

Ministry of Ecology and Natural Resources of Ukraine
Ukrainian Centre on Bat Protection

*The Agreement
on the Conservation
of Bats in Europe*

**NATIONAL REPORT
ON THE STATUS OF BATS
IN UKRAINE**

Period covered: 2000 – 2001

Date of the report: May 26, 2002



Kyiv, 2002

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NATIONAL REPORT

ON THE IMPLEMENTATION OF “THE AGREEMENT ON THE CONSERVATION OF BATS IN EUROPE” IN UKRAINE

A. General Information

Name of state: *Ukraine*

Date of accession to the agreement: *May 14, 1999*

Entry into force: *October 30, 1999*

Date of the report: *May 26, 2002*

Period Covered: *2000–2001*

Competent Authority: *Ministry of Ecology and Natural Resources of Ukraine:*

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B. Status of Bats in Ukraine

1. Summary Details of Resident Species

There are 26 resident species of bats in Ukraine. Among them, 12 species are rare and endangered, and were included into the Red Data Book of Ukraine (1994).

After previous report, 3 new species are registered: *Rhinolophus euryale*, *Rhinolophus mehelyi*, and *Pipistrellus pygmaeus*. Both new rhinolophids are registered in the most southern part of Ukraine (Crimea) and based on doubtful data, and *Pipistrellus pygmaeus* is recorded in several regions using ultrasound detectors.

During this time, new records of the rare bat species were made in Ukraine: *Plecotus austriacus*, *Barbastella barbastellus*, *Myotis bechsteinii*, *Myotis brandtii*, *Myotis nattereri*, *Pipistrellus pygmaeus*.

Dominant species in the nature reserve territories are *Nyctalus noctula*, *Myotis daubentonii*, *Myotis mystacinus*, *Pipistrellus* sp., in the urban territories are *Eptesicus serotinus* and *Pipistrellus kuhlii*, and dominant species in the cave winter communities are *Myotis myotis*, *Myotis blythii* and *Rhinolophus hipposideros*. Common but not numbered species throughout the Ukraine are *Plecotus auritus* and *Vespertilio murinus*.

In Ukrainian fauna, most of bat species are the migratory one, or they have local migrations to the hibernation roosts located on the territory of Ukraine. Hibernation period of bats in Ukraine is: from the end of October (or beginning of November) until second half of March. Some details of resident species are presented in **Annex 1** (annotated list of bat species).

Table 1. Table of distribution and abundance status of bats in Ukraine

N	Name of species	Distribution	Status	Estimated trend	Special protected
1	<i>Rhinolophus ferrumequinum</i>	restricted	rare	–	RDBU
2	<i>Rhinolophus hipposideros</i>	widespread	common	+/o	RDBU
–	[<i>Rhinolophus euryale</i>]	one record	doubtful	?	no
–	[<i>Rhinolophus mehelyi</i>]	one record	doubtful	?	no
3	<i>Miniopterus schreibersii</i>	restricted	extinct ?	–	RDBU
4	<i>Myotis blythii</i>	restricted	scarce	+/o	no
5	<i>Myotis myotis</i>	widespread	frequent	+/o	no
6	<i>Myotis bechsteinii</i>	restricted	rare	o	RDBU
7	<i>Myotis nattereri</i>	restricted	very rare	o	RDBU
8	<i>Myotis emarginatus</i>	restricted	very rare	o	RDBU
9	<i>Myotis dasycneme</i>	restricted	rare	–	RDBU
10	<i>Myotis daubentonii</i>	widespread	common	o	no
11	<i>Myotis brandtii</i>	restricted	rare	o	no
12	<i>Myotis mystacinus</i>	widespread	common	–	no
13	<i>Plecotus auritus</i>	widespread	common	o	no
14	<i>Plecotus austriacus</i>	restricted	rare	o	no
15	<i>Barbastella barbastellus</i>	restricted	very rare	–	RDBU
16	<i>Nyctalus leisleri</i>	restricted	rare	o	RDBU
17	<i>Nyctalus noctula</i>	restricted	frequent	o	no
18	<i>Nyctalus lasiopterus</i>	restricted	very rare	–	RDBU
19	<i>Pipistrellus kuhlii</i>	widespread	common	+	RDBU
20	<i>Pipistrellus nathusii</i>	widespread	frequent	o	no
21	<i>Pipistrellus pipistrellus</i>	widespread	common	o	no
22	<i>Pipistrellus pygmaeus</i>	restricted	rare	o	no
23	<i>Hypsugo savii</i>	restricted	scarce	?	RDBU
24	<i>Eptesicus nilssonii</i>	restricted	scarce	–	no
25	<i>Eptesicus serotinus</i>	widespread	common	o	no
26	<i>Vespertilio murinus</i>	widespread	common	o	no

* Special protected: RDBU – species included to the Red Data Book of Ukraine.

** Estimated trends in the last 20–30 years: “o” stable/unknown, “–” decreasing, “+” increasing.

2. Status and Trends

There are tendencies to increasing of taxonomic richness and species abundance southwards and westwards where is more variety of refuges. So, the greatest number of the bat species is established for the faunal communities of the Transcarpathians, the Podolia, and the Crimea. These regions are characterised by the presence of rivers, forest and rocky sites, and caves.

Despite ecological bat plasticity, a sharp decline of bat populations is observed last decades throughout the Ukraine. The reasons for this phenomenon are the same in different Ukrainian regions. Man-

made and climate factors are thought to be main factors affecting bats. Besides, there were wrong use of pesticides and other poison agricultural chemicals, and also loss of roost and forage sites. Climatic factors especially affect the animals during wintering.

During last decade, one bat species became extinct in Ukraine (*Miniopterus schreibersi*), three species had been recorded as new for Ukraine (see chapter 1), and one more species demonstrates a propensity to synanthropy, and it can be found in the most cities (*Pipistrellus kuhlii*).

The present sites of bat populations need to be identified and studied. Dr. I. Zagorodniuk and Dr. V. Tkach, based on literary data as well as one's collections, defined some trends in bat population during XX century as it is given in **Annex 1** (annotated list of bat species).

