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# **La ricerca ecologica in un mondo che cambia**

## **Libro degli Abstract**

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**V:** Università  
degli Studi  
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THE EFFECT OF FOREST MANAGEMENT ON ENDANGERED INSECTS ASSESSED  
BY RADIO-TRACKING: THE CASE FOR THE GROUND BEETLE *CARABUS*  
*OLYMPIAE* IN BEECH *FAGUS SYLVATICA* STANDS

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Beech forests are important for biodiversity conservation in Europe and studies to identify sustainable forest management practices are therefore required. The ground beetle *Carabus olympiae* Sella, 1855, may be the symbol of the endangered alpine species with very restricted ranges. This steno-endemic, large species inhabits two beech forests of the western Italian Alps where beech wood is still harvested. Forty-one alive individuals were collected and radio-tracked in 2014-2015 in order to assess the effects of forest management on microclimatic conditions they have to endure, habitat use and movements. All interventions changed habitat availability, with an increase of deadwood and bare ground. Thermo/hygro button loggers showed that temperature was higher and humidity lower in managed than in unmanaged stands, suggesting logging interventions may be detrimental to *C. olympiae*, directly (inducing suboptimal climatic conditions) or indirectly (decreasing the availability of prey). Habitat selection analyses proved that in all scenarios deadwood and stumps were the preferred habitats, used as refuge or shelter during the daytime. Bare ground was never used. The length of the path travelled by individual insects was more variable and the tortuosity lower in managed than in unmanaged stands, suggesting that management induced more uncertain and constrained trajectories. We concluded that logging may exert short-term negative effects on *C. olympiae* ground beetles (as suggested by the increase of bare ground, and changes in climatic conditions and movements). However, the preference for stumps and deadwood suggests that forest management, concurrently, may also be beneficial, on the condition that: i) the coppice, which provides more suitable stumps, prevails over conversion to high forest and ii) deadwood originated from cutting (slash and tops) is properly accumulated.