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## **D4.3.2 Report from First Workshop on Animal Sound Research And Libraries (Madrid 27-30 September 2006)**

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## **INDEX:**

<b>Introduction and summary of conclusions</b>	<b>P. 3 – 4</b>
<b>Agenda of the meeting</b>	<b>P. 5 – 8</b>
<b>Final Minutes of workshop</b>	<b>P. 9 – 16</b>
<b>Call for 2<sup>nd</sup> Workshop on Animal Sound Research and Libraries</b>	<b>P. 17</b>



## EDIT WP4 First Workshop on Animal Sound Research And Libraries (Madrid 27-30 September 2006)

### INTRODUCTION AND SUMMARY OF CONCLUSIONS

Between the 27 and 30 of September 2006 the first workshop on animal Sound Research and Libraries was held in Madrid. This workshop was financed within the workpackage 4 (WP4) of the European Network of Excellence EDIT. WP4, Coordinating Research, has among its objectives to promote synergies among research teams within EDIT and beyond, as well as exploring new tools and technologies for use in taxonomy. The organization of this workshop around the topic of animal sound research and libraries fell within these objectives. The Due rather recent celebration of the XX IBAC Conference (15-19 September in Piran, Slovenia) and to the disposition within the WP4 personnel, the organization of the workshop was planned at an early stage of the life of EDIT. The main objectives of the workshop were to promote a coordinated research in the field of bioacoustics and to promote integration of the main collections and archives of animal sounds in Europe, and by the end of the workshop, the following conclusions were drawn:

- It is essential to link sound recordings to voucher specimens. Animal sound collections should be encouraged to collaborate with zoological collections to track changes in taxonomy.
- Promote lobbying within countries to access national funding and among countries for international proposals. The sponsoring of EDIT can be an effective method to strengthen any common proposal (e.g: EU Framework Project VII).
- It is important to coordinate and integrate present and future sound collections at least at European level. This could be done by:
  - Using common web sites with taxonomic information to help recordists update their taxonomic information.
  - Listing the standard sound recording and digitising settings, including information about ultrasounds, to inform prospective recordists.
  - Listing a minimal level of information or metadata that a recording should include to make it a valid archive (environmental information, distance, behaviours, sample rate, etc.).
  - Creating a WWW domain in bioacoustics to unify European Animal Sound Archives efforts.
  - Listing the software available for sound studies.
  - Publishing a list of recommendations for sound analysis and visual sound representation.
  - Creating a database with relevant literature.
- Access to sound collections should be open to researchers, but it is obligatory to mention the source of the sound recordings. Denying the access to sound collection for commercial purposes is the best way to avoid any copyright problems.
- Lending recording equipment to prospective recordings is not the best solution. It is preferable to recommend where and how to obtain financial support to acquire equipment.

- Large, institutional collections are preferred so the recommendation to small personal collections is to deposit a copy in institutional collections. Unfortunately institutional collections also have the risk of disappearing due to the lack of funding, so ideally, they should also deposit backups in other institutional collections to avoid the loss of valuable samples.
- Sound monitoring can be a valuable tool for conservation. Sound collections should promote the use of sound monitoring, for example by providing templates for identifications and free tools to identify sounds.
- There should be an effort towards unifying sound terminology for sound analysis. This has been attempted before, nevertheless the difference between animal groups makes this problem almost impossible solve. Nevertheless the creation of a network of experts on bioacoustics of different animal groups could be the forum to standardise as much as possible the terminology.

The creation a Network of Experts on Bioacoustics is the key to successfully tackle all the proposals and conclusions that were presented in this workshop. With the writing and acceptance of the Letter of Intent by all participants at the end of the workshop, the Network of Experts on Bioacoustics is officially born. The domains [bioacoustic.org](http://bioacoustic.org) and [bioacoustic.net](http://bioacoustic.net) were acquired by EDIT's WP4 to be its official homepage. It is expected that during the XXI IBAC (International Bio-Acoustic Council) Conference that Dr. Gianni Pavan will organize in Pavia (Italy) in September 2007, there will be a follow up of this workshop to consolidate this network.

