Title: Not much of a muchness: Repeated freshwater adaptation - but distinct demographic histories of sticklebacks in Greenland.

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Abstract:
Genetic diversity, which is critical for a population to adapt to changing environments, is shaped by a variety of demographic processes, such as population size, size of the founding populations, bottleneck strength during establishment of populations and migration rates between populations. Back-in time modelling permits us to efficiently test a variety of evolutionary scenarios and hence to gain insights about the demographic processes driven genetic diversity. Three-spined stickleback (*Gasterosteus aculeatus*) is an ancestral marine fish that has adapted to freshwater numerous times throughout the Northern hemisphere. The repeated and independent incidences of freshwater colonisation of sticklebacks enables us to study multiple replicated instances of freshwater adaptation and the demographic histories of those populations. Here we present a study of sticklebacks in Greenland, where a high number of lakes have been independently colonised and preliminary results revealed that stickleback populations differ in genetic diversity amongst those lakes as well as in phenotypes, typically associated with freshwater adaptation. Specifically, we utilised whole-genome-resequencing data from freshwater lakes in Greenland (6 individuals per population, 4 populations) and 20 marine individuals for demographic back-in time modelling (fastSimCoal2). Models were used to explain differences in genetic diversity among those lakes and how variation in demographic history influences freshwater adaptation of stickleback populations. The study provides detailed insights into the diverse nature of the demographic history of geographically close lakes and aims to broaden our understanding on the repeatability and speed of freshwater adaptation.