Chelae regeneration in European alien crayfish

Crayfish chelae have important functions, including prey capture and manipulation, reproduction, defense against predators, and inter- and intraspecific interactions. Consequently a loss of chelae often occurs. Adult specimens of invasive spiny-cheek crayfish (Orconectes limosus) were reared from February to November 2008 to observe the ability to regenerate lost chelae. Percent molt increments (PMI) of postorbital carapace length (POCL), chela length (ChL) and width (ChW) were compared between crayfish with and without chelae. Regenerated chelae were found to grow faster (ChL, ChW) than initial chelae and POCL. This trend occurs in both reproductive and non-reproductive O. limosus males and females. Values of 55.6 ± 0.06% for ChL and 50.0 ± 0.06% for ChW, compared to the initial chelae, were obtained in regenerated chelae of adult O. limosus after one molt. After two molts regenerated chelae reached 67.6 ± 0.07% ChL and 69.7 ± 0.08% ChW of values for initial chelae. Growth rate of regenerated chelae decreased with an increase in chelae dimensions. Regenerated chelae were found to be more narrow (significantly lower ChW/ChL ratio) than initial chelae. Regenerating of chelae did not have any influence on POCL growth. This study presents evidence that the invasive O. limosus possesses the ability of rapid substitution of lost chelae.

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