3. Habitats and Roost Sites

Bat habitats and roost sites are widespread for all over Ukraine but irregularly. So, majority of slits and clefts in rocks, and most of natural caves are located in western Ukraine (the Carpathian Mountains, and the Podolian Upland) and in the Crimean peninsula (the Crimean Mountains), limestone mines are in many parts of the southern Ukraine. Main forests spread in the northern part of Ukraine (Polissia and Wood-Steppe zone) and in the mountain areas (the Carpathians and the Crimea).

Key roosts sites in Ukraine are of very different types, and they are the following: underground and overground refuges, and caves in particular, slits and clefts in rocks, hollows, lofts and another sites in the buildings etc.

Natural cavities in the southern regions are the key sites for bat hibernation. Peculiarities of geographical distribution of cave bat communities, based on the date for *Rhinolophus hipposideros* records, are presented on the map. It is obvious that the main regions of distribution of the cave bat communities are Transcarpathians, Podillia (first of all, Valley of the Dnister), and southern part (mountain part) of the Crimea (see map in **Annex 3**).

4. Threats

There are following main threats for bats in Ukraine (after Krochko, 1995):

- i) loss of roost sites and food habitats;
- ii) downfall during migration;
- iii) disturbance (including large speleo-touristic activity in winter);
- iv) pesticides used in agriculture and forestry;
- v) timber treatments especially felling of trees used for roosts.

Key factors are i), iii), and v).

5. Data Collection

There are data published in scientific newspapers and reports, collections of the Zoological Museum of the National Academy of Sciences and experts mentioned below. It is necessary to study in details the distribution of bats in Ukraine and to create relevant databases.

Analysis of collections in four main zoological museums are carried out by Dr. Igor Zagorodniuk during last years including National Natural History Museum (Kyiv), State Museum of Natural History (Lviv), Zoological Museum of National University (Kyiv), and Museum of Nature of Kharkiv State

University. Two main parameters are investigated: (1) portion of each species in collection and (2) long-time changes of this portion as one of the criteria of species abundance in historical scale.

Museum collections provided unique material to study distribution and variation of rare and endangered species, and these data were used for a few detailed revisions of some bat species in Ukraine. Such revisions were carried out in last years for the horseshoe bat (*Rhinolophus* species), long-eared bats (*Plecotus* sp.), and lesser mouse-eared bat (*Myotis* ex gr. “*mystacinus-daubentonii-brandtii*”). Results of these investigations are published in the special articles by Dr. I. Zagorodniuk, and they keeping in mind in all new Ukrainian reviews on bat collections, bat ranges, bat migration, etc.

Data on relative species abundance in zoological collection are presented in **Annex 4**. So, bat species having a relative abundance more than 3 % in the collections are: *Nyctalus noctula* — 16,2, *Myotis blythii* — 15,0, *Rhinolophus ferrumequinum* — 12,5, *Eptesicus serotinus* — 8,6, *Miniopterus schreibersii* — 6,9, *Rhinolophus hipposideros* — 6,4, *Myotis myotis* — 5,7, *Barbastella barbastellus* — 5,5, *Pipistrellus nathusii* — 5,1, *Plecotus auritus* — 3,4, *Leuconoe daubentonii* — 3,1 %.

In 2001, data on bat collection (totally about 1500 specimens) were used for general analysis of phenology of bats and seasonal changes in bat fauna composition (Table 2).

Table 2. Distribution of records of bats by the months on the basis of all data obtained as a result of investigation of 5 main zoological collections of Ukraine (after: Zagorodniuk 2001)

Species	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Σ
<i>Rhinolophus hipposideros</i>	2	20	19	3	11	19	12	1	4	—	—	18	109
<i>R. ferrumequinum</i>	15	9	2	—	10	7	49	19	63	6	1	—	181
<i>Miniopterus schreibersii</i>	—	3	20	—	2	17	10	17	32	42	—	5	148
<i>Myotis blythii</i>	2	2	—	—	84	47	49	28	—	7	—	2	221
<i>M. myotis</i>	8	12	4	2	12	12	16	10	5	18	1	—	100
<i>Leuconoe bechsteinii</i>	3	1	—	—	—	1	—	—	—	—	—	—	5
<i>L. nattereri</i>	—	—	—	—	—	—	1	—	1	1	—	—	3
<i>L. emarginatus</i>	—	1	—	—	—	12	1	1	—	—	—	—	15
<i>L. dasycneme</i>	—	—	—	1	—	—	1	2	—	—	—	—	4
<i>L. daubentonii</i>	6	9	3	3	3	10	6	6	1	—	—	2	49
<i>L. brandtii</i>	—	—	—	—	—	—	—	1	—	—	—	—	1
<i>L. mystacinus</i>	—	1	—	—	3	2	12	3	5	—	—	—	26
<i>Plecotus auritus</i>	1	9	6	2	5	10	3	4	1	2	2	10	55
<i>P. austriacus</i>	2	7	11	1	—	—	5	5	1	1	—	1	34
<i>B. barbastellus</i>	25	18	12	2	2	1	—	1	1	1	6	8	77
<i>Nyctalus leisleri</i>	—	—	—	—	6	12	9	5	7	1	—	—	40
<i>N. noctula</i>	—	—	3	4	62	46	60	47	5	6	—	5	238
<i>N. lasiopterus</i>	—	—	—	3	1	—	—	—	1	1	—	—	6
<i>Pipistrellus kuhlii</i>	—	—	—	—	—	—	—	1	1	—	1	1	4
<i>P. nathusii</i>	—	—	—	2	16	24	14	19	6	—	—	—	81
<i>P. pipistrellus</i>	—	—	—	4	5	5	15	3	1	3	—	1	37
<i>Hypsugo savii</i>	—	—	—	—	—	—	—	1	—	—	—	—	1
<i>Vespertilio murinus</i>	—	—	—	2	4	3	5	5	—	—	—	—	19
<i>Eptesicus serotinus</i>	22	12	6	7	33	4	10	23	4	2	2	5	130
<i>E. nilssonii</i>	—	—	—	—	—	1	1	—	—	—	—	—	2
Total specimens	86	104	86	36	259	233	279	202	139	91	13	58	1586
Total species	10	13	10	13	16	18	19	21	17	13	6	11	25

C. Measures Taken to Implement Article III of the Agreement

6. Legal measures

Bats are fallen under a number of legal environmental acts of Ukraine: Law on Environmental Protection (1991); Law on Natural-Reserve Fund (1992); Law on Animal Kingdom (1993); Act of the Red Data Book of Ukraine (1994); Law on Ratification of the Convention on Biological Diversity (1996), Law on Ukraine's Accession to the Bern Convention (1996), Law on Ukraine's Accession to the Agreement on the Conservation of Bats in Europe (1999), Law on Ukraine's Accession to the Convention on the Conservation of Migratory Species of Wild Animals (1999), Law on accession to the Convention on international Trade in Endangered Species of Wild Fauna and Flora (CITES). Ministry of Environment and Nuclear Safety has prepared and Cabinet of Ministries of Ukraine adopted legal act on payment and penalties for illegal capture or killing of animals including bats.

