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Saproxylic beetles in Sila National Park (Calabria, Italy) and their role as bioindicators of unmanaged forests

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INTRODUCTION & AIM

Saproxylic beetles play a crucial role in forest ecosystems and their survival is closely linked to forest health. These beetles are essential for decomposing woody necromass and recycling nutrients[1].

However, changes in forest structure, particularly the removal of dead wood, have led to declines in saproxylic beetles communities. Many species of saproxylic beetles are listed in red lists or identified as suitable indicators for monitoring conservation status in ecological surveys[2].

These specialist insects depend not only on deadwood but also on the broader community that interacts with them, including other invertebrates, fungi, under-bark microhabitats, and tree cavities[3].

MATERIAL

Sampling was conducted in Sila National Park (Calabria, Southern Italy) between 2022 and 2023. We selected pine forests with varying quantities of woody necromass. Insects were collected through direct visual observation, focusing on under-bark habitats.

Pine Forest habitat

RESULTS & DISCUSSION

Individuals of *E. dentipes*

Individuals of *C. canaliculatum*

Individual of *C. cinaberinus*

Individual of *P. italicus*

Several of the collected species were designated as 'Vulnerable' on the IUCN Red List, including *Cucujus cinaberinus* (Scopoli, 1763) (Family: Cucujidae), *Ipidia binotata* Reitter, 1875 (Family: Nitidulidae) and *Ampedus sinuatus* Germar, 1844 (Family: Elateridae). Near Threatened species such as *Clinidium (Arctoclinidium) canaliculatum* (O. G. Costa, 1839) (Family: Carabidae), *Scaphium immaculatum* (Olivier, 1790) (Family: Staphylinidae), *Triplax marseuli* Bedel, 1864 (Family: Erotylidae), *Rushia parreyssi* (Mulsant, 1856) (Family: Melandryidae), and *Endophloeus markovichianus* (Piller & Mitterpacher, 1783) (Family: Zopheridae) were collected. Least Concern (LC) species like *Melanotus (Melanotus) castanipes* (Paykull, 1800) (Family: Elateridae), *Pityophagus ferrugineus* (Linnaeus, 1758) (Family: Nitidulidae) and *Enoplopus dentipes* (Rossi, 1790) (Family: Tenebrionidae) were sampled in pine forest with abundant necromass.

CONCLUSION

The forests of the Sila plateau contain elements of high conservation value and a rich diversity of insect species. The community of beetles associated with deadwood is influenced by climate change and forest management practices. The collected species, considered bioindicators, show a very appropriate management of forests in this protected area. The results are interesting both habitat and specie populations.

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