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

Third Report to the National implementation of the Agreement in the Croatia

2003 - 2004

**Croatian Natural History Museum
Museum Bat Group
April 2004**

A. General information

Party: Hrvatska (Croatia)

Period Covered by Report: March 2003 – April 2004

Competent Authority: The Ministry of Culture (MC)

Competent expert group: Croatian Natural History (CNMH) Museum Bat Group (D. Hamidovic, D. Holcer, I. Pavlinic and N. Tvrtkovic)

Appointed members of the Advisory Committee: Mr Nikola Tvrtkovic, PhD, Croatian Natural History Museum, Demetrova 1, 10000 Zagreb, Hrvatska (as bat expert); Mrs Andrea Stefan, Ministry of Culture, Ulica grada Vukovara 78/II, 10000Zagreb, 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.	<i>Rhinolophus blasii</i>	Yes Rare	Yes Rare	Rare
2.	<i>Rhinolophus euryale</i>	Yes Common	Yes Rare	Common
3.	<i>Rhinolophus ferrumequinum</i>	Yes Numerous	Yes Common	Numerous
4.	<i>Rhinolophus hipposideros</i>	Yes Common	Yes Rare	Common
5.	<i>Barbastella barbastellus</i>	Yes Rare	Yes Rare	Rare
6.	<i>Eptesicus serotinus</i>	No*	No*	Common
7.	<i>Eptesicus nilssonii</i>	No*	No*	Rare
8.	<i>Hypsugo savii</i>	Yes Common	Yes Rare	Numerous
9.	<i>Miniopterus schreibersii</i>	Yes Common	Yes Numerous	Common
10.	<i>Myotis aurascens</i>	Yes Common	Yes Rare	Common
11.	<i>Myotis bechsteinii</i>	No*	Yes Rare	Rare
12.	<i>Myotis (blythii ?) oxygnathus</i>	Yes Numerous	Yes Rare	Numerous
13.	<i>Myotis brandtii</i>	Yes Common	Yes Rare	Common
14.	<i>Myotis capaccinii</i>	Yes Common	Yes Rare	Common
15.	<i>Myotis dasycneme</i>	No*	Yes Rare	Rare
16.	<i>Myotis daubentonii</i>	No*	Yes Rare	Numerous
17.	<i>Myotis emarginatus</i>	Yes Numerous	Yes Rare	Numerous
18.	<i>Myotis myotis</i>	Yes Common	Yes Rare	Common
19.	<i>Myotis mystacinus</i>	Yes Common	Yes Rare	Common
20.	<i>Myotis naterreri</i>	Yes	Yes Rare	Rare
21.	<i>Nyctalus lasiopterus</i>	No*	Yes Rare	Rare
22.	<i>Nyctalus leisleri</i>	No	Yes Rare	Common
23.	<i>Nyctalus noctula</i>	No	Yes Common	Numerous
24.	<i>Plecotus austriacus</i>	Yes	Yes Rare	Rare
25.	<i>Plecotus auritus</i>	Yes Common	Yes Rare	Numerous
26.	<i>Plecotus kolombatovici</i>	Yes Common	No*	Common
27.	<i>Plecotus macrobullaris</i>	Yes	Yes	Common
28.	<i>Pipistrellus kuhlii</i>	Yes Common	Yes Rare	Numerous
29.	<i>Pipistrellus nathusii</i>	No	Yes Rare	Common
30.	<i>Pipistrellus pipistrellus</i>	No*	No*	Common
31.	<i>Pipistrellus pygmaeus</i>	Yes Numerous	Yes	Numerous
32.	<i>Tadarida taeniotis</i>	Yes Common	Yes (but active)	Common
33.	<i>Vespertilio murinus</i>	No*	No*	Rare

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 (Helvesen & 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 after revision of bats from genus *Plecotus* in Croatia (in press) we have identified evidence of breeding of *P. macrobullaris* on first five sites (churches).

