**Intraspecific home range scaling: a case study from the owl limpet (**Lottia gigantea**)**

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**ABSTRACT**

**Background:** The owl limpet (**Lottia gigantea**) is an ectothermic invertebrate that inhabits the rocky intertidal zone where it territorially defends home ranges and grazes algae growing on the rocks. Among endothermic species, home range scales isometrically with body mass.

**Hypothesis:** Home range area scales isometrically (scaling exponent \(\sim 1.0\)) across individuals of the owl limpet, spanning more than an order of magnitude in body mass.

**Field sites:** Southern and central California rocky intertidal sites (\(n = 5; \sim 32.5–35.5^\circ\)N).

**Methods:** Measure home range area and body mass of individuals (\(n = 104\)). Determine the scaling exponent.

**Conclusions:** Home range scaling across individuals of **L. gigantea** exhibits the same isometric relationship that is often found across endothermic species.

**Keywords:** Allometry, ectothermic invertebrate, home range scaling, **Lottia gigantea**, size-selective harvesting.

**INTRODUCTION**

Body size correlates with many different facets of the ecology and life history of a species and is generally considered to be one of the most important traits of an organism (Calder, 1984; Anderson-Teixeira et al., 2009; Sibly et al., 2012). The observed generality of some body size scaling relationships has profound implications for describing ecological organization, from species to ecosystems (Brown et al., 2004; Woodward et al., 2005; Hendriks, 2007). For example, the scaling of home range area with body mass is often observed to be isometric (power function exponent \(\sim 1.0\)) when measured across endothermic species spanning multiple orders of magnitude in size (Lindstedt et al., 1986; Jetz et al., 2004; Makarieva et al., 2005; Marquet et al., 2005):

\[
Hr = Y_o M^{-1}
\]

where \(Hr\) is home range area, \(Y_o\) is a normalization constant, and \(M\) is body mass.
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