All wild animals excluding evident pests are protected by law and can not be hunted, killed, captured, exported or imported without special permits issued by a competent authority. Such competent authorities are Department for Fishery of the Ministry of Agricultural Policy (fish), State Committee for Forestry (hunting species), and Ministry of Ecology and Natural Resources of Ukraine (any other animals). In case of large use of animals, limits for capturing/killing are foreseen. Such limits is endorsed only if they are scientifically justified.

Special use of animals listed in the Red Data Book of Ukraine including 12 species of bats for scientific or breeding (selection) purposes is allowed only in the framework of state scientific programmes endorsed by government as appropriate.

By Order of the Deputy Minister of Ecology and Natural Resources, the Scientific and Advisory Council on Bats has been set up at the Ministry and action plan to implement EUROBATS has been worked out.

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

In Ukraine there are following protected areas (the Natural-Reserve Fund) on the conservation of wildlife including roost sites and habitats of bats.

Western Ukraine: Carpathian Biosphere Reserve (incl. Cave Druzhba), Carpathian National Park (incl. the Yamnetski Caves), National Park "Sinevir", Natural Reserve "Roztochchia";

Northern Ukraine (Forest Zone): Shatsk National Park, Polisky Natural Reserve;

Central Podillia (Forest-Steppe zone): National Park Podilslivka, Medobory Nature Reserve; Monuments of Nature: Caves Mlynki, Verteba, Kryshtaleva, and Slavka;

Central Ukraine (Forest-steppe zone): Dnipro-Oril Natural Reserve, Kanivsky Natural Reserve;

Eastern Ukraine (Steppe zone): Lugansk Natural Reserve; National Park Sviati Gory;

Southern Ukraine: Black-Sea Biosphere Reserve, Azovo-Syvash National Park;

Crimea: Crimean Nature Reserve, Karadagh Nature Reserve, Yalta Mountain-Forest Nature Reserve.

Ukrainian specialists identified some other sites, which are important to the conservation of bats. Now we are working with measures for their protection. So, in 2001 during expedition in the Crimea, specialists of UCEBA together with Crimean zoologists found some underground site, where about 3000

specimens of bats are breeding. Just *Rhinolophus hipposideros* has an abundance more than 500 specimen, that is equal to estimation of its total population in Ukraine (!).

In 2002 UCEBA will carried out special project entitled “Inventory of underground habitats in Ukraine and elaboration of recommendations to their protection” (PI is Dr. Zagorodniuk). This project was starter in the end of 2001, and its results will be presented in the next Report. Data on animal communities of about 50 to 70 main caves of Ukraine will be summarized and analysed in special volume, that will be the first such edition in Ukraine and former Soviet Union in a whole.

8. Consideration given to habitats which are important to bats

Ukraine has a wide variety of landscape habitats in the following ecological communities that occur in Ukraine: European broad-leaf forests, the northern taiga, the interior steppe, semiarid stands and marshes near the Black and Azov Seas, the seaside littoral estuaries of some large rivers (such as the Danube, the Dnipro and the Pivdenny Boogh), and the sub-tropical pine and chaparral of the Crimea. The forest sector of Ukraine is occupied 14 per cent of total land area of the country, arable lands are about 55 per cent (total territory of Ukraine is 603,5 thousand sq. km, and human population is about 51 billions).

Since 1998, special investigations of the sacral, ancient and modern architecture as key sites in quasi-natural ecosystems have been started in Lviv, Podillia and Kyiv. In 2000–2001 such investigations were carried out in Kyiv, Kamenets-Podilski, Lviv, Kharkiv, Lugansk, Askania-Nova, Chornobyl, Nizhyn, Kaniv, and some other cities.

Because of majority of bat species in Ukraine has long or local seasonal migrations, two different strategies for the protection of their summer and winter roosts cites can be used. For example, bats use Podillian caves as winter roost sites, and it should be protected accordingly as up to now these caves have protection status as geological objects only.

In 2001 UCEBA propose and investigate the special project “Scientific and technical approaches for conservation of bat populations in Ukraine” (principal investigator was Dr. I. Zagorodniuk). As result of this project, special CD (unfortunately, just one copy) with unique information on the different forms of activities in bat protection and with analysis of possibilities to realize such activities in Ukraine was prepared. This CD, prepared in HTML-format, contains the library of photos and graphs illustrated models of bat-boxes, special gates for caves and other sites of bat concentration, annotated list of possible activities in study of bats, list of underground key-sites etc.

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

Since the time of Ukraine's involvement in the activities in the framework of the Agreement on the Conservation of Bats in Europe, a number of public awareness actions with regards to bat conservation have been done.

Each September, an agenda of the Theriological School (Annual meeting of the Ukrainian Theriological Society) includes special session devoted to the action “European Bat Night in Ukraine”, that includes presentations of slides and photos, new editions, films, scientific findings, student's projects etc. In 2000 (during conference “Bats of Carpathians”) a competition of children's pictures devoted to bats was conducted. A copy of Red Data Book of Ukraine and some other presents awarded winners.

