

Strong selection on mandible and nest features in a carpenter bee that nests in two sympatric host plants

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Host plants are used by herbivorous insects as feeding or nesting resources. In wood-boring insects, host plants features may impose selective forces leading to phenotypic differentiation on traits related to nest construction. Carpenter bees build their nests in dead stems or dry twigs of shrubs and trees; thus, mandibles are essential for the nesting process, and the nest is required for egg laying and offspring survival. We explored the shape and intensity of natural selection on phenotypic variation on three size measures of the bees (intertegular width, wing length, and mandible area) and two nest architecture measures (tunnel length and diameter) on bees using the native species *Chusquea quila* (Poaceae), and the alloctonous species *Rubus ulmifolius* (Rosaceae), in central Chile. Our results showed significant and positive linear selection gradients for tunnel length on both hosts, indicating that bees building long nests have more offspring. Bees with broader mandibles show greater