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SYNTHEYS: Synthesis of Systematic Resources

Europe's natural history museums and botanic gardens form a treasure trove of research resources – if you know where to locate that elusive specimen. Increasingly, institutions are publishing their catalogues on the web, although these huge natural history collections (337 million specimens in 20 institutions) are still largely uncoordinated. The EU-funded SYNTHEYS project is creating a system of databases and virtual collections to help researchers find what they need and locate relevant taxonomic expertise. Once researchers have located the requisite specimens, Transnational Access funding then helps scientists study them for real. The project is also enhancing collection management standards across Europe which will, in turn, improve future access.

● CLASSIFYING THE CLASSIFIERS

The great natural history collections of Europe are a huge, and hugely valuable, research resource for 'systematists' – scientists who classify plants and animals – often with the aim of understanding the evolutionary relationships between groups of organisms. Almost every European capital has a natural history museum and botanic garden of international importance. These collections allow laboratory-bound scientists to range the world and to travel in time: to collect DNA from Galapagos finches as Darwin saw them, or to study the long-extinct ancestors of modern creatures.

Finding the right specimens, however, can be a challenge. Most museums have far more specimens than space to display them; the Natural History Museum in London, for example, has around 70 million specimens. Two centuries of bureaucracy, and the occasional war, can make it hard to locate even the records of relevant items, let alone the specimens themselves.

Meanwhile, collections continue to grow, and often budgets shrink.

Museums are increasingly using information and communications technologies to meet these challenges. Electronic cataloguing and digital imaging allow information to be captured and stored more easily than on traditional card indexes. The internet has made possible "virtual museums", in which individual specimens can be part of multiple collections and visitors are no longer constrained by geographical boundaries or opening hours.

The SYNTHEYS project aims to create one of the most advanced virtual museums in the world by linking 19 of Europe's finest natural history museums and botanical gardens. The result will be an integrated European infrastructure for researchers in the natural sciences, made up of resources that are complementary but widely distributed and at present largely uncoordinated. This virtual museum will encompass not only the physical collections but also analytical facilities and databases. Altogether, says the Project Coordinator, SYNTHEYS will include more than half of the world's natural history specimens. The result will be of great benefit to European researchers in the biosciences and geosciences, particularly those with an interest in biodiversity.

● FROM SECLUDED VAULTS TO DATABASES

In order to facilitate the development of its super-collection, SYNTHEYS is undertaking a series of Networking Activities. These start by bringing together information on the strengths of each institution's collections and expertise, leading to a coordinated European development plan. Setting standards for long-term preservation and access to the collections – and identifying priorities for improvement through mechanisms such as training courses – is another activity. Yet another is creating an integrated system of databases describing European collections.

Optimal storage methods for new types of collections (such as tissue samples and DNA) will be examined and common policies and methodologies will be established. The final activity reviews novel methods of physical analysis used in other disciplines, and assesses how they might be applied to natural history. The outputs from these activities include a series of workshops and conferences, best practice publications, web-based publications and database access.



EUROPEAN COMMISSION

Not all the work is virtual. Along with the Networking Activities, SYNTHESESYS offers European researchers transnational access to the collections, libraries and laboratories of the participating institutions. More than 26 000 visitor days are offered during the

66-month project to 20 institutions in 11 countries. The project covers the costs of travel, accommodation and living expenses, use of the facilities and training, and support from local researchers.

● SYNTHESIS OF SYSTEMATIC RESOURCES IN SUMMARY

Project acronym: SYNTHESESYS

Funding scheme (FP6): Integrated Infrastructures Initiative (I3)

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EU project officer: Anna-Maria Johansson

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Project webpage: www.synthesys.info

Coordinator: Graham Higley, The Natural History Museum, g.higley@nhm.ac.uk

Partners: The Natural History Museum (UK), Royal Botanic Garden, Kew (UK), Royal Botanic Garden Edinburgh (UK), Museum

National d'Histoire Naturelle (FR), University of Copenhagen (DK), Consejo Superior de Investigaciones Cientificas (ES), Naturhistoriska Riksmuseet (SE), University of Amsterdam (NL), Nationaal Herbarium Nederland (NL), Centraalbureau voor Schimmelcultures (NL), National Natural History Museum Naturalis (NL), Botanischer Garten und Botanisches Museum Berlin-Dahlem (DE), Museum für Naturkunde (DE), Humboldt-Universität Berlin (DE), Naturhistorisches Museum (AT), Hungarian Natural History Museum (HU), Museum and Institute of Zoology, Polish Academy of Sciences (PL), Royal Belgian Institute of Natural Sciences (BE), Koninklijk Museum voor Midden-Afrika (BE), National Botanic Garden of Belgium (BE)