MINISTRY OF SCIENCE AND ENVIRONMENTAL PROTECTION OF SERBIA
DIRECTORATE OF ENVIRONMENTAL PROTECTION

NATIONAL REPORT ON THE IMPLEMENTATION OF THE AGREEMENT ON THE CONSERVATION OF BATS IN EUROPE 2006

SERBIA

An Update

Belgrade, April 2007

UPDATE TO THE NATIONAL REPORT ON THE IMPLEMENTATION OF THE AGREEMENT ON THE CONSERVATION OF BATS IN EUROPE

SERBIA

Contents:

A. General Information

Name of the Non-Party Range State: Serbia
(until this report, Serbia was a member of Serbia and Montenegro federation)

Date of Report: 29 April 2007

Period Covered: 31 March 2006 – 30 March 2007

Competent Authorities: Ministry of Science and Environmental Protection of Serbia – Directorate of Environmental Protection (DEP)

Organizations providing support and expertise:

Natural History Museum - Belgrade (NHM BEO 600)

NGO Wildlife Conservation Society MUSTELA (WCS)

Appointed members of the Advisory Committee:

Ms Jelena Dučić, (DEP)

Mr. Milan Paunović, (NHM BEO 600, WCS)

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B. Status of Bats within the Territory of Serbia

1. Summary Data on Resident Species

Introduction

Up to now, on the territory of Serbia 29 bat species from two families (Rhinolophidae and Vespertilionidae) have been recorded. Data on bats are richest for regions of Eastern and Western Serbia (because of the presence of large limestone areas and suitable underground bat shelters, as well as being most studied). Presence of all of the species is documented with voucher specimens that are now kept in collections of NHM, Belgrade, Museum Department of the Institute for Protection of Nature, Novi Sad and Zoological Institute, Sankt Petersburg, Russia.

First data concerning bats in Serbia originate from second half of 19th Century. Researches were sporadic until 1954, when late Dr. Đorđe Mirić became a curator of Mammal collection of Natural History Museum in Belgrade. Dr. Mirić has founded bat banding and bat taxonomy and distribution studies in Serbia (Mirić *et* Paunović 1994; Savić *et al*. 1995), surveying hundreds of roost-sites, collecting thousands of specimens for Museum collection and recording a number of species for the first time in Serbia. Although previous generations have laid a solid foundation, collecting multitude of data, until recently most of that data have remained fragmentary, scattered or even unpublished (Mirić *et* Paunović 1994), some possibly out-of-date.

Since the last decade of 20th century, as current generation of bat workers step forward, researches have become more intensive, systematic and targeted, but also intensive processing, analyses and syntheses, of previous and recent data have started (Savić *et al.* 1995). Those recent bat-workers' efforts, together with awareness aroused in responsible authorities, have led to development of national action plan for conservation of bats (Paunović *et al*. 2004). Action plan is a cornerstone for the book on diversity of bats in Serbia, a capital project preoccupying bat community in Serbia for the last four years and soon to be published. Very intensive work on the book was the main activity of Serbian bat workers durring the last year, so all the other activities (field resarch, education, promotion etc.) were temporary set aside.

Check list of the species with comments on its distribution, status and bionomy
(Paunović *et al.* 2004)

Rhinolophus blasii Peters, 1866

It is found exclusively in caves of mountain areas of the country during all the year. 14 localities are known, and all of them are mixed colonies with *Rhinolophus euryale* and occasionally other species. Short-distance seasonal migrations between the winter and summer roosts were registered.

Rhinolophus euryale Blasius, 1853

It is a common cave dweller of hilly-mountainous limestone areas. It is the most frequently species among the three "medium size" species of horseshoe bats, known at 52 localities. It constitutes mixed summer and nursery colonies of 100-400 individuals with other cave-dwelling species. It hibernates in caves. The largest known colonies consist of about 1.000-2.000 individuals, together with *Rh. blasii* and *Rh. mehelyi*, or with *M. emarginatus* at low altitudes). Short-distance seasonal migrations between the winter and summer roosts were registered.

