

Chapter 10

Effects of Swimming on Silvering and Maturation of the European Eel, *Anguilla anguilla* L.

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Abbreviations 11-KT: 11-ketotestosterone; ACTH: adrenocorticotrophic hormone; Ca: calcium; DHP: dihydroxy progesterone (17, 20 β -dihydroxy-4-pregnen-3-one); E2: 17 β -estradiol; EI: eye index; ER α : estradiol receptor α ; FSH: follicle stimulating hormone; FSH- β : FSH specific subunit β ; FW: fresh water; GnRH: gonadotropin releasing hormone; GP α : gonadotropin common α subunit; GSI: gonadosomatic index (relative gonad mass); LH: luteinising hormone; LH- β : LH specific subunit β ; NEFA: non-esterified fatty acids; q-rtPCR: quantitative real time polymerase chain reaction; StAR: steroidogenic acute regulatory protein; SW: salt water; T: testosterone; VTG: vitellogenin; α MSH: melanophore-stimulating hormone α

10.1 Introduction

Every year at the end of the growth season in autumn, the majority of the large European eels cease feeding, become restless and start to mature. Only those with sufficient lipid stores (Larsson et al. 1990; Svedäng and Wickström 1997) will start their reproductive migration to the spawning grounds in the Sargasso. They leave in a prepubertal condition with less than 2% relative gonad mass (GSI). The smaller males leave by August (Usui 1991). The large and fatty females leave between October and December to arrive an estimated 3.5 months later (Palstra et al. 2008a) at the spawning grounds. There, in early spring, males reach gonad masses of 10% and females of 40% to 60% of the body mass (Palstra et al. 2005).

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