

**Workshop report**  
**Professionals and non-professionals as producers  
and users of taxonomic knowledge – synergies,  
conflicts and the role of taxonomic societies**

An EDIT activity of WP2 and WP4



**Hosted by Cabo de Gata – Nijar Natural Park  
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## Executive summary

One aspect of the taxonomic infrastructure of the future supported by EDIT is the increase of the taxonomic work force in number and in excellence - to guarantee the availability and access to taxonomic information and taxonomic services for everyone who need or will need it in the future. In this light the EDIT workshop 'Professionals and non-professionals as producers and users of taxonomic knowledge – synergies, conflicts and the role of taxonomic societies' was organised on April 23 and 24, 2008 in Almería, Spain. The rationale of the workshop was to develop further insights into the diversity of all taxonomists currently working in the domain.

By way of plenary presentations the amateur and professional<sup>1</sup> taxonomists talked about the kind of taxonomic work they do, the conditions under which they carry out their work, their views and experience (barriers and synergies) of working together. Additionally, four break-out groups worked separately and discussed in depth four themes relevant to collaboration between the two communities. The themes were selected by the participants and the organisers together and covered the following issues: access to taxonomic resources, training and capacity building, recognition of contributions to taxonomy; and the role of taxonomic societies.

The principal recommendations made by the participants were that the amateur taxonomists should be more included in the institutional framework when it comes to access to taxonomic facilities and resources. Furthermore, they should receive equal and similar recognition for their scientific contributions by being accepted as (co)-authors, by being properly cited for contributions, by being considered for funding when they carry out taxonomic activities, and fair reimbursement of expenses (travel, equipment) should be made available to them<sup>2</sup>. To compensate for their unpaid work, institutions should reward the work of amateur taxonomists by 'paying' additional benefits, like: access to collections, library, free photocopies, access to staff and expertise etc. Finally, as the participants stressed, institutions, editors of periodicals, and

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<sup>1</sup> One of the topics discussed was the used terminology to distinguish between people doing paid or unpaid taxonomic work, respectively. It was generally agreed that the terminology should ideally *not* refer to the level of expertise, skills, or commitment. Different preferences of terminology were expressed. The organisers do not want to promote a rigid use of terminology and will use in this report the terminology 'amateur taxonomists' to describe taxonomists with no paid work affiliation in taxonomy; 'professional taxonomists' refers to those employed and paid to do taxonomic work.

<sup>2</sup> Some of these recommendations are already (partly) implemented in some institutions, but the general view was that a lot can be improved on these levels.

taxonomic societies should take a lead in ‘head-hunting’ and liaising between talented amateur taxonomists and the scientific community. In short, at both the administrative level *and* at the level of the individual researcher, there was a request to (further) open-up taxonomic facilities and embrace amateur taxonomists as peers in the taxonomic community.

The presentations and the recommendations from the breakout groups by amateur and professional taxonomists form the basis of the next steps to take for EDIT on this subject. In the view of the workshop organisers only if EDIT considers the following recommendations, will it be able to integrate amateur and professional taxonomic workforces:

- Promote the excellence of the amateur taxonomic work force and stress the synergies of collaboration between the amateur and professional community to a wide audience working in biodiversity
- Inform the biodiversity community (policymakers, wider biology community, end-users of taxonomy) about the diversity and competence of amateur taxonomists
- Promote and train editors of periodicals to motivate and coach amateurs to publish on their work
- Promote ‘open to all-taxonomists’ institutional behaviour: by encouraging transparency on institutional (im)possibilities for amateurs, appointing one contact person for amateur taxonomists, abandoning the 9-5 mentality, easing restrictions on specimen loans and collection access, providing access to equipment
- Promote intuitional/administrative freedom for individual researchers to collaborate with amateur taxonomists
- Promote ‘open to all-taxonomists’ mentality among researchers by: opening up meetings, field trips, collaborative research projects, publications
- Promote fair recognition for all good quality taxonomic work
- Put on the (political) agenda the restrictions on collection permits for all taxonomists.

