

Contribution scenarios of FISH-BOL members

Members of FISH-BOL can contribute in several ways.

1- Projects of autonomous European partners

Refers to European partners which are keen and capable of organizing and running FISH-BOL projects from specimen collection to compilation of COI sequences within their own region or country. Activities developed at this level should be closely integrated with the overall European RWG output and activities.

2- Sub-networks at the country or sub-regional level

These sub-networks would involve partnerships among various institutions of a given country or region. Their structure should accommodate and complement partners' capabilities, as for instance FISH-BOL partners from Portugal which are organized into a national network involving the governmental fisheries research agency (IPIMAR), National Museum of Natural History (Museu Bocage) and various academia and research institutions. Other structures can be considered, as for instance sub-regional level networks involving different countries (e.g. Mediterranean Sea, Baltic Sea, North Sea, and Arctic waters).

3- Collaborative projects between a molecular facility and other partners contributing specimens and taxonomic expertise and associated activities.

In this scheme a core molecular facility of the European RWG [e.g. University of Wales, Bangor (UWB)] will receive DNA barcoding-compliant tissue samples upon establishing collaborative projects with partner(s) providing the non-molecular component of the analytical chain (organizing specimen collection, taxonomy and museum curation). In this topology, targeted projects would be created in the Barcode of Life Database (BOLD) and shared among partners.

4- Collaborative projects between the Canadian Centre for DNA barcoding and Euro partners.

Type 4 projects structure is identical to type 3, except that the molecular work would be carried out in the Canadian Centre for DNA Barcoding (CCDB). These types of projects are subject to availability of the Guelph centre and would have to be considered on a case-by-case basis. Such a scheme is more likely to be established as a result of a lack of capabilities or funding of the respective European molecular centres.

Contribution scenarios of FISH-BOL members (cont.)

5- Other topologies

In addition to these, other project topologies may be considered. Let us know if your case was not considered or does not fit any of the above, and what resources you would require to conduct your projects and for FISHBOL participation. Within the network framework we should be able to find solutions for your specific case among the different partners.

Some useful references:

- Costa F.O. and Carvalho G.R. (2007). The Barcode of Life Initiative: synopsis and prospective societal impacts of DNA barcoding of Fish. *Genomics, Society and Policy* 3 (2): in press (available online in www.gspjournal.com/).
- Fox C.J. et al. (2005). TaqMan DNA technology confirms likely overestimation of cod (*Gadus morhua* L.) egg abundance in the Irish Sea: implications for the assessment of the cod stock and mapping of spawning areas using egg-based methods. *Mol. Ecol.* 14 (3): 879-884.
- Hebert et al. (2003). Biological identifications through DNA barcodes. *Proc. R. Soc. London B*, 270 (1512): 313-321.
- Ivanova et al. (2007). Universal primer cocktails for fish DNA barcoding. *Mol. Ecol. Notes* 7 (4): 544-548.
- Ward, R.D. and Holmes B.H. (2007). An analysis of nucleotide and amino acid variability in the barcode region of cytochrome c oxidase I (cox1) in fishes. *Mol. Ecol. Notes* (OnlineEarly Articles: doi:10.1111/j.1471-8286.2007.01886.x).
- Ward et al. (2005). DNA barcoding Australia's fish species. *Phil. Trans. R. Soc. London B* 360 (1462): 1847-1857.

Websites:

FISH-BOL : www.fishbol.org

CBOL : <http://barcoding.si.edu/>

Canadian Centre for DNA Barcoding:

<http://www.dnabarcoding.ca/>

UWB Molecular Ecology and Fisheries Genetics Lab :

<http://biology.bangor.ac.uk/research/mefgl/>

FISH BARCODE OF LIFE (FISH-BOL)

EUROPEAN Regional Working Group



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DNA barcoding

DNA barcoding uses a short DNA sequence from a standardized and agreed-upon position in the genome as a molecular diagnostic tool for species-level identification in a wide variety of taxa.

The gene region that is being used as the standard barcode for almost all animal groups is a 648 base-pair region in the mitochondrial cytochrome c oxidase 1 gene (COI). COI is proving highly effective in identifying birds, butterflies, **fish**, flies and many other animal groups.

