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[\[PDF \(867K\)\]](#) [\[References\]](#)**Effect of temperature on metabolic rates and horizontal distribution of an endemic amphipod *Jesogammarus annandalei* in Lake Biwa**[Michinori GODO](#)¹⁾²⁾ and [Syuheii BAN](#)¹⁾

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Abstract

Effects of temperature on survival, respiration and excretion rates of an endemic amphipod species, *Jesogammarus annandalei*, in Lake Biwa was examined in January, March, May, June and October 2004 in the laboratory. *J. annandalei*, a univoltine bottom-dweller is distributed in the basin at depths over 40 m and a temperature of 7-8°C in the daytime during the stratified period. In the laboratory, its survival rate declined to 50% within 24 hours when the ambient temperature rapidly changed from 8 to 20 or 25°C, though almost all animals were able to survive a change from 8 to 15°C. Respiration rates of *J. annandalei* increased with temperature in all seasons, being higher in May and June than in January, March and October. Its respiration rate (R) is expressed as a function of its body dry mass (W) and water temperature (T), $\log R = 0.695 \cdot \log W + 0.03 \cdot T - 0.34$. On the other hand, its excretion rates of ammonia and phosphorus also increased with the temperature in May and June, but rather decreased over 20°C in the other months, when it was still young. These negative effects of high temperature on survival and excretion rates may explain why the horizontal distribution of this amphipod was restricted to lake basin depths of over 40 m.

Key Words: [Jesogammarus annandalei](#), [temperature](#), [respiration rates](#), [excretion rates](#), [horizontal distribution](#), [Lake Biwa](#)

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