Agreement on the Conservation of Populations of European Bats

National Implementation Report of Ukraine

2010 / MoP 6

A. General Information

Name of Party:	Ukraine
Date of Report:	June 2010
Period covered:	June 2006 – June 2010
Competent Authority:	Ministry of Environmental Protection of Ukraine: Directorate of Biotic Resources and EcoNet Fauna Conservation Division Dr. Volodymyr Domashlinets Address: 35 Urytskogo Str., Kyiv, Ukraine, 03035 Tel/Fax: (+38 044) 206 31 27 E-mail: domashlinets@menr.gov.ua
Appointed Member	
of the Advisory Committee	Dr. Lena Godlevska
	Schmalhausen Institute of Zoology of NAS of Ukraine
	Address: 15 Khmelnytskogo Str., Kyiv, Ukraine, 01601
	Tel.: (+38 044) 235 10 70, fax.: (+38 044) 234 15 69
	E-mail: Igodlevska@gmail.com

B. Status of bats within the territory of party

1. Summary details of Resident Species

Totally, 26 species have been registered and confirmed for bat fauna of Ukraine (Table 1).

Miniopterus schreibersii is still on the list of extinct species of Ukraine. No evidence of the species occurrence on the territory of the country has been found since 1993 (registration of a single individual of the species in one of underground shelters in the Transcarpathians (Vargovich, 2000)).

Occurrence and status of three more species are questionable.

One species — *Myotis aurascens* — was included into the list of fauna after revision of P. Benda and K. Tsytsulina (2000). However, the status of this species is not finally clear on the whole, more detailed genetic and morphological revision is needed.

By all signs, *Myotis alcathoe* as species was revealed in 1940-s in the Ukrainian Carpathians (Abelenstev, Popov, 1956) and described under "*ikonnikovi*" name. Later this description was brought to "mystacinus". However, revision of the whiskered bats' records in Ukraine allowed to affirm a presence of *M. alcathoe* among Ukrainian bat fauna at least basing at morphological signs (Загороднюк, Дикий, 2009).

In 2009 new form of *Eptesicus* ex gr. "*serotinus*" was described from the territory of Eastern Ukraine. A description is based at revealing of post-calcarial lobe (PCL) with well-developed cartilaginous skeleton in specimens from the studied area, whilst the absence of PCL is generic feature of *Eptesicus* in a whole (Zagorodniuk, 2009). This geographic form of the serotine bat was described as *Eptesicus lobatus* sp. n., which, as the author of the description believes, can

be considered as allospecies of group "serotinus". At present, status of the taxon has been specified basing on DNA-analyses.

2. Status and Trends

Information about distribution, status and trends of bat species of Ukrainian fauna is presented in Table 2. All recognized bat species occurring in Ukraine were included into the new edition of the Red Data Book of Ukraine (RDBU).

	Species	Distribution	Status	Estimated trend	RDBU (2009)
1	Rhinolophus ferrumequinum	restricted	frequent	0	+
2	Rhinolophus hipposideros	restricted	frequent	?/о	+
3	Miniopterus schreibersii	restricted	extinct	ext.	+
4	Myotis blythii	restricted	frequent	0	+
5	Myotis myotis	restricted	frequent	0	+
6	Myotis bechsteinii	restricted	rare	?/o	+
7	Myotis nattereri	widespread	rare	?/o	+
8	Myotis emarginatus	restricted	very rare	?/o	+
9	Myotis dasycneme	widespread	rare	?/o	+
10	Myotis daubentonii	widespread	common	0	+
11	Myotis brandtii	restricted	rare	0	+
12	Myotis mystacinus	widespread	frequent	0	+
13	Plecotus auritus	widespread	frequent	0	+
14	Plecotus austriacus	restricted	frequent	0	+
15	Barbastella barbastellus	restricted	rare	0	+
16	Nyctalus leisleri	widespread	rare	0	+
17	Nyctalus noctula	widespread	common	0	+
18	Nyctalus lasiopterus	restricted	very rare	?/—	+
19	Pipistrellus kuhlii	widespread	common	+	+
20	Pipistrellus nathusii	widespread	frequent	0	+
21	Pipistrellus pipistrellus	widespread	common	0	+
22	Pipistrellus pygmaeus	widespread	frequent	?	+
23	Hypsugo savii	restricted	very rare	0	+
24	Eptesicus nilssonii	restricted	very rare	?/—	+
25	Eptesicus serotinus	widespread	common	0	+
26	Vespertilio murinus	widespread	common	0	+

 Table 1. Distribution and abundance of bats' species in Ukraine*

* Distribution: "widespread" — records of a species cover all the territory of Ukraine or its biggest part; "restricted" — a species was registered at the less part of Ukraine or in few localities. Estimated trends during last 10 years: "?" – unknown, "o" – stable, "–" decreasing, "+" increasing.