Rhinolophus ferrumequinum (Schreber, 1774)

This is a widely distributed and common species. It was recorded at 142 localities, mostly in natural underground shelters, and much less in artificial shelters – buildings and old mines. Breeding colonies were observed in small caves, at the entrances of larger caves and (outside of limestone areas) in the attics; number: usually 100-350 individuals, sometimes with *M. emarginatus*. In the winter it is found in underground roosts: the most often single individuals or groups of 10-15 individuals, but also hibernating colonies of 200-500 individuals were recorded. Largest winter colony recorded had at most 1.200 individuals. Short- and medium-distance seasonal migrations between the winter and summer roosts were registered.

Rhinolophus hipposideros (Bechstein, 1800)

This is a widely distributed and common species, recorded at 100 localities, none in lowlands and river valleys. Breeding colonies were mostly observed in buildings (lofts or other uninhabited premises); number: 5-6 individuals min. – ca. 30 individuals max. In the winter period it's found only in underground roosts: usually single individuals, ca. 30 individuals max. in one roost.

Rhinolophus mehelyi Matschie, 1901

This is rare cave-dwelling species. Only 2 roosts are known in two caves of Eastern Serbia. Estimated population in Serbia doesn't exceed 200 individuals.

Barbastella barbastellus (Schreber, 1774)

It is considered to be a relatively rare and scarce species. 5 localities are recorded up to now on the territory of Serbia: usually single specimens, occasionally 2-5, were found hibernating in caves or mist netted at cave entrances during other seasons. A record of a single gravid female from Obedska Bara pond has been reported (Paunović *et al.* 2003). The known roosts are within altitudinal ranges from 70 to 1000 m, but obviously the species prefers cooler habitats of preserved riparian or mountain beech forests.

Eptesicus serotinus (Schreber, 1774)

It has been found throughout country, but only as single specimens. 41 localities were recorded. However, there is a lack of information about its bionomics and only one breeding roost in tree hollow in Central Serbia is recorded so far.

Myotis aurascens Kusjakin, 1935

The single record is a specimen deposited in the collection of Zoological Institute, Sankt Petersburg, and re-identifyed by Benda *et* Tsytsulina (2000). According to current data on its distribution and ecology, this species is widely distributed in Serbia. The revision of the museum specimens formerly identified as *Myotis mystacinus* (*Myotis mystacinus* group) is ongoing.

Myotis bechsteinii (Kuhl, 1817)

It is rare species restricted to specific forest habitats, recorded at 13 localities. Most of the records are single specimens mist-netted at the entrances of the caves or found hibernating in them. Numerous single individuals have also been found hibernating in artificial underground shelters such as old fortresses (e.g. Petrovaradin fortress, Novi Sad). A few specimens were mist-netted and banded near forested rivulet bodies and in riparian forests. A gravid female was recorded at the first decade of July in Eastern Serbia.

Myotis blythii (Tomes, 1857)

Mostly inhabits natural underground shelters – caves. It is known from 34 localities, where mostly single specimens have been recorded, but several large nursery colonies also. The colonies are mostly mixed – with *M. myotis*, *M. capaccinii*, *M. emarginatus* and *M. schreibersii* Revision of all known records and checks on identified specimens are going on presently, as this species was formerly often mistaken with *M. myotis*.

Myotis brandtii (Eversmann, 1845)

The status of this species, recently found in Serbia for the first time, is not known. Single specimens were recorded at 2 localities, one in the eastern and one in the western Serbia (Paunović *et* Karapandža, *in prep*).

Myotis capaccinii (Bonaparte, 1837)

It is common cave-dwelling species, recorded at 31 localities. It is found in limestone areas at lower altitudes all over the country. This species forms colonies in the caves, alone or together with other species, usually with *M. schreibersii*, *M. myotis*, *M. blythii*, but with other cave-dwelling species also. Mostly hibernates in large caves, often in those with underground water-streams. In Serbia colonies consist of as much as 4.000 specimens of this species for hibernacula and 200–1000 specimens for nurseries.

Myotis dasycneme (Boie, 1825)

There are only 3 records of this species in Serbia. First one is from beginning of the XX century at the park nearby the Palić Lake in far north of Province of Vojvodina, very near the Serbian-Hungarian border. Second record, more then 100 years after, was a single male mist-netted at the entrance of a cave in eastern Serbia in the summer of 1998. Third record was made by ultrasound detector in September of 2001 at the Sava river bank near Kupinovo,

Srem (Herman Limpens, *voce viva*). Preference of open water surfaces and specific way of life, as well as insufficient amount of research in habitats suitable for this species, were obstacles for detection of this bat by classical means of research. Further use of ultrasound detectors could be of a great use in providing data on distribution and bionomics.

