RABIES BULLETIN EUROPE

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Contents

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1. INTRODUCTION

This BULLETIN describes the **reported rabies cases in Europe** for the **Third Quarter 1999**, subsequently referred to as ***"This Quarter"***.

In SECTION 2 a **summary of the rabies situation** in general is given.

SECTION 3 (3.1-3.38) reflects the **situation for individual countries**. Unfortunately, not all countries report regularly yet. However, their contribution is expected.

In the **Miscellaneous** SECTION (4) under 4.1 an abridged version of the WHO World Survey of Rabies No. 33 for the year 1997 is given. An article under 4.2 describes the effects of oral immunization against rabies on the red fox population in Hungary.

The **rabies case data** are tabulated for the **Third Quarter 1999** in SECTION 5. The arrangement of countries follows practical considerations, not alphabetical ones.

SECTION 6 lists the **official contributors** to the BULLETIN.

The **geographical distribution** of rabies cases in Europe of the **Third Quarter 1999** is shown on maps of the Russian Federation, Turkey and Europe in the ANNEX.

2. SUMMARY OF RABIES IN EUROPE

During ***"This Quarter"***, **1132 rabies cases** were reported **in Europe**. Of these 778 were in wild animals (68.7%) and 352 in domestic animals. There were 2 human cases.

Of the **778 cases in wild animals**, 637 (56.3% of total) were red foxes, 1 other fox species, 1 wolf, 65 raccoon dogs, 1 lynx, 17 badgers, 6 stone martens, 15 pine martens, 2 polecats, 2 roe deer, 1 wild boar, 17 bats, 2 hamsters, 1 black rat, 2 Norwegian rats, 1 house mouse, 1 other wild animal, 6 unspecified animals. Of the **352 domestic animals** 119 were dogs, 104 cats, 2 other domesticated carnivores, 5 horses, 2 pigs, 109 bovines, 10 sheep, 1 goat.

There were **2 human cases** reported in the Russian Federation.

The **17 bat cases** occurred in the Czech Republic (2), Denmark (4), Germany (6), Hungary (1) for the first time, The Netherlands (3), and Poland (1). The 2 bats in the Czech Republic and the one in Hungary were identified as *Eptesicus serotinus*.

Because of the distinct epidemiological features of bat rabies, the cases were marked in a different colour in the map of the ANNEX.

The **dog-mediated rabies** in Europe is only prevalent in Turkey. Out of 48 animals affected during ***"This Quarter"*** there was no wild animal involved (39 dogs, 7 bovines, 1 horse, 1 sheep).

There has been a reduction of the total of cases in Europe from 1359 (corrected figure) of the previous quarter to 1132 during ***"This Quarter"***. The changes are caused by the seasons of the year in the fox-mediated rabies (to be deducted are only the few dog-mediated and bat cases), increases and decreases of heavily infected countries and the oral vaccination efforts.

Rabies-free countries in Europe during ***"This Quarter"*** were: Albania, Finland, Greece, Iceland, Ireland, Italy, Macedonia, Norway, Portugal, Sweden, Switzerland, the United Kingdom of Britain and Northern Ireland.

There were **no cases** in France, Luxembourg and Slovenia, but the last indigenously acquired case (terrestrial or bat) was less than two years ago.

The status of the countries with data supplied irregularly cannot be judged.

3. RABIES IN INDIVIDUAL COUNTRIES

3.1 Albania ALB

by Kristaq Berxholi

The country remained **rabies-free.**

Surveillance:

A total of 18 animals (14 foxes, 1 badger, 1 mink, 1 dog, 1 cat) was examined for rabies during ***"This Quarter"*** with negative results.

Note: For 45 bats tested for rabies during the second quarter 1999 a species determination was carried out with the following result: 6 *Pipistrellus savii*, 9 *Pipistrellus kuhli*, 6 *Rhinolophus hipposideros*, 11 *Rhinolophus blasii*, 2 *Rhinolophus euryale*, 1 *Rhinolophus ferrumequinum*, 1 *Myotis myotis* and 9 undetermined species.

3.2 Austria AUT

by Helmut Schnabl

Out of 5296 animal samples examined for rabies during ***"This Quarter"***, 1 dog was diagnosed positive.

The case occurred in Bruck/Mur, in the federal province of the Steiermark. The dog was imported from Turkey.

The diagnosis was confirmed by the WHO Collaborating Centre for Rabies Surveillance and Research, Tübingen, by RT-PCR, neuroblastoma cell passage and monoclonal antibody characterisation. A panel of 10 monoclonal antibodies showed dog-mediated rabies of Serotype 1 prevalent in Turkey.

3.3 Belgium BEL

by L. Hallet

Two cases of rabies were diagnosed during ***"This Quarter"***, 1 bovine in the district of Bastogne and 1 fox in the district of Gouvy, both province of Luxembourg.

An emergency oral vaccination campaign was organized in the area of the two cases. 14,000 vaccine baits were placed in an area of 756 km² in September and October 1999. In October the area was extended into the south-east of the country.

3.4 Bosnia and Hercegovina BIH

No data.

3.5 Bulgaria BUL

by L. Lavchev

There were 6 rabies cases in unspecified animals reported during ***"This Quarter"***. They were located in the north of the country.

3.6 Belarus BYE

by A.M. Axenov

During ***"This Quarter"***, 31 animal rabies cases were reported in all six regions of the country. The cases occurred in 16 foxes, 2 raccoon dogs, 3 dogs, 6 cats, 1 pig and 3 bovines.

3.7 Croatia CRO

by Mate Brstilo and Renata Ivanek

During ***"This Quarter"***, a total of 179 cases of rabies was diagnosed in 17 out of 21 districts. That represents an increase of 123 cases (+ 319.6%) compared to the same period in 1998, and of 75 cases (+172.1%) compared to the previous quarter.

Of the wild animals, rabies was diagnosed in 163 foxes (91.1%), 1 badger, 2 martens and 1 wild boar and of the domestic animals in 4 dogs, 4 cats, 3 bovines and 1 horse.

3.8 Czech Republic CZH

by Oldrich Matouch

During ***"This Quarter"***, 2016 samples were examined for rabies in the Czech Republic. The disease was diagnosed in 40 animals, 30 more than during the third quarter 1998 and 19

less than during the previous quarter. 33 cases were recorded in foxes, 3 in martens, 1 in a cat, 1 in a sheep and 2 in bats. The 2 bat cases occurred in South Moravia. This was the second reporting in the country since 1994. The above mentioned two animals were identified as *Eptesicus serotinus*.

The rabies cases were located in formerly active foci - in the north, the center and the south of the country.

3.9 Denmark DEN

by Preben Willeberg

A total of 4 bat rabies cases was diagnosed during ***"This Quarter"***, distributed throughout the country.

3.10 Germany, Federal Republic DEU

by Winfried W. Müller and Hartmut Schlüter

During ***"This Quarter"***, 9 rabies cases of two active foci in terrestrial animals were recorded in the federal states Nordrhein-Westfalen (5 foxes) and Bayern (1 fox, 2 sheep, 1 cat), and 6 bat rabies cases, distributed throughout the country in 4 different federal states (Schleswig-Holstein [1], Niedersachsen [3], Thüringen [1], Sachsen [1]).

Erratum:

In the previous quarter 1 dog rabies case in the Federal State of Thüringen was reported. The follow-up investigations have determined that this case was a false positive. The correction is already registered in the TABLE 5.2 of this BULLETIN.

3.11 Estonia EST

by Matti Nautras

In 10 of 15 districts of Estonia 24 rabies cases were diagnosed during ***"This Quarter"***, just as many as during the previous quarter. Animal species affected by the disease were: 10 foxes, 5 raccoon dogs, 1 lynx, 1 badger, 1 dog, 3 cats, 3 bovines.

The distribution of cases in the east of the country was prevailingly dense, in the other parts scattered.

3.12 Finland FIN

by Elise Saario

The country remained **rabies-free.**

Surveillance:

A total of 59 animals were examined for rabies by immunofluorescence test on brain tissue during ***"This Quarter"***, all with negative results. Of the animals 11 were foxes, 16 raccoon dogs, 6 badgers, 1 pine marten, 1 polecat, 4 bears, 4 other wild carnivores, 2 northern bats, 2 dogs, 3 cats, 9 bovines.

3.13 France FRA

by Michel F.A. Aubert

No rabies case was reported during ***"This Quarter"***.

Surveillance:

857 samples were examined for rabies during ***"This Quarter"*** with negative results.

