

SCIENTIFIC REPORT on

ESF LESC/SCSS EXPLORATORY WORKSHOP EW05-073

“Effectiveness and gaps in the European legislation concerning subterranean fauna protection and the importance of setting up a European network of protected caves”

- Cluj-Napoca, Romania, 9-10 July 2006 -

Convenor: Oana Moldovan
“Emil Racovitza” Speleological Institute of the Romanian Academy,
Cluj Department

1. & 2. Executive summary & Scientific content of the event

The main objectives of the workshop as defined by the proposal for funding were:

- establishing the state-of-art in European and national legislations on subterranean fauna protection,
- discussing the gaps in European and national legislations in this area,
- deciding the proposal that must be advanced at national and European level,
- discussing the opportunity of building up a network of protected caves with high importance for subterranean fauna protection.

The workshop was organised on 4 sessions. Session 1 and 2 were dedicated to the oral presentations of the subterranean environment protection in Europe and some non-European examples. Sessions 3 and 4 were for discussions about what can be proposed to improve European legislation and the opportunity of proposing a common, European project for subterranean fauna protection.

2 representatives of the European Science Foundation took part in the workshop, Prof. Dr. Vygandas Paulikas and Dr. Tiina Noges. Beside, 21 participants from 9 countries, 7 European (Austria, France, Italy, Great Britain, The Netherlands, Slovenia, Slovakia) and 2 non-European (Brazil, USA) took actively part during the two first sessions. Other scientists from Italy, Great Britain, France, Czech Republic, Slovakia, Romania, Australia, Mexico were present during the sessions 3 and 4.

The first part of the workshop, after the convenor's introduction and the presentation of the European Science Foundation by Prof. Dr. Vygandas Paulikas was dedicated to the presentation of the situation of subterranean fauna and habitats in Europe and at national or regional levels.

Sessions 1 and 2.

Deharveng L. and Gibert J. opened the session by presenting the results of the Pascalis project as the first European project that dealt with subterranean fauna and habitats, namely groundwater. The goals of the project were to define protocols for establishing a network of groundwater biological reserves in Europe, provide a list of selected priority species, habitats and areas. The conclusions were that areas for groundwater fauna protection should be defined at aquifer scale and that vulnerability, human pressures and socio-economical variable should be included as part of the area for conservation. The AQUIFER is the best suited unit. It is also the unit for water

quality management within the Water Framework Directive and would allow to link biodiversity and water quality issues.

Trajano E. and Culver D. presented the Brazilian and respectively the North-American legislations and regulations for subterranean fauna and habitats. Both countries are examples for their efficient protection and conservation measures, although the caves are the property of the Government in the first case and can be also the property of private people in the second case. The problems still exist because industrial users of limestone areas or groundwater represent the main threats to speleological heritage, and sometimes legislation is difficult to apply.

Sket B. after introducing the audience in generalities about Slovenian karst and the need for cave fauna and groundwater protection proposed two alternatives for protection: reasonable and unreasonable measures of species protection or protection of habitats. His presentation tried to explain what we need to protect these natural heritage, what is the importance of these animals and habitats, especially in Europe. Compared to North-America Europe is a hotspot of subterranean biodiversity with more than 661 aquatic species only in the Balkans. Beside the beauty of the cave adapted animals their importance for ecological and morphological studies and for impact assessments. One of the examples he presented was of the Postojna-Planinska Cave System, the richest in fauna of the entire world. Unfortunately this system has not received special attention and has no particular protection status. On the other hand, a cave which is not very rich in fauna is the only official Ramsar site.

Campanaro A. sustained the importance of adding the historical interest of a species as conservation value for selecting species and sites to protect and create natural reserves for unique examples of ancient paleogeographic events. One of the proposals was to build up indexes that use together with species richness, rarity and endemism the historical value of a species.

Danielopol D. and Polak S. emphasized the importance of education and the need to explain people the importance of subterranean fauna and their habitats for humankind in general. Polak S. also proposed the introduction of interdiction for collection of protected species in European legislation.

Notenboom J. introduced the Croatian case of subterranean fauna and habitat protection in the European context of different Directives and Assessments (Habitat Directive, Water Framework Directive, Nitrate Directive, Pesticide Directive, Environmental Impact assessment, Strategic Environmental Assessment) that deal more or less directly with this type of fauna and habitats. With the exception of bats (Microchiroptera) there are only 5 protected cave species. All the protected subterranean species are endemic for the Dinaric karst (Slovenia, Croatia, Bosnia-Herzegovina). He proposed the protection of caves through landscape protection and enhancing communication and lobbying at national and regional levels.