Myotis daubentonii (Kuhl, 1817)

This widely distributed species might be found in whole country in suitable biotopes, most often at wetlands and near water bodies. A high abundance was recorded at a few wetlands in Eastern Serbia and Province of Vojvodina. However, it was reported at only 23 localities. During the winter only a small number of single individuals have been found in caves, and it seems that this bat mostly hibernates in hollow trees. No summer roosts were recorded, but it's assumed that it uses hollow-trees during that period also.

Myotis emarginatus (Geoffroy, 1806)

Relatively common and widespread species, but not particularly abundant. There are 23 known localities. Summer roosts are known to be in buildings and caves; nursery colonies of 200-500 individuals are often mixed with *Rh. ferrumequinum*, or sometimes with *M. schreibersii* and *Rh. euryale*. During winter mostly single specimens have been found in caves.

Myotis myotis (Borkhausen, 1797)

It is one of the most abundant and widespread cave-dwelling bat species in Serbia, recorded at 42 localities. Throughout the year it can be found in natural and artificial underground shelters, churches and buildings. 12 maternity colonies are known. Seasonal migrations between the winter and summer roosts were registered.

Myotis mystacinus group, or *M. mystacinus sensu lato*

Relatively frequent, particularly in suitable woodland regions of the country, especially near, temporary or permanent, smaller water bodies. 19 localities are known. All the data collected so far are currently under revision, because 3, recently divided, sibling species (*M. mystacinus sensu stricto*, *M. alcathoe* and *M. aurascens*) formerly recognized as *M. mystacinus* (now – *M. mystacinus sensu lato*, or *M. mystacinus* group) might occur in Serbia.

Myotis nattereri (Kuhl, 1817)

The status is not known well enough, because it was rarely found in Serbia. 10 localities are known, and only 4 of these are small breeding colonies. Other records refer to single specimens or small groups.

Nyctalus leisleri (Kuhl, 1817)

Little is known about the status of the species. It is rare, although it may be present all over the country, where suitable habitats exist. Only 6 localities were recorded, 2 of which has been previously reported (Miric *et* Paunovic 1997). Most of the recorded specimens were mist-netted in the foraging areas during transitory periods and the summer.

Nyctalus noctula (Schreber, 1774)

It is widely distributed and common species, known from 89 localities. Hibernating colonies were found in cracks and cavities in buildings and bridges, hollow-trees and in fissures in rocks at cave entrances. No records on breeding are known, except for a doubtful single data from western Serbia.

Hypsugo savii (Bonaparte, 1837)

Although it is considered as a common and widespread species in limestone areas of Serbia, at the middle as well as at high altitudes, only 11 localities were recorded, 2 of which have been reported previously (Miric *et* Paunovic 1995). Summer roosts are found in rock crevices, and winter roosts in rock crevices and in the crevices at the cave entrances.

Pipistrellus kuhlii (Kuhl, 1817)

Although it was recorded for the first time only in 1994 in Belgrade (Paunović *et* Marinković 1998), there are many recent records in the cities and other human settlements of this anthropophilous species in Serbia. 33 sites are known where all the stages of life cycle were observed. In last several years, special attention was paid to research on recorded replacement of species *Pipistrellus pipistrellus*, previously predominant in urban habitats, by this species.

Pipistrellus nathusii (Keyserling and Blasius, 1839)

In last several years this species was often recorded during summer and in transitory periods, and several specimens were ringed. The species is known from 17 sites.

Pipistrellus pipistrellus (Schreber, 1774)

Although it is a common and widespread species, no studies of its biology and ecology were done. It is known from 49 sites, including both summer and winter roosts in buildings and caves. It is interesting that in human settlements, especially in large cities, during 1990-ties this species was significantly replaced by species *Pipistrellus kuhlii*. Research on this relation and ecology of these two species is ongoing study.