In 1999, the Rehabilitation Centre for Bats was organised in the Kyiv Zoo as a result of activists of the Ukrainian Centre for Bats Protection. Some information on this centre is available in the Theriological

Bulletin “Novitates Theriologicae” (No 1, 2000). Special activity of the Centre was addressed to secondary schools located in Kyiv, and there was a special letter to all the teachers of biology as well as to pupils, encouraging to protect bats. During 2000–2001, about 50 specimens of 10 bat species were reserved in this Centre. Zoologists of the Centre (V. Tyschenko, V. Negoda, and O. Burdo) obtained a large experience and practice in help the bats, and have a good possibility to distribute special knowledge among amateurs of nature.

In 1998 as electronic edition, in 1999 as pre-print and now as a final edition, a Guidline on Cave Bats has been prepared by Dr. I. Zagorodniuk for speleologists (for the members of the Biospeleology section of the Ukrainian Speleological Association, their headquarter is located in Kyiv). Final version was prepared in 1999 together with colleagues from “Centrum Informacji Chiropterologicnej” Prof. B. Woloszyn and T. Postawa. During two next years (2000–2001), about 400 copies of this “Key” were distributed (free) for zoologists, speleologists, and amateurs.

In 2000–2001 UCEBA due to support of Ukrainian Ministry of Environment and the Netherlands Embassy organise, prepare, edited and published three special bat issues (edited by Dr. Igor Zagorodniuk). First of them is special (pars 2) issue of the Bulletin “Novitates Theriologicae” (about 60 pp.), that was dedicate to materials of the Bat-detector Workshop in Ukraine. It includes about 10 important articles; among them there are two special publications of Dr. Herman Limpens. Second issue is “Bats of Ukraine and adjacent countries: a guide for field investigation” (about 120 pp.), that is in press now. This issue will be distributed among zoologists during 9th Theriological school-seminar that will take place in Lviv, in October of 2002. And the third issue is “Migration Status of Bats in Ukraine” (2001, 172 pp.). In this issue all available data ob bat migration in Ukraine were collected and analysed. Summary of this issue is placed in the end of this Report in **Annex 5**.

10. Responsible bodies

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

Department of Biological Resources
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Contact person 2:
Dr. Igor Zagorodniuk
Head of UCEBA, expert of Ministry
Tel.: +38 (044) 266 3380.
E-mail: zoozag@yahoo.com.

The group of experts of the Ministry in this field:

Prof. Mikhailo Kovtun – Director of the Department of Evolution Morphology at the Institute of Zoology of the National Academy of Sciences of Ukraine (Kyiv);

Prof. Yuliy Krochko – senior expert, the chief of zoological faculty at The State University of Uzhgorod: 294000 Zakarpatska obl., Uzhgorod, vul. A. Voloshyna, 4, University, Department of zoology;

Mr. Vasyl Pokynchereda – scientific specialist of the Carpathian Biosphere Reserve (Rakhiv).

Mr. Volodymyr Tyshchenko (secretary of the group) – scientific specialist of the Kyiv Zoo (Kyiv). E-mail: admin@zoo.freenet.kiev.ua;

Dr. Igor Zagorodniuk (chief of the group) – senior scientist of the Department of population ecology and biogeography at the Institute of Zoology of the National Academy of Sciences of Ukraine (Kyiv); 02105, Kyiv-105, P. O. Box 11. E-mail: zoomus@zoomus.freenet.kiev.ua;

11. Additional action undertaken to safeguard populations of bats

Prof. Yu.Krochko has elaborated some measures for protection of bats species in underground refuges and for their attraction to broad-leaf forests and imitation refuges. Special actions deals with making of artificial roosts (first of all the bat-boxes) firstly were organised by the Ecocentre Delta in Danube delta region (Odessa oblast, 1999, Mr. Olexandr Fedorchenko) and by Ukrainian Bird Ringing Centre in Eastern Polissia (Sumy oblast, 1999/2000, Dr. Glib Gavrys).

In 2001, group of Lviv chiropterologists (Drs. Taras Bashta, Igor Dykyj and Evgenija Srebrodolska) realised the project on the preparing and distribution of 400 bat-boxes in the Lviv province of Ukraine (most western part of Ukraine). Propositions for Ministry of Environment of Ukraine to elaborate some technical approaches for attraction and preservation of both dendrophile and speleobiontic bats were proposed in the report of the project of UCEBA mentioned above.

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

Strict co-ordination of the different activities in bat investigations in Ukraine is going to be improved. Since the end of 1999 the Ukrainian Centre for Bat Protection starts the preparing of a special bulletin on bats, distributed as special issues of the Bulletin “Novitates Theriologicae”. So, in the first issue the following information is placed: report about “European bat night ’99 in Ukraine”, information about Ukrainian Information Centre for Bat Ringing, information about Rehabilitation Centre for Bats at Kyiv Zoo, Bibliography on bats in Ukraine '99. Working materials of the Detector workshop in Ukraine were published in special issue of the Bulletin in 2000 (see: **Annex 5**).

The results of bat investigations carried out by Ukrainian scientists are reflected in publications in the following topics: general and regional reviews of bat fauna, distribution of bats in Ukraine; bat ecology including ringing and study on its migration; morphology and echolocation. These publications are listed in the **Annex 5**.

Since 1999, we are continuing a developing of the National Action Plan for the conservation of bats. This programme consists of the following chapters:

- i) identification of roost sites and habitats of bats;
- ii) working up of approaches and measures for bat conservation;
- iii) development of legal measures for conservation of bats;
- iv) creation of network for monitoring and activities to promote the conservation of bats;
- v) public measures for the awareness of the importance of the conservation of bats;
- vi) international co-operation in this field of the conservation of wildlife.

13. Consideration being given to the potential effects of pesticides on bats

Consideration must be given to the potential effects of pesticides on bats, and efforts to replace timber treatment chemicals, which are highly toxic to bats.

Investigations in this field have not yet being carried out but it is foreseen in near future.

14. Difficulties in the field of the conservation of bats in Ukraine

Bats have not been studied very extensively in Ukraine, and the knowledge about the bats is therefore limited. Main problems of research in Ukraine are lack of nets, ultrasonic detectors and other special equipment, insufficient funding.

In general, there has been an increased interest in Ukraine recently. But, mainly the students express this new activity, during their working with the diploma projects. Lack of financial resources for such investigations in Ukraine from the state are resulted in lack of specialists who continuously studied the bats and related problems of their protection.