For questions on the workshop or the workshop report, please contact the organisers:

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## Workshop participants



	Surname	Name	Place of work	Professional / non-professional taxonomist	Taxa of interest
1	Ahrens	Dirk	Natural History Museum London (Entomology Department), UK	Professional	Scarabacidae
2	Buyck	Bart	Museum national d'histoire naturelle, Paris, FR	Professional	Fungi
3	de Blauwe	Hans	Fire Department Brugge, BE	Non-professional (Fireman)	Bryozoa
4	Burba	Christoph Matthias	Naturwissenschaftlicher Verein Hamburg, DE	Non-professional (Lawyer)	Bacillariophyceae (Diatoms (Möller) Typenplatten)) Foraminifera, Ciliophora
5	Duin	Daphne	Museum national d'histoire naturelle, Paris, FR	Organiser	

6	Eekhout	Xavier	Museo Nacional de Ciencias Naturales, CSIC, ES	Organiser	Anurans
7	Enghoff	Henrik	Natural History Museum of Denmark, DK	Professional	Millipedes (Diplopoda), centipedes (Chilopoda), harvestmen (Opiliones)
8	Fibiger	Michael	Clinical psychologist, Sorø, DK	Non-professional (Clinical psychologist)	Lepidoptera, Heterocera (Owlet moths, Noctuidae)
9	Heule	Ruben	National Museum of Natural History, Naturalis, NL	Non-professional (generalist / conceptualizer)	Taxonomists
10	Hoch	Hannelore	Museum für Naturkunde, Humboldt-Universität zu Berlin, DE	Professional	Hemiptera: Fulgoromorpha (planthoppers) and Coleorrhyncha (moss bugs)
11	Jahn	Regine	Botanic Garden and Botanical Museum Berlin-Dahlem, DE	Professional	Algae (diatoms)
12	Jeppson	Mikael	Trolhättan, SE	Non-professional (Teacher)	Gasteromycetes sensu lato (Basidiomycetes)
13	de Jong	Yde	Zoological Museum Amsterdam, NL	Non-professional (Biodiversity Informatics)	Seaweeds (Ceramiales, Dasyaceae)
14	Komarek	Albrecht	Mödling, AU	Non-professional (Medical doctor, neurology and psychiatry)	Coleoptera
15	Mohr	Katrine	Natural History Museum of Denmark, DK	Organiser	Mammals, Rodentia
16	Pedersen	Henrik Ærenlund	Botanical Garden & Museum, Natural History Museum of Denmark, DK	Professional	Orchids (mainly in Europe, the Mediterranean and SE Asia); Danish vascular plants
17	Piirainen	Mikko	Botanical Museum, Finnish Museum of Natural History, FI	Professional	Vascular plants (especially Salicornia)

18	Pollet	Marc	Institute for the Promotion of Innovation through Science and Technology (IWT-Vlaanderen), BE	Non-professional (Grant coordinator (Ph.D - Postdoc) Scientific Advisor sr.	Insecta, Diptera: Dolichopodidae (long-legged flies) - Palearctic - New World - all aspects
19	Ramos	Marian	Museo Nacional de Ciencias Naturales, CSIC, ES	Professional	Freshwater molluscs. Mostly hydrobiids, other freshwater gastropods
20	Schoolmeesters	Paul	Herent, BE	Non-professional (Bank-employee)	Scarabacidae
21	Sommerer	Manfred	Muenchen, DE	Non-professional (Member of Bayer. Oberster Rechnungshof - i.e. Govt. Accounting Office of the State of Bavaria - with a law degree)	Lepidoptera
22	Söli	Geir	Natural History Museum, University of Oslo, NO	Professional	Diptera - Fungus gnats (Sciarioidea)
23	Stevens	Gill	Head of UK Biodiversity, Department of Botany, Natural History Museum, London, UK	Non-professional (Specialised in science-public interaction)	Algae, bryophytes, lichens (hobby)
24	Tweddle	John	Department of Botany, The Natural History Museum, London, UK	Non-professional (Specialised in access to science information)	Flowering plants and freshwater fish (hobby)
25	Vesterholt	Jan	Natural History Museum of Denmark, DK	Professional	Fungi, Agarics, in particular the genus Hebeloma, but also Lactarius and inoperculate discomycetes
26	Øllgaard	Benjamin	Herbarium, AAU, Institute of Biology, Aarhus, DK	Professional	Neotropical Lycopods and Ferns

### Acknowledgements

The workshop came into being with help of a number of people. Above all, we would like to thank our kind hosts, Rosa Mendoza and Diego Moreno, their colleagues from the Cabo de Gata – Níjar Natural Park and all the participants that came down to southern Spain and shared their views with us.