Mentioned above Myotis alcathoe, M. aurascens and Eptesicus lobatus are not included in the table list.

3. Habitats and Roost Sites

The situation is similar to June 2006. Table 2 summarizes all available data on bats' roosts in Ukraine by three main types.

Species	Underground type*	Building (over) type	Tree type
R. ferrumequinum	W, S, M**	M	_
R. hipposideros	W, S, M	S, M	_
M. schreibersii	W, S, M	М	_
M. blythii	W, S, M	S, M	_
M. myotis	W, S, M	S, M	_
M. bechsteinii	W, S	—	М
M. nattereri	W, S, M	—	S, M
M. emarginatus	W, S, M	М	—
M. dasycneme	W, S	М	М
M. daubentonii	W, S	S, M	S, M
M. brandtii	W, S	—	—
M. mystacinus	W, S, M	S	—
P. auritus	W, S, M	W, S	S, M
P. austriacus	W, S	W, S, M	—
B. barbastellus	W, S, M	W, S	W, S
N. leisleri	—	S, M	S
N. noctula	W	W, S, M	W, S, M
N. lasiopterus	—	S	S, M
P. kuhlii	_	W, S, M	—
P. nathusii	_	S, M	S, M
P. pipistrellus	W, S	W, S, M	S, M
P. pygmaeus	?	М	?
H. savii	S, M	_	_
E. nilssonii	W	S	S
E. serotinus	W, S	W, S, M	М
V. murinus		W, S, M	S, M

Table 2. Use of different roost types by bats in Ukraine

* Underground type — natural caves, cellars, mines, quarries, wells, grottos, etc.; building (over) type — attics, bell towers, hollow walls, ventilation communications, bridges, etc.; tree type — hollow trees, cavities under bark, bird and bat boxes;

** W — winter records, S — summer records, M — maternity colonies or single breeding females.

4. Threats

The following main threats for bats were identified: disturbance in roosts (up to full removing and killing by humans); exclusion from roosts (for overground shelters); loss of roosts (including recreational mastering of underground cavities, full blocking of entrances to underground shelters; so called sanitation felling and cleaning cutting); changing of appropriate for bats microclimate conditions inside underground shelters as a result of partial blocking of entrances; downfall during migration (including downfall in different anthropogenic traps). As well a negative attitude to bats from side of humans is still common. An impact of chemical pollution of the environment (including pesticides) on bats in Ukraine is unclear.

5. Data Collection, analysis, interpretation and dissemination

A geography of bat investigations continues to broaden. New data (including data from poorly known regions in terms of bat fauna) had been collected. The data obtained allow clarifying details concerning status and distribution of bat species in Ukraine. For the first time for the

whole history of zoological investigations in Ukraine a full census in some quite lengthy underground systems (up to 29 km) was done. The results obtained form a base for further bat monitoring of sites. A work on elaboration of appropriate approaches for keeping bats in captivity (for their rehabilitation) has been carried out.

Results of bat investigations carried out by Ukrainian zoologists are reflected in publications covering the following topics: general and regional reviews of bat fauna, description of rare species' records, distribution of bats in Ukraine, biology and ecology of bats, bat conservation, functional morphology. Geography of field faunistical data collection during the period covers, to a greater or lesser extent, almost all administrative provinces of Ukraine.

The results are regularly presented at Ukrainian and international scientific meetings. As previously, each annual theriological meeting includes a special section devoted to highlighting of bat research results in Ukraine.

C. Measures taken to implement Article III of the Agreement

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

Ukraine is a Party of the Convention on Protection of European Wildlife and Natural Habitats and the Convention on the Conservation of Migratory Species of Wild Animals since 1999. Thus, all bat species are protected by these international agreements as well.

In 2009 a new list of bat species included into the Red Data Book of Ukraine was approved (decree № 313 of Ministry of Environmental Protection of Ukraine). The 3rd revised edition of the Red Data Book of Ukraine was published at the end of 2009. The descriptions of individual bat species were revised and new bat species were listed. As compared with previous edition of the Red Data Book where 12 bat species were listed, current edition of the book includes all bat species recorded in Ukraine thus enhancing their legal protection status.