Public awareness activities with regards to bat conservation should be extended as widely as possible and involvement of volunteers to carry out bat census etc.

Map of key bat habitats should be compiled and send to the regional nature conservation authorities to be taking into account in their work.

D. Functioning of the Agreement

The Ministry of Ecology and Natural Resources takes part in implementation of the Agreement on the Conservation of Bats in Europe.

Co-operation with other Range States. Our experts have some connection with specialists from all the neighbouring countries: Poland, Slovak Republic, Hungary, Belorussia, Moldova and Russia, as well as Czech Republic, and Bulgaria. The greatest co-operation we have with the Polish Chiropterological Centre, and Prof. Bronislaw Woloszyn helps us in all our initiatives, and he gives us a large information support. Some activities and publications on bat issues made possible under kind support of the Royal Netherlands Embassy.

ANNEX 1.

Species specific information about bats of Ukraine

First version by Ju. Krochko in 1995,
update by I. Zagorodniuk and V. Tyshchenko in 2000,
update and revised by Zagorodniuk in 2002.

Abbreviation “*RDBU*” means “Red Data Book of Ukraine” (actual edition was published in 1994).
Two species of *Rhinolophus* (*euryle* & *mehelyi*) known in Ukraine after one doubtful record and not mentioned in this Annex.

Species of the genera Rhinolophus and Miniopterus

1. *Rhinolophus ferrumequinum* Schreber.

Population status: native; settled; very rare, generally in foothills (to level 600–650 m) of the Carpathian and the Crimean Mountains; endangered.

Protection status according to the RDBU: yes.

Migration status: settled, characterized for large caves.

Roost sites: underground.

Population trends: decline as a result of destruction of underground sites.

2. *Rhinolophus hipposideros* Bechstein

Population status: native; settled; spread throughout of Ukraine but rare in Ukraine.

Protection status: endangered, according to the RDBU: yes.

Migration status: settled, just local migrations to winter quarters.

Roost sites: mostly underground.

Population trends: decline because of roosts and habitats loss and disturbance by people.

3. *Miniopterus schreibersi* Kuhl

Population status: native; generally of passage; very rare (only in Carpathian region).

Protection status: endangered and abundant and, probably, it is extinct in Ukraine. According to the RDBU has no protected category.

Migration status: mostly as migrant species, but some colonies or they parts was settled.

Roost sites: caves.

Population trends: decline.

Species of the genus Myotis (sensu lato)

4. *Myotis blythii* (Tomes, 1857)

Population status: native; settled; locally distributed but fairly common only in the Carpathian and the Crimean Mountains.

Protection status: not abundant, according to the RDBU has no protected categories.

Migration status: migrant species, just a little part of summer populations is in Ukraine.

Roost sites: all types of underground roosts, some niches in rocks *etc.*

Population trends: increasing following by the colonisation of other areas.

5. *Myotis myotis* (Borkhausen, 1797)

Population status: native; generally settled; widespread in the western and southern Ukraine (in the Carpathian Mountains up to 850 m above sea level).

Protection status: not abundant, according to the RDBU has no protected categories.

Migration status: settled and, probably, part of each populations is migrant.

Roost sites: underground and “over-ground” refuges.

Population trends: numbers stabilised.

6. *Myotis bechsteinii* Kuhl

Population status: native; settled; very rare in broad-leaved and mixed forests generally nearby mountains, absent elsewhere; endangered.

Protection status: very rare, according to the RDBU has protected categories.

Migration status: settled, and no data on the migrant activity in Ukraine are known.

Roost sites: mainly in hollows.

Population trends: invariable.

7. *Myotis nattereri* Kuhl

Population status: native; settled but perhaps locally of passage; locally distributed, generally in broad-leaves.

Protection status: endangered, was included in the RDBU.

Migration status: settled, and no data on the migrant activity in Ukraine are known.

Roost sites: roost trees, lofts of buildings.

Population trends: constant.

8. *Myotis emarginatus* (Geoffroy, 1806)

Population status: native; settled but in Crimea perhaps of passage; locally distributed (western Ukraine and Crimea).

Protection status: endangered, was included in the RDBU.

Migration status: settled. And no data on the migrant activity in Ukraine are known.

Roost sites: underground, caves, slits and clefts in rocks, lofts of buildings.

Population trends: invariable.

9. *Myotis dasycneme* Boie

Population status: native; generally of passage; locally distributed in western, northern and central Ukraine.

Protection status: endangered, according to the RDBU has protected categories.

Migration status: settled, and no data on the migrant activity in Ukraine are known.

Roost sites: lofts of buildings and hollows nearby reservoirs.

Population trends: decline because of reduction of roosts and habitats.

10. *Myotis daubentonii* Kuhl

Population status: native; common throughout much of Ukraine but absent on the Crimea peninsula.

Protection status: according to the RDBU has no protected category.

Migration status: settled, and made just local migrations for the search of useful cavities.

Roost sites: all sorts of roosts nearby reservoirs.

Population trends: compactness of population is continual.

11. *Myotis brandtii* Eversmann

Population status: native; rare, known from the Carpathian only.

Protection status: very rare, according to the RDBU has no protected categories.

Migration status: settled (deficit of data).

Roost sites: unknown; the only record in the cave in winter.

Population trends: unknown.

12. *Myotis mystacinus* Kuhl

Population status: native; more numerous in southern Ukraine, but absent in central and northern Ukraine.

Protection status: common species, according to the RDBU (1994) not present.

Migration status: settled, but all data are old.

Roost sites: roost trees.

Population trends: tend to decrease as a result of felling of trees.

Species of the genera *Plecotus* and *Barbastella*

13. *Plecotus auritus* L.

Population status: native; settled; common almost throughout the Ukraine.

Protection status: abundant, according to the RDBU has no protected categories.

Migration status: settled, and some specimens demonstrate local seasonal migrations.

Roost sites: all sorts of roosts.

Population trends: constant.

14. *Plecotus austriacus* Fischer

Population status: native; spread in the Carpathian Region, in mountains up to 2000 m, absent elsewhere.

Protection status: rare, according to the RDBU has no protected categories.

