

Transgenerational Developmental and Behavioral Plasticity of Threespine Stickleback *Gasterosteus aculeatus* of Lake Myvatn, Iceland

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Introduction

Much research has been conducted exploring phenotypic plasticity, the ability for an organism to alter its phenotype in response to its environment within its lifetime (Denver and Middlemis-Maher, 2010; Kishida et al., 2010; Klemetsen, 2010). However, there is increasing interest in so-called transgenerational plasticity, wherein plastic responses to environmental conditions are passed down to offspring (Hellmann et al., 2020; Richter-Boix et al., 2014; Bell and Hellmann, 2019; Shama et al., 2014). This concept holds particular importance in the face of rapid environmental change, because it allows organisms to evolve without relying on actual genetic changes. One of the most well-known model systems for studying plasticity is *Gasterosteus aculeatus*, commonly named the threespine stickleback. Stickleback populations often form species pairs, with two or more morphs coexisting in a single body of water via niche partitioning. In lake Myvatn, two morphs exist, the “mud” and “lava” morphs, defined mainly by habitat type, as well as morphology and behavior (Kristjánsson et al., 2002; Millet et al., 2013). The fish face multiple

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