RABIES BULLETIN EUROPE

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1. INTRODUCTION

This BULLETIN describes the **reported rabies cases in Europe** for the **First 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 the rabies surveillance in Switzerland is reported in the post-oral vaccination time before the country became rabies-free.

4.2 describes in all details and comments a human rabies case in the United States in 1998.

The **rabies case data** are tabulated for the **First 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 First 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"***, **2201 rabies cases** were reported **in Europe**. Of these 1418 were in wild animals and 783 in domestic animals.

Of the **1418 cases in wild animals**, 1286 were red foxes, 1 arctic fox, 5 corsac foxes, 1 jackal, 9 wolves , 79 raccoon dogs, 1 wild cat, 1 lynx, 2 badgers, 3 stone martens, 5 pine martens, 3 polecats, 1 raccoon, 13 roe deer, 2 red deer, 1 wild boar, 2 bats, 2 other wild animals, 1 unspecified animal.

Of the **783 domestic animals**, 295 were dogs, 143 cats, 37 horses, 3 pigs, 242 bovines, 42 sheep, 20 domestic reindeer, 1 domestic rabbit.

There were **no human cases** reported during ***"This Quarter"***.

The above data are presented in TABLES 5.1 and 5.2 of SECTION 5 and in the TABLES of the individual countries.

For the countries with **fox-mediated rabies** there is usually an increase of rabies cases expected during the first quarter of a year when compared to the last quarter of the previous year; the reason being the increased contact rate in the mating season of the fox. However, this pattern is interfered with due to oral vaccination. Therefore, ***"This Quarter"*** is a mixture of countries following the above pattern, practising oral vaccination successfully or experiencing set-backs.

Generally, the tendency continues: the western countries practising oral vaccination longest have the most improved rabies situation. Overall, there was an increase of cases in Europe by 308 compared to the previous quarter and an increase by 490 cases compared to the first quarter 1998.

Turkey, the only country in Europe following the pattern of **dog-meditated rabies** and not showing obvious seasonality recorded 34 cases during ***"This Quarter"*** compared to 27 in the previous one.

There was 1 **bat rabies case** each in Germany and Poland. Because of the distinct epidemiological features of the disease, the cases are marked in

a different colour in the map of the ANNEX.

Rabies-free countries in Europe were: Albania, Finland, Greece, Iceland, Ireland, Italy, Macedonia, Norway, Portugal, the mainland and islands of Spain, Sweden, Switzerland, the United Kingdom of Britain and Northern Ireland.

There were **no cases** in Austria, Belgium, Denmark, France, the Netherlands, the Spanish territory of North Africa 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:

42 terrestrial animals (28 foxes, 6 badgers, 1 mink, 5 dogs, 2 cats) and 10 bats (9 *Pipistrellus kuhli*, 1 *Pipistrellus savii*) were examined for rabies during ***"This Quarter"*** but all revealed negative results.

3.2 Austria AUT

by Helmut Schnabl

No case of rabies was diagnosed during ***"This Quarter"***.

Surveillance:

A total of 7361 animal samples were examined for rabies with negative results.

Oral vaccination:

In a spring oral vaccination campaign 318,400 vaccine baits were distributed by small aircraft in an area of 10,275 km². The vaccination covered parts of the following federal provinces: Niederösterreich, Burgenland, Steiermark and Kärnten (see Figure 3.2.1). 8 weeks after the first vaccination campaign the following Bezirke (districts) of the Burgenland were vaccinated a second time: Neusiedl/See, Eisenstadt-Umgebung, Eisenstadt, Mattersburg and Oberpullendorf. The oral vaccination is continued in autumn 1999.

FIGURE 3.2.1
Oral Vaccination Area AUT-Spring 1999

3.3 Belgium BEL

by L. Hallet

No case of rabies was diagnosed during ***"This Quarter"***.

Surveillance:

A total of 273 samples were examined for rabies with

negative results: 157 foxes, 74 bovines, 13 cats, 6 dogs, 15 small ruminants, 3 badgers, 1 stone marten, 3 cervines and 1 bat.

3.4 Bosnia and Hercegovina BIH

No data.

3.5 Bulgaria BUL

by L. Lavchev

One rabies case was reported from Bulgaria in the province of Vratza during ***"This Quarter"***.

