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: 1996 – 1999

Date of the report: April 20, 2000

Kyiv, 2000

Content

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: 14 May 1999

Entry into force: 30 October 1999

Date of the report: *April 2000*

Period Covered: *1996–1999*

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

Bioresources Department

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B. Status of Bats in Ukraine

1. Summary Details of Resident Species

There are 24 resident species of bats in Ukraine. Among them, 12 species are rare end endangered, and were included into the Red Data Book of Ukraine (1994).

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 a 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** (summary table) and **Annex 2** (annotated checklist of bat species).

2. Status and Trends

There are tendencies to increasing of taxonomic richness and species abundance southwards and westwards where are 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 an 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 the period outlined in the report, one bat species became extinct in Ukraine (*Miniopterus schreibersi*), and one species had been recorded as new for Ukraine (*Myotis brandti*), 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 last (XX) century as it is given in **Annex 1** (summary table) and **Annex 2** (annotated checklist 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:

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 an 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 last years for the horseshoe bat (*Rhinolophus* species) and lesser mouse-eared bat (*Myotis* ex gr. "*mystacinus-daubentonii-brandtii*").

Data on species abundance in zoological collection are presented in **Annex 4**. So, the first 10 bat species having a relative abundance up to 5 % in the collections among all samples studied are: *Nyctalus noctula* – 15,8, *Myotis blythi* – 14,6, *Rhinolophus ferrumequinum* – 13,1, *Eptesicus serotinus* – 9,0, *Miniopterus schreibersi* – 6,8, *Rhinolophus hipposideros* – 6,1, *Barbastella barbastellus* – 5,7, *Myotis myotis* – 5,5, *Plecotus auritus* (s. l.) – 4,8, *Pipistrellus pipistrellus* – 4,7.

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 "Synevir", Natural Reserve "Roztochchia";

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

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

Central Ukraine (Forest-steppe zone): Dniprovsko-Orilsky Natural Reserve, Kanivsky Natural Reserve;

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

Southern Ukraine: Black-Sea Biospherical Reserve, Azovo-Syvashsky National Park;

Crimea: Crimean Natural Reserve, Karadazky Natural Reserve, Yaltynsky Mountain-Forest Natural Reserve.

Ukrainian specialists identified some other sites which are important to the conservation of bats. Now we are working with measures for their protection.

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 Mln.).

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.

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, Podillian caves are used by bats as winter roost sites, and it should be protected accordingly as up to now these caves have protection status as geological objects only.

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 has 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 1998 a competition of children's pictures devoted to bats was conducted. Winners were awarded by a copy of Red Data Book of Ukraine.

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 Biospeloelogy section of the Ukrainian Speleological Association, their headquarter is located in Kyiv). Final version was prepared together with colleagues from Polish “Centrum Informacii Chiropterologicnej” (CIC) Prof. W. Woloszyn and T. Postawa.

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 and pupils, encouraging to protect bats.

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.

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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 bio-geography 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) are organised by the Ecocentre Delta in Danube delta region (Odessa oblast, 1999, Mr. Olexandr Fedorchenko) and by Bird Ringing Centre in Eastern Polissia (Sumy oblast, 1999/2000, Dr. Glib Gavrys).

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, that is distributed as part 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, Information about Detector workshop in Ukraine in 2000 etc.

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**.

Now we are continuing a developing of the National Action Plan for the conservation of bats. This programme consists of:

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 being 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, this new activity are expressed mainly by the students 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 the 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.

