

Disclosing Taxonomic Capacity: Scaling a European Marketplace for Expertise and Innovation

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Executive summary

Europe's biodiversity, restoration and bioeconomy ambitions depend on reliable taxonomic expertise. However, the European Redlist of Insect Taxonomists (2022) (Hochkirch et al. 2022), demonstrates that taxonomic capacity across Europe is under pressure. Over 40% of insect orders at European level show threatened or eroded capacity, with substantial disparities between Member States and clear structural weaknesses in workforce renewal.

At the same time, demand for reliable species identification and biodiversity data is increasing due to implementation of the EU Biodiversity Strategy for 2030, the Nature Restoration Law and the European Pollinator Monitoring Scheme.

To bridge the gap between capacity and demand, Europe requires not only renewed investment in taxonomy but also an operation mechanism to help mobilise, connect and make visible existing expertise. A taxonomic community European Marketplace for Taxonomic expertise and e-Services provides such a mechanism. It builds directly on the RedList recommendation to establish a centralised and continuously updated hub of European taxonomic expertise (Hochkirch et al. 2022).

Strategic support is now required to consolidate and institutionalise this capability within Europe's research and innovation ecosystem.

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Structural erosion of taxonomic capacity

The European Red List of Insect Taxonomists provides the first systematic assessment of taxonomic capacity for insect taxa in Europe. It reveals:

- 41.4% of insect orders at European level show threatened or eroded capacity
- Capacity gaps are unevenly distributed across Member States.

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- The taxonomic workforce is ageing, with a low proportion of early-career experts
- Gender imbalance remains significant
- Several species-rich and ecologically important insect groups show inadequate or critically low capacity
- The Red List further identifies lack of stable funding, insufficient long-term positions, and fragmentation of expertise as key drivers of erosion.

Without corrective action, Europe risks weakening the scientific foundation required for biodiversity monitoring, invasive species control, agricultural diagnostics, ecosystem restoration and environmental compliance.

The gap: Capacity exists but is fragmented and difficult to Mobilise

While the Red List mapped capacity gaps and structural weaknesses, it also highlighted the need for:

- A continuously updated overview of taxonomic expertise.
- Better linkage between expertise and biodiversity monitoring needs.
- Centralised and accessible information on available experts.
- Improved networking and coordination mechanisms.

Currently, taxonomic expertise remains dispersed across museums, universities, research institutes and individual experts. Potential users including environmental agencies, research projects, private sector actors and conservation practitioners often face difficulty identifying appropriate expertise rapidly and efficiently.

This fragmentation reduces Europe's ability to respond effectively to biodiversity and regulatory demands.

The opportunity: A centralised European Marketplace

A European Marketplace for taxonomic expertise, e-services and tools provides an important and operational response as part of addressing the structural issues identified by the Red List.

The Marketplace aims to:

- Serve as a structured digital interface for discovering taxonomic expertise.
- Improve visibility of experts across Member States.
- Facilitate mobilisation of expertise for biodiversity monitoring, research and applied services.
- Complement existing research infrastructures (e.g. collections, data infrastructures) by focusing specifically on expertise discovery and service provision.
- Generate usage metrics that can inform policy and funding decisions regarding capacity gaps.

Rather than replacing institutional structures, the Marketplace operationalises the Red List recommendation to support a central European information hub on taxonomic expertise.

Why action is urgent

Policy demand for taxonomic input is increasing:

- The EU Biodiversity Strategy for 2030 requires robust species-level monitoring.
- The Nature Restoration Law demands measurable ecological indicators.
- The European Pollinator Monitoring Scheme depends on reliable identification capacity.
- Emerging AI-based biodiversity tools require validated expert input.

At the same time, Red List evidence shows declining capacity in several taxonomic groups

This creates a structural mismatch between growing demand and fragile supply.

A Marketplace does not solve the taxonomic crisis alone. However, it strengthens coordination, transparency and accessibility critical conditions for scaling capacity-building investments effectively.

Policy recommendations

1 SUPPORT THE FURTHER DEVELOPMENT OF A TAXONOMIC E-SERVICES AND EXPERTISE MARKETPLACE

- ↘ Fund a project that integrates collections, taxonomic services, and personnel across institutions in Europe.
- ↘ Ensure the marketplace supports FAIR principles and persistent identifiers aligned with EOSC policies.

2 RECOGNIZE AND SUSTAIN TAXONOMIC EXPERTISE AS RESEARCH INFRASTRUCTURE

- ↘ Include taxonomy in national RI roadmaps and Horizon Europe work programmes.
- ↘ Promote capacity building through fellowships, digital training, and career pathways.

3 INCENTIVIZE CROSS-SECTORAL ENGAGEMENT

- ↘ Encourage public-private partnerships to fund expert services (e.g., pest ID, invasive species).
- ↘ Involve stakeholders in agriculture, environment, and health to co-design services.

4 EMBED MARKETPLACE METRICS INTO POLICY MONITORING

- Use service demand and delivery data to track progress on biodiversity and R&I targets.
- The Marketplace should support implementation of:
 - EU Biodiversity Strategy 2030
 - Nature Restoration Law
 - European Pollinator Monitoring Scheme

This can be achieved by:

- Allowing environmental authorities to identify experts efficiently.
- Generating anonymised demand-side indicators.
- Supporting rapid mobilisation of expertise in response to monitoring needs.

Policy recommendations

Europe's biodiversity ambitions depend on accessible, coordinated and resilient taxonomic experts. The European Red List of Insect Taxonomists demonstrates that this capacity is under structural pressure, while policy demand continues to increase (Reference).

A centralised European Marketplace offers a practical solution to improve visibility, mobilisation and alignment of expertise with policy and research needs.

Consolidating and integrating this instrument within Europe's research infrastructure landscape is a timely and proportionate step. Strategic support now will strengthen the scientific foundations required to deliver Europe's biodiversity and environmental commitments.

Reference:

Hochkirch, A., Casino, A., Penev, L., Allen, D., Tilley, L., Georgiev, T., Gospodinov, K. and Barov, B. 2022. European Red List of Insect Taxonomists. Luxembourg: Publication Office of the European Union.



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