

Aquatic Animal Health Professional Certification Schemes: Some Options for the Asian Fish Health Community

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ABSTRACT

Many governments are under increasing pressure from international trading partners to provide better information on the health status of exported aquatic animal commodities, particularly live animals. A central factor in this situation involves the training and certification of various links in the Competent Authority chain-of-command, including aquatic health service providers, aquatic pathogen detection laboratories, aquatic species pathologists, veterinarians and personnel who facilitate the endorsement of aquatic animal certificates of inspection. Standardized methods to ensure the competence of those people charged with providing and interpreting information on the health status of aquatic animals and/or their products for export is imperative to maintain the confidence of international trading partners. A thorough and logical certification protocol for aquatic animal health personnel would lend additional credibility and assuredness/peace of mind to the importer/consumer in the quality of the product and the production of health certificates of instantly recognizable meaning. Existing professional certification programs for aquatic animal health providers will be reviewed. These programs could provide guidance as a Professional Standards establishing mechanism for veterinarians and non-veterinary personnel in Asia who currently provide aquatic animal health services. This paper proposes a professional standards mechanism, developed through NACA and the Asian Fisheries Society-Fish Health Section (AFS-FHS), to promote and authorize a certification protocol for aquatic animal health providers in Asia as highly useful in improving this situation.

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BACKGROUND

Aquaculture is an important and expanding industry within the region; however, losses due to disease are often a primary constraint to aquaculture growth, with potential effects on both the socio-economic development in many countries that rely heavily on aquaculture for domestic consumption in rural communities, and/or foreign currency income through export markets. The impacts of disease are particularly problematic to small-scale farmers, who represent the majority of aquaculture production in many rural communities in Asia and worldwide. The reasons for this differential impact are multifactorial, but inequities in access to aquatic animal medicine/husbandry services, education and inaccurate information are core issues.

Aquaculture extension services for farmers in Asia are currently provided by personnel with varying levels of education and experience in aquatic animal health, including private individuals, governmental and non-governmental organizations, feed company representatives and others. This chain of information and services provided to the importer/customer from the farmer, through local and regional laboratories and governmental regulatory institutions, is currently fragmented at best. Updated guidelines (OIE, 2007) for facilitating the safe international movement of live aquatic animals have made the aquatic animal disease status of exporting and importing countries much more important from a regulatory standpoint. As such, there is increasing pressure from trading partners to provide better and more standardized information on the health status of exported aquatic animal commodities. Additionally, the globalization of seafood trade and the increasing awareness and demand of consumers for safe and high quality food have put food safety and quality assurance high in public awareness, and made those a priority for many governments. Such concerns also include the use of drugs and other chemicals in aquaculture, and the presence of human pathogens in seafood.

Although the field of aquatic animal health has rapidly developed in the past few years, standardized methods to ensure the competence of those people charged with providing and interpreting information on the health status of aquatic animals and/or their products for export have lagged in development. A thorough and logical certification protocol for aquatic animal health personnel would lend additional credibility and assuredness/peace of mind to the importer/consumer in the quality of the product and the production of health certificates of instantly recognizable meaning. Similar types of certification are practiced in many professional fields as a way of setting standards/baseline for professional competence.

In order to effectively implement such a certification program, national responsibility for aquatic animal health control needs to be clearly assigned, or better defined in cases where jurisdiction is unclear. The responsible authorities for aquatic animal health management vary from country to country, but such mandates may derive from the ministries or departments responsible for fisheries, agriculture and/or livestock, not the veterinary authorities. To this end, designation of a Competent Authority (CA) specifically for aquatic animal health issues is essential. Subsequent levels of authority for aquatic species, as mentioned in following sections, should devolve from the national level. Regardless of any delegated CA, and the actual aquatic animal health service providers

who may be involved, the need exists to have open and effective communication among the health workers, the CA and the governmental competent veterinary authority that has responsibility for reporting aquatic animal pathogens to the World Animal Health Organisation (OIE).