Distribution and status of bats in Ukraine (table)

(by Ju. Krochko, 1995; updated by I. Zagorodniuk and V. Pokynchereda, 2000)

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

Name of species	Distribution	Status	Estimated trend	Special protected
Rhinolophus ferrumequinum	restricted	rare	–	RDBU
Rhinolophus hipposideros	widespread	rare	o	RDBU
Myotis bechsteini	restricted	rare	o	RDBU
Myotis blythi	restricted	scarce	+/o	no
Myotis myotis	widespread	frequent	+/o	no
Myotis dasycneme	restricted	rare	–	RDBU
Myotis daubentoni	widespread	common	o	no
Myotis nattereri	restricted	rare	o	RDBU
Myotis emarginatus	restricted	rare	o	RDBU
Myotis mustacinus	widespread	common	–	no
Miniopterus schreibersi	restricted	rare	–	RDBU
Plecotus auritus	widespread	common	o	no
Plecotus austriacus	restricted	scarce	o	no
Barbastella barbastellus	restricted	rare	–	RDBU
Nyctalus noctula	restricted	frequent	–	no
Nyctalus leisleri	restricted	rare	o	RDBU
Nyctalus lasiopterus	restricted	rare	–	RDBU
Pipistellus pipistrellus	widespread	common	o	no
Pipistellus nathusii	restricted	frequent	o	no
Pipistellus kuhli	restricted	common	+	RDBU
Pipistellus savii	restricted	rare	o	RDBU
Eptesicus nilssoni	restricted	scarce	–	no
Eptesicus serotinus	widespread	common	o	no
Vespertilio murinus	widespread	scarce	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.

ANNEX 2.

Species specific information about bats of Ukraine

(by Ju. Krochko, 1995, update by I. Zagorodniuk and V. Tyshchenko, 2000)

Abbreviation "*RDBU*" means "Red Data Book of Ukraine" (1994).

Species of the genera Rhinolophus and Miniopterus

1. *Rhinolophus ferrumequinum* Schreb.

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.

Roost sites: underground.

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

***2. Rhinolophus hipposideros* Bechstein**

Status: native; settled; spread throughout of Ukraine but rare in Ukraine; endangered.

Protection status according to the RDBU: yes.

Roost sites: mostly underground.

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

3. *Miniopterus schreibersi* Kuhl

Status: native; generally of passage; very rare (only in Carpathian region); endangered.

Protection status according to the RDBU: yes.

Roost sites: caves.

Population trends: decline.

Species of the genus Myotis (sensu lato)

4. *Myotis myotis* Borkhausen

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

Protection status according to the RDBU: no.

Roost sites: underground and overground refuges.

Population trends: numbers stabilised.

5. *Myotis blythi* Monti.

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

Protection status according to the RDBU: no.

Roost sites: all types of roosts.

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

6. *Myotis bechsteini* Kuhl

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

Protection status according to the RDBU: yes.

Roost sites: mainly in hollows.

Population trends: invariable.

7. *Myotis nattereri* Kuhl

Status: native; settled but perhaps locally of passage; locally distributed, generally in broadleaves; endangered.

Protection status according to the RDBU: yes.

Roost sites: roost trees, lofts of buildings.

Population trends: constant.

8. *Myotis dasycneme* Boie

Status: native; generally of passage; locally distributed only in western, northern and central Ukraine; endangered.

Protection status according to the RDBU: yes.

Roost sites: lofts of buildings and hollows nearby reservoirs.

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

9. *Myotis daubentoni* Kuhl

Status: native; settled; common throughout much of Ukraine but absent on the Crimea peninsula.

Protection status according to the RDBU: no.

Roost sites: all sorts of roosts nearby reservoirs.

Population trends: compactness of population is continual.

10. *Myotis brandtii* Eversmann

Status: native; rare, known from the Carpathian only.

Protection status according to the RDBU: no.

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

Population trends: unknown.

11. *Myotis mystacinus* Kuhl

Status: native; common, more numerous in southern Ukraine, but absent in central and northern Ukraine.

Protection status according to the RDBU: no.

Roost sites: roost trees.

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

12. *Myotis emarginatus* Geoff.

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

Protection status according to the RDBU: yes.

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

Population trends: invariable.

Species of the genera Plecotus and Barbastella

13. *Plecotus auritus* L.

Status: native; settled; common almost throughout the Ukraine.

Protection status according to the RDBU: no.