**AGENDA AND SCHEDULE FOR THE FIRST EUROPEAN WORKSHOP ON ANIMAL SOUND RESEARCH AND LIBRARIES. MADRID 27 SEPT- 30 SEPT 2006.****Meeting time and place:**

Wednesday Sept 27th 16:00h.

Sala de Juntas

Museo Nacional de Ciencias Naturales

José Gutiérrez Abascal 2

28006 Madrid. Spain.

**Wednesday 27 September**FIRST SESSION (16:00 – 20:00):

Chairman: Rafael Marquez

Secretary: Xavier Eekhout

16:00 Welcome address

16:30 – 18:00 Introductions

Participants will introduce themselves and those that will be willing to bring a powerpoint or slide presentation about their collection (about 10-15 minutes max suggested) will present it here.

Dr. Richard Ranft: British Library collections

Dr. Karl-Heinz Frommolt: Tierstimmenarchiv Humboldt-Universität zu Berlin

Dr. Gianni Pavan: The sound archive of CIBRA

Dr. Gustav Peters: Sound archives at Koenig Museum

Dr. Klaus Riede: Sound archives at Koenig Museum

Dr. Henrik Eingham: Sound collection at the Natural History Museum of Denmark

Dr. Laure Desutter Grandcolas: Acoustic and databasis in the Paris Museum

Dr. Emmanuel Gilissen: Contribution of the RMCA to Animal Sound Libraries.

Dr. Rafael Márquez: Fonoteca Zoológica

18:00 – 18:15 Presentation by Dr. Richard Ranft.

Global overview of bioacoustics sound libraries.

18:15 – 18:30 Coffee Break.

18:30 – 20:00 Open discussion of prioritized list.

- A global overview of bioacoustic sound libraries (development, total extent of collections, weaknesses and strengths).
- European bioacoustic sound collections - summary of what's where.
- Functions of bioacoustic sound libraries (collection, description, access, preservation).

**Thursday 28 September**SECOND SESSION (9:00 – 13:00)

Chairman: Richard Ranft

Secretary: Paulo Marques

9:00 – 9:30 Presentation by Gustav Peters:

Animal Sound Archives and Zoological Museums - Do they share a common purpose? Can one take on the other's tasks?

9:30 – 10:00 Presentation by: Laure Desutter-Grancolas:

A specimen-based natural history databasis : a crucial tool to study the evolution of biodiversity.

10:00 – 11:00 Open discussion of prioritized list.

- Purpose: How are the collections used?
- What do users of such collections want - depth of coverage, breadth, recording quality, metadata quality.

11:00 – 11:30 Administration, Coffee and Bank Break.

11:30 – 13:00 Open discussion of prioritized list.

- How are collections organised? Cataloguing, accessioning, data structuring, storage, deposit agreements.
- How are collections preserved in perpetuity? Fundamentals technical principles of archiving sounds (preserve full bandwidth, backups, duplicate copies, security, disaster planning, etc).
- Access to collections and their catalogues (especially on-line, but also on-site)

13:00 – 15:00 Lunch Break.

### THIRD SESSION (15:00 – 19:00)

Chairwoman: Anna Omedes

Secretaries: Mercedes Pérez and Laura González

15:00 – 15:30 Presentation by Richard Ranft:

Preservation, and international 'standards' for catalogue information, and general technical principles of audio digitisation.

15:30 – 16:00 Presentation by Karl-Heinz Frommolt:

Organization of databases for scientific cooperation in the fields of bioacoustics.

16:00 – 17:00 Presentation by Alberto González Talaván:

GBIF and animal sound collections.

17:00 – 17:30 Coffee Break.

17:30 – 19:00 Open discussion of prioritized list.

- Creation of a network of sound libraries. Collaboration between libraries: sharing methodologies, sharing audio samples, sharing metadata, sharing engineering skills. How to create a unified web interface to search across all libraries (perhaps GBIF?)? Setting up a suitable European archivist's mailing list, or wiki.
- How to raise the status of these libraries among users, decision-makers, sister organisations?
- How to lobby for and secure funding (EDIT, audio technology companies and others...).

20:30 (approx.) Official workshop dinner.

