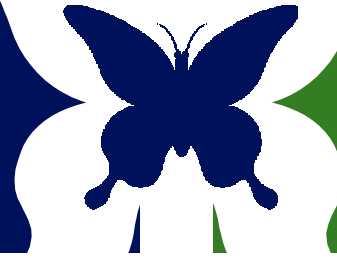




ECBOL

European Consortium for Barcoding of Life



Identifying & Protecting European Biodiversity using DNA Barcodes

The total number of species estimated to exist on earth varies from 3M to 50M or more. Over the past 250 years, more than 1.6M has been described. There is growing awareness that human activities are causing large-scale habitat fragmentation and hence extinction at an ever higher rate. The call to protect our planet's biodiversity is widespread and gets stronger every day. But how can we protect our biodiversity if we don't know what we are protecting – or worse, what we are destroying...?

What is the barcode of life?

The task of species recognition has become more complex; classic taxonomic methods are no longer sufficient to recognise all cryptic species, so more advanced methods are needed. Since 2003, the technique of DNA barcoding (species identification based on short DNA sequences) has drawn considerable attention from the international scientific community, government agencies, and the public large-scale investigations have demonstrated its effectiveness in a wide variety of applications.

DNA barcoding is no longer simply an academic exercise. The complexities in gaining species identifications have immediate serious economic, societal and environmental implications. Customs officers, public health officials, ecologists, resource managers and many others desire an unequivocal answer to the question of what species an organism belongs to. The answer is often critical to health and prosperity of society. Applications could be in forensics, conservation, or ecosystem monitoring, by for instance:

- protecting endangered species
- identifying invasive organisms
- sustaining natural resources
- controlling agricultural pests
- stopping disease vectors
- monitoring environmental quality

ECBOL – joining forces for barcoding in Europe

Europe has been in the front line of the evolution of DNA barcoding; the first international scientific conference was held in London in 2005. European taxonomists and bioinformatics specialists have formed themselves into young, effective networks that gather, identify and curate specimens and analyse barcoding results and make them available in state of the art repositories. By adding high-capacity research infrastructures, these networks will be able to function at an unprecedented level.

To join these forces in Europe and thus form an active participating partner in the International Barcode of Life Initiative (iBOL), the European Distributed Institute of Taxonomy (EDIT) has initiated ECBOL (European Consortium for the Barcoding of Life), a large-infrastructure proposal to calibrate Europe's biodiversity using DNA barcodes.

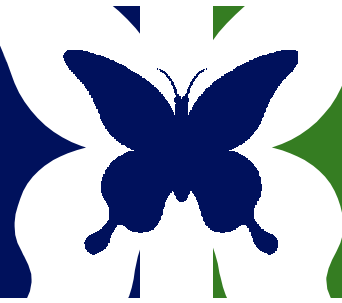
Within ECBOL a network of leading labs for DNA barcoding will be set up across Europe. Furthermore, a centralised bioinformatics hub is planned to make information, present in national databases, available through a single, integrated interface.





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Collaboration is needed with private companies to develop point-of-contact barcode analysis and massive barcode screens. Estimations show that existing European collections already approach the number of one billion specimens. The resulting sequence and barcode reference library will enable a highly effective, globally accessible identification system for those species that are encountered by humanity. Aside from the library the infrastructure will have to be developed that is needed for application to real world problems such as forensics, conservation and ecosystem monitoring.

Creating a barcode reference library will, next to an efficient identification system for organisms, lead to the discovery of many new species. It will cause the identification process to become more precise and automated. The vast amount of DNA barcoding data will be an important impetus for the understanding of mechanisms of evolution as studied in the field of evolutionary biology.

Applications taking advantages of DNA barcodes will be developed in dialogue with the stakeholders; taxonomists will engage with users (government agencies for public health, agriculture, environment and species protection) to design and implement large-scale barcoding projects.

Since 2004 the Consortium for the Barcode of Life (CBOL) has played a critical role in bringing together 150 biodiversity organisations from more than 45 countries all over the world with an interest in barcoding. The rapid growth of this consortium shows that DNA barcoding has become a leading standard in the identification of species; barcode records have already been gathered for 350,000 specimens representing more than 35,000 species.

The members of ECBOL will offer training courses in barcoding-related taxonomic subjects leading to an integrated European training programme. In parallel, public education will increase awareness of the vital contribution that DNA barcoding can make to the improve quality of life.

The ultimate goal of barcoding is to assemble the sequence library and the technology necessary to identify organisms rapidly and inexpensively.

Membership of ECBOL

- Natural history museums
- Zoological and botanical gardens and herbaria together with university departments
- Private biotech companies
- Policy-directed bodies (such as biodiversity organisations and governmental and intergovernmental organisations)

ECBOL consortium chair

- Professor Pedro Crous

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