This need was emphasized at the 23rd Conference of the OIE Regional Commission for Asia, the Far East and Oceania, held in Noumea, New Caledonia in 2003, where a report was presented by the Commission “to demonstrate the current low level of interest in aquatic animal health matters shown by Veterinary Authorities in some Member Countries, deficiencies in communications between Veterinary Authorities and other Competent Authorities involved in aquatic animal health, and inaccuracies and inconsistencies in aquatic animal disease reporting to the OIE by veterinary authorities”.

CURRENT RURAL AQUATIC ANIMAL HEALTH SERVICES IN ASIA

The majority of Asian aquaculture production comes from rural small-scale farms in which disease problems are often thought to be attributable to poor husbandry. In many cases the picture is more complicated, as disease problems arose and continue to exist due to unsafe and unregulated commerce of diseased aquatic animals – both locally and internationally. Economic factors, access to information and access to “safe” alternatives also likely play a role. The spread of many shrimp viruses (and recently of koi herpes virus in fish) are the plausible results of this combination of factors.

Extension services currently offered to rural Asian farmers are provided by many types of governmental and non-governmental organizations, utilizing a heterogeneous mix of personnel with varying levels of education and experience. Often the representative from a feed company is the main (or only) person assisting the farmers with disease and husbandry issues, particularly for more commercial aquaculture such as shrimp farming. Recent literature has acknowledged deficiencies in this approach, including a lack of knowledgeable and experienced extension personnel trained in aquatic animal pathology and appropriate disease control measures; logically, this situation can lead to decreased levels of confidence by many importing countries in the certification of aquatic animal health status.

AQUATIC ANIMAL HEALTH CARE CERTIFICATIONS

The certification of aquatic animal personnel in Asia is not a new idea. The need for this has been repeatedly emphasized at recent meetings and workshops. However, the needs of small-scale farmers/individuals/communities engaged in aquaculture may be substantially different from those of large commercial production facilities. Small scale rural farmers require the same or better disease control, preventative measures and extension services than larger producers, but do not receive them because they are (apparently) less commercially attractive as individual operations due to their size and scale of operation. Larger facilities might need consultation on vertically-integrated biosecurity encompassing feed production, infrastructural components, vehicular movements, distribution, personnel, and compliance with sanitary requirements of product processing, as well as disease

control advice. In contrast, small-entity rural farmers might be better served with a basic level of biosecurity awareness and husbandry techniques. This could include concepts of animal density and environmental stress-related disease prevention. The level of education required to provide this range of service may thus indicate the need for a tiered certification of aquatic animal health providers.

The idea for certifying Asian aquatic animal health personnel can be modeled after the currently-implemented three-tiered approach to pathogen detections /surveillance, based on sophistication of the provider and the diagnostic tools available. Tier 1 involves gross examination and basic microscopy for assessment of gross clinical presentations involving parasites or external fungal infections. Tier 2 involves more sophistication such as microbiological techniques including bacteriological culture and simple serologic tests. Tier 3 involves tools such as cell culture and molecular techniques for virus detection. The goal is to evolve from Tier 1 to Tier 3 by building competence of staff and infrastructure. Other tiers for assessing nutritional status, genetics, environmental factors and other factors could be added over time.

As in human and veterinary medicine, where primary health care may be provided by non-physicians and non-veterinarians who are certified in specialized fields, a similar approach may work for rural Asian aquatic animal health providers. In this case, 'primary care' refers to accessible medicine that is delivered by generalists rather than specialists, entails relatively low technology, places emphasis on prevention and tends to be less costly. By training and certifying primary and secondary aquatic animal health providers, the needs of the rural farmer, industry, government and importing countries can be met, while making extension work more effective. This type of certification system might improve some of the gaps in aquatic animal health extension services in Asia.

U.S. ANIMAL HEALTH CERTIFICATION PROGRAMS

There have been substantial changes in the way aquatic animal health services have been provided over the last few decades in the United States. Few veterinarians in 1975 were available, experienced or interested in aquatic animals beyond mammals in zoological facilities. Diseases of aquatic animals were the mainly the purview of parasitologists and microbiologists. Veterinary medical education in the U.S. and internationally has largely been focused on the diseases of important terrestrial mammals including swine, bovine, equine, feline and canine species, and poultry. As the needs of the U.S. aquaculture industry are evolving to require more advanced and experienced aquatic animal health professionals, the veterinary community has also evolved to meet those needs, but there are still relatively few experienced and available U.S. practitioners whose practice is solely devoted to aquatic animal medicine. However, many veterinarians increasingly incorporate aquatic animal medicine into their existing overall practice.

