Negative allometry for egg size in ladybeetles (Coleoptera: Coccinellidae) : Trade-off between egg hatch time and size

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Like a wide range of other organisms, large species of predatory ladybeetles lay proportionally smaller eggs than small species. This study is particularly concerned with whether egg size in aphidophagous ladybeetles could be constrained by the time it takes eggs to hatch. The eggs of large, *Anisolemnia dilatata* (168 mg), and a smaller species of ladybeetle, *Coccinella septempunctata* (27 mg), were collected immediately after they were laid, separated from one another and weighed, and the time to egg hatch determined at 22°C. As predicted, the eggs of the large species were a smaller proportion (0.0048) of their mother's weight than those of the smaller species (0.0061). On average, the eggs of the large species were about 4.9 times heavier and took 1.31 times longer to hatch than those of the smaller species. These results indicate that in insects and aphidophagous ladybeetles, in particular, egg hatch time is not directly proportional to egg size and reproduction may involve more than a trade off between egg number and size. It is likely that egg hatch time is a constraining factor and an important determinant of the inter-specific negative allometry for egg size in this group of insects.

Keywords: Ladybeetles, egg size, inter-specific negative allometry.