## Introduction

The European Distributed Institute of Taxonomy (EDIT) is a network of leading European institutions in the area of research on the taxonomy<sup>3</sup> of living or extinct organisms. The general objective of the network is to overcome the taxonomic impediment<sup>4</sup> by building a distributed infrastructure for taxonomic research in Europe, which will increase the scientific basis and the capacity for biodiversity conservation. One aspect of the taxonomic infrastructure of the future supported by EDIT is the increase of taxonomic work force in number and in excellence - to guarantee the availability and access to taxonomic information and taxonomic services for everyone who need or will need it in the future.

In this light the EDIT workshop ‘Professionals and non-professionals as producers and users of taxonomic knowledge – synergies, conflicts and the role of taxonomic societies’ was organised on April 23 and 24, 2008 in Almería, Spain. The rationale of the workshop was to develop further insights in the diversity of taxonomists currently working in the domain. The meeting focussed in particular on the similarities and differences between those taxonomists affiliated to taxonomic institutions (professionals) earning a salary for the taxonomic work they do and those taxonomists without institutional affiliation and without getting paid for it (amateurs). The integration of the professional and amateur work force is extremely relevant for taxonomy as research has demonstrated the significant contribution of the amateur community to the identification and description of species (cf. Fontaine et al., 2008), which today, too often remains invisible.

In Almería, 26 people participated in a discussion on barriers to and synergies of integration of the professional and amateur taxonomic communities. They represented a variety of taxonomists from Western Europe, experts in different taxonomic groups and/or with experience in opening up biological data produced by the amateur community for biodiversity policy. In March 2007, in Smolenice, Slovakia, EDIT held a first consultation meeting on the role of taxonomic societies. This meeting, which was mainly attended by people from Eastern Europe, formed the starting point of an investigation of needs of amateur taxonomists. Developing a better understanding of who are contributing to the scientific basis of taxonomy and under what conditions, the subject of the Almería workshop is the joint responsibility of two EDIT work packages, WP2 (focusing on producers of taxonomic knowledge) and WP4

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<sup>3</sup> ‘Taxonomy’ to be understood in a very broad sense, cf. Enghoff, H. & Seberg, O. 2006: A taxonomy of taxonomy and taxonomists. – *The Systematist*, Newsletter of the Systematics Association 27: 13-15. – <http://www.systass.org/newsletter/TheSystematist27.pdf>

<sup>4</sup> <http://www.cbd.int/gti/>



(focusing on users of taxonomic knowledge), also the organisers of the workshop.

The workshop discussion has showed that there is a huge diversity of ‘in between’, ‘overlapping’ and much more ‘fluid’ categories than the simple distinction ‘professionals’ versus ‘amateur’. We shall come back to this point later in the report. The workshop used a clear division of presentations and discussion and addressed a range of questions in a certain order. This report however, will not sum-up the events in chronological way but summarises the headings which follow a rational order. Successively five thematic sections will cover the central outcomes of the meeting (1) concepts and categories, (2) access to taxonomic resources (3) training and capacity building, (4) recognition of contributions to taxonomy, (5) the role of taxonomic societies. First, in the paragraph below, a short introduction of the practical setting of the workshop is described.

## **1 Format of the workshop**

The venue of the workshop was the information centre of the Cabo de Gata - Níjar Natural Park, in the town of Rodalquilar, Spain. The workshop programme covered two days of presentations and discussion. During the first day the organisers presented the context of the workshop, the objectives of EDIT and explained why EDIT has an interest to stimulate the integration of the professional and amateur taxonomic work force. Then the floor was offered to those who considered themselves as amateurs. Each of them gave a short presentation about the kind of taxonomic work they do, the conditions under which they carry out their work, their views on and experience with professional taxonomists, what barriers they encounter, and what possible solutions they see. Furthermore, they talked about their passion for taxonomy and what made them enthusiasts of taxonomy. A second round of short presentations was for the participants that considered themselves as professional taxonomists. They were asked to address similar questions concerning their experience with and views on collaboration with amateur taxonomists. They named examples of good and bad practices. The rest of the first day was devoted to general presentations on examples of exiting successful collaborative activities. During the second day of the workshop, the participants worked in breakout groups on four different themes. The themes were chosen because of the lively debate they had generated during the first day. The following themes were selected:

- Access to taxonomic resources
- Training and capacity building
- Recognition of contributions to taxonomy

- The role of taxonomic societies.

