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**Publication date**

2010

**Document Version**

Final published version

**Published in**

Tools for Identifying Biodiversity: Progress and Problems

**License**

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[Link to publication](#)

**Citation for published version (APA):**

de Jong, Y. (2010). A Pan-European Species-directories Infrastructure (PESI). In P. L. Nimis, & R. Vignes Lebbe (Eds.), *Tools for Identifying Biodiversity: Progress and Problems: proceedings of the international congress, Paris, September 20-22, 2010, Muséum national d'Histoire naturelle - Grand Amphithéâtre* (pp. 49-51). EUT - Edizioni Università di Trieste. <http://hdl.handle.net/10077/3746>

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# A Pan-European Species- directories Infrastructure (PESI)

Yde de Jong

**Abstract** — This paper introduces the rationale and aims of the Europe-wide biodiversity informatics PESI [1] project. PESI defines and coordinates strategies to enhance the quality and reliability of European biodiversity information by integrating the infrastructural components of four major community networks on taxonomic indexing, namely those of marine life, terrestrial plants, fungi and animals, into a joint work programme. This will include functional knowledge networks of both taxonomic experts and regional focal points, which will collaborate on the establishment of standardised and authoritative taxonomic (meta-) data. In addition PESI will coordinate the integration and synchronisation of the European taxonomic information systems into a joint e-infrastructure and the creation of a common user-interface disseminating the pan-European checklists and associated user-services results.

**Index Terms** —biodiversity, infrastructure, taxonomy, nomenclature, standards, Europe, checklists, bio-informatics, cybertaxonomy.



## 1 INTRODUCTION

The correct use of names and their relationships is essential for biodiversity management; therefore the availability of taxonomically validated, standardised nomenclatures is fundamental for biological e-infrastructures. PESI is the next step in integrating and securing taxonomically authoritative species name registers, serving to underpin the management of biodiversity in Europe.

PESI is a joint initiative of two Networks of Excellence: EDIT (European Distributed Institute of Taxonomy) [2] and MarBEF (Marine Biodiversity and Ecosystem Functioning) [3], funded by the European Commission under the Seventh Framework Capacities Work Programme - Research Infrastructures - and is led by the University of Amsterdam. It was started in May 2008 and will last three years, involving 40 partner organisations from 26 countries and several non-contracted associated partners.

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## 2 INTEGRATING INFRASTRUCTURES

### 2.1 Rationale

PESI defines and coordinates strategies to integrate the infrastructural components of four major community networks on taxonomic indexing and their respective knowledge (social and technical) infrastructures; those of marine life, terrestrial plants, fungi and animals, into a joint work programme. These include the three main all-taxon registers in Europe, namely the *European Register of Marine Species* [4], *Fauna Europaea* [5], and *Euro+Med PlantBase* [6] in coordination with EU-based nomenclators, i.e. *Index Fungorum* [7], IPNI [8], and *AlgaeBase* [9], plus the network of EU-based Global Species Databases (GSDs).

### 2.2 COORDINATION AND INTEGRATION OF EUROPEAN EXPERT NETWORKS

The integration of the social expertise networks will result in functional knowledge systems of taxonomic experts and regional focal points, which will collaborate on the establishment of standardised and authoritative taxonomic (meta-)data and the development of approaches for long-term data government. The sustainability of these taxonomic expert networks is considered as the most threatening issue to PESI's success, since Europe is experiencing a decline in its number of professional taxonomists.

PESI is addressing this concern by advancing the abilities of the *Society for the Management of Electronic Biodiversity Data* (SMEBD) [10], by collaborating with the *European Distributed Institute on Taxonomy* (EDIT) project and the *Consortium of European Taxonomic Facilities* (CETAF) [11], as well as reaching out to non-professional taxonomists and taxonomic societies in a hope to revive this vital science.

### 2.3 COORDINATION AND INTEGRATION OF INFORMATION E-INFRASTRUCTURES

The technical integration of these checklists into a joint 'European Taxonomic Backbone' relies on the *Common Data Model* (CDM) [12], ensuring the conceptual mapping of taxonomic databases. This is hosted in the CDM store as a denormalised relational database management system (the so-called 'PESI data warehouse'). The CDM represents a component of EDIT's Cybertaxonomy Platform [13].

PESI is also involved in supporting international efforts on the development of the 'Global Names Architecture' (GNA) [14] by building a common intelligent name-matching device in consultation with principal initiatives like GBIF [15] and LifeWatch [16]. This provides a unified cross-reference system to all stakeholders optimising their taxonomic meta-data service functioning.

## 2.4 INTEGRATED E-SERVICES FOR USERS AND DISSEMINATION

PESI will build an interactive, multilingual web portal [17] to carry out the dissemination of the developed species names service and to support the use of the pan-European species data in the e-science domain. This will include relevant supplementary data, like occurrence details by applying dynamic links to pertinent e-data services.

### ACKNOWLEDGEMENT

The authors wish to thank all PESI partners, especially PESI work-package leaders and managers, for their contributions.

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- [6] Euro+Med PlantBase (<http://www.emplantbase.org/home.html>)
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