NaturaFinite mixture models are used in the context

**Model Specification:**

Mean sizes for successive instars were defined iteratively as follows, allowing for known differences in growth trends between immature and adolescent crab:

, for

, for

where is the mean size for the *k*th instar, and are Hiatt slope and intercept parameters, respectively for immature crab, with and being the corresponding adolescent phase parameters. Instar standard errors were similarly defined, but allow for additional error inflation in the form of two positive parameters and :

, for

, for

Growth for mature crab was modified slightly by including an additive term :

Based on biological considerations, we expect that .

Population dynamics equations define the relationships between instars between years. They were based on the following assumptions:

* For each sex, there is a largest adolescent instar at which all individuals either skip-moult or moult to maturity the following year. This instar is IX for female crab and XII for male crab.
* Skip-moulting crab only occur in male adolescent crab instars IX or larger.
* Skip-moulters moult to maturity the following year.
* Only instars IX and X constitute matures in female crab, and instars IX, X, XI, XII and XIII in male crab.