

Chapter 3

Silvering: Metamorphosis or Puberty?

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Abbreviations 11-KT: 11-Ketotestosterone; CRH: Corticotropin releasing hormone; E2: Estradiol; FSH: Follicle-stimulating hormone; FSH β : β subunit of FSH; GP α : Common subunit of gonadotropins; GH: Growth hormone; GRIF: Gonadotropin release-inhibiting factor; GSI: Gonadosomatic index; GTH: Gonadotropins; KCIO₄: Potassium perchlorate; LH: Luteinizing hormone; LH β : β subunit of LH; PTU: Propylthiouracil; SRIH: Somatostatin; T: Testosterone; T₃: Triiodothyronine; T₄: Thyroxine; TH(s): Thyroid hormone(s); TSH: Thyroid stimulating hormone; thyrotropin; Vg: Vitellogenin

3.1 Introduction

Eels have a complex migratory life cycle with the occurrence of two metamorphoses (for reviews see: Sinha and Jones 1975; Tesch 1977; Haro 2003). They represent a typical larval (first) metamorphosis, the leptocephalus larva being transformed into the glass eel. After this drastic transformation, the growth phase starts in the continental waters and glass eels become “yellow” eels. After many years in freshwater, the yellow eels transform into “silver” eels which stop growing and start their downstream migration towards the ocean and the area of reproduction. To allow this transition from sedentary life in freshwater to migrant life in seawater, eels undergo their second metamorphosis, known as silvering. Silvering not only preadapts the eel to deep-sea conditions (Sébert 2003), but also prepares for sexual maturation, which will only be completed during the oceanic migration towards the Sargasso Sea (Tesch 1982, 1989; Dufour and Fontaine 1985; Fontaine 1985; Dufour 1994). At the silver stage, eels are

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