

## **Distribution and habitat selection of early benthic stages of snow crab, *Chionoecetes opilio***

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**ABSTRACT:** Early benthic stages of snow crab are presumed to be very stenothermic and they might be sensitive to environmental changes and influence subsequent adult population abundance. Little quantitative information exists on habitat preferences of juvenile snow crabs to verify this idea. We determined the distribution pattern of juveniles in the northwestern Gulf of St. Lawrence (Canada) in May 2001. Temperature and substratum preferences were evaluated through controlled laboratory experiments in aquaria that had a temperature gradient and offered a choice of three sediment types (mud, sand and gravel). In general, early benthic stages have sharp size/age-dependent distributions and habitat preferences. In the field, juveniles from instars I to IV are scarce in the core of the cold intermediate layer (CIL) but they distribute immediately above and below where temperatures are  $>0^{\circ}\text{C}$ . Older juveniles, from instars VI to VIII, are concentrated at depths  $<27$  m above the CIL. Analysis of historical data, from 1989 to 2000, supports this depth distribution pattern. Temperature preference in the laboratory shifted from a cold ( $0.0\text{-}1.5^{\circ}\text{C}$ ) to a warmer temperature range ( $1.0\text{-}4.5^{\circ}\text{C}$ ) between instars III and V. Juveniles preferred mud in general. Early juvenile instars might represent the weakest link of the snow crab life cycle because of their narrow habitat requirements.