The participants were asked to look at the themes from the following angles:

- Differences and similarities between professionals and amateurs
- Integration, and how to reach it
- Excellence, best practises in taxonomy
- Synergies, and how to achieve them

Each break out group had a moderator, who presented the outcome of the group discussion to all participants. A plenary work session followed where the participants structured the outcomes of the breakout groups, named and prioritised recommendations for EDIT and for the taxonomic community in general.

### **1.1 Output of the workshop**

The outcomes of the workshop will be summarised in two separate documents. One is this formal report for EDIT members, for individual researchers and the directors of the EDIT institutions. The second document will be a booklet aiming at a broader audience, ranging from individual professionals (including EDIT researchers) and amateur taxonomists, to management level of natural history institutions, to members and boards of taxonomic societies and everyone else who deals in their profession with taxonomists, like policy makers and conservation managers. The booklet will aim at explaining the diversity of expertise that is available in the taxonomic community and the differences in work conditions they are operating in, will emphasise the synergies that will come forward from creating a work environment where professionals and amateurs have the opportunity to collaborate, and will include a number of successful (and maybe unsuccessful) case stories.

## **2 Participants**

The workshop had 26 participants, among whom 11 who subscribed as ‘professional taxonomists’ and 12 as ‘non-professional’, 3 people from EDIT were present for logistical support. Before discussing the agenda subjects it is relevant to highlight the diverse backgrounds of the participants. The table on pages 5-7 lists the jobs positions participants held at that moment. Among the amateur taxonomists the diversity is the highest; a lawyer, a psychologist, a psychiatrist, a fireman, one working in finance, teachers, public administrators and so on. The professional background of the paid taxonomists was, of course, more homogenous. However, several of them mentioned they had worked for years in non-taxonomic fields, before getting a paid position in taxonomy. During that period they carried out taxonomy as amateurs.

The difference in taxonomic expertise between amateur taxonomists and professional taxonomists was said not always to be very obvious. Several of the ‘amateur taxonomists’ present published papers in peer-reviewed journals and participate in networks with professional taxonomists. Several examples were given of amateur taxonomists providing training courses for professional taxonomists. The amateur community often has a profound knowledge of local flora and fauna, sometimes to a greater extent than the expertise available in natural history institutions. In certain countries, like the Netherlands, this implies that the national government gets most of their taxonomic information on national sites by way of the taxonomic societies, and not from the academia. In the case of the Netherlands the natural history institutions are specialised in the biodiversity of Asia and South American. Finally, it is worth mentioning that some disciplines, e.g., mycology depend very much on the contributions of amateur taxonomists in particular.

### **3 Outcomes of the workshop**

As is mentioned above, this report is written for individual researchers in EDIT institutions and their superiors. It summarises the discussion and conclusions of the workshop with professional and amateur taxonomists and attempts to stress the importance for the taxonomic discipline the amateur community as a serious work force, with adequate expertise to contribute to the scientific basis of the field. The organisers are convinced this is something that should be recognised at research *and* management level of EDIT institutions. Furthermore the report wants to serve as a gateway for those already working with amateur taxonomists or planning to start collaborative activities in the future. Although this report is targeted to EDIT (professional taxonomists), the workshop itself has been framed to generate outcomes of interest for a broader audience, professionals and amateurs included.

Five central themes that were addressed in the workshop will be discussed in the following paragraphs. They relate to similarities and differences between professional and amateurs taxonomists, taxonomic excellence, integration and expected synergies. The first paragraph addresses the ambiguous attempt and hot topic of debate during the meeting, the categorisation of the taxonomic community in two groups here called ‘professional taxonomists’ and ‘amateur taxonomist’.

The overall impression gained from the discussions is that both groups will benefit significantly from collaboration.

### 3.1 Catching diversity

Within the framework of integrating the taxonomic work force – among other things, EDIT promotes intensified collaborations between taxonomists working in their institutions and others who do taxonomy. However it is not obvious how to classify those two groups, if one can speak of two groups at all. During the first day of the meeting in Almería the subject about how to differentiate and categorise the diversity of people working on taxonomic questions was stressed. A discussion developed about the terminology ‘professionals’ and ‘non-professionals’ which the workshop organisers had applied in the workshop handouts. Alternatively, the terminology ‘amateur taxonomists’ versus ‘expert taxonomists’, ‘scientists’ versus ‘citizen scientists’, ‘taxonomists’ versus ‘para-taxonomists’, or single terminologies like; ‘naturalists’, ‘private taxonomist’ or the wording ‘biological recorder’ were mentioned. All these definitions are in use in different contexts to make a distinction between those people being paid for doing taxonomic work and those doing taxonomy unpaid. The most frequently heard comment was that the terminology used to describe the unpaid taxonomists, in all the above examples, carries the connotation of someone who is lacking competence. The term ‘private taxonomist’ was suggested as a new alternative, underlining the positive aspect of independence of the unpaid taxonomist, but here a good matching term for the ‘professional taxonomists’ is missing.