## **Friday 29 September**

### FOURTH SESSION (9:00 – 13:00)

Chairman: Gustav Peters

Secretary: Paulo Marques

9:00 – 9:30 Presentation by Gianni Pavan:  
Experiments with first digital systems at CIBRA.

9:30 – 10:00 Presentation by Klaus Riede:  
Virtual phonothek in DORSA (Digital Orthoptera Specimen Access – [www.dorsa.de](http://www.dorsa.de)).

10:30 – 11:00 Presentation by Friedhelm Schwenker:  
DORSA song classification toolbox.

11:00 – 11:30 Coffee Break.

11:30 – 12:00 Presentation by Rafael Márquez:  
Other sound monitoring efforts: frogloggers.

12:00 – 12:30 Presentation by Marian Ramos:  
EDIT, WP4: Coordinating Research.

12:30 – 13:00 Presentation by Henrik Eingham:  
EDIT, WP2: Integrating and Reshaping the Experts and Expertise Basis

13:00 – 15:00 Lunch Break

### FIFTH SESSION (15:00 – 18:00)

Chairman: Gianni Pavan

Secretary: Jose Manuel Padial

15:00 – 18:00 Open discussion of prioritized list

- Copyrights - and wrongs
- Cooperation and links with research institutes, and with repositories of other taxonomic specimens
- Support for collectors of audio specimens, by training provision and by loan of equipment.

16:00 Coffee Break

- The role of established permanent archives v. individual's on-line web databases (risk of data loss without a reliable long-infrastructure).
- Sound monitoring and animal sound collections.
- Automated sound identification, taxon-specific algorithms?

- Standards for taxon-specific sound analysis parameters/nomenclature.
- Database of standard sounds for automated comparisons

**Saturday 30 September****Field trip to the Sierra de Gredos**

Meeting point: MNCN parking lot.

Departure time 7:00

Estimated return time 23:00

We will be visiting a mountain area 2 Hrs away from Madrid.

Bring good walking shoes (granitic outcrops), a hat and sunscreen (we will be above timberline mostly), you can wear shorts but bring at least a pair of long pants and light jacket (it is likely to be very hot but it may be chilly) and, of course binoculars (we may see ibex goats or other wildlife). A small backpack may be a good item to carry.

Water and non-vegetarian lunch will be provided. We will gather in a local restaurant in Gredos for an early dinner (20:00) before returning to Madrid.



**EDIT WP4**  
**1st Workshop on**  
**ANIMAL SOUND RESEARCH AND LIBRARIES**

**Final Minutes**

27 - 30 September 2006

**Museo Nacional de Ciencias Naturales (CSIC),  
Madrid, Spain**

**FOREWORD:**

This workshop was organised within the framework of EDIT's WP4 "Research Coordination". As stated in the final version of the proposal for EDIT, WP4 included among its original Description of Work: *Prospecting for collaboration among research teams within EDIT and proposing mechanisms for integration of non-EDIT experts* (DoW 4.1), as well as *Prospecting new and emerging opportunities: explore emerging opportunities, including new tools and technologies (i.e. Bar-coding, Morphometrics-Image Recognition, Sounds, etc.) through brainstorming and thematic workshops* (DoW 4.3). The results and conclusion of the workshop fall within the planned milestones M4.3.2 *Workshop on DNA Barcoding, Sounds or another new perspective or new tool*, and two of the planned deliverables: D4.3.2 *Report from one workshop on new perspectives or new tools (e.g. DNA Bar-coding, Sound Analysis or Morphometrics-Image Recognition, according to SAC and NSC advice)* and D4.3.3 *Thematic networks of experts committees established*.

**Preparation of the meeting:**

The first steps towards this workshop were made in the XX IBAC (International Bioacoustics Council) Conference in Piran, Slovenia (September 15-19 2005), which was attended, by Dr. Rafael Márquez and where most of the initial connections were made. The 1st Workshop on Animal Sound Research And Libraries was later made possible thanks to the support of EDIT's WP4 "Research Coordination".

The main goals of this workshop were:

- To promote coordinated research in the field of bioacoustics.
- To promote integration of the main collections and archives of animal sounds in Europe.
- Establish a network of European experts on bioacoustics.

