**AGREEMENT ON THE CONSERVATION OF BATS IN EUROPE (EUROBATS)**

# Second Report to the National implementation of the Agreement in Croatia

2002 - 2003

Croatian Natural History Museum

Museum Bat Group

April 2003

# A. General information

***Party***: Hrvatska (Croatia)
***Period Covered by Report***: March 2002 – April 2003
***Competent Authority***: The Ministry of Environmental Protection and Physical Planning (MEPPP)
***Competent expert group***: Croatian Natural History (CNMH) Museum Bat Group (D. Hamidovic, D. Holcer, I. Pavlinic and N. Tvrtkovic)
***Appointed member of the Advisory Committee***: Nikola Tvrtkovic, PhD, Croatian Natural History Museum, Demetrova 1, 10000 Zagreb, Hrvatska;

# B. Status of Bats within the Territory of the Party

## 1. *Summary Details of Resident Species*

Table 1. List of Croatian bats

* = scarce field data; changes after last report **in bold**; Status: *Rare, Common, Numerous*

| *No.* | *Species* | *Evidence of Breeding* | *Evid. of Wintering* | *Supposed status* |
|---|---|---|---|---|
| 1. | *Rhinolophus blasii* | Yes Rare | Yes Rare | Rare |
| 2. | *Rhinolophus euryale* | Yes Common | Yes Rare | Common |
| 3. | *Rhinolophus ferrumequinum* | Yes Numerous | Yes Common | Numerous |
| 4. | *Rhinolophus hipposideros* | Yes Common | Yes Rare | **Common** |
| 5. | *Barbastella barbastellus* | **Yes Rare** | Yes Rare | Rare |
| 6. | *Eptesicus serotinus* | No* | No* | Common |
| 7. | ***Eptesicus nilssonii*** | **No*** | **No*** | **Rare** |
| 8. | *Hypsugo savii* | Yes Common | Yes Rare | Numerous |
| 9. | *Miniopterus schreibersii* | Yes **Common** | Yes **Numerous** | Common |
| 10. | ***Myotis aurascens*** | **Yes Common** | **Yes Rare** | **Common** |
| 11. | *Myotis bechsteinii* | No* | Yes Rare | Rare |
| 12. | *Myotis (blythii ?) oxygnathus* | Yes Numerous | Yes Rare | Numerous |
| 13. | *Myotis brandtii* | Yes Common | Yes Rare | Common |
| 14. | *Myotis capaccinii* | Yes Common | Yes Rare | Common |
| 15. | *Myotis dasycneme* | No* | Yes Rare | Rare |
| 16. | *Myotis daubentonii* | No* | Yes Rare | Numerous |
| 17. | *Myotis emarginatus* | Yes Numerous | Yes Rare | Numerous |
| 18. | *Myotis myotis* | Yes Common | Yes Rare | Common |
| 19. | *Myotis mystacinus* | Yes Common | Yes Rare | Common |
| 20. | *Myotis naterreri* | No* | Yes Rare | Rare |
| 21. | ***Nyctalus lasiopterus*** | **No*** | **Yes Rare** | **Rare** |
| 22. | *Nyctalus leisleri* | No | Yes Rare | Common |
| 23. | *Nyctalus noctula* | No | Yes Common | Numerous |
| 24. | *Plecotus austriacus* | **No*** | Yes Rare | **Rare** |
| 25. | *Plecotus auritus* | Yes Common | Yes Rare | Numerous |
| 26. | *Plecotus kolombatovici* | Yes Common | **No*** | Common |
| 27. | *Plecotus microdontus (= alpinus)* | No* | No* | Rare |
| 28. | *Pipistrellus kuhlii* | Yes Common | Yes Rare | Numerous |
| 29. | *Pipistrellus nathusii* | No | Yes Rare | Common |
| 30. | *Pipistrellus pipistrellus* | No* | No* | Common |
| 31. | *Pipistrellus pygmaeus / mediterraneus* | **Yes Numerous** | No* | Numerous |
| 32. | *Tadarida taeniotis* | Yes Common | Yes (but active) | Common |
| 33. | *Vespertilio murinus* | No* | **No*** | Rare |