Besides the fact that most participants felt uncomfortable with what they called ‘patronizing terminology’, it turned out that the distinction between paid and unpaid taxonomic work is quite elusive. Among the participants there were several people who held full-time jobs as taxonomists in an academic institutions but who explained that important parts of their taxonomic work was something they carried out independent from their paid academic positions. For instance, several professional taxonomists put forward that 80% of their work was committed to management and administrative tasks. Most of the taxonomic work they carried out was done in their free time, weekends and holidays. Others said that in their academic affiliated time they worked on a taxonomic group in a specific geographical region (focal area of their institution?). In their own time and with their own resources they kept on working on this group but focusing on species in their home region, often in collaboration with ‘amateur taxonomists’. Also the opposite pattern occurred. Some ‘amateur taxonomists’ with paid jobs in other professions explained that they carried out, from time to time, paid taxonomic work on a freelance basis, but did not hold a taxonomic position as such. These examples demonstrate that there are ‘professional taxonomists’, with a paid position in academic

institutions, still doing unpaid ‘amateur’ taxonomic work and at the same time there are ‘amateur taxonomists’ whose main income comes from being, e.g., a lawyer but doing paid taxonomic work from time to time. In many taxonomic institutions it is tradition that retired scientists (*in casu* professional taxonomists) continue to work in the institution after their retirement. These ‘reborn amateurs’ often produce large and valuable contributions to the taxonomy of their group, being now relieved of the former administrative and other professional tasks.

The discussion on the use of concepts and terminology showed the importance of an appropriate use of terminology for the participants. In spite of the hybrid examples above, everyone agreed that the concepts for the communities should in particular underline the differences between doing paid or unpaid taxonomic work and should not imply a lack of expertise, skills or commitment. We, the organisers, do not want to promote a rigid use of terminology and think that everyone should use the terms one feels comfortable with. However for the sake of readability we prefer to be consistent in our report. Although we are aware of its limitations, in this report we will use ‘*professional taxonomists*’ versus ‘*amateur taxonomists*’ (take note of the mandatory addition of ‘taxonomists in both categories). The connotation of these concepts expresses what we want to distinguish, and textually the two are well balanced. According to dictionaries and our application, the term ‘amateur’ refers to an activity, where the people taking part do not receive money, and ‘professional’ refers to engaging in a given activity as a source of livelihood. Furthermore the two concepts form a real pair without adding a negation like ‘non’.

### 3.2 Access to taxonomic resources and facilities

As mentioned above, taxonomic expertise, serious commitment and enthusiasm to contribute to the scientific and biodiversity basis of taxonomy is widely present among amateur taxonomists. The excellence of this work force often stays unnoticed, representing a loss for taxonomy and biodiversity in general. As discussed during the workshop, opening up scientific infrastructures for the amateur community will further encourage their enthusiasm and facilitate and fuel high quality output. In the discussion of the first day, several barriers hindering amateur taxonomists were identified. The breakout groups of the second day provided a list of suggestions how these could be overcome. This paragraph summarises the barriers that were mentioned and the solutions that were suggested concerning access to research facilities and infrastructures for by amateurs. The **barriers** that were pointed out are:

- rigid criteria to obtain grants e.g for SYNTHESYS (often number of high impact publications is counted)
- rigid criteria to obtain field permits, (even more difficult for amateur taxonomists than for professional taxonomists)
- rigid (government) regulations regarding use of chemicals
- rigid institutional access regulations (forms, badges, logins, keys)
- institutional liability issues (might lead to complete close off of collections for amateur taxonomists).
- restrictions regarding loans of specimen (often only to researchers affiliated to institutions)
- costs for using facilities (travel, photocopies)
- costs of subscriptions of scientific publications
- specialisation level of databases (excludes people who are not using scientific names)
- rigid work/opening hours 9-5 mentality (to visit museums or to meet with professional taxonomists).
- non transparency of institutional facilities, regulations, and contact persons