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

Although an initial list of underground key sites had been already compiled, a work on search and determining of new important underground bat roosts is going on. For now, the list includes a number of sites in different regions of Ukraine — in the Crimea (Crimean Autonomous Republic), in Podolia and Dniester River Region (namely, Ternopil, Khmelitsky, Chernivtsi, Vinnytsya and Odessa Oblasts), in Transcarpathian region (Zakarpatska Oblast), in the Central and Eastern Ukraine (Kievska and Kharkivska oblast), at continental south of Ukraine (Odesa, Mykolayiv and Kherson oblasts). The list was transmitted for including into general pan-European list.

A number of important forest plots and overground roosts were determined to be important sites for bats as well.

8. Consideration given to habitats which are important to bats

Initial measures (already revealed to be effective) on conservation of newly identified key bat sites concern mostly official familiarizing of responsible authorities about their new status and inadmissibility of activities which may lead to worsening of conditions vital for bats. Some sites are under procedure of reserving by giving them an official status of protected objects.

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

Since 2006 tens of interviews to mass-media (TV, news-papers, radio) about bats and necessity of their conservation were given by Ukrainian bat workers and bat conservationalists. Since the consideration of the draft Law of Ukraine "On adoption of an Amendment to the Agreement on the Conservation of Bats in Europe" in Ukrainian Parliament caused a big resonance among the public a special press-conference was convened by bat-workers in Kiev in February 2009. The press-conference was entirely devoted to bat conservation issues.

For raising public awareness of local people and speleologists for the necessity of bat conservation, few posters, leaflets and pocket calendars calling people to be friendly to bats were issued and distributed.

Other activities include special lectures for different groups (broad public, speleologists, students, pupils, members of groups of young naturalists, etc.) and popular bat excursions. A

bat web-site (kazhan.org.ua) is regularly updated. The web-site has a special section for general public with pointed coordinates of opened question lines (both e-mail and telephone ones).

Few local bat-night events took place.

A special project, firstly, aimed to raise awareness about importance of bat conservation among public health authorities which quite often deal with calls from people finding bat colonies or single bat specimens in their dwellings, was carried out. Secondly, it was directed at the distribution of adequate information about rabies in bats and absence of special danger of it for people (more details are in iss. 12 of the report)

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

Scientific Advisory Council on the Conservation of Bats at the Ministry of Environment Protection of Ukraine. Contact persons: Dr. Lena Godlevska (head of the council), Dr. Volodymyr Domashlinets, Dr. Igor Zagorodniuk.

Dr. Lena Godlevska	Dr. Volodymyr Domashlinets	
Schmalhausen Institute of Zoology, NAS Ukraine Tel.: (+38 044) 235 10 70 Fax.: (+38 044) 234 15 69	Ministry of Environmental Protection Tel/fax: (+38 044) 206 31 27 E-mail: domashlinets@menr.gov.ua	
E-mail: lgodlevska@gmail.com		

Dr. Igor Zagorodniuk

Lugansk National University, Laboratory of animal ecology Tel.: (+38 067) 738 20 89

E-mail: zoozag@ukr.net

11. Addition action undertaken to safeguard population of bats

The situation is generally similar to the report for the MoP5 in 2006.

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

Unfortunately, there is no any state funded programme or initiative concerning conservation and management of bats. All ones are originated from enthusiasm of individual bat-workers or their groups. The list below includes both small-budget projects and initiatives which have no any financial support but carried out by Ukrainian bat workers for a more or less long time on continuing basis and characterized by quite definite results. In absence of stable financial support each initiative becomes a certain outbreak in some direction, thus here descriptions of all of them are given in details.

Finished:

"Role of bat hibernation sites in deep rock crevices for their conservation on the territory without natural caves, North-Eastern Ukraine" (2006–2007). The project was supported by BCI Student Research Scholarship Program (executor: A. Vlaschenko). As it follows from the title the work was devoted to search of hibernation sites in crevices of outcrops of geological rocks.