Erratum:

In the previous issue of this BULLETIN - 2/99 - a bat was mentioned of which a rabies-like virus was isolated („Lagos bat"). This bat is more likely of the Rousettus species and not as described the Pteropus species.

(Source: BEMRAF Vol. 29, No. 7-8-9, July, August, September 1999)

3.14 Federal Republic of Yugoslavia FRY

by Živko Davidović

24 rabies cases (17 foxes, 1 dog, 6 cats) were registered during ***"This Quarter"*** in the Federal Republic of Yugoslavia.

There was a concentration of cases in the north (Vojvodina); only 3 cases occurred in Srbija and 2 cases in Crna Gora.

3.15 Greece GRE

The country remained **rabies-free.**

3.16 Hungary HUN

by Bálint Kerekes

During ***"This Quarter"***, 75 rabies cases in animals were reported. Of these, 10 cases were located west of the river Danube and 65 east of it.

There were 55 cases in foxes (73.3% of total), 1 stone marten, 8 cats, 6 dogs, 1 goat, 3 bovines and for the first time in Hungary, a bat.

The rabid bat was specified an *Eptesicus serotinus* and was located in Budapest.

3.17 Iceland ICE

The country remained **rabies-free.**

3.18 Ireland IRE

The country remained **rabies-free.**

3.19 Italy ITA

by Santino Prosperi

The country remained **rabies-free.**

3.20 Lithuania LTU

by K. Gedrimas and A. Dranseika

During ***"This Quarter"***, there were 67 cases of rabies. Of these, 48 (71.6%) occurred in wild animals (25 foxes, 18 raccoon dogs, 1 badger, 3 pine martens, 1 polecat) and 19 in domestic animals (1 dog, 6 cats, 1 horse, 11 bovines).

The most affected districts were Utena and Lazdijai with 8 and 7 cases respectively. All other affected districts recorded less than 5 cases.

During ***"This Quarter"***, more than 20,000 dogs, 2000 cats and 4000 bovines were vaccinated against rabies.

No human rabies case was recorded.

3.21 Luxembourg LUX

by Arthur Besch

During ***"This Quarter"***, no rabies case was recorded in the Grand Duchy of Luxembourg. The last fox rabies case occurred 21 months ago.

However, the development of the disease in the neighbouring countries as well as in Luxembourg itself makes it necessary to continue with the oral vaccination. At the end of September 1999 a campaign was carried out covering the whole country. 48,000 Raboral vaccine baits were placed by helicopter resulting in a density of approx. 18 vaccine baits per km².

For an improved distribution of vaccine baits the GPS (Ground Position System) was in use, which had already been practiced previously.

Surveillance:

5 foxes and 1 badger have been examined for rabies with negative results.

3.22 Latvia LVA

by V. Veldre and E. Jegers

32 rabies cases were registered during ***"This Quarter"*** in 13 out of 26 districts. 26 cases (81.3% of total) were in wild animals (14 foxes, 4 raccoon dogs, 7 badgers and 1 polecat) and 6 in domestic animals (3 dogs and 3 cats).

The most affected district was Saldus with 7 cases.

3.23 Moldova MLD

by Vasile Bahau, A. Ganea and V.Kilary

During ***"This Quarter"***, 23 samples were investigated for rabies at the Central Veterinary Investigation Laboratory (10 cats, 11 dogs, 1 goat, 1 pig).

In 4 cases rabies was diagnosed: in Faleshty, Kaushany and Chimishliya 1 cat each and in Slobodzeya 1 pig.

3.24 Netherlands NET

by G. Visser

During *"This Quarter"*, 32 animals were investigated for rabies (1 fox, 2 cats, 29 bats). 3 bats were diagnosed positive.

3.25 Norway NOR

by Eivind Liven

The country remained **rabies-free.**

3.26 Poland POL

by Andrzej Komorowski

A total of 267 animal rabies cases were registered in Poland during *"This Quarter"*, including 1 bat rabies case (at Olsztyn in the north of the country). 217 cases (81.3% of total) were in wild animals and 50 in domestic animals.

Concentration of cases occurred in the centre and the east of the country.

3.27 Portugal POR

The country remained **rabies-free.**

3.28 Romania ROM

by Mircea Chertes

Only 5 cases of rabies (2 foxes, 1 other wild animal, 1 dog, 1 cat) were reported in Romania during *"This Quarter"*. They were scattered in the northern half of the country.

3.29 Russia RUS European part only

by V.A.Vedernikov, V.A.Sedov, I.V. Baldina, A.M.Gulyukin, E.G.Troizkaya, B.L.Cherkasskiy, V.J. Ladnyi, V.V.Seliverstov, V.F.Pilinin, and S.A. Kolomizev

During *"This Quarter"*, 204 rabies cases in animals were reported. Of the total number of cases 140 were in domestic animals - 46 dogs, 38 cats, 49 bovines, 1 horse, 6 sheep. Of 64 wild animals, rabies was diagnosed in 57 foxes, 1 wolf, 1 raccoon dog, 1 korsak (Vulpes corsak L.), 1 badger, 2 rats, 1 mouse.

Most affected were the Penza Region with 17 cases, Oryol Region with 16 cases, Voronezh Region with 16 cases, Samara Region with 16 cases, Orenburg Region with 15 cases.

There were 2 human cases reported - in the Smolensk Region and in the Moscow Region.

During this quarter, a natural seasonal decline in the epizootic intensity occurred. There are no reasons for expecting that strongly pronounced cases of rabies of animals will become more frequent in the fourth quarter of 1999 as well, since in unfavourable regions the number of preventive vaccinations of cats and dogs were extended. The campaigns of oral immunization of the wild predators were carried out. We have reasons for expecting that the density of the fox population has reduced also as a result of the epizootic itself.

But the situation is very difficult. Now, there is already no real hunting control over the number of foxes and wolves, in big populated areas the number of stray and neglected dogs and cats is increasing. Accordingly, in future, new cyclic rises of epizootics are inevitable. The danger of the arising of big disease centers in towns is increasing.

3.30 Spain SPA

by Carlos Abellan Garcia

During *"This Quarter"*, the mainland and islands of Spain remained rabies-free in terrestrial animals.

There were 2 rabid dogs of Melilla in the Spanish territory of North Africa.

No bat rabies cases were noticed in the mainland of Spain. The last cases occurred in the previous quarter.

3.31 Slovak Republic SVK

by Jozef Sokol and Bohuslav Lovas

A total of 97 rabies cases in animals was reported in the Slovak Republic during *"This Quarter"*. Of these were

80 (82.5%) wild animals (74 foxes, 4 pine martens and 2 hamsters) and 17 domestic animal (6 dogs, 10 cats and 1 horse).

3.32 Slovenia SVN

by Zoran Kovač

No rabies case was reported during ***"This Quarter"*** from Slovenia.

3.33 Sweden SWE

The country remained **rabies-free.**

3.34 Switzerland SWI

by Uli Müller

The country remained **rabies-free.**

Surveillance:

During ***"This Quarter"***, 70 animals were examined for rabies with negative results: 31 foxes, 7 badgers, 2 other mustelids, 1 deer, 1 other wild animal, 6 dogs, 5 cats, 1 bovine and 16 bats (5 *Pipistrellus pipistrellus*, 2 *Pipistrellus nathusii*, 4 *Pipistrellus kuhli*, 1 *Myotis mystacinus*, 1 *Nyctalus noctula*).

3.35 Turkey TUR

by Celal Özcan

During ***"This Quarter"***, 48 rabies cases in animals were reported in Turkey. All cases were in domestic animals: 39 dogs, 7 bovines, 1 horse, 1 sheep.

In the provinces (Il) of Istanbul and Bursa 23 and 14 cases were recorded respectively, in the other infected provinces between 1 and 3.

3.36 Macedonia TYM

The country remained **rabies-free**.

3.37 Ukraine UKR

No data.

3.38 United Kingdom UNK

The country remained **rabies-free.**

Surveillance 1999

First Quarter

One report of a suspect case of rabies in a dog, outside of quarantine, was investigated and declared negative by Government veterinary staff.

16 bats were examined for rabies during the quarter, all with negative results.

Second Quarter

No suspect cases, outside of quarantine, were reported in this quarter.

54 bats were examined for rabies during the quarter, all with negative results.

There were no human cases reported during either quarter.

