

LONG-TERM TRENDS OF CAVE SALAMANDERS (SPELEOMANTES STRINATII) IN
LIGURIA AND PIEDMONT

Original

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ABSTRACTS

LONG-TERM TRENDS OF CAVE SALAMANDERS (*SPELEOMANTES STRINATII*) IN LIGURIA AND PIEDMONT

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Documenting amphibian declines and extinctions is pivotal to identify drivers and conservation priorities. However, ascertaining population trends is difficult, and requires long term monitoring programs. Unfortunately, such programs often are jeopardized by funding constraints and rarely cover broad areas of species ranges. The cave salamander, *Speleomantes strinatii*, is listed as endangered by the IUCN redlist, which suggests a declining population trend and a high risk of extinction in the next years, but its actual status is highly debated. Despite time series exist on the abundance of some populations, very limited information is so far available on the overall trend of this species over a broad scale. However, published surveys by cave biologists are available and report the occurrence of *S. strinatii* in a large number of cavities of Liguria and Piedmont for the period 1950-1985. From 2011 to 2023, we conducted visual encounter surveys in 111 cavities in Central and Western Liguria, and in Southern Piedmont. We re-surveyed cavities for which historical data on the occurrence of *S. strinatii* were available. We then used occupancy modeling to 1) relate present-day occupancy to recorded microhabitat features (temperature, humidity, incident light), and 2) compare present-day occupancy with historical data. We also used historical and present-day information on land cover to identify potential drivers of occupancy changes. Our surveys confirmed that *Speleomantes strinatii* is widespread in the study area. Its occupancy was significantly associated with microhabitats characterized by low temperature, high humidity and limited incident light. Overall, salamanders were detected in most of cavities with suitable microhabitat. Our surveys confirmed salamander occurrence in most of cavities with historical records. We did not detect evidence of decline. Present-day levels of occupancy and abundance are apparently higher than values reported in historical records. Nevertheless, uncertainty on the sampling efforts during historical records is high, thus it is unclear whether differences correspond to actual expansion of the species, or are simply the effect of a higher sampling intensity. Our analysis highlights the importance of long-term data to ascertain the actual conservation status of species, and can be used as reference to understand the fate of *S. strinatii* under the threat of emerging infectious diseases.