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.	<i>R. blasii</i>	decline	1	1.500	NT	VU A1a;E	small
2.	<i>R. euryale</i>	decline	8	10.000	VU	VU B2b(iv)	?
3.	<i>R. ferrumequinum</i>	stabile ?	30	35.000	NT	NT	?
4.	<i>R. hipposideros</i>	stabile ?	8	?	VU	NT	small
5.	<i>B. barbastellus</i>	?	0	?	VU	DD	small
6.	<i>M. schreibersii</i>	decline	11	13.000	NT	EN A1ac	small
7.	<i>M. bechsteini</i>	?	0	?	VU	VU A2c;B2b(iii)	small
8.	<i>M. capaccinii</i>	decline	8	15.000	VU	EN B2ab(iii)	significant
9.	<i>M. dasycneme</i>	?		?	VU	DD	small
10.	<i>M. emarginatus</i>	?	14	48.000	VU	NT	significant
11.	<i>M. myotis</i>	decline ?	3	9.000	NT	NT	small
12.	<i>N. leisleri</i>	?	0	-	NT	DD	small
13.	<i>P. austriacus</i>	decline	1	?	LR	EN A1e	small
14.	<i>P. kolombatovici</i>	?	3	1.500	NE	DD	?
15.	<i>P. macrobullaris</i>	decline ?	5	?	NE	DD	?
16.	<i>M. blythii oxygnathus</i>	?	15	60.000	LR	LR	?

Considering negative trends in known summer colonies and lack of positive measures for their protection from competent government authority, regional status of *M. schreibersii* is Endangered species.

With negative trends of all populations with exception of the largest colony in NP Krka, regional status of *M. capaccinii* is Endangered species.

Plecotus austriacus seems that is suffering form serious decline on the southern border of its distribution and is in category of Endangered species too. 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 column *locations* are changed with column *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.	Jamina	Med	Pit	Wintering ?	6.000	1; MS
5.	Culumova pecina	Med	Cave	All year	6.000	6; MS, MC, RF, MM
6.	Spilja Miljacka II	Med	Cave	All year	6.000	8; MC, MS
7.	Medova buza	Med	Sea-cave	Maternity	4.270	5; MS, ME, RE, MO
8.	Markova jama	Med	Pit	Maternity	3.000	4; MS, MM, RF, MO
9.	Spilja Golubinka	Med	Cave	Maternity	3.000	2; ME, RF
10.	Skarin Samograd	Med	Cave	All year	1.590	5; MS, RF, MO
11.	Zagorska pec	Med	Cave	All year	1.300	5; RF, MO, MS
12.	Draskova spilja	Med	Sea-cave	Maternity	1.200	2; ME, RF
13.	Matesica pecina	Con	Cave	All year	1.177	5; MC, MS, RE
14.	Jama Suhi Rumin	Med	Pit	All year	1.000	4; ME, RF
15.	Vilina pec	Med	Cave	Maternity	910	5; MS, ME, RE, MO
16.	Spilja Tounjcica	Alp	Cave-spring	Maternity	700	3; MS
17.	Spilja Veternica	Con	Cave	All year	500	13 ; RF
18.	Jopiceva jama	Con	Cave	All year?	404	3; RF
19.	Medvidja ropa	Med	Sea-cave	Maternity	400	3; ME, RF
20.	Rogovac spilja	Con	Cave	Maternity ?	400	1; RE
21.	Boltekova spilja	Med	Cave	Maternity	300	1; ME
22.	Spilja Bela voda	Med	Cave-spring	Maternity	300	1; MO
23.	Uviraljka	Con	Swallow hole	Hibernation	> 270	11; MD, MDas
24.	Modra pecina	Alp	Lake-cave	Maternity	250	5; MS, MC, MO
25.	Bariceva cave	Alp	Spring-cave	Maternity	234	9; RE, MS
25.	Spilja kod Krupe	Med	Cave	Maternity	200	2; MO, MS
26.	Spilja na rtu Kabal	Med	Sea-cave	Maternity ?	200	2; RF, ME

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

Founding of new roost sites during wintering stopped, due to the lack of financial support from State and some other possible sources. Only voluntary information from speleologists added new records of roosting sites.

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 (**Alpine**, **Continental**, **Hungarian**, **Mediterranean**).