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4. MISCELLANEOUS ARTICLES

4.1 World Survey of Rabies, 1997

The thirty-third world survey of rabies for the year 1997 is based on data received from 103 countries/territories out of 193 WHO Member States/Associate Members which were sent the questionnaire. In addition, other official sources were used, expanding its coverage to 169 countries/territories.

The survey reports on 5 major topics:

(1) Rabies situation and trends for 1997
- Human and animal rabies cases and methods of confirmation
- Presence/absence by country
- Elimination/introduction of rabies
- Main rabies epidemiological patterns
- Trends and geographical distribution

(2) Rabies post-exposure treatments

(3) Rabies vaccine production and imports
- Human vaccines
- Animal vaccines

(4) Diagnostic techniques in medical and veterinary laboratories

(5) Rabies vaccine application to dogs and other animal species, including oral immunization.

4.1.1 Rabies situation and trends, 1997

Human deaths

Worldwide, the number of human rabies deaths is estimated to be between 35 000 and 50 000 annually.

Africa. Most of the reported human deaths from rabies (96%) were diagnosed on clinical grounds only. The main source of exposure was dogs (40%). In 35% of reported cases, the source of exposure was unknown but thought to be related to a dog bite.

Americas. A total of 114 rabies deaths were notified, 69 less than in 1996. The United States reported 4 human deaths caused by exposure to bats.

Asia. The highest incidence continued to be observed in Asia, with 33 008 reported human deaths. Most of them (an estimated 30 000) occurred in India. Rabies diagnosis was mainly made on clinical grounds only.

Europe. With 13 deaths, Europe notified less than 0.1% of all reported rabies mortality in the world. Most of these cases (10) were reported from the Russian Federation. The case notified in France followed exposure outside the country.

Animal cases

Africa. The total number of reported animal rabies cases was 2 344. In 72% of cases, the diagnosis was confirmed by a laboratory. The majority of the laboratory-confirmed cases occurred in dogs (57%), followed by ruminants (25%).

Americas. With 16 486 animal rabies cases, the Americas reported 49% of the total number of cases in the world; 26% of all laboratory-confirmed cases were diagnosed in dogs. **The United States notified 8 509 animal rabies cases, which is an indication of the level of active surveillance in this region as well as of the underreporting in other parts of the world.**

Rabies was mostly reported in wildlife in the United States, while dog rabies prevailed in the Caribbean and South America. The number of cases diagnosed in bats was the highest compared to other continents. Most cases in bats were diagnosed in the United

States, with 958 out of 961 cases for the whole of the Americas.

Asia. The majority of rabies diagnoses in animals were laboratory-confirmed. The dog was the main species involved (90% of the total number of laboratory-confirmed animal rabies cases). The highest number of rabies cases was reported by the Philippines (with 1966 laboratory-confirmed cases), followed by Thailand.

Europe. A total number of 5 098 cases was reported. All reported animal cases were laboratory-confirmed. Wild animals remain the main rabies reservoir in Europe. The vast majority of rabies cases occurred in foxes (60%). Dogs were affected in 12% of cases, and ruminants accounted for 11% of the total cases reported, followed by cats (8%). Poland and the Russian Federation reported the highest number of animal rabies cases of all European countries. Italy reported elimination of rabies in 1997.

General trends

According to the questionnaire, increase or decrease means at least a 10% variation against the number of rabies cases reported during the preceding year. Ten out of 17 countries in Europe reported a decrease of rabies cases.

In the 54 countries/territories which reported on the epidemiological pattern of the disease, dog rabies accounted for 57%, wildlife for 33% and bat rabies for 10%. Dog rabies prevailed in Africa and Asia. Wildlife rabies was the main pattern in Europe and North America.

4.1.2 Rabies and prevention

Human rabies post-exposure treatment

Dogs were the origin of exposure in 87% of the human post-exposure treatments administered in Africa, 97% in Asia, and 74% in Europe (where 8% of the treatments followed exposure to wildlife species). Rabies post-exposure treatment consisted mainly in the application of vaccine alone in Africa (82%), in Asia (88%) and in Europe (80%).

In China, about 5 million people are estimated to be vaccinated annually. India estimated the annual number of post-exposure treatments at approximately 1 million, whereas Bangladesh reported around 60 000 post-exposure treatments per year.

Human vaccines

According to replies from 67 countries/territories, 13 produced human rabies vaccine in 1997. About 76% of all human rabies vaccine doses manufactured in these 13 countries were produced on cell culture. Seven countries produced only vaccines prepared on neural tissues. Six countries produced rabies vaccines on cell culture. All human vaccines produced in Europe are prepared on cell culture.

Fifty-one countries reported importing human vaccines, 95% were of cell-culture origin, and 2% of neural tissue origin. Approximately 2% of the vaccines imported were manufactured on embryonating eggs.

Animal vaccines

Twenty-six (25%) out of 103 countries/territories reported producing animal rabies vaccines. Twelve countries (46%) produced vaccines prepared on cell culture, 5 countries (19%) on neural tissues and 8% on embryonating eggs, with 7 countries producing more than one type of vaccine; 99% of the total quantity of veterinary rabies vaccines were produced on cell culture, whereas 0.6% stemmed from neural tissue and less than 0.1% were produced on embryonating eggs. Fifty-three countries/territories reported importing animal rabies vaccines. About 99% of these vaccines were prepared on cell culture.

Diagnostic techniques used in medical and veterinary laboratories

Thirty-four countries/territories provided information on the diagnostic techniques used in medical laboratories and 67 on those used in veterinary laboratories. The fluorescent antibody test (FAT) continued to be the technique most widely used to diagnose rabies in humans (32 out of 34 countries/territories) and in animals (61 out of 67).

In 65% (22) of the 34 countries/territories, the laboratories responsible for human rabies diagnosis used the mouse inoculation test (MIT), 15% (5) histological techniques, and 24% (8) other techniques. Many laboratories applied more than one technique to confirm rabies cases. The tissue culture inoculation test (TCI) was carried out in 6 countries, 1 country reported using an ELISA and 1 a polymerase chain reaction (PCR) test.

Vaccine application in animals

Regarding dog immunisation against rabies, vaccination is compulsory in 13 out of 25 (52%) countries from Africa, 3 out of 10 (30%) countries belonging to the Americas, 9 out of 29 (31%) countries located in Asia, 18 out of 33 (54%) European countries and 2 out of 6 countries or territories located in Oceania which are included in this WSR.

In many of the rabies-free countries dog vaccination is generally forbidden and exceptionally allowed for exporting or importing animals.

Estimates of the number of dogs immunized in 1997 and estimates of the vaccination coverage (in %) by country and territory are given in Annex 5 of the report.

The dog population size may have been underestimated in many countries.

4.1.3 RABNET

In Annex 10 RABNET, the electronic data bank which contains all rabies data submitted to WHO through the Questionnaire for the WHO World Survey of Rabies is described.

More and more countries have received their password to enter their data into this data bank which is accessible via the World Wide Web:
http://oms.b3e.jussieu.fr/rabnetS/

Data already stored in the RABNET databank are fully available for analyses.

(Sources: World Survey of Rabies No. 33 for the Year 1997; World Health Organization, Department of Communicable Disease Surveillance and Response, 1999-WHO/CDS/CSR/APH/99.4 and Weekly Epidemiological Record No. 45, 12 November 1999, both at WHO Geneva).

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4.2 Effect of Oral Immunization against Rabies on the Red Fox Population in Hungary

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Introduction

The oral immunization programme was started in 1992 in Hungary and, as of 1996, it tended to cover the whole Transdanubia (western part of the country). This area was immunized five times up to the autumn of 1998, and the number of rabies cases strongly decreased (WHO data in 1998). Investigations in Western-European countries (Vos, 1995) showed a massive increase in the population density of red fox parallel with the immunization. Moreover the social behaviour of foxes also changed in the family groups, namely more than one female live in a burrow (Reynolds, 1995).

Field experiences in Hungary over the past few years also suggest a gradually increasing and dispersing red fox (Vulpes vulpes) population. As a consequence of this phenomenon serious problems could result for game management and wildlife conservation:

- The human - carnivore conflicts could become more frequent. The settlement of carnivore species in villages and cities could increase, new kind of damages and public health problems could emerge.
- Probably the speed of population increases will differ among different species. The interspecific competition could be stronger. As a result of these processes the rare, more vulnerable species (for example wildcats) could decrease or disappear.
- The increased level of predation pressure could cause serious damages in the small game population and could endanger the rare, vulnerable prey species.

