

CHAPTER 1.5.

CRITERIA FOR LISTING SPECIES AS SUSCEPTIBLE TO INFECTION WITH A SPECIFIC PATHOGEN

Article 1.5.1.

The purpose of this chapter is to provide criteria for determining which species are listed as susceptible in Article 1.5.2. of each *disease-specific* chapter in the *Aquatic Code*.

Article 1.5.2.

Scope

Susceptibility may include clinical or non-clinical *infection* but does not include species that may carry the *pathogenic agent* without replication.

The decision to list a species as susceptible should be based on a finding that the evidence is definite. However, possible susceptibility of a species is also important information and this should also be included in Section 2.2.1. entitled «Susceptible host species» of the relevant *disease-specific* chapter of the *Aquatic Manual*.

Article 1.5.3.

Approach

A three-stage approach is outlined in this chapter to assess susceptibility of a species to *infection* with a specified *pathogenic agent* and is based on:

- 1) criteria to determine whether the route of transmission is consistent with natural pathways for the *infection* (as described in Article 1.5.4.);
- 2) criteria to determine whether the *pathogenic agent* has been adequately identified (as described in Article 1.5.5.);
- 3) criteria to determine whether the evidence indicates that presence of the *pathogenic agent* constitutes an *infection* (as described in Article 1.5.6.).

Article 1.5.4.

Stage 1: criteria to determine whether the route of transmission is consistent with natural pathways for the infection

The evidence should be classified as transmission through:

- 1) natural occurrence; includes situations where *infection* has occurred without experimental intervention e.g. *infection* in wild or farmed populations; or
- 2) non-invasive experimental procedures; includes cohabitation with infected hosts, *infection* by immersion or ingestion; or
- 3) invasive experimental procedure; includes injection, exposure to unnaturally high loads of pathogen, or exposure to stressors (e.g. temperature) not encountered in the host's natural or culture environment.

Consideration needs to be given to whether experimental procedures (e.g. inoculation, infectivity load) mimic natural pathways for *disease* transmission. Consideration should also be given to environmental factors as these may affect host resistance or transmission of the pathogen.

Article 1.5.5.

Stage 2: criteria to determine whether the pathogenic agent has been adequately identified

The *pathogenic agent* should be identified and confirmed in accordance with the methods described in Section 7 (corroborative diagnostic criteria) of the relevant disease chapter in the *Aquatic Manual*, or other methods that have been demonstrated to be equivalent.

Article 1.5.6.

Stage 3: criteria to determine whether the evidence indicates that presence of the pathogenic agent constitutes an infection

A combination of the following criteria should be used to determine *infection* (see Article 1.5.7.):

- A. the *pathogenic agent* is multiplying in the host, or developing stages of the *pathogenic agent* are present in or on the host;
- B. viable *pathogenic agent* is isolated from the proposed *susceptible species*, or infectivity is demonstrated by way of transmission to naive individuals;
- C. clinical or pathological changes are associated with the *infection*;
- D. the specific location of the pathogen corresponds with the expected target tissues.

The type of evidence to demonstrate *infection* will depend on the *pathogenic agent* and potential host species under consideration.

Article 1.5.7.

Outcomes of the assessment

The decision to list a species as susceptible should be based on a finding of definite evidence. Evidence should be provided for the following:

- 1) transmission has been obtained naturally or by experimental procedures that mimic natural pathways for the *infection* in accordance with Article 1.5.4.;

AND

- 2) the identity of the *pathogenic agent* has been confirmed in accordance with Article 1.5.5.;

AND

- 3) there is evidence of *infection* with the *pathogenic agent* in the suspect host species in accordance with criteria A to D in Article 1.5.6.. Evidence to support criterion A alone is sufficient to determine *infection*. In the absence of evidence to meet criterion A, satisfying at least two of criteria B, C or D would be required to determine *infection*.

Article 1.5.8.

Species for which there is incomplete evidence for susceptibility

The decision to list a species as susceptible in Article 1.5.2. of each *disease*-specific chapter should be based on a finding that the evidence is definite.

However, where there is insufficient evidence to demonstrate susceptibility through the approach described in Article 1.5.3. because transmission does not mimic natural pathways of *infection*, or the identity of the *pathogenic agent* has not been confirmed, or *infection* is only partially supported, information will be included in the relevant *disease-specific* chapter in the *Aquatic Manual*.

If there is insufficient evidence to demonstrate susceptibility of a species, the *Competent Authority* should assess the risk of spread of the pathogen under consideration, in accordance with the recommendations in Chapter 2.1., prior to the implementation of import health measures.

Article 1.5.9.

Pathogenic agents with a broad host range

For *pathogenic agents* with a broad host range, it may be appropriate for the outcome of the assessment to be made at a taxonomic classification higher than species (e.g. genus, family).

- 1) A decision to conclude susceptibility for a taxonomic level above species should only be made where:
 - A. more than one species within the taxonomic group has been found to be susceptible in accordance with the criteria above;

AND

- B. no species within the taxonomic group has been found to be refractory to infection.

The taxa chosen should be the lowest level supported by this evidence.

- 2) Evidence that a species is refractory to infection may include:
 - A. absence of *infection* in species exposed to the *pathogenic agent* in natural settings where the pathogen is known to be present and it causes disease in susceptible species;
 - B. absence of *infection* in species exposed to the *pathogenic agent* through controlled challenges using experimental procedures.