

Parallel adaptation to the freshwater in a number of independent White Sea populations of threespine sticklebacks.

Threespine stickleback populations adapted to the freshwater all over the World multiple times in parallel. It was already shown that same freshwater alleles are utilized during the adaptation process from the standard genetic variation; however it was not shown to what extent the adaptation process is repeatable among populations. Here we examine 7 freshwater stickleback populations of nearly the same age from White Sea basin and find that there is a number of divergence islands (DIs) which are likely to be critical for adaptation as they became fixed in all populations studied, but there are more other DIs. Although the majority of the DIs has signatures of adaptation to the freshwater, we observe three DIs that have signatures of adaptation to the marine environment. We also find that some DIs are likely not to be fixed due to balancing selection.