After confirmation of two additional species during last year investigations (*Eptesicus nilssonii* and *Nyctalus lasiopterus*), 33 bat species in total have been recorded in Croatia. Species status of *Myotis aurascens* (Benda and Tsytsulina 2000) is kind of questionable considering insufficient and not so clear morphological differences, and also, lack of evidence on molecular level (Helversen & Mayer 2001). In spite of this, after T. Hutson`s list of bats occurring in Europe and considering results published on analysis of material from Croatia (Benda and Tsytsulina 2000), *M. aurascens* is included in list of bats of Croatia. Only *Rhinolophus mehelyi* has not been confirmed in the recent studies. Probably one additional species (*Myotis alcathoe*) is expected, considering recent recordings from Hungary, Greece and France. Last year we have found first evidence of breeding of *Barbastella barbastellus* (National Park Plitvice lakes) and numerous breeding colonies of *Pipistrellus pygmaeus /mediterraneus* in buildings of Donji Miholjac near Drava river (Croatian / Hungarian border).

**2. *Status and Trends***

Table 2. List of threatened bat species of Croatia (changes after last report **in bold)**

| *No.* | *Species* | *Supposed population trend* | *Number of known maternity roosts* | *Supposed number of breeding specimens* | *IUCN Category* | *Regional Category* | *Percent of whole species population* |
|---|---|---|---|---|---|---|---|
| 1. | *R. blasii* | decline | 1 | 1.500 | NT | **VU** A1a;E | small |
| 2. | *R. euryale* | decline | **8** | 10.000 | VU | VU B2b(iv) | ? |
| 3. | *R. ferrumequinum* | stabile ? | 30 | 35.000 | NT | NT | ? |
| 4. | *R. hipposideros* | stabile ? | **8** | ? | VU | NT | small |
| 5. | *B. barbastellus* | ? | 0 | ? | VU | DD | small |
| 6. | *M. schreibersii* | decline | **11** | 13.000 | NT | **EN** A1ac | small |
| 7. | *M. bechsteini* | ? | 0 | ? | VU | VU A2c;B2b(iii) | small |
| 8. | *M. capaccinii* | decline | **8** | 15.000 | VU | **EN** B2ab(iii) | significant |
| 9. | *M. dasycneme* | ? | | ? | VU | DD | small |
| 10. | *M. emarginatus* | **?** | **14** | 48.000 | VU | NT | significant |
| 11. | *M. myotis* | decline ? | **3** | 9.000 | NT | NT | small |
| 12. | *N. leisleri* | ? | 0 | - | NT | DD | small |
| 13. | ***P. austriacus*** | **decline** | **0** | **?** | **LR** | **EN** A1e | **small** |
| 14. | *P. kolombatovici* | ? | 2 | 1.500 | NE | DD | ? |
| 15. | *P. microdontus* (=*alpinus*) | decline ? | 0 | ? | NE | DD | ? |
| 16. | *M. blythii oxygnathus* | ? | **15** | 60.000 | LR | LR | ? |

During the last 40 years we have recorded disappearance of summer roosts of *Miniopterus schreibersii* from 10 localities and overall decline of known summer population for more than 30 %. On the other hand, we found two big wintering roosts with over 50.000 bats in total, but

these numerous colonies probably contain some part of foreign bat populations. Considering negative trends in known summer colonies and lack of positive measures for their protection from competent government authority, regional status of *M. schreibersii* has been changed Vulnerable to Endangered.

In the last 40 years we have also recorded total disappearance of more than half subpopulations (from 11 of 19 sites) of *Myotis capaccinii* and decline of abundance for one isolated subpopulation due to foraging habitat pollution and destruction. Our estimate is that more than 30% of individuals from the local metapopulation have disappeared. With only one new finding of a roost site (NP Plitvice lakes, relatively small number of individuals) as a result of last year investigations and negative trends of all populations with exception of the largest colony in NP Krka, we have decided to change regional status of *M. capaccinii* from Vulnerable to Endangered.