That is why sufficient and suitable data about the fox population from the whole country have to be gained to estimate the population change and the effect of the immunization.

Materials and Methods

In the years 1988, 1990, 1994, 1995, 1997 and 1998 mail questionnaire surveys (Szemethy and Heltai, 1996) were made with the hunting associations. The hunters estimated the population density and the density of occupied dens by educated guess. We checked this estimation in a field study, where the burrow density was estimated by strip transect method (Davis & Winstead 1980). The two estimated densities did not differ significantly. Thus, the population density and burrow density of foxes estimated by the hunters were analysed. The statistical analyses were made by SPSS for Windows (SPSS Inc.).

Results

The red fox population increased markedly in Hungary from 1988-1998 (TABLE 4.2.1). However the growth rate of the population density in Transdanubia where rabies immunization is practiced as compared to the Great Plain (no immunization) was significantly different (FIGURE 4.2.1). There is a stronger increase in the population in Transdanubia.

Also, larger burrow densities were found in Transdanubia than in the Great Plain (FIGURE 4.2.2).

Years	Hungary			Transdanubia			Great Plain		
	n	average	variance	n	average	variance	n	average	variance
1988	233	4.39	3.15	97	4.9	3.7	136	3.6	2.7
1990	186	5.09	3.78	74	5.1	3.6	112	4.8	4.0
1994	280	5.87	4.90	119	7.1	4.7	161	4.7	4.6
1995	377	6.30	4.77	141	7.3	5.5	236	5.5	4.1
1997	299	7.52	5.79	121	9.0	6.85	178	6.52	4.7
1998	448	8.20	6.77	193	10.57	8.15	255	6.4	4.78

TABLE 4.2.1: The population density of red fox (Nr/1000 ha) in Hungary from 1988-1998.

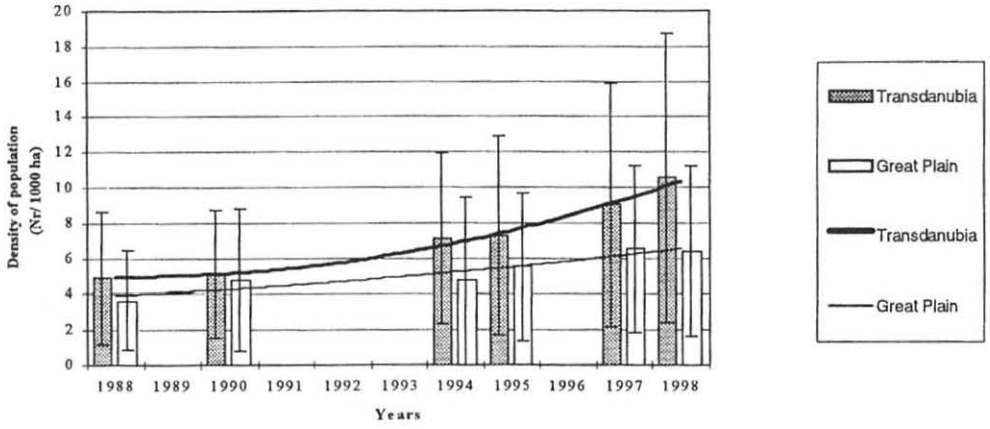

FIGURE 4.2.1: The change in the population density of foxes in Transdanubia and in the Great Plain from 1988-1998 (averages ± variances). The horizontal curves are trendlines for the data.

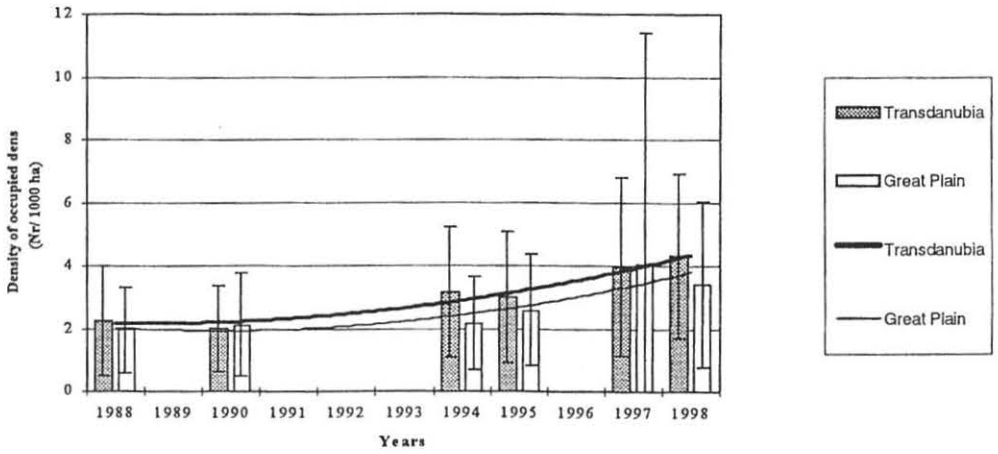

FIGURE 4.2.2: The change in the burrow density of foxes in Transdanubia and in the Great Plain from 1988-1998 (averages ± variances). The horizontal curves are trendlines for the data.

Discussion

It can be noticed that the population density of the red fox increased in the whole country in the past years. Probable causes of growth could be the recent changes in agriculture, like insufficient rodent control and increasing proportion of fallow lands, or the currently used hunting method, e.g. shooting is not efficient. The hunting bag data do not follow the population increase (National Wildlife Management Database, 1998).

On the other hand there is a significant difference between the rate of the population increase in Transdanubia and in the Great Plain. The estimated population density grows faster in Transdanubia. It could be due to the effect of the oral immunization of foxes against rabies.

Even the burrow density is larger in Transdanubia, but the trendlines do not separate so intensively. However, it could be due to the change in the social structure of red fox population (formation of the family groups) and due to the less intensive mortality of the young foxes (Müller et al., 1995), which can integrate into the family groups.

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TABLE 5.1

EUR E U R O P E **3/99** R A B I E S C A S E S 1. 7.99 - 30. 9.99

LOCATION CODE NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
	DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
ALB ALBANIA *							0						0		0
AUT AUSTRIA 1)	1	-	-	-	-	-	1						0		1
BEL BELGIUM	-	-	1	-	-	-	1	1	-	-	-	-	1		2
BIH BOSNA I HERCEGOWIN**							0						0		0
BUL BULGARIA							0	-	-	-	-	6	6		6
BYE BELARUS	3	6	3	-	-	1	13	16	-	-	-	2	18		31
CRO CROATIA	4	4	3	1	-	-	12	163	1	2	-	1	167		179
CZH CZECH REPUBLIC	-	1	-	-	1	-	2	33	-	3	-	2	38		40
DEN DENMARK							0	-	-	-	-	4	4		4
DEU FED.REP.OF GERMANY	-	1	-	-	2	-	3	6	-	-	-	6	12		15
EST ESTONIA	1	3	3	-	-	-	7	10	1	-	-	6	17		24
FIN FINLAND *							0						0		0
FRA FRANCE *							0						0		0
FRY FED.REP.OF YUGOSLA	1	6	-	-	-	-	7	17	-	-	-	-	17		24
GRE GREECE *							0						0		0
HUN HUNGARY	6	8	3	-	1	-	18	55	-	1	-	1	57		75
ICE ICELAND *							0						0		0
IRE IRELAND *							0						0		0
ITA ITALY *							0						0		0
LTU LITHUANIA	1	6	11	1	-	-	19	25	1	4	-	18	48		67
LUX LUXEMBOURG *							0						0		0
LVA LATVIA	3	3	-	-	-	-	6	14	7	1	-	4	26		32
MLD MOLDOVA	-	3	-	-	-	1	4						0		4
NET NETHERLANDS							0	-	-	-	-	3	3		3
NOR NORWAY *							0						0		0
POL POLAND	5	14	29	-	-	2	50	164	6	8	2	37	217		267
POR PORTUGAL *							0						0		0
ROM ROMANIA	1	1	-	-	-	-	2	2	-	-	-	1	3		5
RUS RUSSIAN FEDERATION	46	38	49	1	6	-	140	57	1	-	-	6	64	2	206
SPA SPAIN 2)	2	-	-	-	-	-	2						0		2
SVK SLOVAK REPUBLIC	6	10	-	1	-	-	17	74	-	4	-	2	80		97
SVN SLOVENIA *							0						0		0
SWE SWEDEN *							0						0		0
SWI SWITZERLAND + LIEC*							0						0		0
TUR TURKEY	39	-	7	1	1	-	48						0		48
TYM MAKEDONIJA *							0						0		0
UKR UKRAINE **							0						0		0
UNK UNITED KINGDOM *							0						0		0
TOTAL	119	104	109	5	11	4	352	637	17	23	2	99	778	2	1132
PER CENT	10.5	9.2	9.6	0.4	1.0	0.4	31.1	56.3	1.5	2.0	0.2	8.7	68.7	0.2	100.0