As an example of a model certification protocol, the U.S. Department of Agriculture, Animal and Plant Health Inspection Service (USDA APHIS), administers the National Veterinary Accreditation Program (NVAP). This is a voluntary program that certifies private veterinary practitioners to:

- issue Federal regulatory health certifications for animal movement and export
- conduct extensive disease surveillance and monitoring
- be aware of and execute the notification protocols for reportable, zoonotic and emerging diseases
- safeguard U.S. animal health and control animal diseases

Benefits of the NVAP program include:

- training of a sufficient number of veterinarians to perform activities for regulatory work in a manner that is consistent with international and interstate trade requirements
- standardized accreditation procedures and requirements allowing for more uniform administration of USDA programs

Basic requirements for the NVAP:

- successful completion of a Doctorate of Veterinary Medicine;
- licensure to practice veterinary medicine in the State in which the veterinarian wishes to perform accredited duties; and,
- completion of an orientation program, which includes information on:
 1. Federal and specific state animal health regulations
 2. Interstate movement requirements for animals
 3. Import and export requirements for animals
 4. USDA animal disease eradication and control programs
 5. Laboratory support in confirming disease diagnoses
 6. Ethical/Professional responsibilities of an accredited veterinarian

The above criteria apply to veterinarians engaged in the health care of all types of farmed animals. However, with some modifications, the model is adaptable to veterinarians dealing with aquatic species.

Under the developing US National Aquatic Animal Health Program (NAAHP), provisions will be eventually be made among three Federal agencies, designated as co-Competent Authorities, for the training and certification of personnel involved with the exportation of farmed, resource and wild-caught aquatic animals. Finfish and shellfish health inspections, for example, will be conducted by individuals (inspectors) with appropriate education, training, equipment and facilities. It is important that any aquatic animal inspector be an impartial third party who has no potential of personal gain dependent upon the outcome of the inspection. The initial and continued success of this program will rely on the professional integrity and faithful execution of the duties of accredited veterinarians and other aquatic animal personnel.

AMERICAN FISHERIES SOCIETY/FISH HEALTH SECTION FISHERIES PROFESSIONAL CERTIFICATION

The American Fisheries Society (AFS)/Fish Health Section has developed educational and experience requirements to certify individuals in a tiered Fisheries Professional certification program. Although this program does not hold any Federal or otherwise official status,

the U.S. Department of Interior, Fish and Wildlife Services and the Department of Commerce, National Oceanographic and Atmospheric Administration acknowledge AFS Certified Fish Health Pathologists and Fish Health Inspectors as competent individuals in the field of aquatic animal health for finfish species under their respective jurisdictions. Some State agencies in the U.S. legally recognize individuals with AFS certification and provide increased compensation as an incentive to obtain and retain the certification. This certification program has been a successful attempt to raise the professional profile of AFS professionals by encouraging its members to stay current with advances in the field, and through requiring periodic re-certification to maintain their status.

NATIONAL ASSOCIATION OF TESTING AUTHORITIES (NATA), AUSTRALASIA

The NATA, which certifies member laboratories in Australasia to ISO/IEC 17025 standards, has recently recognized the qualification of an “aquatic diagnostician”. This designation is defined as:

“A veterinary pathologist specializing in fish pathology who has satisfactorily completed the Australian College of Veterinary Scientists (ACVSc) Aquatic Animal Chapter examinations or equivalent course of research post graduate qualification that included a large component of aquatic animal pathology.

OR

A non-veterinarian who has completed an approved graduate education program in fish pathology; and has completed a minimum of 3 years professional level full-time fish health work experience including a substantial pathology/histopathology component; and is authorized to make a diagnosis under the relevant state legislation in the jurisdiction in which the laboratory operates.

