Rates and patterns of missing appendages in snow crab (*Chionoecetes opilio*) population in the southern Gulf of Saint Lawrence and its possible causes

Surette Tobie and Moriyasu Mikio

Snow Crab Section, Aquatic Resource Division, Science Branch, Department of Fisheries and Oceans, 343 University Avenue, Gulf Fisheries Centre, Moncton New Brunswick E1C 5K4, Canada
E-mail: tobie.surette@dfo-mpo.gc.ca

Crustaceans may lose their pereiopods (chelipeds and walking legs) due to predation, intra- and inter-specific competition, through moulting process or during the commercial fishing activity (Abello et al., 1994). Missing pereiopod patterns in a snow crab (*Chionoecetes opilio*) population were analyzed based on annual bottom survey data conducted since 2000 in the southern Gulf of Saint Lawrence, northwestern Atlantic. Pereiopods loss rates were regressed over sex, maturity stage and size, as well as the moulting phase. Spatio-temporal variation of appendage loss and relationship between appendage loss and crab abundance were also considered.

Preliminary results showed that a significant difference between the sexes, maturity phases and size. The rates for immature crab were generally low and constant over all sizes, whereas the rate was two to three times higher in sexually mature than immature crab. In addition, these rates were twice as high in smaller mature males as for larger ones. This pattern is even apparent in recently moulted males. Older shelled (terminally moulted) males showed only a moderate increase in appendage loss over a mating period compared to recently moulted one that are the first participant to the mating competition. The loss rates were twice as high in smaller mature males as for larger ones. The rates for females were about half of the rates observed in males and were more or less constant with crab size. In males the 2nd pereiopods had the highest loss rates whereas the chelipeds and 5th pereiopods had the lowest. In females, the 2nd and 5th pereiopods had the highest rates whereas the chelipeds had a rate less than half that of any other pereiopods. Pereiopod loss rates in females were about 60% those observed in males. Mature females similarly showed higher rates than immature ones with newly moulted females having a moderate increase in pereiopod loss rates than older mature females. This may be a function of the longer life expectancy of mature female versus male snow crab. Annual changes in the pereiopod rates showed some correlation with underlying population dynamics, most notably high abundance levels in large males.

Such results strongly suggest that the main cause for pereiopod loss may occur at intra-specific (mating) competition (Conan and Comeau, 1986) rather than commercial fishing induced loss.

References

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