

Sessione
Il pianeta condiviso

Poster

Invisible barriers: The european eel between habitat fragmentation and climate change

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The European eel *Anguilla anguilla* (Linnaeus, 1758), a catadromous species currently classified as “Critically Endangered” on the IUCN Red List, represents a paradigmatic case of how anthropogenic impacts can compromise the coexistence between humans and wildlife. The long-standing relationship between humans and eels, once based on traditional fishing practices, has transformed into a survival challenge for the species, caught between local pressures and global threats.

This study investigated the effects of 54 large dams (height ≥ 15 m) on Sardinian watercourses, assessing changes in the distribution of *A. anguilla* upstream and downstream of dams and the ecological status of river mouths. Using geospatial tools (QGIS, Google Earth), drone surveys, and direct sampling methods (passive floating traps for juveniles and electrofishing for adults and subadults), historical data (1940-2025) were integrated with recent observations to assess species persistence in the affected basins.

These results highlight a significant local impact: a 75% range contraction in dammed basins and an 85% reduction in presence compared to control sites. Dams function as near-total barriers to juvenile upstream migration, with only 2 out of 54 facilities equipped with functional fish ladders. Drone deployment enabled detection of flow persistence in the reaches immediately downstream of dams, assessment of river mouth conditions, and estimation of river quality through the Fluvial Functionality Index.

Beyond river habitat fragmentation, eels face an additional global threat: climate change, through increasing temperatures and altered ocean current patterns, may compromise reproductive migration to the Sargasso Sea. The European eel case demonstrates how human impact, although localized, is embedded within broader environmental transformation dynamics, altering ancient evolutionary equilibria.

Restoring river connectivity and ensuring the ecological functionality of watercourses must be prioritized to ensure species conservation and enable sustainable coexistence between humans and the environment.