Pipistrellus pygmaeus (Leach, 1825)

Up to now 11 localities, foraging sites are recorded by ultrasound detectors in the region of Srem and in the vicinity of Belgrade. Revision of identification of specimens in museum collections, considering specimens of *Pipistrellus pipistrellus* is ongoing study, because these two species haven't been distinguished until recently.

Plecotus auritus sensu lato (Linnaeus, 1758)

This species is relatively rare, but widespread both at lowest and highest altitudes. Up to now it is recorded at 16 sites. All the data collected so far are currently under revision, because both recently divided sibling species (*P. auritus sensu stricto* and *P. kolombatovici*) formerly recognized as *P. auritus* (now – *P. auritus sensu sensu lato* or *P. auritus* group) might occur in Serbia.

Plecotus austriacus sensu lato (Fischer, 1829)

This is one of the most common and widespread species throughout the country, although the main number of records is represented by single specimens. Up to now 45 sites has been recorded. It hibernates regularly in underground shelters. As for the previous species, all the data collected so far are currently under revision, because both recently divided sibling species (*P. austriacus sensu stricto* and *P. macrobullaris*) formerly recognized as *P. austriacus* (now – *P. austriacus sensu sensu lato* or *P. austriacus* group) might occur in Serbia.

Vespertilio murinus Linnaeus, 1758

There are 20 records, mostly in buildings, most of them from the Belgrade and its surroundings, as well as records of single specimens from all around Serbia. There is no proof of breeding and wintering in Serbia so far, because most of the records derived from transitory periods.

Miniopterus schreibersii (Kuhl, 1817)

This is one of the common and relatively widespread cave-dwelling bat species in Serbia, which forms very large colonies. Up to now 48 roosts were identified. It often shares the same roosts (caves, old mines and fortresses) with *M. myotis*, *M. blythii and M. capaccinii*, usually forming mixed colonies with those species. Medium-distance seasonal migrations between the winter and summer roosts were registered.

List of species expected to be found in Serbia
(Paunović *et al.* 2004)

Eptesicus nilssonii (Keyserling *et* Blasius, 1839)

This species is probably present in small numbers at suitable habitats and in shelters at greater altitudes.

Myotis alcathoe von Helversen and Heller, 2001

According to current data on its distribution and ecology, the species could be expected in Serbia. The revision of the museum specimens formerly identified as *Myotis mystacinus* (*Myotis mystacinus* group) is ongoing study.

Nyctalus lasiopterus (Schreber, 1780)

Its presence may be expected in forested parts of the country at greater altitudes.

Plecotus macrobullaris Kuzjakin, 1965

According to current data on its distribution and ecology, this species could be expected in Serbia. The revision of the museum specimens of the genus *Plecotus* is ongoing.

Plecotus kolombatovici (Djulic, 1980)

According to current data on its distribution and ecology, this species might be expected in Serbia, but not as likely as *P. macrobullaris*. The revision of the museum specimens of the genus *Plecotus* is ongoing.

Tadarida teniotis (Rafinesque, 1814)

The presence of this species has recently been confirmed in Montenegro and Bosnia – Herzegovina (Ciechanowski *et al.* 2005), as well as in Macedonia and Bulgaria. It is expected to be found in termophilous limestone area of the Eastern, Western and Southern Serbia, especially in certain localities within canyons and gorges.

2. Status and Trends

Table 1 presents national threat statuses, assessed according last IUCN criteria (IUCN 2001, 2003), assessments of previous and current population trends and recorded breeding in Serbia (Paunović *et al.* 2004). Since the last National Report, data has been processed by RAMAS® Red List software, and some changes have been made.