Natura 2000 is an example of how protection and conservation of subterranean heritage can be improved *per se* or using other umbrella species. The Natura 2000 example was brought into attention also by the previously mentioned speaker and also by Cobolli M. and Sbordoni V. They used the example of Lazio region which has already a database of 306 underground species from which 22 are endemic for one cave and 39 are endemic for this region. Finally, they emphasized on the importance of involving regional authorities in protection of fauna and subterranean habitats. This idea was also sustained by Messina G. in his talk about the protection in Tuscany,

explaining their database, the state of water protection and the perspectives about new legislation in speleology.

Latella L. made a presentation of the Verona area emphasizing the pollution problems. The main problems for subterranean protection are: water pollution, dumping of solid waste, illegal excavations, overcollecting of rare and endemic species.

Mulec J. explained in details the Slovenian legislation on cave and cave inhabitant protection, as one of the oldest in Europe. About one third of all the cave species are on the national Red List, and from the total of 4800 taxa 2000 are endangered. It is also the country with the largest limestone areas in the world and consequently hot-spot of subterranean biodiversity.

Eastern Europe was represented also by Kovac L. which presented the latest data on cave fauna from the Northern Carpathians: the Slovakian cave hot-spots of biodiversity and the general situation in this country. He also mentioned that some of the cave species are protected. Moldovan O. emphasized also the importance of Romanian fauna to the European biodiversity, with many endemic species, despite its extreme geographical distribution in Europe. The Romanian problems are the lack of an official Red List for subterranean fauna and the lack of efficiency in applying the national legislation on cave protection.

The second part of the workshop (Sessions 3 and 4) was dedicated to discussion about effectiveness and gaps in European legislation about cave fauna and proposed modifications, and respectively about the opportunity of proposing a network of protected caves representing hot-spots of biodiversity to the European Community in the FP7 Framework.

The discussions were opened by Notenboom J. who explained that it will be difficult to change the European legislation or it will be very difficult. The best would be to use the existent possibilities and legislation, as for example the opportunities offered by Habitat Directive, Water Framework Directive and Natura 2000 network.

Slavko P. brought the discussion about the effectiveness of management of protected areas, which is especially problematic in eastern countries with less experience on this aspect.

Messana G. and Sbordon V. stressed the point on changing the legislation at regional level which can be effective for some European countries, as Italy. Moldovan O. argued that it is not possible for centralised countries, as Romania where there is no autonomy at regional level. On the contrary, it would be possible to have Red Lists on regional level. And to ask for moral and financial support.

Moldovan O. emphasized on the fact that people and politicians do not know the importance of subterranean habitats and fauna and our duty is to give the information to the public.

Sbordon V. also proposed to use umbrella species for the protection of subterranean animals.

One of the major proposals was done by Latella L. – to edit the Guidelines for protection of subterranean fauna and selection of protected species and habitats. The discussions were then focused on this proposal and how it would be a better way to realise it.

Several modalities were taken into account but it seems that a common project with all the interested institutions and specialists working on underground fauna as collaborators should be proposed. Noges T. brought into attention the project of the ESF and this was the proposal accepted by the participants as the most realistic one.

3. Assessment of the results, contribution to the future direction of the field

Subterranean environment has the highest number of endemic species of all habitats known on the globe. The variety of fauna groups and species, adapted to very different habitats is poorly known by the public and by politicians or those that have the power to decide and propose laws. The number of specialist of the underground living beings is not high, but this meeting revealed that many of the protected sites in the world are based in limestone areas or groundwater aquifers.

The workshop was the first meeting of this kind in the world. The first that used the experience of specialists from different European and non-European countries to effectively raise questions about how can subterranean fauna and habitats be protected.

The problem is that the efforts of the specialists from different countries were not concentrated only on national and regional levels and not at European level. This meeting provide the necessary expertise to formulate the common targets and the common strategy for protection of subterranean fauna and habitats in Europe.

