



Influence of salinity and temperature on the growth and production of a freshwater mayfly in the Lower Mobile River, Alabama

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ABSTRACT: Secondary production of the burrowing mayfly, *Hexagenia limbata*, was quantified from four sites differing in seasonal salinity within the Lower Mobile River, Alabama, from October 1995 to September 1996. This population was univoltine, with emergence occurring from late May through early August. Comparisons with other populations of this species showed latitudinal trends suggesting that summer temperatures may exceed an upper thermal threshold for growth. Longitudinal differences in riverine salinity (i.e., upriver sites, 0‰; downriver sites, 5.5‰ maximum salinity) explained most of the differences among sites, both for average density (upriver sites, 75.6 mayflies m⁻²; downriver sites, 2.54 mayflies m⁻²) and annual production (upriver, 1,669 mg m⁻² yr⁻¹; downriver, 46.6 g m⁻² yr⁻¹). Laboratory bioassays indicated that *H. limbata* nymphs could survive elevated salinity (LC₅₀ of 6.3‰ at 18° C; 2.4‰ at 28° C), although growth experiments showed similar growth at 0, 2, 4, and 8‰ salinity treatments. Results from field observations and laboratory experiments demonstrated that these mayflies are tolerant of increases in salinity and showed that individuals surviving the stress of elevated salinity can grow at similar rates as mayflies in freshwater.

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