbandry practices, and risk
assessment worksheets that are useful for biosecurity programs (Chapter 5). There is a need for harmonization among these government agencies and for biosecurity programs for the ornamental industry.

Most protection from disease in the United States is done at the state level, but import regulations also need to be harmonized. Many states have no regulations, some address only salmonids, and most regulations are inaccessible to producers. Wisconsin is one of the few states that address biosecurity and health programs for large numbers of freshwater species (Chapter 6), such as yellow perch, to issue health certificates for non-salmonid operations. Another area in need of harmonization for effective aquaculture biosecurity in the United States is in diagnostic data collecting and reporting and validity of test results (Chapter 7).

At the farm level, common themes are education, communication, and economics. This book provides information on the proper use of disinfectants (Chapter 8), aquatic animal health surveillance (Chapter 9), and how to raise farmer awareness and keep them informed about biosecurity issues (Chapter 10).

Case studies of two diseases affecting the salmon industry, infectious hematopoietic necrosis (IHN) and infectious salmon anemia (ISA), are described in Chapters 11 and 12, respectively. Industry response led to effective disease management in the IHN study. The ISA study points out the need for increased surveillance.

Aquaculture Biosecurity 2004 was the follow-up to a workshop on biosecurity held by OI in Honolulu in July 2001, and provided additional information for effective biosecurity programs against aquatic animal diseases. The session brought out the need for increased integration of biosecurity measures from the farm to the international level, identified some of the major issues that need to be addressed, and made recommendations on the next steps to be taken to ensure the profitability and sustainability of aquaculture.

We would like to express our thanks and appreciation to Dr. A. David Scarfe for his assistance in planning the special session and identifying presenters for Aquaculture Biosecurity 2004, to the contributing authors, to manuscript reviewers for their helpful comments and suggestions, and to Ms. Alcian Clegg for her valued assistance in preparing the manuscripts for review and publication.

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