* NO CASES ** NO DATA 1) IMPORTED FROM TURKEY 2) IN NORTH AFRICA

TABLE 5.2

EUR EUROPE **1-3/99** RABIES CASES 1. 1.99 - 30. 9.99

LOCATION CODE	NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
		DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
ALB	ALBANIA *							0						0		0
AUT	AUSTRIA 1)	1	-	-	-	-	-	1	1	-	-	-	-	1		2
BEL	BELGIUM	-	-	1	-	-	-	1	1	-	-	-	-	1		2
BIH	BOSNA I HERCEGOWIN**							0						0		0
BUL	BULGARIA							0	-	-	-	-	22	22		22
BYE	BELARUS 2)	8	12	4	2	-	1	27	40	-	-	-	6	46		73
CRO	CROATIA	29	23	5	1	8	1	67	493	1	4	-	4	502		569
CZH	CZECH REPUBLIC	1	1	-	-	1	-	3	155	3	5	3	2	168		171
DEN	DENMARK							0	-	-	-	-	9	9		9
DEU	FED.REP.OF GERMANY	-	1	-	1	7	-	9	24	-	1	6	14	45		54
EST	ESTONIA	8	12	3	-	-	-	23	40	2	-	-	26	68		91
FIN	FINLAND *							0						0		0
FRA	FRANCE							0	-	-	-	-	1	1		1
FRY	FED.REP.OF YUGOSLA3)	1	10	1	-	-	-	12	25	-	-	-	-	25		37
GRE	GREECE *							0						0		0
HUN	HUNGARY	18	30	9	2	2	1	62	217	-	2	-	4	223		285
ICE	ICELAND *							0						0		0
IRE	IRELAND *							0						0		0
ITA	ITALY *							0						0		0
LTU	LITHUANIA	4	13	15	2	-	-	34	74	1	12	2	62	151		185
LUX	LUXEMBOURG	-	-	-	1	-	-	1						0		1
LVA	LATVIA	17	12	2	1	-	-	32	58	8	1	1	15	83		115
MLD	MOLDOVA	11	6	6	-	-	1	24	12	-	-	-	-	12		36
NET	NETHERLANDS							0	-	-	-	-	5	5		5
NOR	NORWAY *							0						0		0
POL	POLAND	23	31	60	-	-	2	116	500	9	21	3	101	634		750
POR	PORTUGAL *							0						0		0
ROM	ROMANIA	5	4	3	-	4	-	16	11	-	-	-	3	14		30
RUS	RUSSIAN FEDERATION	360	163	443	50	54	57	1127	562	4	1	3	36	606	4	1737
SPA	SPAIN 4)	2	-	-	-	-	-	2	-	-	-	-	2	2		4
SVK	SLOVAK REPUBLIC	19	37	5	1	-	1	63	304	3	11	3	6	327		390
SVN	SLOVENIA	-	1	-	-	-	-	1	3	-	-	-	-	3		4
SWE	SWEDEN *							0						0		0
SWI	SWITZERLAND + LIEC*							0						0		0
TUR	TURKEY	105	-	11	1	2	-	119						0		119
TYM	MAKEDONIJA *							0						0		0
UKR	UKRAINE **							0						0		0
UNK	UNITED KINGDOM *							0						0		0
TOTAL		612	356	568	62	78	64	1740	2520	31	58	21	318	2948	4	4692
PER CENT		13.0	7.6	12.1	1.3	1.7	1.4	37.1	53.7	0.7	1.2	0.4	6.8	62.8	0.1	100.0

* NO CASES ** NO DATA 1) DOG CASE IMPORTED FROM TURKEY 2) NO DATA FOR JANUARY, MAY AND JUNE
3) NO DATA FOR 1ST QUARTER 4) 2 DOG CASES IN NORTH AFRICA

TABLE 5.3

EUR E U R O P E **3/99**

R A B I E S C A S E S
'OTHER ANIMAL SPECIES'

1. 7.99 - 30. 9.99

LOCATION		OTH.DOM.ANIMALS		OTHER WILD ANIMALS											UNSPEC.	TOTAL
CODE	NAME	OTH.DOM. CARNIVO.	PIG	OTHER FOX	WOLF	RACCOON DOG	LYNX	WILD BOAR	INSECT BAT	HAMSTER	BLACK RAT	NORVEG RAT	HOUSE MOUSE	OTH.W. ANIMAL		
BUL	BULGARIA	-	-	-	-	-	-	-	-	-	-	-	-	-	6	6
BYE	BELARUS	-	1	-	-	2	-	-	-	-	-	-	-	-	-	3
CRO	CROATIA	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
CZH	CZECH REPUBLIC	-	-	-	-	-	-	-	2	-	-	-	-	-	-	2
DEN	DENMARK	-	-	-	-	-	-	-	4	-	-	-	-	-	-	4
DEU	FED.REP.OF GER	-	-	-	-	-	-	-	6	-	-	-	-	-	-	6
EST	ESTONIA	-	-	-	-	5	1	-	-	-	-	-	-	-	-	6
HUN	HUNGARY	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
LTU	LITHUANIA	-	-	-	-	18	-	-	-	-	-	-	-	-	-	18
LVA	LATVIA	-	-	-	-	4	-	-	-	-	-	-	-	-	-	4
MLD	MOLDOVA	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
NET	NETHERLANDS	-	-	-	-	-	-	-	3	-	-	-	-	-	-	3
POL	POLAND	2	-	-	-	35	-	-	1	-	1	-	-	-	-	39
ROM	ROMANIA	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
RUS	RUSSIAN FEDERA	-	-	1	1	1	-	-	-	-	-	2	1	-	-	6
SVK	SLOVAK REPUBLI	-	-	-	-	-	-	-	-	2	-	-	-	-	-	2
TOTAL		2	2	1	1	65	1	1	17	2	1	2	1	1	6	103
PER CENT		1.9	1.9	1.0	1.0	63.1	1.0	1.0	16.5	1.9	1.0	1.9	1.0	1.0	5.8	100.0

RABIES CASES 1. 7.99 - 30. 9.99

LOCATION CODE NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
	DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
AUT AUSTRIA															
602 BRUCK AN DER MUR 1)	1	-	-	-	-	-	1						0		1
BEL BELGIUM															
LX LUXEMBOURG	-	-	1	-	-	-	1	1	-	-	-	-	1		2
DEN DENMARK															
030 HYIDEBHEK							0	-	-	-	-	1	1		1
050 SONDERJYLLAND							0	-	-	-	-	1	1		1
055 RIBE							0	-	-	-	-	1	1		1
070 ARHUS							0	-	-	-	-	1	1		1
TOTAL	0	0	0	0	0	0	0	0	0	0	0	4	4	0	4
DEU FED.REP.OF GERMANY															
01 Schleswig-Holstein							0	-	-	-	-	1	1		1
03 Niedersachsen							0	-	-	-	-	3	3		3
05 Nordrhein-Westfalen							0	5	-	-	-	-	5		5
09 Bayern	-	1	-	-	2	-	3	1	-	-	-	-	1		4
14 Sachsen							0	-	-	-	-	1	1		1
16 Thueringen							0	-	-	-	-	1	1		1
TOTAL	0	1	0	0	2	0	3	6	0	0	0	6	12	0	15
PER CENT	0.0	6.7	0.0	0.0	13.3	0.0	20.0	40.0	0.0	0.0	0.0	40.0	80.0	0.0	100.0
NET NETHERLANDS															
02 FRIESLAND							0	-	-	-	-	2	2		2
10 ZUID-HOLLAND							0	-	-	-	-	1	1		1
TOTAL	0	0	0	0	0	0	0	0	0	0	0	3	3	0	3
SPA SPAIN															
52 MELILLA (NORTH AFRICA	2	-	-	-	-	-	2						0		2