European legislation is very difficult to change and is better to use the already given European Directives (Habitat Directive and Water Framework Directive) and possibilities. There are possibilities of changing national or regional regulations concerning this fauna and its habitats. The main and first priority is to create a network of European cave conservation biology researchers / institutions. Preferably under the umbrella of the International Society for Subterranean Biology (SIBIOS). This proposal was accepted by the members of the SIBIOS, which took part after the International Symposium of Biospeleology, held also in Cluj-Napoca (Romania) between 11 and 15th of July 2006 (just after the workshop). This network will link all the interested specialists and institutions that work on subterranean fauna or habitats. Their main goals are as follows:

- Develop Guidelines to establish what and how to conserve subterranean habitats and fauna. Such guidelines were proposed by IUCN for caves in general. Despite the importance given by the rareness, the vulnerability and the originality of subterranean fauna nothing has been done and is impossible to ask for protection until specialists will not be in agreement;
- Provide baseline documentation; such documentation will favour the understanding of problems linked to vulnerability of subterranean fauna, its importance and the measures of protection that can be taken;
- Identify research priorities; in order to achieve our goals of fauna and habitats' protection we must identify the research that ought to be undertaken in the near future;
- Increase public awareness; although not very accepted by researchers in general, the increase of tourism in caves and of industrial use of groundwater are facts that must be taken into account and is better to inform before any damage is done than to try to restore the habitats;

- Provide this information to relevant authorities and stakeholders; the people that have the power of decision must know and must understand the importance of subterranean fauna and habitats and must know whom to consult for decisions that can irreversible damage underground habitats;
- Link to the broader conservation society; it is an important target for our specialists because we try to take advantage of the knowledge and management experience of other specialists interested in conservation of nature in general.

4. Final programme

Sunday, 9.07.2006

Morning

Arrival

10.00 - 13.00

Registration of participants, Hotel Capitolina

Hotel Capitolina (conference room)

15.00 – 15.20

Meeting introduction by the convenor
Presentation of the European Science Foundation (ESF),
Vygandas Paulikas (Standing Committee for the Social
Sciences)

15.20 – 16.20

Session 1: State-of-art in subterranean environment
protection in European
Louis Deharveng, Janine Gibert, *Protecting subterranean
life. Presentation of results of the PASCALIS Project, funded
by the European Community and other projects concerning
cave fauna*

16.20 – 16.50

Dan Luca Danielopol, Sanda Iepure, Malvina Artheau, Peter
Pospisil, *Protected subterranean areas in Europe defined by
taxonomic and phylogenetic diversity criteria*

16.50 – 17.30

Coffee & Tea break

17.30 – 17.50

Marina Cobolli, Valerio Sbordoni, Stefano De Felici,
*Conservation of cave fauna in the Latium within the scope of
the Program „Natura 2000“*

17.50 – 18.10

Giuseppe Messina, Mariella Baratti, *Protection of
subterranean ecosystems in Tuscany: do good wills give
good results?*

18.10 – 18.30

Leonardo Latella, Roberto Zorzin - Protection and monitoring
of some cave of scientific relevance in Verona Province
(Italy). *Monitoring of a protected cave near Verona*

18.30 – 18.50

Alessandro Campanaro, Fabio Stoch, *Protection of
groundwater endemics in Italy: some case studies*

20.00 – 22.00

Dinner & Bar discussion

Monday 10 July 2006

Hotel Capitolina (conference room)

09.00 – 9.30

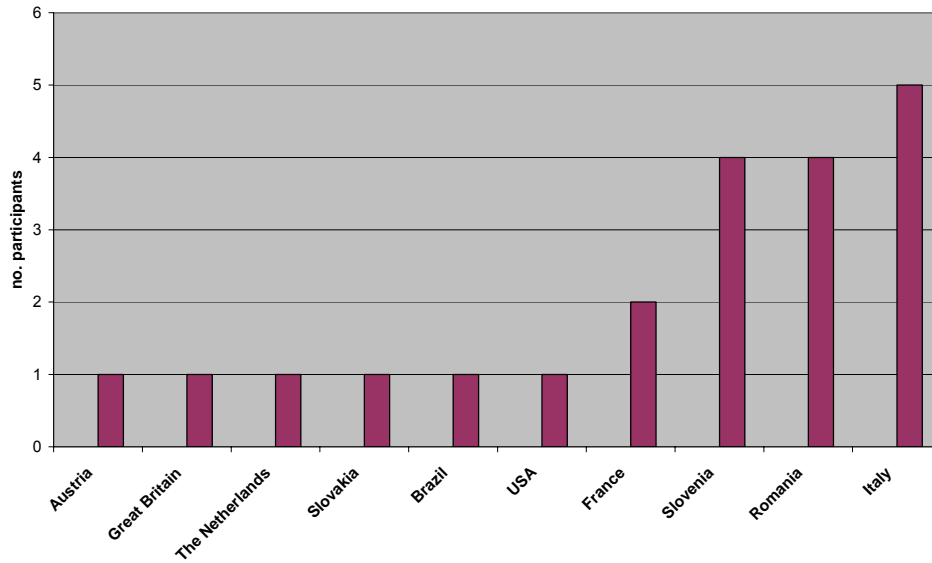
Session 2: State-of-art in subterranean environment
protection in European and non-European countries
Eleonora Trajano, *Protection of cave animals in Brazil*