"Key sites for cave dwelling bats of Podillya and Dniester River region" (2006–2007). The project was supported by DEFRA through the EUROBATS Secretariat (project's leader: L. Godlevska). An overall aim was, basing on results of field census and estimation of current status of regional bat populations, to determine important bat sites of the region for their further protection and monitoring. The first scaled bat census was carried out both in summer and winter seasons. 53 underground units (limestone, chalk and phosphorite mines, natural caves and grottoes, sacral and fortification cavities) were examined. Most of them were checked by bat-workers for the first time. Based on received results, 10 globally important for conservation and monitoring of bats key sites were determined — 4 natural

caves and 6 complexes of exhausted mines. In 2007 project executors initiated an implementation of some practical measures for the conservation of the sites. Regional and local authorities were officially informed about uniqueness and significance of the cavities and necessity of their direct protection. At the same time, all sites were included into the Ukrainian national list of key underground bat sites. Description and coordinates of the sites were transmitted to EUROBATS Secretariat for including them into European general list of important bat sites. In 2007–2008, due to implemented initial conservation measures and active position of local authorities, demolition of two of the determined underground key bat sites was prevented.

More information is available at http://kazhan.org.ua/eng/projects/pr_podil.htm.

"Kharkov Bat Education Programme" (2007–2008). Supported by BCI's Global Grassroots Conservation Fund (team leader: A. Naglov). The project aimed to change public opinion about bats to friendly side in Kharkov region, and to raise awareness of people about necessity of bat conservation. A special emphasis was given to distribution of information about ways of secure interactions with bats (to limit a number of bat bites accidents). The project represents the first, large, systematic bat-education programme in Eastern Ukraine. In the framework of the project 3 colorful posters, 2 leaflets and many pocket calendars had been produced and distributed. Lectures in schools were given.

"Key sites for cave-dwelling bats of the continental south of Ukraine" (2008). The project was supported by "Direction des Eaux et Forêts" (Luxembourg) and "Ministry of Environment, Nature Conservation and Nuclear Safety" (Germany) through the EUROBATS Secretariat (2008; project's leader: L. Godlevska). The project is follow-up one to "Key sites for cave dwelling bats of Podillya and Dniester River region". As with previous one an overall aim is to determine important bat sites of the target region for their further protection and monitoring. Totally, 60 points were examined (exhausted and active limestone mines (majority of objects), military underground objects, cellars). Almost all objects were examined for the purpose of bat census firstly. Most of the bat records represent an essential addition on status and distribution of revealed bat species in Ukraine, generally. Based on census results, six underground cavities or their complexes, which are highly important for bats, were determined. In 2009 executors started an implementation of some initial practical measures on conservation of determined important underground sites.

Details are at http://kazhan.org.ua/eng/projects/pr_south.htm.

"Rare fauna of Eastern Ukraine" (2006–2009). Internal Luhansk University project (main executor: I. Zagorodniuk). The project aims, mainly, with inventory of rare mammal, including bat, species of Eastern Ukraine. Detailed cadastres and distribution maps were compiled for bat species occurring in the region.

"Development of collaboration between bat workers and public healthy authorities: implementation for bat conservation in Ukraine" (2009). The project is supported by Ministère de l'Écologie, de l'Énergie, du Développement durable et de l'Aménagement du territoire (MEEDDAT), France; Department for Environment, Food and Rural Affairs (DEFRA), UK; and EUROBATS Secretariat under EPI. An overall aim is to improve bat conservation in Ukraine by distribution of knowledge about bats and necessity of their protection through public health authorities and development of collaboration between them and zoologists both at level of ministries and at level of individual experts from each "side".

There were two preconditions for carrying out the project. The first one: usually people finding bat colonies or single bat specimens in their house apply to sanitation services (considering bats as rodents and, thus, as pests). In such cases these services have not had consistent answers adequate to the recognized conservation status of bats. The second precondition concerns three fatal human rabies cases following bat bites during last 50 years in Ukraine. These cases have been regularly quoted but without information about the conservation status of bats and their vulnerability (which provokes a negative altitude to bats and is thus a threat).

The central point of the project was a two-days workshop ("Bats and man: conservation and epidemiological aspects") carried out in May 2009 in Kiev. The workshop gathered bat-

experts, veterinarians, rabiolologists and representatives of healthy authorities of Ukraine. The workshop participants adopted a resolution stating a series of important issues concerning the improvement of bat conservation practice and bat rabies surveillance in rabies" Ukraine. Under this project the booklet "Bats and (available at http://kazhan.org.ua/eng/projects/pr_bm-w-shop.htm) and the leaflet "Our neighbors bats" had been prepared and published. A big attention is paid to implementation of EUROBATS Resolution 5.2 (translation of which in Ukrainian was placed in the booklet). The publications have broadly been disseminated among the public health authorities throughout Ukraine.