One of the news is putting of *Plecotus austriacus* on the list of threatened bats with category Endangered. After newest revision of the genus *Plecotus* from Croatia, distribution of Grey long-eared bat seems to be restricted only to the northern part of country. Investigations of two characteristic areas in northern part of Croatia (Natural Park Samoborsko gorje and Zumberak and area surrounding city of Donji Miholjac which lies near Drava river) resulted with no new findings of any recent summer colonies of this species. With less than five known sites at all, it seems that this species is suffering form serious decline on the southern border of its distribution. Usage of pesticides and timber treatment chemicals are probably the major cause of decline.

### 3. *Habitats and Roost Sites*

Table 3. List of the most important natural multi-species roost sites in Croatia with more than 200 specimens/site in nursing or/and hibernation roosts. It is a selection from 77 known underground sites with bats. Methodology and categories after EUROBATS Habitats group, but *locations* are changed in *region* (biogeographical region). Changes after last report **in bold.**

| *No* | *Site name* | *Region* | *Site Type* | *Usage* | *Max count* | *Species recorded; Target species* |
|---|---|---|---|---|---|---|
| 1. | **Spilja Kustrovka** | **Alp** | **Cave** | **Hibernation** | **30.250** | **4**; MS |
| 2. | Visticina jama | Med | Pit | All year | **20.150** | **5**; MS, RF |
| 3. | Spilja Tradanj | Med | Cave | Maternity | 20.000 | 5; ME, RF, RE, MO |
| 4. | Culumova pecina | Med | Cave | All year | 6.000 | 6; MS, MC, RF, MM |
| 5. | Spilja Miljacka II | Med | Cave | All year | 5.000 | **8**; MC, MS |
| 6. | Medova buza | Med | Sea-cave | Maternity | **4.270** | 5; MS, ME, RE, MO |
| 7. | Markova jama | Med | Pit | Maternity | 3.000 | 4; MS, MM, RF, MO |
| 8. | Spilja Golubinka | Med | Cave | Maternity | 3.000 | 2; ME, RF |
| 9. | Skarin Samograd | Med | Cave | All year | 1.590 | 5; MS, RF, MO |

| | | | | | | |
|---|---|---|---|---|---|---|
| 10. | Zagorska pec | Med | Cave | All year | 1.300 | 5; RF, MO |
| 11. | Draskova spilja | Med | Sea-cave | Maternity | 1.200 | 2; ME, RF |
| 12. | Jama Suhi Rumin | Med | Pit | All year | 1.000 | 4; ME, RF |
| 13. | Matesica pecina | Con | Cave | All year | 1.177 | 5; MC, MS, RE |
| 14. | Vilina pec | Med | Cave | Maternity | 910 | 5; MS, ME, RE, MO |
| 15. | **Spilja Tounjcica** | **Alp** | **Cave-spring** | **Maternity** | **700** | **3**; MS |
| 16. | Spilja Veternica | Con | Cave | All year | 500 | 10; MS, RF, RE |
| 17. | Jopiceva jama | Con | Cave | All year? | 404 | 3; RF |
| 18. | Medvidja ropa | Med | Sea-cave | Maternity | 400 | 3; ME, RF |
| 19. | **Rogovac spilja** | **Con** | **Cave** | **Maternity ?** | **400** | **1; RE** |
| 20. | Boltekova spilja | Med | Cave | Maternity | 300 | 1; ME |
| 21. | **Spilja Bela voda** | **Med** | **Cave-spring** | **Maternity** | **300** | **1**; MO |
| 22. | Uviraljka | Con | Swallow hole | Hibernation | > 270 | **11**; MD, MDas |
| 23. | **Modra pecina** | **Alp** | **Lake-cave** | **Maternity** | **250** | **5**; MS, MC, MO |
| 24. | **Spilja kod Krupe** | **Med** | **Cave** | **Maternity** | **200** | **2**; MO, MS |
| 25. | **Spilja na rtu Kabal** | **Med** | **Sea-cave** | **Maternity ?** | **200** | **2**; RF, ME |

MS= Miniopterus; ME= M.emarginatus; MO=M.oxygnathus; MM=M.myotis; MC=M.capaccinii; MD=M.daubentoni; MDas=M.dasycneme; RF=R.ferrumequinum; RE= R.euryale

Only small number of new roost sites is found during wintering research, mostly due to the lack of financial support from MEPP and some other possible sources. Only voluntary information from speleologists and systematic investigations in two restricted areas (NP Plitvice lakes and PP Samoborsko and Zumberacko gorje) added new records of roosting sites. The most important one is a finding of Croatian largest known wintering site of *Miniopterus schreibersi* with more than 30.000 bats in cave situated in Gorski kotar area (first obs. I. Pavlinic and V. Bozic).