Migration status: settled, sometimes it made short local migrations.

Roost sites: all sorts of roosts.

Population trends: constant.

15. *Barbastella barbastellus* (Schreber, 1774)

Population status: native; settled; locally distributed on the right Dnipro river and Peninsula Crimea.

Protection status: not abundant, according to the RDBU has protected categories.

Migration status: settled and not demonstrate long-distant seasonal migrations.

Roost sites: undergrounds, caves, slits and clefts in rocks, roost trees, lofts of buildings mainly in woodland.

Population trends: unimportant decreasing because of reduction of roosts.

Species of the genus Nyctalus**16. *Nyctalus leisleri* Kuhl**

Population status: native; migratory; spread in broadleaf forests of Ukraine but rare; endangered.

Protection status: not abundant, according to the RDBU has protected categories.

Migration status: long-distant migrant species.

Roost sites: hollows of trees.

Population trends: variable depending on conditions of wintering (outside Ukraine).

17. *Nyctalus noctula* Schreber

Population status: native; generally of passage; common in broadleaves of Ukraine, in mountains up to 2000 m.

Protection status: abundant, according to the RDBU has no protected categories.

Migration status: long-distant migrant species.

Roost sites: hollows of trees.

Population trends: variable depending on conditions of hibernation (outside Ukraine).

18. *Nyctalus lasiopterus* Schreber.

Population status: native; migratory; rare (generally in broadleaf forests); endangered.

Protection status: rare, according to the RDBU has protected categories.

Migration status: long-distant migrant species.

Roost sites: hollows of trees.

Population trends: variable depending on conditions of hibernation (outside Ukraine).

Species of the genera Pipistrellus and Hypsugo

19. *Pipistrellus kuhlii* (Kuhl, 1817)

Population status: native; some populations settled and some of passage; very rare in southern Ukraine and Crimea, absent elsewhere.

Protection status: abundant, according to the RDBU has protected categories.

Migration status: invasion in main part of Ukraine.

Roost sites: slits and clefts in rocks and buildings.

Population trends: continual; colonisation a north.

20. *Pipistrellus nathusii* (Keyserling & Blasius, 1839)

Population status: native; migratory; fairly common in forest and forest-steppe zones and Crimea.

Protection status: abundant, according to the RDBU has no protected categories.

Migration status: long-distant migrant species.

Roost sites: holes of trees and buildings.

Population trends: constant.

21. *Pipistrellus pipistrellus* (Schreber, 1774)

Population status: native; some populations settled and some of passage; common throughout much part of Ukraine.

Protection status: abundant, according to the RDBU has no protected categories.

Migration status: residential, some populations are partly settled.

Roost sites: hollows of trees and buildings.

Population trends: stabilised.

22. *Pipistrellus pygmaeus* (Leach, 1825)

Population status: native; some populations settled and some of passage; records known from forest regions in North and East of Ukraine.

Protection status: not abundant, according to the RDBU has no protected categories.

Migration status: probably, it is a long-distance migrant.

Roost sites: hollows of trees and buildings.

Population trends: stabilised.

23. *Hypsugo savii* (Bonaparte, 1837)

Population status: native; very rare in southern Crimea, absent elsewhere.

Protection status: endangered, very rare, according to the RDBU has protected categories.

Migration status: settled species (deficit of data).

Roost sites: lofts of buildings and clefts in rocks.

Population trends: numbers of populations are constantly low.

Species of the genera Eptesicus and Vespertilio

24. *Eptesicus nilssonii* Keys. et Blas.

Population status: native; settled; locally distributed in western, central and eastern Ukraine (Carpathian Mountains to level 1500 m and central Ukraine); endangered.

Protection status: rare, according to the RDBU has no protected categories.

Migration status: settled in Ukraine.

Roost sites: lofts of buildings, caves, hollow of trees, and clefts in rocks.

Population trends: decline.

25. *Eptesicus serotinus* Schreber

Population status: native; settled; common throughout much of Ukraine.

Protection status: abundant, according to the RDBU has no protected categories.

Migration status: settled, most common bat species in cities and, second, this species demonstrates clear tendency to form the large urbo-populations.

Roost sites: buildings and undergrounds.

Population trends: decline because of roosts loss.

26. *Vespertilio murinus* L.

Population status: native; migratory; widespread throughout of Ukraine (in Carpathian Mountains up to 2000 m), more numerous nearby Azov Sea.

Protection status: not abundant, according to the RDBU has no protected categories.

Migration status: Migration status: long-distant migrant species.

Roost sites: different sorts of roosts.

Population trend: numbers of populations are stable but for most areas are low.

ANNEX 3.

Geography of bat communities in Ukraine

Geographical distribution of cave bat communities in Ukraine

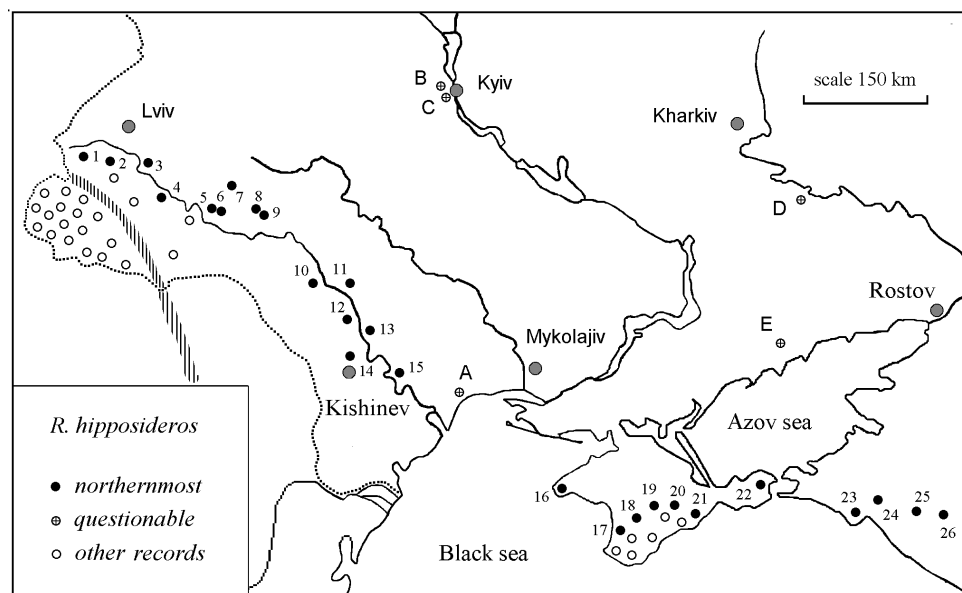


Figure 1. Distribution of the underground roost marked by the records (both summer and winter) of species *Rhinolophus hipposideros* (after Zagorodniuk 1999).