Table 1 - Status and Population Trends of Bats in Serbia

Species	**Status**	**Pop. trend 2002**	**Pop. trend 2006**	**Breeding recorded**
Rhinolophus blasii Peters, 1866	NT	Stable	Same	Yes
Rhinolophus euryale Blasius, 1853	NT	Stable	Same	Yes
Rhinolophus ferrumequinum (Schreber, 1774)	LC	Stable	Same	Yes
Rhinolophus hipposideros (Bechstein, 1800)	NT	Stable	Same	Yes
Rhinolophus mehelyi Matschie, 1901	EN	Unknown	Same	Yes
Barbastella barbastellus (Schreber, 1774)	VU	Stable/Declining	**Stable**	Yes
Eptesicus serotinus (Schreber, 1774)	LC	Stable/Declining	**Stable**	Yes
Hypsugo savii (Bonaparte, 1837)	LC	Stable	Same	Yes
Myotis aurascens Kusjakin 1935	DD	-	**Unknown**	No
Myotis bechsteinii (Kuhl, 1817)	NT	Declining	**Stable**	Yes
Myotis blythii (Tomes, 1857)	LC	Stable	Same	Yes
Myotis brandtii (Eversmann, 1845)	DD	Unknown	Same	Doubtful
Myotis capaccinii (Bonaparte, 1837)	LC	Stable/Declining	**Stable**	Yes
Myotis dasycneme (Boie, 1825)	DD	Unknown	Same	No
Myotis daubentonii (Kuhl, 1817)	LC	Stable/Increasing	**Increasing**	Doubtful
Myotis emarginatus (Geoffroy, 1806)	NT	Declining	**Stable/Declining**	Yes
Myotis myotis (Borkhausen, 1797)	LC	Stable/Declining	**Stable**	Yes
Myotis mystacinus group	LC	Stable	**Increasing**	Yes
Myotis nattereri (Kuhl, 1817)	NT	Unknown	**Stable**	Yes
Nyctalus leisleri (Kuhl, 1817)	LC	Stable	Same	No
Nyctalus noctula (Schreber, 1774)	LC	Stable	Same	Doubtful
Pipistrellus kuhlii (Kuhl, 1817)	LC	Increasing	Same	Yes
Pipistrellus nathusii (Keyserling and Blasius, 1839)	LC	Stable/Declining	**Stable**	No
Pipistrellus pipistrellus group	LC	Declining	**Stable/Declining**	Yes
Pipistrellus pygmaeus (Leach 1825)	DD	-	**Unknown**	Doubtful
Plecotus auritus group	NT	Stable	**Stable/Declining**	Yes
Plecotus austriacus group	LC	Stable	**Stable**	Yes
Vespertilio murinus Linnaeus, 1758	LC	Stable	**Increasing**	No
Miniopterus schreibersii (Kuhl, 1817)	LC	Stable	Same	Yes

3. Habitats and Roost Sites

Bats in Serbia were recorded at about 500 roost sites. Most data are available on underground bat shelters, while data on habitats as well as on anthropogenous shelters and those in hollow-trees are scarce. Only in the last decade of previous century were more up-to-date and all-including research methods used, and data were completed and analyzed. The ecological studies on bats and their habitats have mostly just started.

4. Threats

Table 2 shows classification of the threat factors by different types of bat shelters and habitats present in Serbia.

Table 2 – Main threat factors of bat shelters and habitats in Serbia.

		Factors of threat	
Shelters	Natural and artificial underground shelters	Disturbance	Fire
			Noise
			Research
			Using of excrements (bat guano)
		Direct killing	Vandalism
			For mystic and magical purposes
			For collections
		Inappropriate protection of shelters	Building the wall at the entrance of shelters
			Unsuitable iron bars at the entrances
			Setting of lights
			"Tidying" for tourism
		Change of use	Closing of caves
			New purposes of the shelters
	Anthropogenic shelters	Destruction of suitable buildings	
		Accidental poisoning	
		Disturbance	
		Deterioration	
		Limit of trophic resources	
Habitats		Chemical pollution	Industry
			Pesticides (insecticides)
		Habitat changes	Forest devastation and cutting
			Producing of forest clearings
			Intensive agriculture
			Arranging the banks of channels and rivers

5. Data Collection

Data are collected by a few specialists in national scientific institutions. There is no officially designed responsible institution for collecting and evaluating of data concerning bat conservation and management on federal level, and efforts have to be made to assure effective collection and management of data in the future. The largest database and collections of bat specimens are deposits in Natural History Museum, Belgrade. The NGO Wildlife Conservation Society MUSTELA works towards collection of data related to bat conservation, including database for all the roost sites, relevant legislation, etc.