Examples of post graduate qualification could include a higher degree or doctorate of philosophy in a relevant discipline with demonstrated experience in diagnostic techniques. Three years full-time work experience (minimum 0.75 FTE) is in line with the requirements of the American Fisheries Society (who register both veterinary and non-veterinary people as “fish pathologists” after examination).”

In Australia, there is no professional body similar to the American Fisheries Society which registers non-veterinarian ‘fish pathologists’ in a similar way to a professional veterinary Board certification process for veterinarians with specialized post-graduate training. This has limited the application of the above “aquatic diagnostic” definition, since veterinarians generally object to non-veterinarians receiving any official recognition for diagnosing or treating animal diseases. Moves to increase professional opportunities for aquatic animal practitioners in Australia have centered on the development of the Aquatic Animal Health Chapter of the ACVSc, which now offers membership by examination for registered veterinarians. However, most veterinarians, although authorized by virtue of their position to sign health certificates and make diagnoses for a wide spectrum of aquatic diseases affecting many species, often have only finfish- or salmonid-centric experiences.

INTERNATIONAL RECOGNITION

One of the issues which Asian countries (and others) will likely encounter is that the veterinary qualifications of an individual are not transferable to or recognized in other countries regardless of the country from which the veterinary degree was obtained, or the professional status and experience of the individual. The building of stronger formal and informal veterinary professional ties between countries, particularly ones with adjoining or shared water resources, could eventually allow for cross-recognition of veterinary and non-veterinary aquatic animal health qualifications.

RECOMMENDATIONS

One important achievement for Asia would be the establishment of an Asian equivalent of the American Fisheries Society certification approach, with membership achieved through specific required training and examination. Such a registration process would act as a professional standards-setting mechanism for non-veterinarian professionals in Asia who currently provide health and management services, including pathogen detections, environmental assessments and modifications, nutritional advice, provision of therapeutic options (but generally not prescribing therapeutants restricted to veterinary prescription), and advice for many other factors affecting aquatic animals.

Professional standards that could be developed for certifying personnel who want to provide aquatic animal health services are currently being drafted for review by the Network of Aquaculture Centres of Asian-Pacific (NACA) and the Asian Fisheries Society-Fish Health Section (AFS-FHS). These standards might offer farmers the opportunity to identify and choose from a wider pool of qualified individuals than currently exists; and would lend additional credibility and assurance to importers and consumers regarding the quality of the product. Such standards would also facilitate the issuance of valid certificates of inspection for aquatic animals. Ultimately, individual countries may need to adopt, modify or vary these suggestions to suit their own particular situations and resources.

With all this said, individual certification is only one part of the picture. There is a need also to put in place a system for training of the certified people. This is not a small task, but could be done based on a system of recognized and “certified” training centers. This topic is thoroughly covered in Subasinghe (1995).

REFERENCES

- FAO. 1997. A Review of Aquaculture Extension Services in Bangladesh (Complete Version). RAP Publication No. 35. FAO, Bangkok, Thailand. 54 pp. (Accessed on 11 May 2008 from <http://www.fao.org/DOCREP/004/X6940E/X6940E00.HTM>)
- FAO. 1997. A Review of Aquaculture Extension Services in the People’s Republic of China. RAP Publication No. 34. FAO, Rome, Italy. 46 pp. (Accessed on 11 May 2008 from <http://www.fao.org/DOCREP/005/AC804E/AC804E00.HTM>)

FAO. 1989. Review of Extension Methodologies in Aquaculture. Aquaculture Development and Coordination Programme. FAO, Rome, Italy. 65 pp. Project reports No. ADCP/REP/89/44 (Accessed on 11 May 2008 from <http://www.fao.org/docrep/T8654E/T8654E00.htm>)

Subasinghe, R.P., Arthur, J. R. and Shariff, M. 1996. Proceedings of the Regional Expert Consultation on Aquaculture Health Management in Asia and the Pacific Serdang, Malaysia, 22–24 May 1995. *FAO Fish. Tech. Pap.* No. 360.