With these goals in mind the selection of participants was made based on their experience in the field of bioacoustics, as well as for being the representatives of animal sound collections in Europe. A first group of participants was contacted during the XX IBAC conference and, based on their suggestions a second group of people was contacted. Finally a general call was launched in June 2006 to all EDIT members in order to inform and raise awareness on the event. The attendance of the first and second group of experts was totally financed, and for the members of EDIT institutions who showed interest in attending, travel grants were made available in order to help with their travel expenses. The line of work followed by the organization of the workshop assured, as much as possible, that the key people on the field of bioacoustics in Europe would be

contacted and informed of the existence of this workshop. The workshop was also attended by a group of local volunteers who assisted in the organization and whose work was not remunerated.

### Participants:

Name	Institution	Days
Rafael Márquez (RM) (Coordinator)	Museo Nacional de Ciencias Naturales	27-30
Marian Ramos (MR) (Leader EDIT WP4)	Museo Nacional de Ciencias Naturales	27-30
Gianni Pavan (GiP) (Coordinator of 2 <sup>nd</sup> Workshop)	CIBRA, Università degli Studi di Pavia	27-30
Laure Desutter Grandcolas (LDG)	Muséum national d'Histoire naturelle	27-30
Henrik Enghoff (HE) (EDIT WP2)	Natural History Museum of Denmark	27-29
Richard Ranft (RR)	British Library, Sound Archive	27-30
Friedhelm Schwenker (FS)	Universität Ulm	27-30
Karl Heinz Frommolt (KHF)	Humboldt-University Berlin	27-30
Klaus Riede (KR)	Staatliches Museum für Naturkunde Stuttgart	27-30
Gustav Peters (GuP)	Zoologisches Forschungsmuseum Alexander Koenig	27-30
José Pedro do Amaral (ZP)	Universidade de Lisboa	27-30
Alberto González Talaván (AG)	GBIF Spain	28
Emmanuel Gilissen (EG)	Royal Museum for Central Africa	27-30
Anna Omedes (AO)	Museu de Ciències Naturals, Barcelona	27-29
Mario Penna (MP)	ICBM, Universidad de Chile	29-30
Paulo Marques (PM)	Museu Bocage	27-30
Diana Escobar (DE)	Institut de Cultura de Barcelona	28-29

From the host institution (27-30). Assistant coordination:

Xavier Eekhout	Mercedes Pérez
Gema Solis	Laura González
Diego Llusia	José Manuel Padial

### MEETING:

Wednesday 27 September 2006

#### First Session

**(Chairman: Dr. Rafael Marquez, Secretary: Xavier Eekhout)**

**Rafael Márquez, as coordinator of the workshop, and Marian Ramos, as EDIT's WP4 Leader, opened the meeting welcoming all the participants to the Museo Nacional de Ciencias Naturales. Next, each of the participants introduced themselves.**

According to workshop agenda and schedule, some of participants made a short presentation (15 minutes) of the sound collections existing in their institutions:

- Dr. Rafael Márquez: *Fonoteca Zoológica* (Marquez 01.pdf)
- Dr. Richard Ranft: *British Library collections* (Ranft 01.pdf)
- Dr. Gianni Pavan: *The sound archive of CIBRA* (Pavan 01.pdf)
- Dr. Gustav Peters: *Sound archives at Koenig Museum* (Peters 01.pdf)
- Dr. Klaus Riede: *DORSA Virtual museum and phonotek - www.dorsa.de* (Riede 01.pdf)

- Dr. Henrik Enghoff: *Sound collection at the Natural History Museum of Denmark*
- Dr. Laure Desutter-Grandcolas: *Acoustic and databases in the Paris Museum* (Desutter-Grandcolas.pdf)
- Dr. Emmanuel Gilissen: *Royal Museum for Central Africa* (Gillisen.pdf)
- Dr. Karl-Heinz Frommolt: *Tierstimmenarchiv Humboldt-Universität zu Berlin*

After the introductions, the meeting continued with the presentation:

- *Bioacoustic libraries: an overview* by Dr. Richard Ranft (Ranft 02.pdf).