Species complexity of bat communities in Ukraine

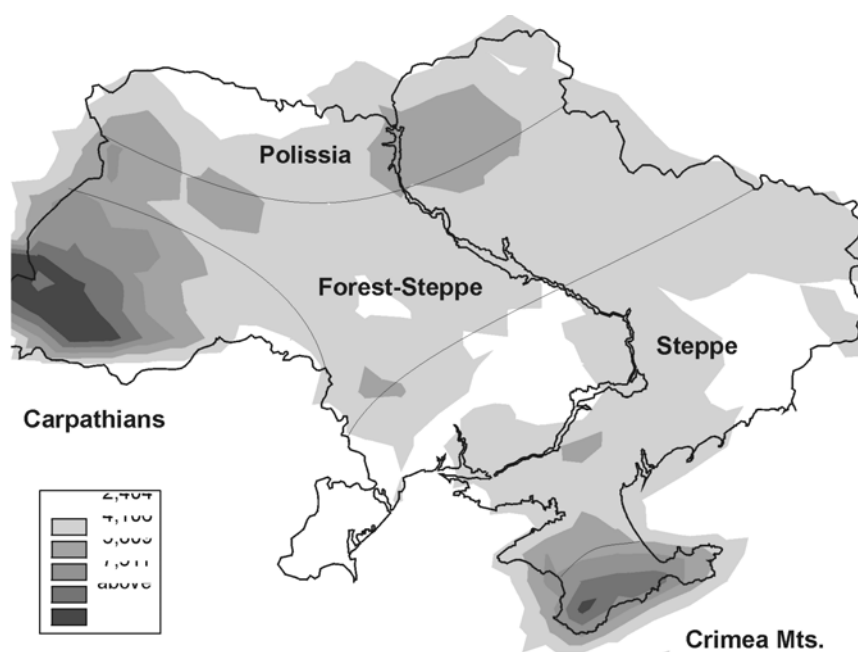


Figure 2. Geographical changes of bat species number in Ukraine (after Zagorodniuk 2001).

ANNEX 4.

Bats in the collections of zoological museums of Ukraine

First version by I. Zagorodniuk and V. Tkach in 1996,
update by Zagorodniuk in 1998;
update and revised by Zagorodniuk in 2002.

Table 3. Number of known bat specimens from Ukraine based on the results of investigations of 3 biggest zoological museums (after Zagorodniuk, 1998, with corrections in 2001)

Taxa in Ukrainian fauna		Number in collection ***			Total number		Protected status*
Genus	Species	LNHM	ZMKU	UMNH	Sum, n	Portion, %	RDBU 1994
<i>Rhinolophus</i>	<i>ferrumequinum</i>	17	17	141	175	12,5	2
—	<i>hipposideros</i>	33	3	53	89	6,4	2
<i>Miniopterus</i>	<i>schreibersii</i>	2	36	58	96	6,9	2
<i>Myotis</i>	<i>blythii</i>	40	75	95	210	15,0	—
—	<i>myotis</i>	22	11	47	80	5,7	—
<i>Leuconoe</i>	<i>bechsteinii</i>	3	1	1	5	0,4	3
—	<i>nattereri</i>	1	0	2	3	0,2	3
—	<i>emarginatus</i>	0	3	12	15	1,1	3
—	<i>dasycneme</i>	0	0	2	2	0,1	3
—	<i>daubentonii</i>	13	4	26	43	3,1	—
—	<i>brandtii</i>	0	0	1	1	0,1	—
—	<i>mystacinus</i>	5	0	19	24	1,7	—
<i>Plecotus</i>	<i>auritus</i>	19	7	21	47	3,4	—
—	<i>austriacus</i>	13	0	14	27	1,9	—
<i>Barbastella</i>	<i>barbastellus</i>	52	8	17	77	5,5	3
<i>Nyctalus</i>	<i>leisleri</i>	0	1	24	25	1,8	3
—	<i>noctula</i>	36	79	112	227	16,2	—
—	<i>lasipterus</i>	1	1	4	6	0,4	3
<i>Pipistrellus</i>	<i>kuhlii</i>	0	0	4	4	0,3	3
—	<i>nathusii</i>	6	16	49	71	5,1	—
—	<i>pipistrellus</i>	2	2	28	32	2,9	—
<i>Hypsugo</i>	<i>savii</i>	0	0	1	1	0,1	3
<i>Eptesicus</i>	<i>nilssonii</i>	0	0	2	2	0,1	—
—	<i>serotinus</i>	40	30	51	121	8,6	—
<i>Vespertilio</i>	<i>murinus</i>	2	2	13	17	1,2	—
Total		307	296	797	1400	100,0	12

* RDBU – status after the last (second) edition of the “Red Data Book of Ukraine” (1994).

** The only specimen *Myotis "ikonnikovi"* (UMNH) probably is identical to *M. mystacinus*.

*** Collections are: LNHM — State Natural-History Museum in Lviv, ZMKU — Zoological Museum of Kyiv National University; UMNH — National Museum of Natural History of Ukraine.

ANNEX 5.

Publications in the fields on conservation and biology of bats

The most of published information arrears in the few special issue as: chapters in the book “*European bat night '98 in Ukraine*” (Kyiv, 1998), species descriptions in the book “*Mammals of Ukraine, protected by the Bern Convention*” (Kyiv, 1999), and so on. During last decade, Ukrainian Centre of Bat Protection (UCEBA) prepared and published 10 special issues deal with bat fauna of Ukraine.