Roost sites: all sorts of roosts.
Population trends: constant.

14. *Plecotus austriacus* Fischer

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

Protection status according to the RDBU: no.

Roost sites: all sorts of roosts.

Population trends: constant.

15. *Barbastella barbastellus* Schr.

Status: native; settled; locally distributed on the right Dnipro river and Peninsula Crimea; endangered.

Protection status according to the RDBU: yes.

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

Population trends: unimportant decreasing because of reduction of roosts and disturbance by people.

Species of the genus Nyctalus

16. *Nyctalus noctula* Schreber

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

Protection status according to the RDBU: no.

Roost sites: hollows of trees.

Population trends: variable depending on climate conditions.

17. *Nyctalus leisleri* Kuhl

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

Protection status according to the RDBU: yes.

Roost sites: hollows of trees.

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

18. *Nyctalus lasiopterus* Schreb.

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

Protection status according to the RDBU: yes.

Roost sites: hollows of trees.

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

Species of the genera Pipistellus and Hypsugo

19. *Pipistellus pipistrellus* Schreb.

Status: native; some populations settled and some of passage; common throughout much of Ukraine.

Protection status according to the RDBU: no.

Roost sites: hollows of trees and buildings.

Population trends: stabilised.

20. *Pipistellus nathusii* Keys. et Blas.

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

Protection status according to the RDBU: no.

Roost sites: holes of trees and buildings.

Population trends: constant.

21. *Pipistellus kuhli* Kuhl

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

Protection status according to the RDBU: yes.

Roost sites: slits and clefts in rocks and buildings.

Population trends: continual; colonisation a north.

22. *Hypsugo savii* Bonoparte

Status: native; very rare in southern Crimea, absent elsewhere; endangered.

Protection status according to the RDBU: yes.

Roost sites: lofts of buildings and clefts in rocks.

Population trends: numbers of populations are constantly low.

Species of the genera Eptesicus and Vespertilio

23. *Eptesicus nilssoni* Keys. et Blas.

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

Protection status according to the RDBU: no.

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

Population trends: decline.

24. *Eptesicus serotinus* Schreber

Status: native; settled; common throughout much of Ukraine.

Protection status according to the RDBU: no.

Roost sites: buildings and undergrounds.

Population trends: decline because of roosts loss.

25. *Vespertilio murinus* L.

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

Protection status according to the RDBU: no.

Roost sites: different sorts of roosts.

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

ANNEX 3.