The rest of the session was devoted to an open discussion on the topics:

- *European bioacoustics sound collections – summary of “what is where”*
- *Functions of bioacoustics libraries (collection, description, access, preservation)*

First the need of having representative sample of sounds per species was stressed (complete repertoires, enough individuals to assess interindividual variation in call parameters...). HE stated that the problem of poor sampling is not different from other types of collections. MR asked about the percentage of recordings deposited in sound collections that are linked to a voucher specimen, and although there are some exceptions (based on the DORSA experience, around 20% of the voucher specimens in the case of orthopterans are linked to sound recordings), probably less than 1% of the recordings found in sound collections have a voucher specimen. It was agreed that linking voucher specimens with recordings is essential to track future changes in taxonomy as well as in monitoring biodiversity and for assessing biodiversity loss. The use of animal calls as a parameter to infer phylogenies was also discussed. LDG stated that once again the limiting factor is the number of quality recordings, and there is a need to promote making quality recordings of several individuals. Regarding how complete the sound collections are in respect of taxonomic ‘coverage’ it is clear that some groups of animals are much better documented than others. Such is the case of birds and this, in part, is due to the collaboration of amateur recordists. This situation is somewhat analogue to what we find in morphological taxonomy where a significant percentage of the taxonomic work is also done by amateurs. All the following discussion was centred on the need of obtaining funds that could be used to link sound collections, to integrate amateur work and to standardize sound collections as much as possible. It was concluded that it would be a good position to lobby within countries to access national funding and among countries for international proposals (e.g.: EU Framework Programme 7). MR explained that although EDIT does not finance research, it does seek this kind of integration and that its support to a network of experts on bioacoustics could increase the strength for common project proposals. The creation of this network could be a starting point to promote a better sampling of animal sounds among other scientists and amateurs. It could function as council for suggesting recording and digitising techniques and it ultimately could be the first step to coordinating and integrating present and future collections.

Thursday 28 September 2006

## **Second Session**

**(Chairman: Dr. Richard Ranft, Secretary: Dr. Paulo Marques and Gema Solís)**

The second session was opened with two presentations:

- *Animal Sound Archives and Zoological Museums. Do they share a common purpose? Can one take on the other’s tasks?* by Dr. Gustav Peters (Peters 02.pdf). (30 min.)
- *A specimen-based natural history database: a crucial tool to study the evolution of biodiversity* by Dr.

Laure Desutter-Grandcolas. (30 min.)

The rest of the session was dedicated to an open discussion on the topics:

- *Purpose: how are the collections used?*
- *How are collections organised? Cataloguing, accessioning, data structuring, storage, deposit agreement.*

The structure and information included in a sound collection can depend of what the users want from it. It was agreed that it was important to have, if possible, an association between sound recordings and specimens, as well as with metadata (e.g.: pictures, videos, etc.) and natural history data of the species. All the discussion was around the idea of what could be done to integrate and coordinate all animal sound archives. In summary, the proposed actions were:

- To create a list of web sites with taxonomic information to help recordists update their taxonomic information.
- To start a PHONOBANK where the recordings used in the description of new species could be registered (thus, a taxonomic-quality sound repository).
- To list the standard sound recording and digitising settings, including information about ultrasounds, to inform prospective recordists.
- To list a minimal level of information or metadata that should accompany recording to make it a valid archive specimen (environmental information, distance, behaviours, sample rate, etc.).
- To create a WWW domain in bioacoustics to unify European Animal Sound Archives efforts.
- To list the software available for sound studies.
- To publish a list of recommendations for sound analysis and visual sound representation.

### Third Session

**(Chairwoman: Dr. Anna Omedes, Secretaries: Mercedes Pérez and Laura González)**

The third session was opened with two presentations:

- *Audio Preservation & Documentation: Technical Aspects* by Dr. Richard Ranft (Ranft 03.pdf). (30 min.)
- *Organization of databases for scientific cooperation in the fields of bioacoustics* by Dr. Karl Heinz Frommolt (Frommolt.pdf). (30 min.)