C. Measures Taken To Implement Article III of the Agreement

6. Legal measures taken to protect bats, including enforcement action

- Serbia had ratified the following International conventions and agreements related to bat conservation:

  - Convention on Wetlands of International Importance especially as Waterfowl Habitat (1977)
  - Convention on the Biological Diversity (2001)
  - Convention on International Trade in Endangered Species of Wild Fauna and Flora (2001)

- Responsible ministries study and prepare ratification of following documents important for conservation and protection of bats:

  - Agreement on the Conservation of Bats in Europe
  - Conservation of Migratory Species of Wild Animals
  - Conservation of European Wildlife and Natural Habitats

- National legislation related to bat protection:

  - 22 bat species were protected by Decretal on Protection of populations of bats by the State (Sl. glasnik 1961): *Rhinolophus ferrumequinum, Rh. hipposideros, Rh. euryale, Myotis myotis, M. dasycneme, M. oxygnathus, M. capaccinii, M. daubentonii, M. bechsteinii, M. mystacinus, M. emarginatus, M. nattereri, Vespertilio murinus, Eptesicus nilssonii, E. serotinus, Nyctalus leisleri, N. noctula, N. lasiopterus, Pipistrellus pipistrellus, Barbastella barbastellus, Plecotus auritus and Miniopterus schreibersii.*
  - In the Province of Vojvodina in 1977 the fine was introduced for destroying bats (of 500 dinars apiece)
  - In the province of Kosovo and Metohija from 1977 there is Decree of protection of natural rarities that included protection of all bat species, i.e. representatives of two families – Rhinolophidae and Vespertilionidae.
  - In 1990 22 above mentioned bat species are declared protected under the Decision on Protection of Animal Species as Natural Rarities (Sl. glasnik 1990).
  - As the new Law on Environmental Protection has taken effect in 1991, the Directive on Protection of Natural Rarities (Sl. glasnik 1993) passed in 1993 and it has been in effect since. It prohibits "to destroy, catch, harm, disturb, export or mount specimens of protected species", as well as "to destroy or endanger their habitats". Listed bat species are placed in Category I of protection, as the most strictly protected.
  - In 1999, after a vast discussion, in which bat workers as well as many other specialists took part, a proposal of new, renewed and improved Directive on Protection of Natural Rarities was prepared, in order to replace faulty current Directive. The proposal contains the clause on protection of all species of bats in Serbia under the most strictly protected I category. It is still in procedure.
  - The new Law on Environmental Protection (Sl. glasnik 2004), much better and fully harmonized with EU standards, has passed and taken effect, so new Directive should, hopefully, pass soon.

- Other official documents
  - Biodiversity of Yugoslavia with the review of International Important Species (1995): The conservation of bat species and their habitats is declared as priority. 25 bat species are listed and their zoogeographical and ecological preferences analyzed. Update of this document will be available at the middle of 2004.
  - The Preliminary Red List of Vertebrata of Serbia (1991): 22 bat species are listed. The Update, the Red List and the Red Book of Vertebrates of Serbia are ongoing projects (see point 12, paragraph 13).

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

In Serbia the bats are known at more then 500 roost sites and more than 170 localities that can not be declared as roosts. Until now only underground roosts (natural caves) have been

declared as protected sites important for the conservation of bats. The process of identification of important bat sites is ongoing.

Important bat roosts and habitats occur on the territory of more than 1000 protected natural assets, covering surface of 500.000 ha.

Since 1949 till today, over 30 natural speleological objects were protected by law, most of which are important bat shelters and thereby important for conservation of bats. By special decretals in 1956 and 1977 Baćina Pećina cave and Ribnička Pećina cave, respectively, have been protected as bat shelters exactly.

8. Consideration given to habitats those are important to bats

Roosting habitats

Although many roosting habitats are protected by law, they are usually not managed considering needs of bats. On the other hand, lack of control and permanent monitoring by responsible bodies, as well as lack of suitable financing, is decreasing the preservation and usefulness of roost habitats for bat life.

Foraging habitats

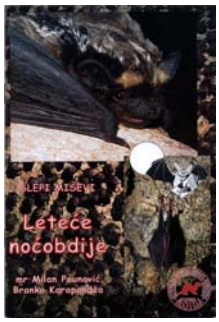
No special considerations have been given yet to protect foraging habitats of bats. So far they are protected almost exclusively due to some wider importance (for example, biodiversity conservation), or due to importance for some other representatives of living or non-living nature.

