

GROWTH RATE OF SARDINE (*Sardinops sagax*)

LARVAE OFF THE OLIGOTROPHIC

LOWER-WEST COAST OF AUSTRALIA

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Abstract

The growth rate of sardine (*Sardinops sagax*) larvae, sampled from oligotrophic coastal waters of south-western Australia as part of the SRFME biophysical oceanography project, was compared to the growth rates exhibited by sardine larvae from southern Australia and major upwelling regions of the world. Laird-Gompertz, Gompertz, von Bertalanffy and linear growth functions were fitted to the lengths at age of 68 larval sardines (3.17-16.20mm SL). Although all four growth models provided good fits to the data, the AIC statistic demonstrated that the Laird-Gompertz and Gompertz models provided the best descriptions of the data. The average daily growth rate for larval *S. sagax* from the lower west coast of Australia, estimated using the Laird-Gompertz growth function, was 0.82mm day⁻¹. In comparison, the average daily growth rate for larval *S. sagax* from south Australia, calculated as described above but using data collected by Gaughan *et al.* (2001) for larvae of the same age range (3-18 days post-hatch), was lower (0.55mm day⁻¹). Productivity in waters off the lower west coast of Australia is lower than off the south coast, but the water temperatures in the former region were higher, which may account for the fact that the estimate for the average daily growth of larval *S. sagax* from the lower west coast was higher than for the south coast. Despite productivity of the lower west coast region being comparatively low, *S. sagax* larvae grew at the upper end of the range exhibited by this species elsewhere in the world. It is thus proposed that the high growth rate of early larval sardines from the lower west coast reflects the comparatively high water temperatures in this region, a conclusion also supported by the finding that *S. sagax* grew slightly faster in summer than winter.