1) IMPORTED FROM TURKEY

RABIES CASES 1. 7.99 - 30. 9.99

LOCATION CODE NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
	DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
BUL BULGARIA															
06 VRATZA							0	-	-	-	-	1	1		1
15 PLEVEN							0	-	-	-	-	1	1		1
27 CHOUMEN							0	-	-	-	-	4	4		4
TOTAL	0	0	0	0	0	0	0	0	0	0	0	6	6	0	6
FRY FED.REP.OF YUGOSLAVIA															
01 Beograd	-	1	-	-	-	-	1						0		1
02 Pancevo	1	1	-	-	-	-	2	2	-	-	-	-	2		4
03 Novi Sad	-	1	-	-	-	-	1	2	-	-	-	-	2		3
04 Zrenjanin	-	1	-	-	-	-	1						0		1
05 Subotica	-	1	-	-	-	-	1	3	-	-	-	-	3		4
06 Sombor	-	1	-	-	-	-	1	5	-	-	-	-	5		6
11 Kraljevo							0	3	-	-	-	-	3		3
13 Podgorica							0	2	-	-	-	-	2		2
TOTAL	1	6	0	0	0	0	7	17	0	0	0	0	17	0	24
PER CENT	4.2	25.0	0.0	0.0	0.0	0.0	29.2	70.8	0.0	0.0	0.0	0.0	70.8	0.0	100.0
MLD MOLDOVA															
01 MOLDOVA	-	3	-	-	-	1	4						0		4
TUR TURKEY															
05 AMASYA	1	-	-	1	-	-	2						0		2
10 BALIKESIR	1	-	-	-	-	-	1						0		1
16 BURSA	12	-	2	-	-	-	14						0		14
21 DIYARBAKIR	-	-	1	-	-	-	1						0		1
31 HATAY	1	-	-	-	-	-	1						0		1
34 ISTANBUL	20	-	2	-	1	-	23						0		23
35 IZMIR	2	-	-	-	-	-	2						0		2
45 MANISA	1	-	2	-	-	-	3						0		3
53 RIZE	1	-	-	-	-	-	1						0		1
TOTAL	39	0	7	1	1	0	48	0	0	0	0	0	0	0	48
PER CENT	81.3	0.0	14.6	2.1	2.1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0

RABIES CASES 1. 7.99 - 30. 9.99

LOCATION CODE	NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
		DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
BYE	BELARUS															
01	Brest Region							0	1	-	-	-	-	1		1
02	Vitebsk Region	1	1	-	-	-	-	2	4	-	-	-	2	6		8
03	Gomel Region	1	3	-	-	-	-	4						0		4
04	Grodno Region	1	1	1	-	-	-	3	4	-	-	-	-	4		7
05	Minsk Region	-	1	1	-	-	1	3	6	-	-	-	-	6		9
06	Mogilev Region	-	-	1	-	-	-	1	1	-	-	-	-	1		2
TOTAL		3	6	3	0	0	1	13	16	0	0	0	2	18	0	31
PER CENT		9.7	19.4	9.7	0.0	0.0	3.2	41.9	51.6	0.0	0.0	0.0	6.5	58.1	0.0	100.0
LTU	LITHUANIA															
32	Akmenes							0	1	-	-	-	-	1		1
38	Varenos	-	-	1	-	-	-	1	-	-	-	-	1	1		2
41	Vilniaus	-	1	-	-	-	-	1						0		1
46	Jonavos							0	-	-	-	-	1	1		1
47	Joniskio	-	-	1	-	-	-	1						0		1
49	Kaisiadoriu	-	1	2	-	-	-	3	1	-	-	-	-	1		4
51	Marijampoles							0	1	-	-	-	-	1		1
52	Kauno	-	-	1	-	-	-	1	1	-	-	-	-	1		2
53	Kedainiai							0	1	-	-	-	-	1		1
55	Klaipedos	1	-	-	-	-	-	1						0		1
56	Kretdingos	-	-	1	-	-	-	1	2	1	-	-	-	3		4
59	Lazdiju							0	3	-	-	-	4	7		7
62	Moletu							0	1	-	-	-	1	2		2
65	Pakruojo	-	-	1	-	-	-	1	-	-	1	-	2	3		4
66	Panevezio	-	1	-	-	-	-	1	2	-	-	-	1	3		4
67	Pasvalio	-	1	-	-	-	-	1	2	-	-	-	1	3		4
69	Prienu							0	1	-	-	-	1	2		2
71	Radviliskio	-	1	-	-	-	-	1	2	-	1	-	-	3		4
75	Skuodo	-	-	1	-	-	-	1						0		1
77	Taurages							0	1	-	-	-	-	1		1
81	Ukmerges	-	-	3	-	-	-	3	-	-	-	-	1	1		4
82	Utenos	-	-	-	1	-	-	1	3	-	-	-	4	7		8
88	Silutes							0	1	-	-	-	1	2		2
89	Sirvintu	-	1	-	-	-	-	1	1	-	2	-	-	3		4
94	Jurbarko							0	1	-	-	-	-	1		1
TOTAL		1	6	11	1	0	0	19	25	1	4	0	18	48	0	67
PER CENT		1.5	9.0	16.4	1.5	0.0	0.0	28.4	37.3	1.5	6.0	0.0	26.9	71.6	0.0	100.0

RABIES CASES 1. 7.99 - 30. 9.99

LOCATION CODE NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
	DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
CRO CROATIA															
01 Zagrebacka							0	22	-	-	-	-	22		22
03 Sisacko-Moslavaca	-	-	2	-	-	-	2	13	1	-	-	-	14		16
04 Karlovacka	1	1	-	-	-	-	2	8	-	-	-	-	8		10
05 Varazdinska							0	2	-	-	-	-	2		2
06 Koprivnicko-Krizevack	-	2	-	1	-	-	3	24	-	1	-	-	25		28
07 Bjelovarsko-Bilogorsk							0	11	-	-	-	-	11		11
08 Primorsko-Goranska							0	2	-	-	-	-	2		2
09 Licko-Senjska							0	4	-	-	-	-	4		4
10 Viroviticko-Podravska							0	10	-	-	-	1	11		11
11 Pozesko-Slavonska							0	7	-	-	-	-	7		7
12 Brodsko-Posavska							0	2	-	-	-	-	2		2
14 Osijecko-Baranjska	2	-	-	-	-	-	2	20	-	-	-	-	20		22
16 Vukovarsko-Srijemska	1	-	-	-	-	-	1	5	-	-	-	-	5		6
17 Splitsko-Dalmatinska	-	-	1	-	-	-	1	2	-	1	-	-	3		4
18 Istarska							0	19	-	-	-	-	19		19
20 Medimurska							0	1	-	-	-	-	1		1
21 Zagreb	-	1	-	-	-	-	1	11	-	-	-	-	11		12
TOTAL	4	4	3	1	0	0	12	163	1	2	0	1	167	0	179
PER CENT	2.2	2.2	1.7	0.6	0.0	0.0	6.7	91.1	0.6	1.1	0.0	0.6	93.3	0.0	100.0
HUN HUNGARY															
01 Budapest							0	-	-	-	-	1	1		1
02 Baranya	-	1	-	-	-	-	1	2	-	-	-	-	2		3
03 Bacs-Kiskun	-	1	1	-	1	-	3	8	-	-	-	-	8		11
04 Bekes	1	-	1	-	-	-	2	3	-	-	-	-	3		5
05 Borsod-Abauj-Zemplen	1	3	-	-	-	-	4	8	-	-	-	-	8		12
06 Csongrad	-	1	-	-	-	-	1	10	-	-	-	-	10		11
09 Hajdu-Bihar							0	6	-	-	-	-	6		6
10 Heves							0	1	-	1	-	-	2		2
11 Komarom-Esztergom	1	-	-	-	-	-	1						0		1
12 Nograd	-	1	-	-	-	-	1	6	-	-	-	-	6		7
13 Pest							0	9	-	-	-	-	9		9
15 Szabolcs-Szatmar-Bere							0	1	-	-	-	-	1		1
17 Tolna	3	1	-	-	-	-	4						0		4
18 Vas	-	-	1	-	-	-	1	1	-	-	-	-	1		2
TOTAL	6	8	3	0	1	0	18	55	0	1	0	1	57	0	75
PER CENT	8.0	10.7	4.0	0.0	1.3	0.0	24.0	73.3	0.0	1.3	0.0	1.3	76.0	0.0	100.0