Throughout the morning of the second day one of the breakout groups worked in depth on the question of access to taxonomic resources and facilities for amateurs. They presented the outcome of their work to the rest of the group. In their list of possible solutions they made a distinction between general suggestions for change and specific suggestion to EDIT. In general, it was said, the taxonomic institutions should

- provide simple and **practical guidelines** on the **contact persons** responsible for which taxonomic groups/collections
- provide transparent information on what they **can and cannot** offer to amateur taxonomists
- provide transparent information on the procedures to follow (for collection use, library, expert consultation)
- provide a dedicated physical space with (minimum) equipment that amateurs can use
- create the opportunity for ‘regulars’ to obtain a particular status (scientific attaché) in the institutions, coupled with more privileges to resources and facilities.

Besides general suggestions for taxonomic institutions the breakout group presented several suggestions concerning taxonomic societies and amateurs to simplify access. **Societies and individual amateurs** are asked to:

- provide information on member expertise, society facilities, interests and needs
- provide information on geographical availability of local expertise/experts
- make documentation (pictures)/specimens available for non commercial use

Furthermore it was suggested that taxonomic institutions and taxonomic societies should make a **joint effort** on the following:

- invite each other to participate in joint activities (field trips, conferences, training)
- integrate each others procedures, processes and share taxonomic output on the web

There were specific points which the breakout group wanted EDIT to think about:

- start a consumer website – e.g integrate feedback from visiting taxonomists concerning institutional facilities on a regularly basis and use them to improve institutional services for future visitors.
- support the creation of a loan/exchange network for specimens as it exists for libraries (sending specimens to the closest available facility for easier consultation)
- promote the creation of a National/European website that provides the link between all groups of professional- and amateur taxonomists.
- stimulate professional and amateur taxonomists to speed up the access to various exiting taxonomic databases for the international user community.

The general view of the breakout group on access and resources was that transparency and further flexibility of procedures regarding access will considerable enhance taxonomic excellence and create synergies that are needed for taxonomy.

### **3.3 Training and capacity building**

A second breakout group explored in depth the needs and the opportunities of training and capacity building to increase the integration of professional and amateur taxonomists. They described some particular requirements of taxonomy that make training a core factor in safeguarding the future taxonomic work force. For instance, for several amateur taxonomists, it was single experience or contact with an experienced taxonomists that had interested them in taxonomy, and had inspired them to advance in the dicipline and sometimes convinced them to publish on their work. Furthermore, the

participants mentioned that traditionally taxonomy is a highly individual activity, where people work independently. At the same time, and conflicting with the previous, to master taxonomy one needs to follow a long journey of continuous theoretical and practical learning. Other currently existing barriers and that were summarised are:

- taxonomic literature and the access to literature does often not take into account the diversity of the taxonomic audience
- the reluctance on the side of (some) professional and amateur taxonomists to aim for an integrated taxonomy
- the very personal motivation and ‘taxonomic joy’ of the amateur taxonomists is often misunderstood

The following suggestions to overcome these difficulties were presented:

- institutions should prioritise and commit time and resources to nurture the contribution and knowledge of amateur taxonomists
- taxonomic institutions and taxonomic societies should promote ‘nature’ and the study of nature to a broad audience
- taxonomic institutions and societies should ‘head-hunt’ for taxonomic amateur talents and offer them an intensive training programme
- training should be as a partnership of equals
- training courses should apply a mentor-pupil approach between two taxonomists who are interested in the same group/method
- open training courses/summer schools up to each other (professional and amateur taxonomists) and promote them to each other
- editors of taxonomic periodicals should coach and motivate amateurs to publish on their findings

In general the breakout group stressed that professional and amateur taxonomists should exchange their knowledge, because both have valuable insights to offer. The trend is that taxonomic institutions specialise more and more in molecular techniques and less in morphological methodologies, while these techniques are widely practised among amateur taxonomists. Joining forces offers an integrated taxonomy in terms of sector and skills.