Special volumes

A field key to bats of Ukraine. By V. F. Pokynchereda. — Rakhiv, 1997. — 24 pp.

European bat night '98 in Ukraine. Edited by I. Zagorodniuk. Kyiv, 1998. — 198 pp. (Proceedings of the Theriological School, issue 1).

A field key to bats hibernated in the caves of Ukraine. By I. Zagorodniuk. — Kyiv: Intern. Solomon Univ., 1999. — 35 pp.

Order bats — Chiroptera. In: *Mammals of Ukraine protected by the Bern convention.* Edited by I. Zagorodniuk. — Kyiv, 1999. — P. 23–108. (Proceedings of the Theriological School, issue 2).

A field key to bats from the underground roosts of Eastern Europe. Zagorodniuk I., Postawa T., Woloszyn B. W. Krakow–Kyiv: Platan, 1999. — 43 pp.

Bat-detector workshop in Ukraine 2000. Edited by I. Zagorodniuk. Kyiv, 2000. — 56 pp. (Novitates Theriologicae. Volume 2).

Abstracts to III International Conference "Bats of Carpathian region" Rakhiv, 2000. — 22 pp.

Bats of Ukraine and adjacent countries: a guide for field investigations. Zagorodniuk I., Godlevska L., Tyshchenko V., Petrushenko Ya. Kyiv, 2001. — [102] pp. (Proceedings of the Theriological School, volume 3). (This issue).

Zagorodniuk I., Godlevska L., Tyshchenko V., Petrushenko Ya. *Bats of Ukraine and adjacent countries: a guide for field investigations.* — Kyiv, 2001, 108 (?) pp. — (Proceedings of the Theriological School, volume 3). — (in press).

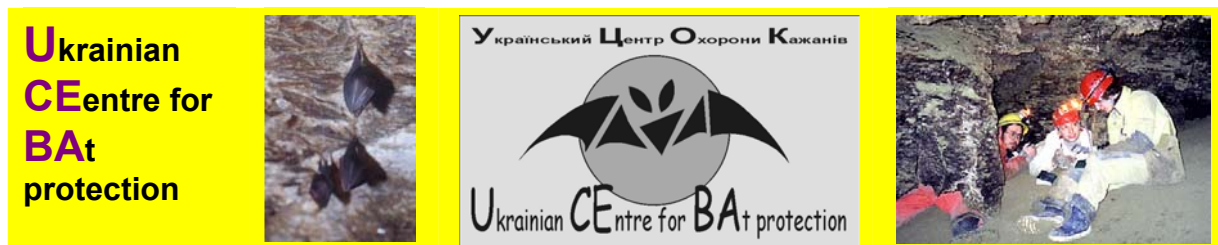
Migration Status of Bats in Ukraine / Edited by I. Zagorodniuk. Kyiv, Ukrainian Theriological Society, 2001. 172 pp. — (Novitates Theriologicae. Pars 6).

(Summary of last edition. *Special issue of the Ukrainian Theriological Bulletin deals with investigations of migration status of bats. History and present state of investigations and methods of investigations are analysed, including comparison of seasonal aspects of fauna and of species geographical ranges, individual marking of animals, analysis of phenology etc. Descriptions of migration status of taxonomic and ecological groups are given. Based on results of questionnaires of colleagues, detailed descriptions of regional bat faunas are presented. Detail analysis of phenological data obtained from the collections of zoological museums is given. General review of migration status of the bats from Ukraine are prepared, including the rating of bat species by their migrant activity, analysis of migrant ways and some other peculiarities).*

ANNEX 6.

Web-site of the Ukrainian Centre for Bat Protection (UCEBA)

Here, just short information about UCEBA web-site is given. This site will be placed in May 2002 in the site of the Institute of Zoology of Ukrainian Acad. Sci. (Kyiv) and in site of CIC (Krakow).



General information. History of UCEBA since 1995, main goals and current initiatives. ... UCEBA structure and its nodes, memberships, working groups. ...

Central node. UCEBA central node works on the base of the Department of Ecology of Institute of Zoology NASU, where coordinators of special UCEBA networks are working: Igor Zagorodniuk, Yaroslav Petrushenko, and Lena Godlevska. Members of the central node also are Volodymyr Domashlinets (Ministry of Environment) and Volodymyr Tyschenko (Kyiv Zoo). Tasks of the Central node: preparing of UCEBA general actions (school-seminars, bat-nights), holding of current documentation (database on bats' banding, collections, caves, national reports), holding of the library (including electronic publications and electronic versions of "hard" publications), coordination (information exchange, bullet preparing), publication initiatives (guides, keys, booklets, leaflets, other).

Regional nodes. Names and addresses of UCEBA regional coordinators in Lugansk, Lviv, Simferopol, Nizhyn, Askania-Nova, Kharkiv, Uzhgorod, Kaniv.

Informational centre. This is a main form of activity of the Central node. Here there are: (1) the most of special publications on chiropterafauna of Ukraine and adjacent countries as hard copies and electronic versions, (2) working materials of UCEBA, including National reports; (3) EUROBATs documents; (4) collection of special articles on bats; (5) electronic tables on distribution and banding of bats, known collected specimens. Among functions of the node there are also preparing of special issues of "*Novitates Theriologicae*" and publications of the keys and guides. Here it's possible to get information on methods of bats' study and conservation, bats' banding, identification of bats' species in the field and in laboratories. Coordinator: [Igor Zagorodniuk](mailto:zoozag@yahoo.com) (zoozag@yahoo.com).

Speleobiological group. An aim of this activity direction is studying of cave bats' communities and their monitoring. ... Coordinator: [Yaroslav Petrushenko](mailto:speleobat@mail.ru) (speleobat@mail.ru).

Bat Detector network. The network is presented by 7 regional nodes. Coordinator: [Lena Godlevska](mailto:dc@isppe.freenet.kiev.ua) (dc@isppe.freenet.kiev.ua).

Centre for bats' rehabilitation. The Centre was based at [Kyiv Zoo](#) in the autumn of 1999. ... Coordinator: [Volodymyr Tyschenko](mailto:kazhan@gomail.com.ua) (kazhan@gomail.com.ua).

UCEBA publications. List of publications, presented above in **Annex 5**.