Geographical distribution of cave bat communities in Ukraine

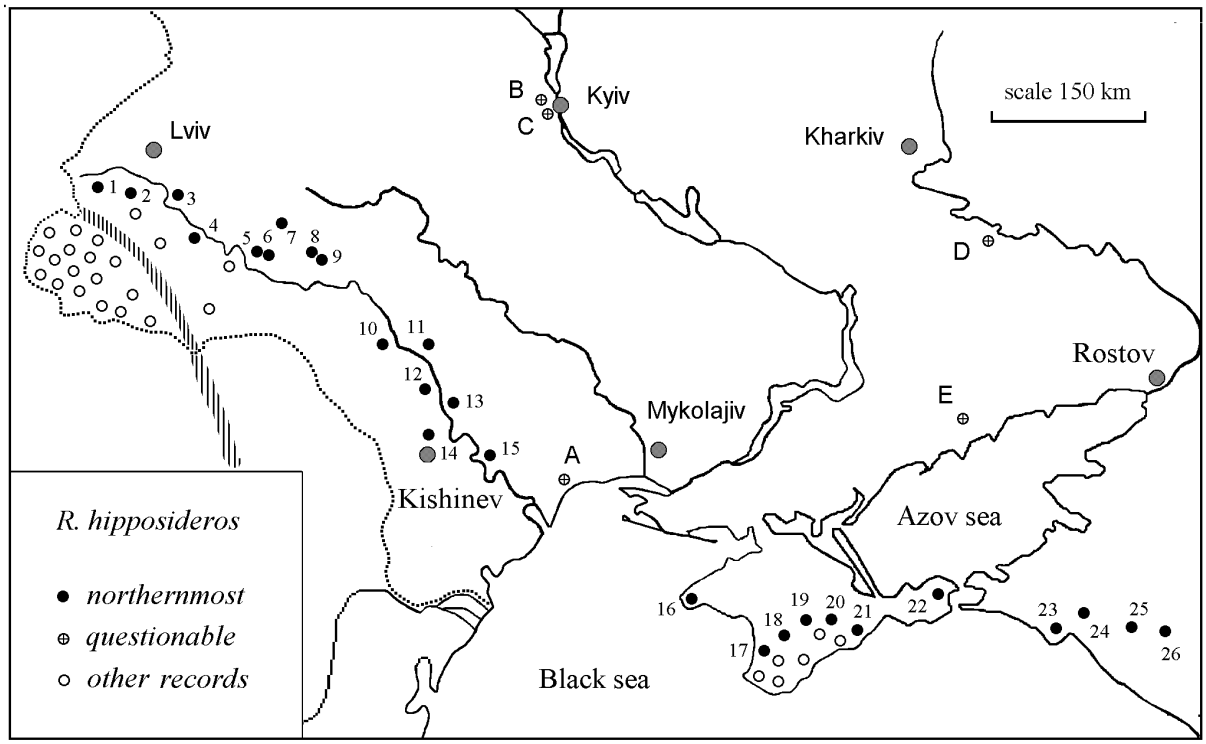

Figure 1. Distribution of the underground roost marked by the records of the Lesser horseshoe bat, *Rhinolophus hipposideros* (after Zagorodniuk 1999).

ANNEX 4.

Bats in the collections of zoological museums of Ukraine

Table 3. Number of known bat specimens from Ukraine based on the results of investigations of all the central zoological museums (after Zagorodniuk, 1998, with additions)

Taxa in Ukrainian fauna		Number in collection of			Total number		Protected status**
Genus	Species	LNHM	ZMKU	UMNH	Sum, n	Portion, %	RDBU (1994)
Rhinolophus	*hipposideros*	33	3	52	88	6,1	2
Rhinolophus	*ferrumequinum*	17	17	154	188	13,1	2
Miniopterus	*schreibersi*	2	36	59	97	6,8	2
Myotis	*blythi*	39	75	95	209	14,6	-
	myotis	20	11	48	79	5,5	-
	bechsteini	3	1	1	5	0,3	3
	nattereri	0	0	1	1	0,1	3
	brandti	0	0	0	0	0,0	-
	*mystacinus**	3	0	20	23	1,6	-
	emarginatus	0	3	12	15	1,0	3
	dasycneme	0	0	1	1	0,1	3
	daubentoni	14	4	27	45	3,1	-
Plecotus	*auritus* (s. l.)	32	7	30	69	4,8	-
	austriacus	0	0	4	4	0,5	-
Barbastella	*barbastellus*	56	8	17	81	5,7	3
Pipistrellus	*pipistrellus*	5	16	46	67	4,7	-
	nathusii	0	1	43	44	3,1	-
	kuhli	0	0	3	3	0,2	3
	savii	0	1	1	2	0,1	3
Nyctalus	*leisleri*	0	1	17	18	1,3	3
	noctula	30	79	117	226	15,8	-
	lasiopterus	1	1	4	6	0,4	3
Eptesicus	*serotinus*	38	32	59	129	9,0	-
	nilssoni	0	0	4	4	0,3	-
Vespertilio	*murinus*	0	2	25	27	1,9	-
Total		293	298	840	1431	100,0	12

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

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

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), notes on new interest records of species in a journal "*Vestnik zoologii*" (Kyiv, vol. 31-33), abstracts of *VIII European Bat research symposium* (Krakow, 1999), and so on.

Special issues, general reviews of bat fauna, and bibliography on bats are the followings:

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