Locations (coordinates) of sites were deposited in database of T. Mitchell-Jones, but only for usage as points in mapping projects, without permit for publishing or sending exact coordinates to others. Added are, also, Croatian biogeographical regions after Emerald Network project (**Alp**ine, **Con**tinental, **Hun**garian, **Med**iterranean).

Table 4. Roost sites in attics and other artificial shelters with more of 150 bats.
Changes after last report **in bold.**

| *No.* | *Site name* | *Region* | *Site type* | *Usage* | *Max count* | *Species recorded* |
|---|---|---|---|---|---|---|
| 1. | Šibenik | Med | Old factory | Maternity | **5.000** | 2; ME, RF |
| 2. | Rudnik Vora | Med | Mine | Hibernation | 400 | 1; RF |
| 3. | **Donji Miholjac** | **Ung** | **Building** | **Maternity** | **300** | **1; PP** |
| 4. | Zagreb | Con | Hospital | Hibernation | 300 | 1; NN |
| 6. | Sisak | Con | Factory | Maternity | 300 | 1; NN |
| 7. | Karlovac | Con | Building | All year | 250 | 1; NN |
| 8. | Ozalj | Con | Old castle | Maternity | 250 | 1; RF |
| 9. | **Donji Miholjac** | **Ung** | **Building** | **Maternity** | **200** | **2; PP, PN** |
| 10. | Novigrad | Med | Old house | Maternity | 200 | 2; MO |
| 11. | **Metkovic** | **Med** | **Building** | **Hibernation?** | **170** | **1; PK** |

NN=N.noctula; PK=P.kuhlii; PP=P. pygmaeus/mediterraneus

**4. *Threats***

The same as in the last report.

**5. *Data collection***

The same as in the last report.

## C. Measures Taken to Implementation Article II of the Agreement

**6. *Legal measurements taken to protect bats***

All bats species are legally protected by law, same as all cave fauna, which include bat colonies in caves, but in practice this protection is hardly ever materialized. Special measurements do not exist.

**7. *Sites identified which are important to the conservation of bats***

Table 5. List of threatened multi-species sites which are in need of urgent special protection and conservation measures

| *No.* | *Site name* | *Target species* | *Threats* |
|---|---|---|---|
| 1. | Tradanj cave<br>Maternity, 20.000 bats, 5 species | *R. euryale*<br>*M. emarginatus*<br>*R. ferrumequinum* | Archeological site;<br>Disturbance |
| | Miljacka II cave<br>All year, > 5.000 bats, 8 species<br>**Part of National Park Krka** | *M. capaccinii* | Disturbance |
| 2. | Ćulumova cave<br>All year, 6.000 bats, 6 species | *M. myotis*<br>*R . ferrumequinum*<br>*M .capaccinii* | Touristic plans |