The session continued with an open discussion on the topics:

- *How are collections organised? Cataloguing, accessioning, data structuring, storage, deposit agreements.*
- *How are collections preserved in perpetuity? Fundamentals technical principles of archiving sounds (preserve full bandwidth, backups, duplicate copies, security, disaster planning, etc.).*
- *Access to collections and their catalogues (especially on-line, but also on-site).*

A major problem to unify collections is the use of different terminology for different sounds of a repertoire and, although this problem may not be solved completely, it can be faced by including more details about the sound recordings (more metadata). The importance of including abiotic sounds (ambient sounds) in animal sound archives was stressed in the discussion. Some of the collections already have abiotic sounds and it was agreed that the recording of such sounds should be encouraged. Regarding the access to sound collections, there was a general agreement that sounds should be generally accessible for scientific use, but that the danger of making a commercial use of the recordings was real. All agreed that everybody who uses sounds of a

collection is obliged to cite the source of such sound. Also, to protect valuable recordings, it seems possible to follow the example of other types of collections that suffer from occasional misuse of their specimens, this is, create a blacklist of institutions and persons who do not follow the obligations.

After the open discussion there was a third presentation in this session:

- *The Global Biodiversity Information Facility (GBIF) and animal sound collections* by Alberto González Talaván (Gonzalez.pdf). (30 min.)

Until the end of the session there was an open discussion on the topics:

- *Creation of a network of sound libraries. Collaboration between libraries: sharing methodologies, sharing audio samples, standardizing metadata, and sharing engineering skills. How to create a unified web interface to search across all libraries (perhaps GBIF)? Setting up a suitable European archivist's mailing list, or wiki.*
- *How to raise the status of these libraries among users, decision-makers, sister organisations?*
- *How to lobby for and secure funding (EDIT, audio technology companies, and others)?*

Once again, the suggested step to follow was to create a network of experts on bioacoustics. HE and MR stated that, although EDIT could not fund any kind of research, it would definitely encourage the creation of this type of networks. KR suggested that EDIT's WP7 could include in a workshop the topic of monitoring through sound and somebody could attend representing the network. There was also a discussion about the possibility of this network to organise courses for not only dedicated to monitoring, but also to form students in bioacoustics and even integrate amateurs. It was suggested that the courses could be organised as summer workshops or intensive courses following a permanent structure and involving local administrations. Regarding the courses, MR suggested that interaction with WP8 should be further explored. After these suggestions of what the network of experts in bioacoustics could promote, it was discussed what type of organization should the network have. HE proposed to make it an international society open to everybody, to manage an exchange of truly global information. Afterwards the relationship with IBAC (International Bio-Acoustic Council) was discussed. It was agreed that to participate in the activities such as monitoring programs or courses, it was necessary to have a more formal organization than IBAC, although there should be a relationship. GiP, who is in charge of organizing the next IBAC meeting in Pavia in September 2007, offered to host a follow up of this workshop as one of the activities in the meeting. GuP commented that in order to make a stable organization it was necessary to have regular meetings and this required funds. There was a suggestion of starting the network with a relatively simple organization, for example a email list or a wiki. MR guessed that maybe this could be included in EDIT's webpage. In the case of creating an independent webpage for the network it was discussed if it would be possible to develop it within one of EDIT's workpackages or maybe obtain financial support from GBIF. AG explained that neither GBIF Secretariat nor GBIF Spain have funding programmes aimed to this kind of initiatives at the moment. It was agreed that the webpage should include all the actions proposed at the end of the second session towards the unification of the animal sound archives, as well as a database of relevant literature. Another concern regarding the network was to define it as a network of experts with only the current group represented in the workshop. It was decided that it was desirable to organise the network around researchers and collections, but that the network should stay open to include more people or institutions. MR proposed to follow the model of CETAF where one of the institutions functions as the leader. To close the discussion, it was decided that next day a subgroup would get together to prepare a document with the written objectives of the network of experts and these would then be reviewed and confirmed by the rest of the participants.

