



Purpose of Testing for Diseases.

It seems these days that everyone and their dog want to have a part of the bone. The backbone of disease control is in the realm of testing before aquatic livestock are moved or before the disease spreads on a farm or across a region. There are various organizations writing about their tests. It all gets real confusing when all the different test “requirements” swirl around a producer’s or practitioner’s or regulator’s head. So perhaps some explanation will be helpful to us in the Alliance as we work together to overcome some real basic hurdles that get in the way of moving livestock efficiently in commerce.

Testing is done for at least three purposes, or stated in another way, there are three testing regimes: Diagnostic, Regulatory, or Surveillance. Many state requirements try to utilize one test regime for all purposes which lead to appreciable confusion and conflict in requirements.

Diagnostic Testing. As a private practitioner I often take diagnostic samples when fish are sick or there is a fish kill. I don’t need a large sample if the etiology is widespread. A few representative examples will make a useful sample for testing and sending to the diagnostic laboratory. There are times, also, when there are very few sick fish and the samples are only taken from the moribund. The greatest effort is made to get a diagnosis out of good samples with minimal laboratory cost for the diagnostics. Diagnostic testing maybe called sampling under a financial bias.

Regulatory Testing. When a client wants to move aquatic livestock to another state or a customer there are often testing requirements spelled out in regulations. Without adequate federal oversight each state can decide what is adequate. This atmosphere is giving us the menagerie of import requirements we see between states regarding interstate movement of aquatic livestock. Some good old collaboration between states, until the feds get a handle on things, could smooth the highway of commerce.

Regulatory tests are done to test a known population for a pathogen or disease. Traditional regulatory livestock tests have relied on blood samples or some other non-lethal sampling which allowed up to 100% testing of the population because the animals survived. But aquatic livestock have very few regulatory tests that can be done with blood samples or swabbing a body orifice or even water tests for that matter. So we calculate how many of the population we need to sacrifice in lethal testing to establish a level of confidence that the disease will be in a very low percentage of the population. Presently, the two most commonly referenced regulatory testing protocols come from OIE or AFS-FHS. Pathogen bias is an alternate description of regulatory testing.

OIE has figured out that testing is for the virus detection. Testing is being done to define where the virus is located. OIE testing protocol permits sampling 150 fish per unique water source with effort to have all representative susceptible species and year classes collected in the sample population. The OIE method requires testing twice a year and to have a negative testing record for two or more years. This protocol is really looking for everything that is common to the pathogen.

AFS-FHS protocols are about testing the fish. Testing by AFS-FHS protocols could be said to define where the fish are located. The “lot” definition commonly has to be the same species in the same year class of the same lineage and in the same water body. AFS-FHS testing is especially useful in the wide open spaces that fisheries move in. It has helped in collecting information about species biology and other matters of the ecosystem. Many biologists are simultaneously doing fish census and other management measures. Aquatic livestock are already managed and do not share many activities in that fashion. The AFS-FHS protocol identifies everything in common to the fish.

Surveillance Testing. The third category of testing is best seen in the selection of an even smaller relative sample size from the whole population in a whole area. This sampling can be for numerous pathogens and multiple species. The knowledge gained is entirely based on statistical methods to determine the prevalence of a disease in an area. Location bias is a description of surveillance testing.

Kindly remember that historically no routine regulatory or surveillance testing has ever detected an emerging disease pathogen. Diagnostic samples provide that ability when producer, practitioner and laboratory are communicating and thinking. Once identified, the regulators have the responsibility to act if the pathogen is a potential threat.