| | | | |
|---|---|---|---|
| 3. | Golubinka cave<br>Maternity, 3.000 bats, 2 species | *M emarginatus*<br>*R. ferrumequinum* | Disturbance; Touristic area |
| 4. | Medova buža sea-cave<br>Maternity, 2.900 bats, 5 species | *M. schreibersii*<br>*R. euryale*<br>*M. emarginatus* | Disturbance;<br>Touristic area |
| 5. | Škarin Samograd cave<br>All year, 1.590 bats, 5 species | *M. myotis*<br>*M. schreibersii*<br>*R. ferrumequinum* | Archeological site;<br>Guano harvesting;<br>Disturbance; |
| 6. | Zagorska cave<br>All year, 1.300 bats, 5 species | *R. ferrumequinum* | Touristic plans;<br>Solid waste deposit |
| 7. | Matešića cave<br>All year, 1.177 bats, 5 species | *R. euryale*<br>*M. capaccinii*<br>*M. schreibersii* | Disturbance |
| 8. | Vilina cave<br>Maternity, 910 bats, 5 species | *R. euryale*<br>*M. emarginatus*<br>*M. schreibersii* | Plans for hydroelectric power station: MEPPP signed permit for overflow of cave |
| 9. | Veternica cave<br>All year, >500 bats, 10 species<br>**Part of Nature Park Medvednica** | *M. schreibersii*<br>*R. euryale*<br>*R. ferrumequinum* | Disturbance; Touristic place |
| 10. | Uviraljka swallow hole<br>Hibernation, > 270 bats, 11 species<br>**Part of Nature Park Papuk** | *M. dasycneme*<br>*M. daubentonii* | Cave is situated near military facilities and some plans for destroying of the site exist |

This list contains known most important and most threatened bat sites recorded during season 2000 / 2001. New information is a serious threat of a large colony of about 5.000 *M. emarginatus* and *R. ferrumequinum* roosting in the attic of old and non-functional factory near city of Šibenik. As soon as we became aware of this threat (new owner of the factory would like to start business as soon as possible and probably get rid of the bats) we have send a letter to MEPPP with proposal for urgent protection of the attic along with this colony, but unfortunately, never received any answer. Ministry, as the head organization for protection, also received the above list (Table 5) of sites in need of protection, but no initiatives for protection were taken. Part of the problem could be in wrong (or misunderstanding of) concept which defines degree of responsibility for protected species and areas: people from competent authority for EUROBATS agreement (MEPPP) insist on having responsibility only for national parks and natural parks, and for animal species in general, but not for special reserves like bat sites. Special reserves are, according to them, responsibility of local community and local counties. Situation on local level generally is also not good: Counties in most cases (not all but most) ignored initiatives for protection and existed policy, international agreements and laws. Only few, among them and Nature Park Medvednica, started with project on assessing influence of visitors on bat population in Veternica cave. Without better understanding of the problems and more initiative for

protection coming from authorities, our work is useless and implementation of the Agreement is in question, it seems to will stay only on paper.

During February MEPPP has send to UNEP / Mediterranean five selected action plans for Croatian coast and sea area for possible international funding. Selection of proposed action plans was send without signs or knowledge of competent commission, and without any proposal of action plan for protection of bat colonies and other animal species listed as threatened on European level. Somebody ignored list of priorities.

**8.** ***Consideration given to habitats which are important to bats***

There are only scarce information for locally bat important habitats (except for water-surface foragers and cave-dwellers), that is especially for key-areas; but some general measurements only for forestry practice will be taken as part of future Nature Protection Law (in preparation).

**9.** ***Activities carried out to promote the awarness of the importance of the conservation of bats***

- «*Bat Night*», held on 21.09.2002. (hosted and organized by CNH Museum with night excursion across old part of town and nearby parks and listening to bats, city of Zagreb)
- *Telephone* line (CNHM number) with bat experts: 00385 1 4851 700
- *Magazines*: «Jet Set magazine» February / March 2003: article «Dance of bats», interview with D. Hamidovic with colour pictures from I. Pavlinic, 46-50);

«Eurocity magazine» article: discovery of bat colony in an old mine in Baranja, B. Jalzic;

- *Newspapers*: several interviews about importance and value of bats; after suffering of wintering colony of Noctule bats in Virovitica city; after news about rabies case via bats in Spain and Ireland; D. Hamidovic, I. Pavlinic;
- *Radio and TV interviews* as a part of the project "Conservation of the longfingered bat *Myotis capaccinii* for the protection of karstic habitat", D.Hamidovic;
- *Radio*: several reportages about bat conservation, I. Pavlinic, N. Tvrtkovic;
- *TV Show* for childern «Elevator» - with childern about bats – Batman against Dracula; *Main news* (8:00 p.m.): June 2002 - short reportage about discovering of large old mine with bats in Baranja; September 2002 - reportage on European Bat Night; January 2003 - reportage about discovering of wintering colony of endangered bats in Uviraljka swallowhole on Papuk mountain; D.Holcer, D.Pavlinic, N.Tvrtkovic, D.Hamidovic;
- *Booklet* «Bats of Croatia: identification, handling, protection», N. Tvrtkovic, I. Pavlinic & D. Holcer, financed by MEPPP in 2001;

**10.** ***Responsible bodies, in accordance with Article III.5 of the Agreement, nominated for the provision of advice on bat conservation and management***

It has not been nominated.