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

Almost all activities to promote the awareness of the importance of the conservation of bats in Serbia have been carried out by the Wildlife Conservation Society MUSTELA and by Natural History Museum, Belgrade.

Publicity materials published:

- Leaflet: The Bats. What we know about them, MUSTELA 2001 (still available).
- Postcard: Portrait of *Rhinolophus blasii*, MUSTELA 2001 (still available).
- Many articles in newspapers and journals, MUSTELA, NHM, 2000-2004.
- Booklet: The Bats – flying night–dwellers, MUSTELA 2003.
- Documentary film: Flying night-dwellers, Radio Television Serbia 2003.
- Booklet: Bats in Forests, MUSTELA, NHM, 2004 (courtesy of Deutscher Verband für Landschaftspflege – DVL and Bundesamt für Naturschutz – BfN, with assistance of UNEP-EUROBATS)
- Leaflet: The Bats. Our Next-door Neighbors, MUSTELA 2006

Education:

- Bat-workers school and training

Bat-workers school and training has been organized by WCS Mustela during May, financed through the own funds of WCS Mustela. It started with workshop in Belgrade (May 16th–18th), followed by field-practice (May 19th–25th) in Valjevo area (Western Serbia), one of the diversity centers of bat fauna in Serbia. Participants from Serbia, as well as from Montenegro, have learnt and practiced bat survey, handling and identification, guided by experienced bat-workers from Serbia and Slovenia.

- In the frame of educational activities, WCS MUSTELA and Natural History Museum, both from Belgrade, during last 13 years have provided more then 140 lectures, slide presentations and performances of popularization of bats in all levels of schooling, from kindergarten through elementary, middle and high schools to university level, as well as those for the general public.

- European Bat Night in Belgrade

Since 2001 for the first time the manifestation of European Bat Night was not held in Belgrade.

- Presentations in other cities of Serbia

The program of the European Bat Night manifestation was realized in 2 larger towns in Serbia during autumn 2006:

- Valjevo (Western Serbia), in a high school aula, 120 persons present, on July 31st, 2006. Program: History and characteristics of bat echolocation; Amazing world of bats in Serbia.
- Bor (Eastern Serbia), in two of the local schools, 150 persons present, on October 3rd, 2006. Program: History and characteristics of bat echolocation; Amazing world of bats in Serbia.

10. Responsible bodies nominated for the provision of advice on bat conservation and management

- The body responsible for nature conservation and environmental protection in Serbia is Ministry of Science and Environment Protection of Serbia – Directorate of Environmental Protection (DEP).

- Many protected areas, including some protected bat caves and/or karst landscapes are managed by Ministry of Agriculture, Forestry and Water Resources of Serbia.

- Institutions providing scientific information and consultancy are Natural History Museum Belgrade and Institute of Nature Protection of Serbia.

11. Additional action undertaken to safeguard populations of bats

- At the beginning of 2001, 20 bat boxes were set within the National Park Fruška Gora on locality Brankovac. In 2004 bat boxes were checked twice. During 2005 and 2006 new 25 bat boxes were set in the National Park of Fruška Gora.

- Natural History Museum, Belgrade, and WCS MUSTELA permanently work on monitoring of urban bat populations, especially in Belgrade, but also in other larger cities

of Serbia. Teams in these institutions answer the calls of public regarding bats, always pursuing active demystification and education. Also, permanent monitoring was established in main roost sites throughout the Serbia.

- Diversity of bats in Serbia, a study base of national action plan for conservation, accomplished (Paunović *et al.* 2004). Initiated by Natural History Museum, Belgrade, accepted and supported by Ministry of Science and Environmental Protection of Serbia, Directorate of Environmental Protection.

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

- 2000-2006: Project "Monitoring of important bat roosts in Valjevo area, Serbia"; realized by WCS Mustela and Society of Young Researchers of Belgrade, three times a year, financed through the own funds of these societies.

- 2001-2003, 2006-2008: Project: "Bat-workers trainings, including workshops and field-practice in diversity centers of bat fauna in Serbia"; realized by WCS Mustela; financed through the own funds of WCS Mustela.