Bats of Gomolsha forests (Gomolshanskie lesa)" (1999–2009). Ten years bat research work (leader and main researcher Dr. A. Vlaschenko). The Gomolsha woodland, with the total square of about 10000 ha, represents a relatively old oak forest massif located on the right high bank of the Seversky Donets river. Bats had been studied there since 1915. Unfortunately, in the beginning of the 1950s bat research was stopped. In 1999 the bat research in Gomalsha forests had been renewed by A. Vlaschenko. The main objectives of the work are: to study summer bat assemblage in oak forests (numbers, distribution, dynamics), to develop a system of bat monitoring for forest territories, to study characteristics of bat tree roosts for further, etc. One of the work realized goals is popularization of bats among students during summer student field practice carried out at the biostation situated in borders of the woodland. For now the main aims of the work were achieved but monitoring is going on.

"Responsible forest management for sustainable development — model forest areas in Romania and Bulgaria and building capacity in the Ukraine". Supported by WWF-DCP (2005–2008; expert on mammals and habitats: I. Zagorodniuk). A great attention was given to bats and their conservation. Bats were determined as one of key group of mammals in estimation of forest value. Clear criteria on revelation and protection of bat habitats for Ukrainian forestries are proposed. A final report book "High conservation value forests toolkit. A practical guide for Ukraine" will be printed and distributed through Ukrainian foresrties.

Ongoing:

"Bat research in the Chernobyl exclusion zone" (2003–2010; project leaders: S. Gaschak and A. Vlaschenko). The work deals with few objectives: determination of bat species composition, relative diversity, distribution of bats, sex and age composition, patterns of usage of the region by different species; and determination of total content of ⁹⁰Sr and ¹³⁷Cs in the animal body, and dependence of these indices on different factors.

More information is available at http://kazhan.org.ua/eng/projects/pr_chernob.htm.

"Bat census in underground cavities of Western Podillya" (2008–2009). Main executor: M. Drebet. Works on search of new underground habitats in the region and bat census in them are carried out. A number of unknown earlier sites with large winter bat aggregations have been already found.

"Conservation of important underground bat sites in the Eastern Crimea (Southern Ukraine)". Supported by Stichting Zoogdierenwerkgroep Zuid-Holland (2010; convener: L. Godlevska). The main aim of the project to realize measures for the conservation of the unique bat aggregations in underground cavities of the Eastern Crimea, including giving them an official status of reserved objects in accordance with the procedure defined by national legislation.

"Development of new system of summer bat population monitoring on the territory of nature reserves of Ukraine". Supported by Bat Conservation International, Inc. (BCI), Student Scholarship Program (2010; team leader: Alona Gukasova). An aim is approbation and application of a new multifactor system of summer bat population monitoring on the territory of Especially Protected Natural Areas of the Eastern Europe.

"Kharkov center of bat rehabilitation". Joint initiative of Kharkov National University and Kharkov Zoo (leader of the initiative Dr. A. Vlaschenko). A phenomenon of bat migration in Kharkov city is being recorded by local zoologists from year to year, that includes mass invasions of bats into inner chambers of few buildings in the city. During migration period

groups of up to 100 bats often attempt to penetrate through windows to university rooms. Because of windows' design many bats become trapped between frames, where they may die. The initiative group tries to save these bats whenever possible. Besides, in the city there are records of bats (both single and groups) lost their shelters in winter.

The initiative group had started an establishment of the center (with permanent workers and volunteers) at the base of Kharkov Zoo for rehabilitation bats after urban-traps and for keeping "lost" animals in winter with following releasing in spring. The centre will be similar to Kiev one and, thus, will become the second bat rehabilitation center in Ukraine. According to estimations of the group's leader the center may help up to few hundreds of bats yearly.

"Bat census in underground cavities of Western part of Ukraine". Supported by Stichting Zoogdierenwerkgroep Zuid-Holland (2010–2011; project leader L. Godlevska). The project aimed with follow-up inventory of underground cavities in the region for determining of important bat sites for their further protection and monitoring and carrying out of the entire winter bat census in already identified key bat sites of Western part of Ukraine.