### **3.4 Recognition for contributions to taxonomy**

During the discussion of the first day it appeared that the question of recognition for taxonomic work is a concern that preoccupies professional and amateur taxonomists alike. They both feel that formal and informal recognition practices structure and even hinder their work. The significance placed upon publications in high impact journals (by peers and institutions) was a particular cause of concern among workshop participants. Their main objection to this practice relates to the fact that Impact Factors discriminate against “traditional”



taxonomic research compared with other branches of biology. It was mentioned that taxonomy is not always considered even as a science by others. For this reason, the Impact Factors as a measurement for scientific excellence was said to be unsuitable for taxonomy. As this model of recognition limits above all the amateur taxonomists to contribute to taxonomy, the third breakout group focussed on possible solutions to diminish or overcome this barrier for them. They distinguished three areas that play a role in the current recognition framework but that should be considered for improvement:

- 1) Work on **taxonomic and biodiversity databases** should be recognised as relevant for taxonomy:
  - because electronic resources are essential to modern taxonomy
  - because it is labour and skill intensive work
  - the work of amateur taxonomists should be recognised by peers by clearly citing them in papers and by having attached author/contributor labels on downloaded data.
  - additionally an appropriate citation measure should be developed e.g. counting the times material is cited, downloaded, counting the number of database visitors/users and number of cross-links
- 2) Recognition of a wide variety of **publications** as scientific relevant by aiming to:
  - 'legalise' grey literature by promoting online publications on regulated fora
  - train and stimulate editors to look for taxonomic talent (a possible task for EDIT).
  - institutions and networks like EDIT should urge professional taxonomists to cite and co-author with amateur taxonomists
  - EDIT should develop guidelines on how to cite alternative contributions (who provided the specimens or identifications, carried out the field work, helped curate the collection etc.)
- 3) Recognition of alpha taxonomic and or collection based work within institutions by way of:
  - correctly facilitate specimen donations by (amateur) taxonomists to the collections (donor should be guaranteed access to his/her collection, non commercial user licenses etc.)
  - recognition of curating contribution of amateur taxonomists
  - involvement of amateur and professional taxonomists when building a collection,
  - providing additional benefits for contributions (e.g. access to collections, library, free photocopies, access to staff and expertise)
  - allowing institutional staff to invest time in building partnerships with

amateur taxonomists.

Being an (co)-author, being cited for contributions, funding of taxonomic activities, reimbursement of expenses (travel, equipment) and provision of additional benefits (access to facilities and expertise) were mentioned as appropriate recognition mechanisms for amateur taxonomic work. It is not surprising that these mechanisms resemble a lot the methods used to recognise the work of professional taxonomists.

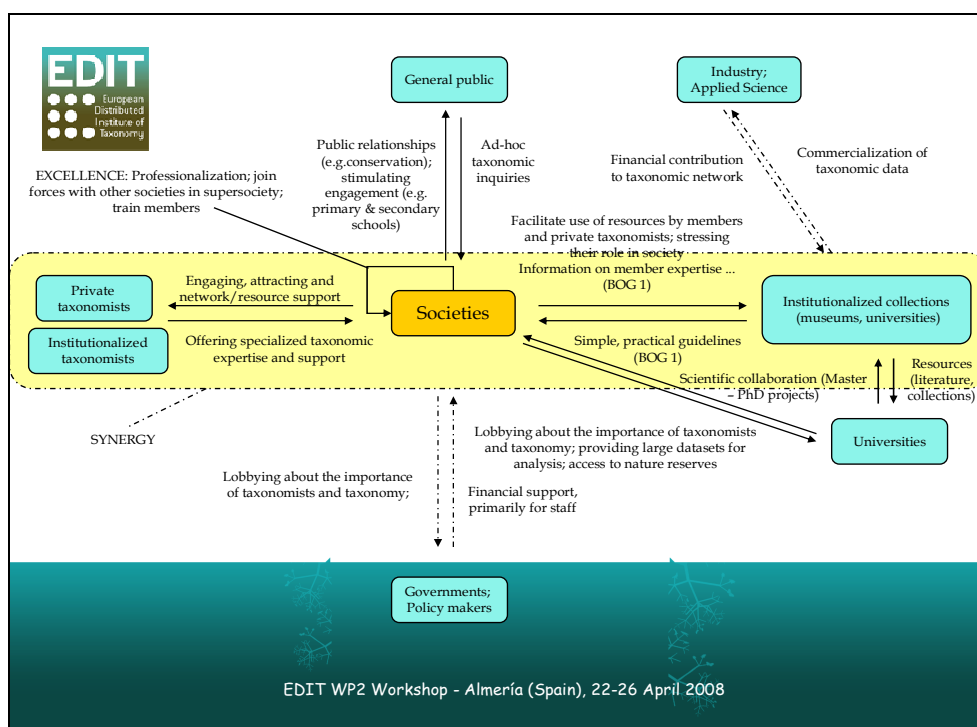
### **3.5 The role of taxonomic societies**