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

<i>No.</i>	<i>Site name</i>	<i>Region</i>	<i>Site type</i>	<i>Usage</i>	<i>Max count</i>	<i>Species recorded</i>
1.	Šibenik	Med	Old factory	Maternity	5.000	2; ME, RF
2.	Boljun	Med	Church loft	Maternity	500	2; PM, PK
3.	Rudnik Vora	Med	Mine	Hibernation	400	1; RF
4.	Donji Miholjac	Ung	Building	Maternity	300	1; PP
5.	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; PM=P. macrobullaris; PK=P.kolombatovici

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. Changes after last report **in bold**.

No.	Site name	Target species	Threats
1.	Tradanj cave Maternity, 20.000 bats, 5 species	<i>R. euryale</i> <i>M. emarginatus</i> <i>R. ferrumequinum</i>	Archeological site; Disturbance
	Miljacka II cave All year, > 5.000 bats, 8 species Part of National Park Krka	<i>M. capaccinii</i>	Disturbance
2.	Ćulumova cave All year, 6.000 bats, 6 species	<i>M. myotis</i> <i>R. ferrumequinum</i> <i>M. capaccinii</i>	Touristic plans
3.	Golubinka cave Maternity, 3.000 bats, 2 species	<i>M. emarginatus</i> <i>R. ferrumequinum</i>	Disturbance; Touristic area
4.	Medova buža sea-cave Maternity, 2.900 bats, 5 species	<i>M. schreibersii</i> <i>R. euryale</i> <i>M. emarginatus</i>	Disturbance; Touristic area
5.	Škarin Samograd cave All year, 1.590 bats, 5 species	<i>M. myotis</i> <i>M. schreibersii</i> <i>R. ferrumequinum</i>	Archeological site; Guano harvesting; Disturbance;
6.	Zagorska cave All year, 1.300 bats, 5 species	<i>R. ferrumequinum</i>	Touristic plans; Solid waste deposit
7.	Matešića cave All year, 1.177 bats, 5 species	<i>R. euryale</i> <i>M. capaccinii</i> <i>M. schreibersii</i>	Disturbance
8.	Vilina cave Maternity, 910 bats, 5 species	<i>R. euryale</i> <i>M. emarginatus</i> <i>M. schreibersii</i>	Plans for hydroelectric power station: Ministry signed permit for overflow of cave
9.	Veternica cave All year, >500 bats, 13 species Part of Nature Park Medvednica	<i>R. ferrumequinum</i>	Disturbance; Touristic plans: large colonies of two species disappeared (MS, RE)
10.	Uviraljka swallow hole Hibernation, > 270 bats, 11 species Part of Nature Park Papuk	<i>M. dasycneme</i> <i>M. daubentonii</i>	Cave is situated near military facilities; building of wider road and lost of cave water
11.	Barićeva cave, Maternity, > 200 bats, 9 species	<i>R. euryale</i> <i>M. schreibersi</i>	Cave is situated ½ km near National Park Plitvice and disturbance of tourists without control was noted

This list contains known most important and most threatened bat sites mostly recorded during season 2000 / 2001, and any new investigation funded from State institutions break all activities proposed from EUROBATS in last years. Without better understanding of the problems and more initiative for protection coming from European authorities, our work is useless and implementation of the Agreement is in question, it seems to will stay only on paper.

8. Consideration given to habitats which are important to bats

There is 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 new Nature Protection Law.

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

- «*Bat Night*», held on 20/21st September in Nature Park «Papuk» in Velika, and in Nature Park «Zumberak-Samoborsko gorje» in Slani Dol, and one workshop for children in Samobor hosted and organized by Nature Park's staff and Museum bat group.
- *Telephone* line (CNHM number) with bat experts: 00385 1 4851 700
- *Magazines*: «Yet Set magazine»: article about bats, March 2003 (I.Pavlinić); article about forest bat conservation in «Forest news» –November 2003 (I.Pavlinić)
- *Radio*: several reportages;
- *Booklet*; because of shortage of money, printing of all material was stoped

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

No

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 longfingere 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 Zumberak and Samoborsko gorje; 2002-2004 (N. Tvrtkovic, I. Pavlinic); financed by Nature Park;

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 State institutions considering our idea to prepare legal questionnaire for parties which use pesticides and timber treatment chemicals. Situation is already quit serious 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. 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 because we share 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

New problem is changing of responsible State institution (from 2004 it is Ministry of Culture) and not money are planned for activities of EUROBATS implementation. 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.