Started:

"Fauna of bats as an indicator of the most valuable natural complexes in Chernobyl Exclusion Zone worthy of legislative protection (Ukraine)". Supported by the Rufford small grants Foundation (2010-2011; the project leader: S. Gaschak). Chernobyl Exclusion Zone (of Ukraine) is a huge (2600 km2) natural and semi-natural complexes almost completely abandoned during last 25 years. Due to absence of people it became very attractive for many animals, including endangered species. Population and diversity of wildlife certainly increased there, and this region became to play important role in nature conservation respect. Nevertheless there are no governmental programs and plans to really protect the area in nature value concern. Moreover, ideas about recovery of some kinds of industrial activities in the zone are considered, including use of forest resources. It is a direct threat for wildlife and all achievements which natural complexes got over last 25 years. Additional weigh downing circumstance is lack of wildlife researchers and corresponding truthful scientific information about the region. The aim of the project to provide such information in order to ground proposals about conservation and protection of the most valuable habitats of the Chernobyl Exclusion Zone. Bats were chosen as key wildlife object since: 1) all species in Ukraine are in the red list; 2) already 12 species (of 15–17 possible) have been found in Chernobyl; 3) presence of some species indicates high value of the habitats for many other species. The project will include regular contacts with scientists, conservationists, media, officials, public etc. by presentations, articles, interviews, the website. The conservation proposals will be elaborated by the project end.

"Nyctalus lasiopterus in Ukraine: inventory of current status, proposals to revise the species status in IUCN Red List and conservation". Supported by the Rufford small grants Foundation (2010–2011; the project leader: A. Vlaschenko). The project could be estimated like successful after realization the following two objectives: 1) to check localities of Ukraine where the greater noctule was found in past in Ukraine; 2) to study deeply the locality in Chernobyl Zone where Greater Noctule was found in 2009 (the first record of the species in Ukraine after a long "no-records" period). The long-lasting result will include concrete information about the species status and population trend in Ukraine that could be used for revision of IUCN Red List Status of the species.

13. Consideration being given to the potential effect of pesticides on bats, and efforts to replace timber treatment chemicals, which are highly toxic to bats

No consideration has been given.

D. Functioning of the Agreement

14. Co-operation with other Range States

The ongoing project "Development of collaboration between bat workers and public healthy authorities: implementation for bat conservation in Ukraine" is realized under cooperation with the Netherlands. Translation of the EUROBATS publication "Protecting and managing

underground sites for bats" (Mitchell-Jones et al., 2007) into Russian was done under Russian-Ukrainian cooperation. Joint Polish-Ukrainian field expeditions were carried out. Besides, there is a collaboration of Ukrainian bat-workers with specialists from many EUROBATS Range States in the field of information exchange.

15. Measures taken to implement Resolution adopted by Meeting of Parties

Resolution 3.7 "Amendment to the Agreement", Resolution 4.8 "Amendment of the Annex of the Agreement" and Resolution 5.3 "Amendment of the Annex to the Agreement". A Law of Ukraine No 1007-VI "On adoption of an amendment to the Agreement on the Conservation of Bats in Europe" (which covered amendments of pointed resolutions 3.7, 4.8 and 5.3) was adopted by the Verkhovna Rada of Ukraine on 18.02.2009.

Resolution 2.4 "Transboundary Programme: Habitat proposals" and Resolution 4.3 "Guidelines for the Protection and Management of Important Underground Habitats for Bats". The work on initial systematic survey of potential underground bat sites for the determination of key ones for further protection and monitoring is going on. During the report period firstly three big "white" regions of Ukraine were investigated for the main purpose of discovery of important bat underground sites. For defined ones a number of initial conservation steps were undertaken (see iss. 12). All of newly found important bat sites were included into national list of important bat habitats. The work on implementation of effective conservation measures on these sites is going on. Translation of the guidelines "Protecting and managing underground sites for bats" into Russian was done (in co-authorship with Russian expert). The translation is available as PDF at web-sites.

Resolution 2.4 and Resolution 4.4 (bat conservation and forest management). First case on preventing of destroying of important woodland bat habitat had taken place (in Eastern Ukraine) due to the direct application on the procedure provided by national Ukrainian legislation. For now Scientific Advisory Council on the Conservation of Bats at the Ministry of Environment Protection of Ukraine works at elaboration of the national list of important bat forest habitats.

Resolutions 2.7 and 3.3 "Format of National Report". The reports are prepared by adopted scheme.

Resolution 5.2 "Bats and Rabies in Europe". In 2009 an initiative group realized a row of steps toward implementation of the resolution issues (look iss. 12: finished projects). The resolution text was translated into Ukrainian and distributed broadly throughout Ukraine.

Resolution 5.7 "Guidelines for the Protection of Overground Roosts, with Particular Reference to Roosts in Buildings of Cultural Heritage Importance". Translation of the guidelines "Protection of overground roosts for bats" into Russian was done as well. Now it's ready for publishing in paper or electronic version.

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