## Friday 29 September 2006

### Fourth Session

**(Chairman: Dr. Gustav Peters, Secretary: Dr. Paulo Marques and Gema Solís)**

The fourth session was fully dedicated to the following presentations (30 min. each):

- *Go Digital (experiments with first digital systems at CIBRA)* by Dr. Gianni Pavan (Pavan 02.pdf).
- *Automatise annotation of Orthopteran songs: First result from analysing the DORSA sound repository* by Dr. Klaus Riede (Riede 02.pdf).
- *DORSA song classification* by Dr. Friedhelm Schwenker (Schwenker.pdf).
- *First lessons from a pilot sound monitoring program in Iberia* by Dr. Rafael Márquez (Marquez 02.pdf).
- *First European Animal Sound Research and Libraries Workshop. The European framework* by Dr. Marian Ramos (Ramos.pdf).
- *EDIT WP 2: Integrating and Reshaping the Expert and Expertise Basis* by Dr. Henrik Enghoff (Enghoff.pdf).

### Fifth Session

**(Chairman: Dr. José Pedro do Amaral, Secretary: José Manuel Padial)**

This session was entirely dedicated to have an open discussion on the topics:

- *Copyrights and wrongs.*
- *Cooperation and links with research institutes and with repositories of other taxonomic specimens.*
- *Support for collectors of audio specimens, by training provision and by loan of equipment.*
- *The role of established permanent archives vs. individual's online web databases (risk of data loss without a reliable long-term infrastructure).*
- *Sound monitoring and animal sound collections. Automated sound identification, taxon-specific algorithms?*
- *Standard for taxon-specific sound analysis parameters and nomenclature.*
- *Database of standard sounds for automated comparisons.*

Regarding copyrights, it was discussed that free on-line access to sound recordings deposited in collections is a complex issue. Although the risks are considerable, there is a general trend toward open access (with some restrictions). A code for each downloaded sound could be used, and everyone agreed that it is obligatory to credit the source of the recording. It is suggested that a tracking program for the uses of downloaded sounds could be developed.

It is considered pivotal to secure the complete and correct connection between data of sound specimens in collections and their corresponding animal voucher specimens. The main problem is that old sound recordings usually lack a reference to a 'material' animal voucher specimen. Moreover, some institutions devoted to sound collections do not care about the zoological specimens. The inclusion of data about recordings is proposed to be included in the labels of new specimens recorded. Furthermore, it is necessary to encourage institutions to maintain a reliable connection between specimens and sounds. It is decided that the network of experts has to write a letter with the recommendations. Furthermore, newly described species with description of the vocalization should include a unique reference number for the sound deposited in the sound collection. Additionally, the sound collection should have information about the location and collection number of the zoological specimen.

When discussing the possibility of supporting collectors of audio specimens, RR explained that the British Library has broad experience in loaning of technical equipment for sound recordings. They provide material to individual and institutions with the condition of incorporation of new sounds to the library. Nevertheless, the success is very low. In contrast, KHF explained that this procedure is not legal in Germany without an individual contract. The general agreement is that what should be done is to recommend people on where and how to apply for funding to buy sound recording equipment.

When discussing about permanent archives *vs.* individual's online web databases, it was agreed that this is a big issue. Large institutional collections are preferred, because small personal collections are more likely to disappear. There are some efforts to exchange records and to convince owner to deposit original recordings in institutional collections. Nevertheless, there is also the risk that some official sound collections might disappear. It is recommended to always deposit a backup of the sounds in other collections. Some mass media outlets may become partners and provide facilities to digitise and store sounds. The lack of funding for enough personnel to digitise and store sounds is a big problem as some collections are not able to digitise promptly all new sounds they receive due to the lack of personnel.

Regarding sound monitoring, it is clear that it may be an important tool for conservation biology and management. The collections should provide templates for identifications and free tools to identify sounds, and as a matter of fact there are already some initiatives in this sense. It is recommended to elaborate a protocol for animal sound monitoring that may be incorporated to such web pages as Conservation International.

When it comes to analysing animal sounds, terminology varies, even within the same animal group, so it is necessary to promote some consensus in terminology and methods. Although there have been previous initiatives to standardize terms, sounds of some groups like mammals still lack them, whereas in groups like anurans and some insect groups terminology is more or less standardized. It was decided that the network of experts should encourage the formal definition of terms when used for the first time in technical literature and the standardization of terms when possible.