FISH-BOL aims and structure of RWG

The Fish Barcode of Life Initiative (FISH-BOL), is a global effort to coordinate an assembly of a standardised reference DNA barcode library for all fish species, one that is derived from voucher specimens with authoritative taxonomic identifications.

FISH-BOL is one of the global campaigns of the Consortium for the Barcode of Life (<http://barcoding.si.edu/>), an international consortium sponsored by the Alfred P. Sloan Foundation and Smithsonian.

The global Administration of FISH-BOL is Co-Chaired by Paul Hebert (University of Guelph, Canada) and Bob Ward (CSIRO, Australia) and with Campaign Coordinator Robert Hanner (University of Guelph, Canada). FISH-BOL has been broken into 10 regional working groups (RWG):

- * Africa
- * Australia
- * Central America
- * Europe
- * India
- * North America
- * North East Asia
- * Oceania/Antarctica
- * South America
- * South East Asia

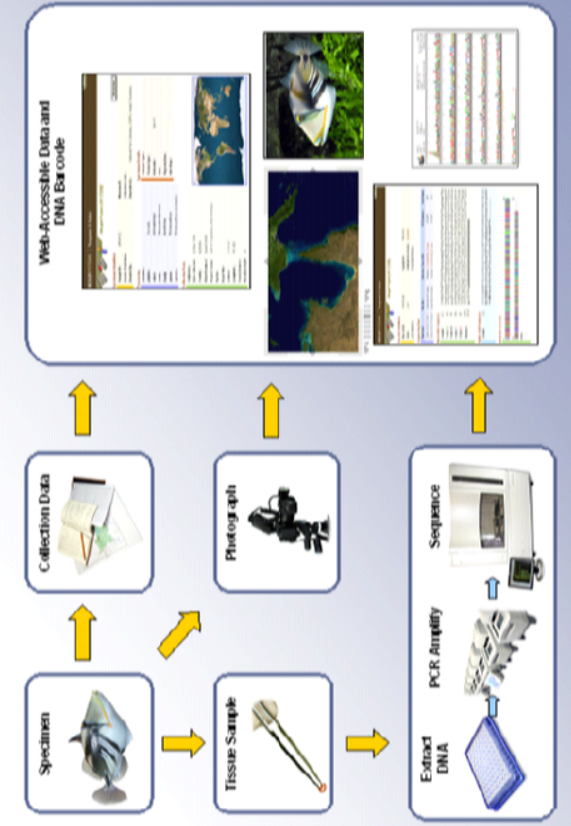
The European RWG is coordinated by a steering committee at the University of Wales, Bangor, UK, composed of Chair Gary Carvalho, Deputy-Chair Martin Taylor, Scientific Support Filipe Costa, Membership Secretary and general enquiries Jan Albin. The list and contacts of current European RWG members can be found at www.fishbol.org.

Bullet points of applications to fish and fisheries

- Identification of fish, fillets, fins, and fragments (marketing, substitutions, quota and bycatch management).
- Identification of processed product e.g. canned fish, dried fish, mixtures (substitutions).
- Identification of threatened, endangered and protected species (conservation).
- Identification of fish eggs and fish larvae (ecosystem research, direct and indirect fisheries management).
- Identification of prey items in stomach contents (food webs and ecosystem research).
- Identification of historical, archived and museum material (taxonomy).
- Identification of new species and possible fusions, insights into phylogenetic relationships (fish biology, evolution).
- Possible production of DNA microarrays from the sequence data
- Documentation of range expansions



European Fish DNA Barcoding – Developing a Reference Library for known Species



Analytical chain

The Fish Barcode of Life effort is creating a valuable public resource in the form of an electronic database containing DNA barcodes, images, and geospatial coordinates of examined specimens. The database contains linkages to voucher specimens, information on species distributions, nomenclature, authoritative taxonomic information, collateral natural history information and literature citations. FISH-BOL thus complements and enhances existing information resources, including FishBase and various genomics databases.