| | |
|-----------------------------|---|
| 09.30 – 10.00 | David Culver, <i>Effectiveness of the U.S. Endangered Species Act in protecting subterranean fauna</i> |
| 10.00 – 10.30 | Boris Sket, <i>Reasonable and unreasonable measures in Species protection. Suggestions for future regulations.</i> |
| 10.30 – 11.00 | <i>Coffee & Tea break</i> |
| 11.00 – 11.20 | Jos Notenboom, <i>Application of the Habitats Directive for the protection of subterranean fauna and habitats in Croatia</i> |
| 11.20 – 11.40 | Graham Proudlove, <i>British cave protection</i> |
| 11.40 – 12.00 | Lubomir Kovac, <i>Biodiversity important subterranean locations of Slovakia and the state of protection of cave fauna</i> |
| 12.00 – 12.20 | Slavko Polak, <i>Invasive cave beetle trapping as potential threat to animal populations on type localities</i> |
| 12.20 – 12.40 | Janez Mulec, Mirjam Gorkič, Tanja Pipan, <i>Legal basis of subterranean fauna protection in Slovenia: an example of Postojna-Planina cave system</i> |
| 12.40 – 13.00 | Oana Moldovan, Sanda Iepure, Ilie Victoria, Andrei Giurginca, <i>Protection of subterranean fauna in Romania</i> |
| 13.00 – 15.00 | <i>Lunch</i> |
| 15.00 – 17.00 | Session 3: Round-table about effectiveness and gaps in European legislation about cave fauna and proposed modifications |
| 17.00 – 17.30 | <i>Coffee & Tea break</i> |
| 17.30 – 19.00 | Session 4: Round-table about the opportunity of proposing a network of protected caves representing hot-spots of biodiversity to the European Community in the FP7 framework. |
| 20.00 – 22.00 | <i>Dinner & Bar discussion</i> |
| Tuesday 11 July 2006 | |
| Morning | <i>Departure</i> |

5. Statistical information on participants

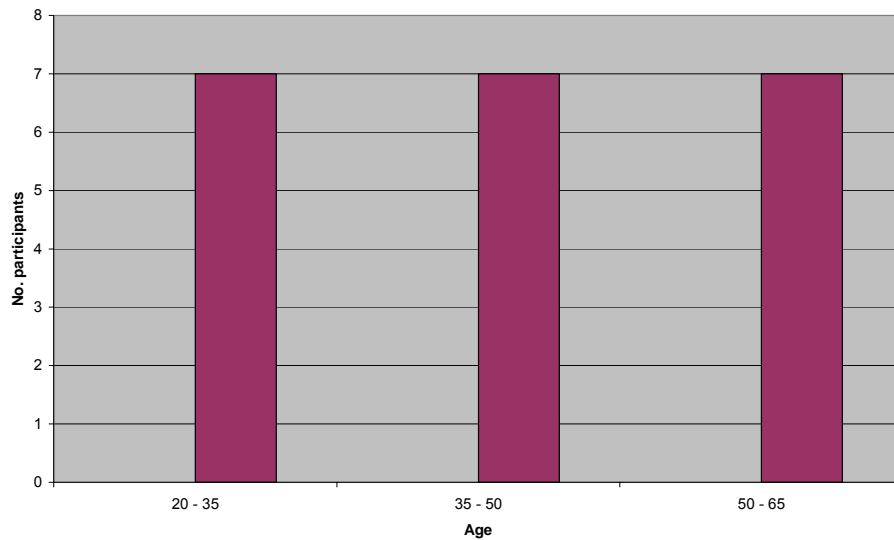
- 21 participants
- 9 countries

| Contry / No. participants | Austria | France | Italy | Great Britain | The Netherlands | Slovenia | Slovakia | Romania | Brazil | USA |
|---------------------------|---------|--------|-------|---------------|-----------------|----------|----------|---------|--------|-----|
| | 1 | 2 | 5 | 1 | 1 | 4 | 1 | 4 | 1 | 1 |



- age classes

| Age / No. participants | 20 - 35 | 35 - 50 | 50 - 65 |
|------------------------|----------|----------|----------|
| | 7 | 7 | 7 |