**11.** ***Additional action undertaken to safeguard populations of bats***

During May 2002 MEPPP invited N. Tvrtkovic and D. Hamidovic to help on the meeting with politicians and major of Osijek (city near famous Zoological Reserve «Kopacki rit» - Ramsar convention site - mouth of Drava river into Danube river). Meeting was about local autonomy proposal, and insistence, about permanent antimosquito treatment of zoological reserve «Kopacki rit» with BTI products, which would resulted in permanent disappearance of mosquitoes from the city area (will be?). Both bird and bat experts have stated their disapproval of the idea due to the unknown possible influence on other species of insects and through them on bird and bat populations inside reserve. Pressure for this action was encouraged by mentioning some health programs in Germany.

**12.** ***Recent and ongoing programmes relating to the conservation and management of bats***

- *Scientific project* «The biology of indicator species of threatened habitats» (No. 183007) 2002-2004; Principal investigator: N. Tvrtković; team: D. Holcer, D. Hamidović, I. Pavlinić; financed by Croatian Ministry of Science: started in September 2002;
- *Conservation project* "Conservation of the longfingered bat *Myotis capaccinii* for the protection of karstic habitat", 1999-2003. Project leader D.Hamidović, co-leader M. Jokic (Croatian Waters Company), funded by Whitley Laing Foundation (UK);
- *Conservation project* "Management of Veternica cave" with assessing influence of visitors on bat population too, 2003-2004, Croatian Biospeleological Society, financed by Nature Park Medvednica;
- *Inventory project*: Bats in National Park Plitvice lakes; 2002-2004 (N. Tvrtkovic, D. Kovacic, I. Pavlinic, D. Holcer); financed by National Park;
- *Inventory project*: Bats in Nature Park Samoborsko gorje and Zumberak; 2002-2004 (N. Tvrtkovic, I. Pavlinic); financed by Nature Park;
- *Permanent student table with bat boxes* in riparian oak forest in Turopolje near Zagreb, Faculty of Science; (D. Kovacic & D. Holcer); Master degree of G. Bartolic: «Activities of bats in different forest microhabitats», Faculty of Science, Zagreb.

**13.** ***Consideration being given to the potential effects of pesticides on bats, and their food sources and efforts to replace timber treatment chemicals which are highly toxic to bats***

No official information or any kind of help have been provided from the MEPP considering our idea to prepare legal questionnaire for parties which use pesticides and timber treatment chemicals. Situation is already quit serious (see above by *Plecotus austriacus*) and whit fast development of nowadays still quit rural villages and cities it most certainly won't get any better by itself and now is the right time to take some positive measures and protect bats from these kind of threats.

## D. Functioning of the Agreement

**14.** ***Co-operation with other Range States***

Poor. Few initiatives for cooperation with Slovenian Bat Group were not supported by our governments. Contacts with Hungarian NGOs are in initial phase. We would like to make contacts with experts and NGOs of northern countries (especially Czech, Slovakia, Poland and Baltic countries) for cooperation possibilities, especially for joint programs on migrations of what are probably the same metapopulations of migratory species, such as *Miniopterus schreibersi*, *Nyctalus* spp. and *Pipistrellus nathusii*.

**15.** ***Measures taken to implement Resolutions adopted by Meeting of Parties***

We are having some problems with MEPPP who rejected our proposal for funding monitoring (both summer and winter colonies) without explanation but we still believe that they will realize the importance and responsibilities that we all together have. Only "serious" investment during last year was made by buying 100 copies of the CD "We are your friends" which were given for free during Bat Night. That is simply not enough and we hope that the situation will change positively as soon as possible because without true cooperation between all involved sides real implementation of the agreement is almost impossible task.