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Integrating human, animal and environmental health

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A Review of the British Columbia Ministry of Agriculture and Land's Fish Health Audit and Surveillance Program

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Executive Summary

The BC Fish Health Audit and Surveillance Program (FHASP) was designed to monitor the health of farmed marine-based salmon in British Columbia. The program was also intended to provide a means of auditing information collected and made public by the salmon farming industry in order to improve public confidence in the industry. Currently, the program only applies to marine-based salmon aquaculture facilities but there is interest in expanding the program to other sectors of the industry.

Since the FHASP first became operational in 2001, production changes and amalgamation of the aquaculture industry, in addition to changes in the strategic goals and objectives of the provincial fish health program, have occurred. Consequently, this review was requested by BCMAL to ensure that the FHASP continues to meet its objectives in the face of industry change. The objectives of this review were: 1) to review the design and operational aspects of the FHASP by comparing it to currently accepted epidemiological principles of disease surveillance, 2) to assess the in-field sampling design and procedures, 3) to review the data management system and make recommendations for changes and improvements, and 4) to provide a needs assessment for expansion and application of the FHASP to other aquaculture sectors.

As the terms apply to the field of epidemiology, surveillance and monitoring have different definitions (Box 1) and the FHASP functions as a monitoring program. Although the current FHASP does not meet all of the requirements for a surveillance program (Table 1), many of the required components of a useful surveillance program are already in place: dedicated financing and staff are available, fish health and sea lice data are regularly

collected and a database in which to store information exists. The level to which salmon aquaculture production in BC is monitored and the degree of cooperation between government and industry are unparalleled in other Canadian agricultural sectors. The FHASP provides an important venue to monitor the health of marine-based salmon.

It is important to recognize that disease detection, diagnosis, treatment and control have and continue to occur outside the realm of the FHASP. Fish disease and fish pathogens are routinely identified by fish health staff on farms and are diagnosed and managed with veterinary assistance. In this respect, the aquaculture industry is similar to other land-based agriculture sectors. The FHASP was not meant to replace this system but rather to improve public confidence in those diseases diagnosed and reported by industry. We are not aware of any other agricultural sector where government actively surveys the general

Box 1: Key definitions (Last, 2001)

Surveillance: is the systematic, ongoing collection, analysis and dissemination of information in time for actions to be taken

Monitoring: is the intermittent performance and analysis of routine measurements, aimed at detecting trends but with no requirements or thresholds for action

health of livestock as opposed to seeking to identify specific pathogens or diseases of concern.

As an audit of those diseases reported by industry, the FHASP is in a position to instill public confidence in the data reported by industry. In addition, on farm visits as part of the FHASP increase the number of fish observed and tested thereby improving disease detection capabilities in the province. The data collected as part of the BC FHASP exceed international standards to demonstrate freedom of disease and the level of fish health monitoring in BC is more comprehensive than in other parts of Canada and other salmon producing regions of the world. Maintenance of the current program, with minor adjustments, will go a long way towards maintaining Canada's international reputation for disease freedom and control.

Table 1: Summary of how the attributes of the FHASP fared in the review process.

Attribute	Score	Major determinant of score
Usefulness	Low	The data are regularly interpreted and used to direct action
Simplicity	Low/Moderate	Different case definitions between government and industry and no formal plan for data analysis and dissemination of results
Flexibility	High	The program has adapted to minor changes in industry
Data Quality	Data Completeness: High	Few places for data entry errors
Acceptability	Moderate	Level of program participation by industry and non-industry stakeholders
Sensitivity	Low	Inability to detect outbreaks and predetermined levels of disease
Representativeness	Unknown	Uncertainty about the clinical course of many fish diseases and characteristics of available diagnostic tests
Timeliness	Low	The data are not collected in time for action to be taken
Stability	Moderate/High	Past history of funding, ongoing industry participation and cooperation

As a surveillance program, the FHASP is missing two critical aspects: 1) specific and measurable objectives for the program, including specific thresholds for action, and 2) a plan for routine and ongoing analysis, interpretation and communication of the results to those who need to know in time to act. Identification of clear and measurable objectives will make it easier in the future to evaluate whether the objectives are being achieved and whether they need to be reviewed or additions made. The information collected through the FHASP has lead to actions being taken (eg further investigation, treatment initiation, management changes). However, there are no formal or documented thresholds to determine when actions are required. Establishment of a threshold for action ahead of time can improve cooperation by all stakeholders involved and decrease the time required for that action to be completed. Interpretation and dissemination of the information collected is critical to augment the ability of the program to improve public confidence in the data produced by industry. If these short-comings are addressed, the FHASP would

