Annex 1. Topic 1: Species-level indexing of pollinator collections

1. Challenges to address by the Proposal

For researchers, as well as local nature conservation organisations and citizen scientists, reference collections composed of reliably identified specimens are an important tool supporting species identification. However, finding reference collections is difficult because there is no common portal to access information on the content and location of these collections. In addition, many potentially very valuable reference collections are hidden because their contents have not been listed and published due to lack of resources or expertise.

The proposal should address this challenge and aim to contribute towards the establishment of distributed national reference collections of pollinators. This will be achieved by carrying out digital species indexes for some European pollinators' collections, thus improving the online accessibility to the information about the pollinator species present in these collections. Pollinators, in the context of the TETTRIs project, only include butterflies (Papilionoidea), bees (Apoidea), and hoverflies (Syrphidae).

2. Practical impact on site

The proposal should be designed with input from local stakeholders to address the needs of the local community and contribute to pollinator conservation in the region. Improved access to collections facilitates identifications, a crucial aspect of monitoring programs, and thus assist conservation efforts and contribute towards well informed policy decisions in the region leading, for instance, to recommendations for pollinator-friendly land management practices. The proposal should be particularly beneficial for the management of the protected areas in Europe, especially those around biodiversity hotspots with the highest diversity of pollinator species, many of which are threatened or endangered.

3. Collaborative approach

Proposals should include collaboration with a TETTRIs project consultant to achieve the results of the TETTRIs project focused on improving access to reference collections of pollinators. The proposal is expected to complement this task and participate in:

1) providing a digital species-level index of at least six target pollinator collections in collection holding facilities of different sizes and organisation type (private, small and possibly specialised museums, larger general repositories such as national museums). The index is to include species names, numbers of specimens and the presence of type specimens. From half of the collections, also information on geographic distribution at the general level (e.g., country) and possible provenance from specific hot-spot areas will be collected. Those wishing to submit a proposal are encouraged to co-apply with other institutions to take advantage of different expertise and share their tools and resources.
2) collecting experiences and concrete information on resources needed (time, money, personnel etc.) to develop a general protocol for creating species-level indices for natural history collections of different types.

4. Innovation

Above the framework of collaboration with TETTRIS consultants, supported projects can also include own creative activities and innovations, such as (**but not limited to**):

- **Citizen science**: involvement of citizens (after proper training), assisted by amateur/professional taxonomists or curators in species-indexing of reference

collections (as defined in point 3.1 above), either *ex novo* or by completing existing indexes;

- **Reference collection improvement:** Performing a gap analysis through the above-mentioned indexes (completeness of the species included in the collection from a specific geographic area in respect to a previously published checklist) and planning a field campaign and/or duplicates exchange initiative to fill the gaps. This should also involve taxonomists, amateurs and citizens with the local institutions in charge of the conservation management of one or more biodiversity hotspot areas (provided that sampling is legally permitted);
- **Protocol development:** Help develop efficient protocols to retrieve species indexes based on a given physical arrangement of the collection (e.g., collect experiences whether it is better to extract and rearrange the specimens in new boxes before indexing, or list the names as they appear in the accession books, etc.).
- **Artificial intelligence (AI):** Test AI recognition tool (e.g., extract nomenclatural information through OCR (optical character recognition) softwares applied to images of drawers, accession books, inventories etc.

5. **Expected outcomes from the proposal**

The proposals' work will create valuable data on pollinator species in European collection holding facilities, focusing on the threatened or endangered species. The data will also be used to create an online mapping tool showing the geographical locations of European pollinator collections on a map, and thus help locate important reference collections of pollinators near, e.g., hotspot and conservation areas. Together, the data collected from different collection holding facilities, will form a distributed national reference collection of pollinators.
The platform and tool will be freely accessible to the public, including local communities, biodiversity hotspots, and managers/researchers of protected areas, as well as to researchers and knowledge resource centres such as museums and research institutions. This tool will greatly improve accessibility to collections and provide valuable information to be used in conservation efforts, species monitoring, and research on pollinator diversity and ecology.
By reporting the experiences and providing concrete information on resources needed to create species-level indexes, the proposed projects will help develop a general protocol for retrieving fundamental information on the contents of natural history collections.

6. **Specific conditions:**

- Proven expertise/skills in the target groups, i.e. insects, are strongly recommended. In the case that multiple skills and equipment are needed that cannot be provided by a single institution/candidate, co-applications of multi-institution consortia or temporary associations are strongly recommended (see point 3.1). Potential candidates may both collaborate with the concerned institution or perform the work themselves upon the institution's permission.
- Proposals submitted by consortia/associations operating at national level will have an added value *per se* (over those proposed by individual entities and/or disperse geographically).

General Instructions to applicants:

To be considered for funding, proposals should clearly address all three key aspects of the topic, i.e. 1) demonstrate a strong practical impact, 2) implement a collaborative approach, and 3) integrate innovative dimensions to biodiversity identification, monitoring and/or conservation.

Proposals should provide a detailed budget and timeline, as well as clear metrics for measuring project success.

Applicants should also demonstrate relevant experience and expertise in areas such as biodiversity science, citizen science, data analysis, and stakeholder engagement.

Citizen science aspects can be involved in all topics. However, Proposals focused primarily or exclusively in Citizen science engagement will fall under Topic 7.

See the Call text for further detailed information.