Finally, the possibility of carrying automated analysis was discussed. Due to the complexity, differences, and convergences among the huge amount of taxonomic groups making any kind of initiative of this type is very difficult. The interspecific variation is sometimes so high that the use of a single template is not enough. Hence, the archives should register as much intraspecific variation as possible. This initiative may be possible for some groups as anurans and grasshoppers. EDIT may support such an initiative.

**To end the final session the domains [bioacoustic.net](http://bioacoustic.net) and [bioacoustic.org](http://bioacoustic.org) are finally elected as the domains and were bought by EDIT WP4. The goals of a European Network of Experts were defined, together with a letter of intent that was collaboratively written and distributed at the end of the meeting for further revision. The working text of the letter of intent was the following:**

**At the meeting of the first European Workshop on Animal Sound Research and Libraries, Edit Workpackage 4, hosted by the Fonoteca Zoologica, Madrid 27-30 September 2006, researchers working with bioacoustics collections agreed to create the "European Network of Bioacoustics Collections for Taxonomy and Conservation"**

### **Aim**

To foster cooperation among institutions and researchers to safeguard bioacoustics collections and optimise their use as resource for research.

## **Background**

Bioacoustics is increasingly recognised as a valuable tool for taxonomy and biodiversity research.

Current collections are fragmented and endangered due to the evanescence of the media (tapes) and the signal they store. The collections comprise both sound recordings held in sound archives and zoological institutions. However, links between sound recordings and the recorded animals are nonexistent or insufficiently documented. Therefore, this network aims to the following objectives:

## **Objectives**

1. To raise awareness of the significant scientific and heritage value of collections.
2. To promote the digitisation of bioacoustics collections
3. Encourage the archiving of private collections
4. Standardize metadata
5. Recommendations for terminology
6. Recommendations for equipment and software
7. Create a database of experts
8. Compile a reference animal sound bank, providing accession numbers to reference sounds and whenever possible voucher specimens
9. To provide the best link between multimedia and voucher specimens
10. Liaise with international taxonomic and biodiversity and conservation networks
11. Training and education
12. Establish links between scientist and interested public through websites, providing community and software tools.
13. Develop bioacoustics tools
14. Develop sound monitoring protocols for biodiversity conservation

The final version of this letter of intent was distributed among the participants January 20th, 2007 with the suggestion of including it within their websites. A copy was included in the webpage of IBAC ([www.ibac.info](http://www.ibac.info)) and it will be also included in the EDIT website.

## **Saturday 30 September 2006:**

Field trip. End of the workshop.

1st announcement

## 2nd European Workshop on Animal Sound Research and Libraries

organized within the frame of EDIT WP4



The 2nd workshop on animal sound research and libraries will be held on September 18<sup>th</sup> within the **XXI IBAC International Bioacoustic Congress** organized by CIBRA, University of Pavia, 15-18 September 2007.

The subject of bioacoustics is principally a marriage between the fields of biology and physical acoustics. Given its multidisciplinary nature, the Congress aims to bring together, in informal settings, biologists from different specialisms (ethologists, physiologists, taxonomists, ecologists, etc) with engineers, sound archivists and amateur sound recordists, to develop discussion and exchange of ideas.

The workshop is hosted by CIBRA, the Interdisciplinary Center for Bioacoustics and Environmental Research of the University of Pavia, on behalf of the **European Network of Bioacoustic Collections for Taxonomy, Systematics and Conservation** created with an agreement of the experts who attended the 1st workshop at the Fonoteca Zoologica (Madrid), 27-30 September 2006. The network aim is to foster cooperation among institutions, researchers and interested amateurs to safeguard animal sound recordings and to optimise their use as a resource for research and nature conservation.

To read more about the XXI IBAC Congress and the European Network visit the web at [http://www.unipv.it/cibra/xxi\\_ibac.html](http://www.unipv.it/cibra/xxi_ibac.html) and [http://www.unipv.it/cibra/res\\_network\\_uk.html](http://www.unipv.it/cibra/res_network_uk.html)

For further information please contact the organizer [gpavan@cibra.unipv.it](mailto:gpavan@cibra.unipv.it)