- 1996-1998, 2004-2007: Project: "Diversity of Mammal Fauna of the Beljanica Mountain", with special attention to bat fauna; Beljanica Mountain, Eastern Serbia, in July, realized by Biology Students' Research Society "Josif Pancic".

- 2006-2009: Project Nr. 146023B: "Diversity of fossil and recent flora and fauna of Serbia – evaluation of diversity degree and estimate of threat status as an indicator of natural values conservation". Project of Natural History Museum, Belgrade, in co-operation with Faculty of Geology, Univ. of Belgrade, sponsored by Ministry of Science and Environmental Protection of Serbia, Directorate of Science.

- 2006-2009: Project „Ecology, behaviour and population genetics of the forest living Bechstein's bat (*Myotis bechsteinii*) in two glacial refuges: South-Eastern Europe and the Caucasus" in the frame of „SCOPES 2005 – 2008" project, (Scientific Co-operation between Eastern Europe and Switzerland). Responsible persons are Mr. Andrej Conti, student of ecology, Univ. of Novi Sad, and Ms. Danijela Anastasov, student of biology, Univ. od Novi Sad.

- 2006-2010: Annual youth biology research camps "Mammal Diversity of Tara mountain National Park", in July, realized by Researchers Society "Vladimir Mandic – Manda", Valjevo, and Society of Young Researchers of Belgrade.

- 2007-2009: Project "Presence and distribution of bats infestation by EBLV in Serbia". Project of Pasteur Institute, Novi Sad, Serbia in co-operation with Natural History Museum, Belgrade, sponsored by the Ministry of Agriculture, Forestry and Water Resources of Serbia, Directorate of Veterinary Medicine.

- 2002-2005: Annual youth biology research camps "Mammal Diversity of Durmitor and Tara gorge" with special attention to bat fauna; village of Tepca, Montenegro, in July, realized by Researchers Society "Vladimir Mandic – Manda", Valjevo, and Society of Young Researchers of Belgrade.

- 2002-2005: Project Nr. 1864: „Assessment of status and changes in biological and geological diversity of modified landscape on the example of central parts of Serbia (Sumadija)". Project of Natural History Museum, Belgrade, in co-operation with Faculty

of Natural Sciences, Univ. of Kragujevac, sponsored by the Ministry of Science and Environmental Protection of Serbia, Directorate of Science.

- 2002-2005: Project Nr. 1525: "Inventarization, monitoring and evaluation of faunal components in integral protection of biodiversity". Project of Biological faculty, University of Belgrade, in co-operation with Natural History Museum, Institute for biological research "Sinisa Stankovic", both from Belgrade, and Faculty of Natural Sciences, University of Kragujevac, sponsored by the Ministry of Science and Environmental Protection of Serbia, Directorate of Science.

- 2003-2004: Project "Diversity of bats in Serbia. National Action plan for conservation and preparation to accessing international documents". Project of Natural History Museum, Belgrade, sponsored by Ministry of Science and Environmental Protection of Serbia, Directorate of Environmental Protection.

- 2003-2004: "Applicative potentials and ecological aspects of protection of Serbian mammal fauna". Project of Biological faculty, University of Belgrade, in co-operation with Natural History Museum, Institute for biological research "Sinisa Stankovic", both from Belgrade, and Faculty of Natural Sciences, University of Kragujevac, sponsored by the Ministry of Science and Environmental Protection of Serbia, Directorate of Environmental Protection.

- 2003-2006: Project "Red data book of Vertebrates of Serbia". Project of Natural History Museum, Belgrade, in co-operation with Biological faculty and Institute for biological research "Sinisa Stankovic", Belgrade, sponsored by Ministry of Science and Environmental Protection of Serbia, Directorate of Environmental Protection. Project is stopped because of the change of its structure and will proceed in period 2007-2009.

D. Functioning of the Agreement

13. Co-operation with other Range States

Co-operation mainly remained on personal level, especially intense with colleagues from Slovenia who participated in research and education activities in Serbia.

In co-operation with colleagues from Slovenia and Bosnia - Herzegovina a paper that is the first complete documented overview of bat fauna of Bosnia - Herzegovina has been prepared. Studies for the paper included re-check of the bat specimens from the collection of the Land Museum Sarajevo, Bosnia - Herzegovina.

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