RABIES CASES 1. 7.99 - 30. 9.99

LOCATION CODE NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
	DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
CZH CZECH REPUBLIC															
01 Central Bohemia							0	11	-	-	-	-	11		11
02 South Bohemia							0	2	-	-	-	-	2		2
04 North Bohemia	-	-	-	-	1	-	1	17	-	1	-	-	18		19
06 South Moravia	-	1	-	-	-	-	1	3	-	2	-	2	7		8
TOTAL	0	1	0	0	1	0	2	33	0	3	0	2	38	0	40
PER CENT	0.0	2.5	0.0	0.0	2.5	0.0	5.0	82.5	0.0	7.5	0.0	5.0	95.0	0.0	100.0
POL POLAND															
04 Kujawsko-Pomorskie	1	5	6	-	-	-	12	22	2	1	-	3	28		40
06 Lubelskie							0	5	-	1	-	2	8		8
10 Lodzkie	-	1	-	-	-	-	1	7	-	1	1	2	11		12
12 Malopolskie	-	1	-	-	-	-	1	2	-	1	-	-	3		4
14 Mazowieckie	1	-	3	-	-	2	6	39	4	-	-	2	45		51
18 Podkarpackie	-	2	-	-	-	-	2	11	-	-	-	1	12		14
20 Podlaskie	1	1	6	-	-	-	8	31	-	-	-	10	41		49
22 Pomorskie							0	2	-	-	-	-	2		2
26 Swietokrzyskie							0	15	-	-	-	-	15		15
28 Warminsko-Mazurskie	1	3	14	-	-	-	18	27	-	4	1	16	48		66
30 Wielkopolskie	1	1	-	-	-	-	2	3	-	-	-	1	4		6
TOTAL	5	14	29	0	0	2	50	164	6	8	2	37	217	0	267
PER CENT	1.9	5.2	10.9	0.0	0.0	0.7	18.7	61.4	2.2	3.0	0.7	13.9	81.3	0.0	100.0
SVK SLOVAK REPUBLIC															
1 Bratislavsky kraj							0	9	-	-	-	-	9		9
2 Trnavsky kraj							0	2	-	-	-	-	2		2
3 Trenciansky kraj	-	2	-	-	-	-	2	12	-	1	-	-	13		15
4 Nitriansky kraj							0	9	-	-	-	-	9		9
5 Zilinsky kraj							0	3	-	-	-	-	3		3
6 Banskobystricky kraj	4	3	-	1	-	-	8	15	-	1	-	-	16		24
7 Presovsky kraj	1	3	-	-	-	-	4	9	-	2	-	-	11		15
8 Kosicky kraj	1	2	-	-	-	-	3	15	-	-	-	2	17		20
TOTAL	6	10	0	1	0	0	17	74	0	4	0	2	80	0	97
PER CENT	6.2	10.3	0.0	1.0	0.0	0.0	17.5	76.3	0.0	4.1	0.0	2.1	82.5	0.0	100.0

R A B I E S C A S E S 1. 7.99 - 30. 9.99

LOCATION CODE NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
	DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
EST E S T O N I A															
03 Ida-Virumaa							0	-	1	-	-	-	1		1
04 Jogevamaa							0	1	-	-	-	-	1		1
06 Laeaenemaa							0	1	-	-	-	-	1		1
07 Laeaene-Virumaa	-	1	-	-	-	-	1						0		1
08 Polvamaa							0	1	-	-	-	-	1		1
10 Raplamaa							0	1	-	-	-	-	1		1
11 Saaremaa							0	-	-	-	-	1	1		1
12 Tartumaa							0	3	-	-	-	2	5		5
13 Valgamaa	-	-	3	-	-	-	3	2	-	-	-	2	4		7
15 Vorumaa	1	2	-	-	-	-	3	1	-	-	-	1	2		5
TOTAL	1	3	3	0	0	0	7	10	1	0	0	6	17	0	24
PER CENT	4.2	12.5	12.5	0.0	0.0	0.0	29.2	41.7	4.2	0.0	0.0	25.0	70.8	0.0	100.0
LVA L A T V I A															
04 Bauska							0	1	-	-	-	1	2		2
05 Cesis							0	1	-	-	-	-	1		1
07 Dobele	1	-	-	-	-	-	1						0		1
08 Gulbene							0	1	-	-	-	-	1		1
10 Jelgava							0	1	-	-	-	-	1		1
12 Kuldiga	-	1	-	-	-	-	1	1	1	-	-	-	2		3
14 Limbazi							0	-	-	-	-	1	1		1
15 Ludza							0	-	1	-	-	-	1		1
18 Preili							0	1	-	1	-	-	2		2
20 Riga							0	4	2	-	-	-	6		6
21 Saldus	1	1	-	-	-	-	2	2	1	-	-	2	5		7
25 Valmiera	-	1	-	-	-	-	1	2	2	-	-	-	4		5
26 Ventspils	1	-	-	-	-	-	1						0		1
TOTAL	3	3	0	0	0	0	6	14	7	1	0	4	26	0	32
PER CENT	9.4	9.4	0.0	0.0	0.0	0.0	18.8	43.8	21.9	3.1	0.0	12.5	81.3	0.0	100.0

RABIES CASES 1. 7.99 - 30. 9.99

LOCATION CODE NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
	DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
ROM ROMANIA															
05 BIHOR							0	1	-	-	-	-	1		1
11 CARAS-SEVERIN	-	1	-	-	-	-	1						0		1
28 NEAMT	1	-	-	-	-	-	1						0		1
36 TIMIS							0	-	-	-	-	1	1		1
40 VRANCEA							0	1	-	-	-	-	1		1
TOTAL	1	1	0	0	0	0	2	2	0	0	0	1	3	0	5
PER CENT	20.0	20.0	0.0	0.0	0.0	0.0	40.0	40.0	0.0	0.0	0.0	20.0	60.0	0.0	100.0
RUS RUSSIAN FEDERATION															
08 Pskov Region	2	-	1	-	-	-	3	2	-	-	-	-	2		5
12 Twer Region	1	-	-	-	-	-	1	4	-	-	-	1	5		6
13 Kaluga Region							0	3	-	-	-	-	3		3
15 Moscow Region	1	2	-	-	1	-	4						0	1	5
16 Oryol Region	4	7	1	-	-	-	12	4	-	-	-	-	4		16
17 Ruazan Region	3	1	-	-	-	-	4	1	-	-	-	1	2		6
18 Smolensk Region							0						0	1	1
19 Tula Region	6	2	-	-	2	-	10	1	-	-	-	1	2		12
24 Rep. of Mordoviya	1	-	-	-	-	-	1						0		1
25 Rep. of Chuvashiya	1	1	1	-	-	-	3						0		3
26 Belgorod Region	2	7	3	-	-	-	12						0		12
27 Voronezh Region	-	5	8	-	-	-	13	3	-	-	-	-	3		16
28 Kursk Region	1	3	2	-	-	-	6	4	-	-	-	-	4		10
29 Lipetsk Region	-	-	2	-	1	-	3						0		3
30 Tambov Region	-	-	1	-	-	-	1	2	-	-	-	-	2		3
31 Astrakhan Region	2	1	3	-	1	-	7	-	-	-	-	2	2		9
32 Volgograd Region	1	-	2	-	-	-	3	2	-	-	-	-	2		5
33 Samara Region	2	1	6	-	-	-	9	6	1	-	-	-	7		16
34 Penza Region	3	-	4	-	1	-	8	9	-	-	-	-	9		17
35 Saratov Region	3	3	-	-	-	-	6	7	-	-	-	-	7		13
36 Ulyanovsk Region	1	1	-	-	-	-	2	3	-	-	-	-	3		5
38 Rep. of Tatarstan	-	-	1	-	-	-	1	2	-	-	-	-	2		3
40 Stavropol Territory	1	1	2	-	-	-	4	2	-	-	-	-	2		6
41 Rostov Region	1	2	-	-	-	-	3						0		3
42 Orenburg Region	5	-	8	1	-	-	14	-	-	-	-	1	1		15
44 Rep. of Bashkortostan	5	1	4	-	-	-	10	2	-	-	-	-	2		12
TOTAL	46	38	49	1	6	0	140	57	1	0	0	6	64	2	206
PER CENT	22.3	18.4	23.8	0.5	2.9	0.0	68.0	27.7	0.5	0.0	0.0	2.9	31.1	1.0	100.0

