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Association for the
Sciences of Limnology
and Oceanography



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Life at low temperatures: A novel breeding-system adjustment in a polar cladoceran

Hebert, Paul D. N., Chad L. Rowe, Sarah J. Adamowicz

Limnol. Oceanogr., 52(6), 2007, 2507-2518 | DOI: 10.4319/lo.2007.52.6.2507

ABSTRACT: The typical breeding system of cladocerans, cyclic parthenogenesis, is poorly suited to polar settings because it requires one or more rounds of parthenogenesis before the production of males and sexual eggs. Past work has shown that many arctic cladocerans have secondarily made the transition to obligate, apomictic parthenogenesis. Arctic populations of *Holopedium gibberum* lack males, suggesting their possible adoption of this breeding system. However, this study shows that these lineages instead possess genotypic characteristics expected under either self-fertilization or automictic parthenogenesis, the first record of such a breeding system in the Cladocera. As populations of *Holopedium* from southerly areas reproduce by cyclic parthenogenesis, this breeding system transition appears to represent an adaptive response to living at low temperatures.
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