Taxonomic societies are often fora where professional and amateur taxonomists meet. The core business of a society is often to promote a specific area of taxonomy be it mycology, entomology, ornithology etc. They often have their own taxonomic journal and organise conferences and field studies. The fourth breakout group looked into the role taxonomic societies are playing and could play to improve the integration between professional and amateur taxonomists. In their presentation the breakout group stressed the importance of recognising the diversity of societies regarding the geographical scope of its members, the user/producer ratio, the size of the society, the professional/amateur ratio and their taxonomic scope of interest. It was mentioned that the societies have the qualities to be the central player in the web of biodiversity actors. The envisioned key players in this field are:

- the general public
- taxonomic institutions
- universities
- governments and policymakers
- individual taxonomists (professional and amateurs)
- Research and Development centres
- Industry

The breakout group mapped these players in a diagram (Fig. 1) and labelled in what way, by applying different qualities, the taxonomic societies could act as intermediate between all these groups.

Fig. 1.



## Summary of discussion

The workshop with amateur and professional taxonomists in Almería addressed the barriers and synergies of integration of the professional and amateur communities. In the discussion the participants emphasised the artificiality of distinguishing between amateur taxonomists and professional taxonomists when it comes to taxonomic competences. However, it was stressed that the non-institutional affiliation of the amateur taxonomists created specific barriers for them contributing to their full potential. The main topics discussed were: (1) terminology of amateur and professional taxonomists (2) access to taxonomic resources, (3) training and capacity building, (4) recognition of contributions to taxonomy, (5) the role of taxonomic societies. The general conclusions were that the amateur taxonomists should be more included in the institutional framework when it comes to access to facilities and resources. Furthermore they should receive equal and similar recognition for their scientific contributions by being accepted as (co)-authors, by being cited for contributions, by being considered eligible for funding when they carry out

taxonomic activities, and a fair reimbursement of expenses (travel, equipment) should be made available to them<sup>5</sup>. To compensate for their unpaid work, institutions should reward the work of amateur taxonomists by ‘paying’ additional benefits, like: access to collections, library, free photocopies, access to staff and expertise etc. Finally, as the participants stressed, institutions, editors of periodicals, and taxonomic societies should take a lead in ‘head-hunting’ and liaising between talented amateur taxonomists and the scientific taxonomy. In short, the administrative level *and* the level of individual researchers should (further) open up their facilities and embrace amateur taxonomists as valuable contributors to the science.

## Next’s steps for EDIT

The present report will be distributed to all EDIT members. It summarises the discussion and conclusions of the workshop with professional and amateur taxonomists. It emphasises the importance for taxonomy to consider the amateur community as a serious work force, with the adequate expertise to contribute to the field. The organisers would like to underline that this should be recognised at research, curation *and* management level of EDIT institutions. Most of the ideas on how to integrate the work of professional and amateur taxonomists are suggestions for the taxonomic community in general. In the list below, the organisers present specific recommendations for actions that should be considered by EDIT concerning principally the managers in EDIT institutions, individual researchers and curators working in EDIT institutions. In the view of the organisers EDIT should:

- Promote the excellence of the amateur taxonomic work force and stress the synergies of collaboration between the amateur and professional community to a wide audience working in biodiversity
- Inform the biodiversity community (policymakers, wider biology community, end-users of taxonomy) about the diversity and competence of amateur taxonomists
- Promote and train editors of periodicals to motivate and coach amateurs to publish on their work
- Promote ‘open to all-taxonomists’ institutional behaviour: by encouraging transparency on institutional (im)possibilities for amateurs, appointing one contact person for amateur taxonomists, abandoning the 9-5 mentality, easing restrictions on specimen loans and collection access, providing access to equipment

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<sup>5</sup> Some of these recommendations are already (partly) implemented in some institutions, but the general view was that a lot can be improved.

- Promote intuitional/administrative freedom for individual researchers to collaborate with amateur taxonomists
- Promote ‘open to all-taxonomists’ mentality among researchers by: opening up meetings, field trips, collaborative research projects, publications
- Promote fair recognition for all good quality taxonomic work
- Put on the (political) agenda the restrictions on collection permits for all-taxonomists.

## References

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An undescribed millipede species (*Ommatoiulus* n.sp.) collected during the workshop. K. Mohr phot.