

Chapter 16

Impact of Eel Viruses on Recruitment of European Eel

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16.1 Introduction

Eels have an uncommon catadromic life cycle with exceptional migratory patterns to their spawning grounds several thousand kilometres away: the European eel (*Anguilla anguilla*) travels over 5,500 km to the Sargasso Sea (Schmidt 1923; McCleave and Kleckner 1987; Tesch 1982; Tesch and Wegner 1990); the American eel (*A. rostrata*) migrates over 4,000 km also to the Sargasso Sea (Castonguay and McCleave 1987; McCleave and Kleckner 1987; Tesch and Wegner 1990); the Australian eel (*A. australis*) travels over 5,000 km into the Pacific Ocean to spawn (Jellyman 1987); and the Japanese eel (*A. japonica*) travels over 4,000 km to an area near the Marianna Islands in the Philippines to spawn (Tsukamoto 1992). Evidently such long distance swimming will place those fishes under extra stress caused by the long starvation period, the high energy cost of the journey, and the many changes in the environment such as salt water, darkness, high pressure, and low temperatures, among other stress factors. Stress is often a basis for disease in eel, especially in intensive eel culture (Haenen and Engelsma, 2005 unpublished finding).

Nowadays, global transport of live fishes for aquaculture has facilitated the global spread of pathogens from diseased to healthy stocks. Within the last few decades, aquaculture has become an important production branch in our society. Its global production has more than doubled between 1986 and 1996 in tonnage and value, and over one quarter of human fish consumption at world scale is now produced in aquaculture (Naylor et al. 2000). The Netherlands is one of the leading eel producing & trading countries (Heinsbroek and Kamstra 1995). Blanc (1997) showed that nearly 100 pathogens have been introduced into European water bodies since the introduction of aquaculture. Worldwide many diseases are known in both wild and cultured eel. Parasites, for example trematodes, *Anguillicola*

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