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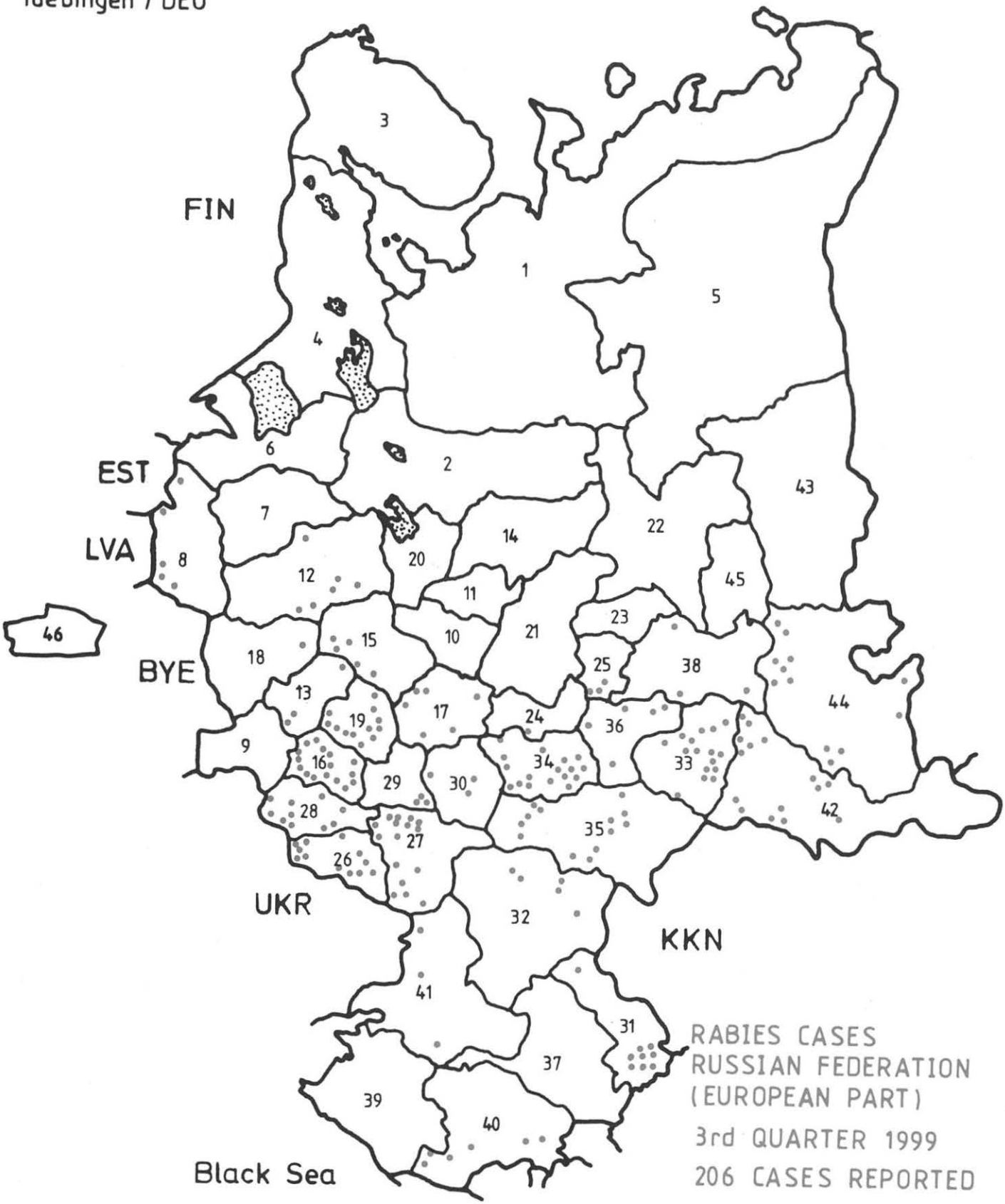

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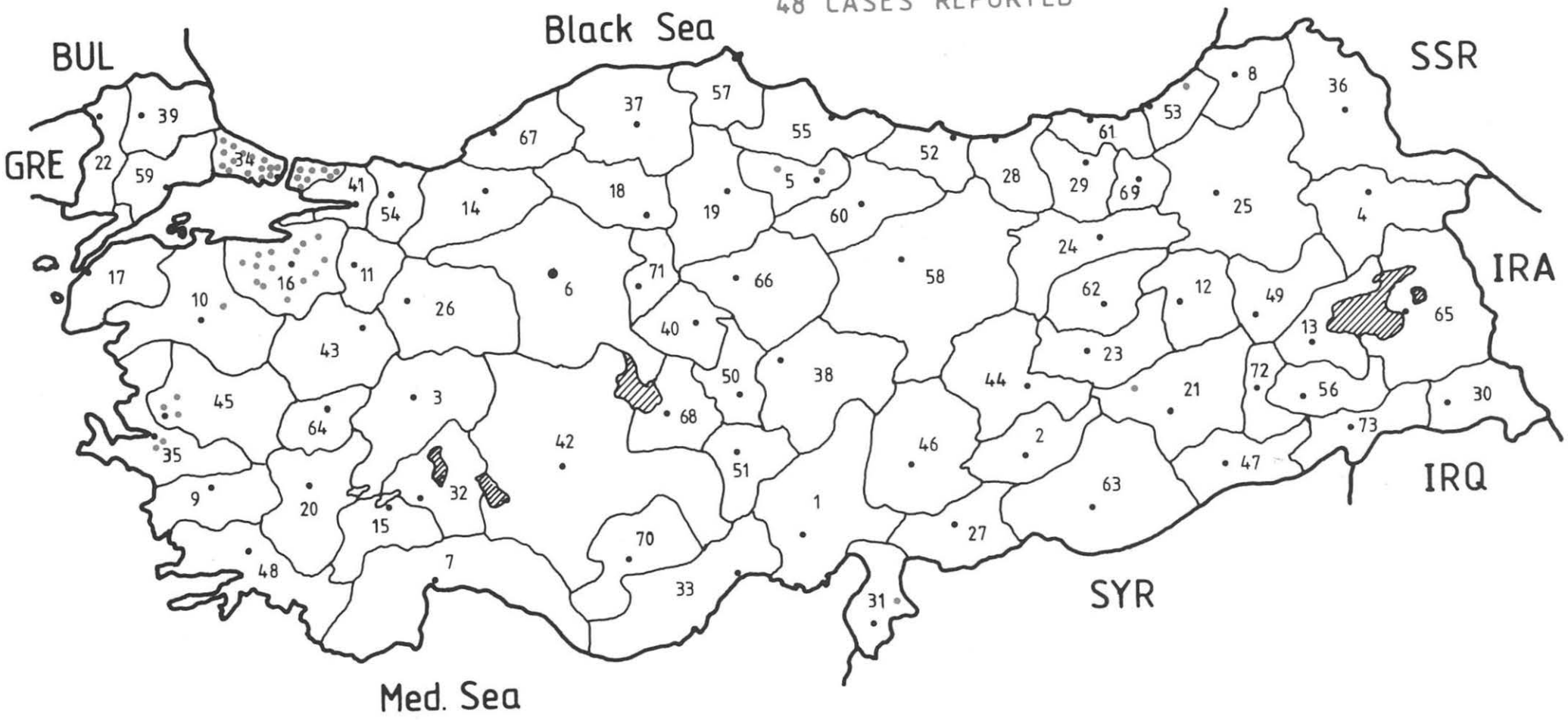
RABIES CASES TURKEY
3rd QUARTER 1999
48 CASES REPORTED



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RABIES CASES EUROPE
3rd QUARTER 1999

1132 CASES REPORTED

17 BAT RABIES CASES INCLUDED

ICE
(rabies free)

NOR
(rabies free)

FIN
(rabies free)

EST
(24)

SWE
(rabies free)

LVA
(32)

RUS
(206)

DEN
(4)

LTU
(67)

RUS

BYE
(31)

IRE
(rabies free)

UNK
(rabies free)

POL
(266)
(1)

NET
(3)

UKR
(no data)

DEU
(9)
(6)

BEL
(2)
(0)

CZH
(38)
(2)

SVK
(97)

MLD
(4)

FRA
(0)

AUT
(1)
(dog case imported from Turkey)

HUN
(77)
(1)

SWI
(rabies free)

ROM
(5)

SVN
(0)

(179)
CRO

ITA
(rabies free)

BIH
(no data)

FRY
(24)

BUL
(6)

TYM
(rabies free)

POR
(rabies free)

SPA
North Africa (2)
(0)

ALB
(rabies free)

TUR
(48)

GRE
(rabies free)

(rabies free) = NO INDIGENOUS CASE REPORTED FOR AT LEAST TWO YEARS

0 50 100 km