

## Journal Publications

Carmichael L.E., J. Krizan, J. A. Nagy, M. Dumond, D. Johnson, A. Veitch, C. Strobeck. 2007. **Northwest passages: conservation genetics of Arctic Island wolves.**

### Abstract

Wolves in the Canadian Arctic Archipelago face several challenges to persistence: a harsh habitat, an unstable prey base, and potentially significant anthropogenic influences. These external factors, if combined with genetic constraints common to island populations, could be particularly difficult to withstand. To determine the genetic status of Arctic Island wolves, we used 14 microsatellite loci to estimate population variation and the extent of interisland and island-mainland gene flow. All island populations were significantly less variable than mainland wolves; although inbreeding is currently insignificant, the two least variable populations, Banks and the High Arctic (Ellesmere and Devon Islands), showed genetic signatures of recent population declines. Recovery after a bottleneck appears to result, in large part, via recolonization from other islands. These extinction-recolonization dynamics, and the degree of similarity among island wolves revealed by Bayesian clustering, suggest that Arctic Island wolves function as a metapopulation. Persistence of the metapopulation may be supported by periodic migration from mainland populations, occurring primarily through two corridors: Baffin Island in the Eastern Arctic, and Victoria Island in the Western Arctic. This gene flow could be compromised or eliminated by loss—due to climatic warming or increased human activity—of sea ice in the Northwest Passage.