6. The final list of participants

1. Campanaro Alessandro, Ph.D. student – Amphipoda - University of Rome “La Sapienza”, Dept. of Animal and Human Biology, Vialle dell’Universita 32, 00185 Roma, Italy, alessandro.campanaro@uniroma1.it
2. Cobolli Marina, Ph.D., professor – genetics and behaviour of cave Insects – University of Rome “La Sapienza”, Dept. of Animal and Human Biology, Vialle dell’Universita 32, 00185 Roma, Italy, marina.cobolli@uniroma1.it

3. Culver David, Ph.D., professor – subterranean ecology – Dept. of Biology, American University, 4400 Massachusetts Ave., NW Washington DC, 20016 U.S.A., dculver@american.edu
4. Danielopol Dan, Ph.D., professor – groundwater ecology – Austrian Academy of Sciences, Institute of Limnology, Dept. Mondsee, Mondseestrasse 9, A-5310 Mondsee, Austria, dan.danielopol@eaw.ac.at
5. Deharveng Louis, Ph.D., senior researcher – cave Collembola – Museum National d’Histoire Naturelle de Paris, Laboratoire d’Entomologie, 45 rue Buffon, Paris, france, deharven@mnhn.fr
6. Giurginga Andrei, Ph.D., researcher – Isopoda - Institutul de Speologie “Emil Racovita”, Bucuresti, Romania, sankao2@yahoo.com
7. Iepure Sanda, Ph.D. student, assistant researcher – cave Crustacea - Institutul de Speologie “Emil Racovita”, Dept. of Cluj, 400006 Cluj-Napoca, Romania, siepure@hasdeu.ubbcluj.ro
8. Ilie Victoria, Ph.D. student, assistant researcher – subterranean ecology, Pseudoscorpionida, Chilopoda - Institutul de Speologie “Emil Racovita”, Bucuresti, Romania, victoria_boitan@yahoo.com
9. Juberthie Christian, Ph.D., researcher – cave fauna – Laboratoire souterrain de Moulis, 09200 Saint-Girons, France, Cjuberthie@aol.com
10. Kovac Lubomir, Ph.D., professor - cave fauna of Slovakia, Collembola - Department of Zoology, Institute of Biology and Ecology, Faculty of Sciences, University of P. J. Safari, Moyzesova 11, SK-041 67 Kosice, Slovakia, kovaclu@science.upjs.sk
11. Latella Leonardo, Ph.D. student, curator – cave beetles – Museo Civico di Storia Naturale di Verona, Lungadige Porta Vittoria 9, 37129 Verona, Italy, leonardo_latella@comune.verona.it
12. Messina Giuseppe, Ph.D., professor – cave Amphipoda – Centri di Studio per la Faunistica ed Ecologia Tropicali, CNR, Via Romana 17, 50125 Firenze, Italy, messana@fi.cnr.it
13. Moldovan Oana, Ph.D., senior researcher – ecology and protection of cave fauna – Institutul de Speologie “Emil Racovita”, Dept. of Cluj, 400006 Cluj-Napoca, Romania, oanamol@hasdeu.ubbcluj.ro
14. Mulec Janez, Ph.D., researcher – cave microbiology - Karst Research Institute ZRC Sazu, Titov trg 2, SI-6230, Postojna, Slovenia, pipan@zrc-sazu.si
15. Notenboom Jos, Ph.D. – Amphipoda – National Institute for Public Health and Environment, Nature Policy Assessment Office, P.O.Box 1, 3720BA Bilthoven, The Netherlands, j.notenboom@rium.nl
16. Pipan Tanja, Ph.D., researcher – subterranean Crustacea – Karst Research Institute ZRC Sazu, Titov trg 2, SI-6230, Postojna, Slovenia, pipan@zrc-sazu.si
17. Polak Slavko, Ph.D. student, curator – cave beetles – Notranjski muzej Postojna, Ljubljanska 10, SI-6230 Postojna, Slovenia, slavko.polak@guest.arnes.si
18. Proudlove Graham, Ph.D. – cave fishes – Dept. of Zoology, Manchester Museum, M139PL, Manchester, U.K., g.proudlove@umist.ac.uk
19. Sbordoni Valerio, Ph.D., professor – genetics - Valerio Sbordoni, Department of Biology, Tor Vergata University, 00133 Roma, Italy, valerio.sbordoni@uniroma2.it
20. Sket Boris, Ph.D., professor – cave fauna of Slovenia – Oddelek za biologijo BF, Univerza v Ljubljani PP 2995, Ljubljana 1001, Slovenia, b.sket@uni-lj.si
21. Trajano Eleonora, Ph.D., professor – cave fishes – Departamento de Zoologia, Instituto de Biociencias da USP, C.P. 11461, 05422-970, Sao Paulo, Brazil, etrajano@usp.br