3.6 Belarus BYE

by S.N. Shpilevsky

During ***"This Quarter"***, 27 cases of rabies were reported in 5 of 6 regions of the country for the months of February and March 1999. The cases occurred in 15 foxes, 2 wolves, 1 raccoon, 3 dogs, 5 cats and 1 horse.

3.7 Croatia CRO

by Danijela Lamer

During ***"This Quarter"***, a total of 286 cases of rabies was diagnosed in 62 municipalities of Croatia. That represents an increase of 139 cases (+ 95%) compared to the same period in 1998, and also an increase of 139 cases (+ 95%) compared to the previous quarter.

Out of the total, rabies occurred in 248 wild animals (246 foxes, 1 wild cat, 1 marten) and in 38 domestic animals (18 dogs, 14 cats, 1 bovine, 2 sheep, 2 goats and 1 domestic rabbit).

3.8 Czech Republic CZH

by Oldrich Matouch

A total of 72 cases of rabies was reported in the Czech Republic during ***"This Quarter"***, 43 more than in the first quarter 1998. The cases occurred in 69 foxes, 2 roe-deer and 1 domestic dog.

The reasons for the worsening of the rabies situation seems to be the increasing fox population. Furthermore, there might be set-back due to the distribution technique of vaccine baits practised. The aerial dropping more recently practised seems much more effective than the manual distribution.

The highest concentration of cases was recorded in North Bohemia (35) and South Bohemia (18).

Figure 3.8.1. shows rabies cases January to May 1999 and the oral vaccination area of the spring 1999.

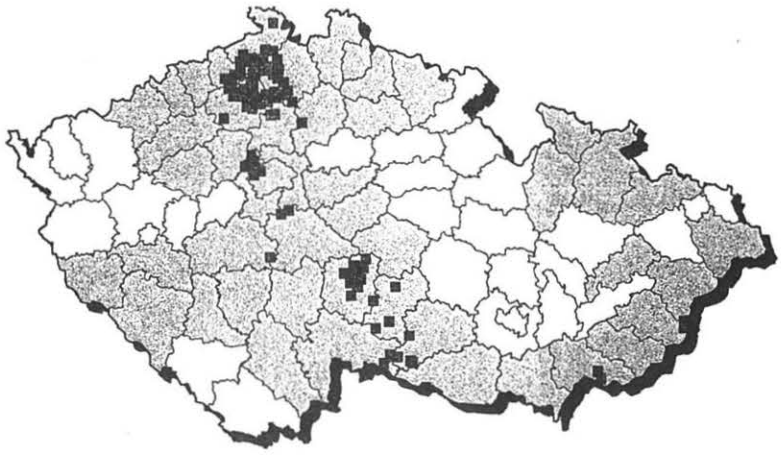
3.9 Denmark DEN

by Eric Stougaard

No case of rabies was diagnosed during ***"This Quarter"***.

FIGURE 3.8.1

Rabies Cases Czech Republic: January to May 1999
Vaccination area: Spring 1999



3.10 Germany, Federal Republic DEU

by Winfried W. Müller and Hartmut Schlüter

During ***"This Quarter"***, 27 rabies cases in terrestrial animals (14 foxes,1 stone marten, 6 roe deer, 1 horse and 5 sheep) and 1 in a bat were reported.

The two new foci which developed during the last quarter recorded less cases, in Hessen from 19 to 6 cases, in Sachsen from 9 to 7 cases. There was an increase of cases in the Nordrhein-Westfalen focus from 8 to 14 cases.

The bat rabies case occurred in the state of Schleswig-Holstein.

3.11 Estonia EST

by Matti Nautras

In 13 of 15 districts of Estonia 43 rabies cases were diagnosed during ***"This Quarter"***, 33 in wild animals (19 foxes, 13 raccoon dogs, 1 lynx) and 10 in domestic animals (5 dogs, 5 cats).

There were concentration of cases in the north and the east of the country.

3.12 Finland FIN

by Elise Saario

The country remained rabies-free.

Surveillance:

A total of 228 animals were examined by immunofluorescence test on brain tissue during ***"This Quarter"***, all with negative results. Of the animals 155 were foxes, 43 raccoon dogs, 3 lynx, 11 pine marten, 1 otter, 1 elk, 6 other wild carnivores, 4 dogs and 4 cats.

3.13 France FRA

by Michel F.A. Aubert

There was no rabies case recorded in the country during ***"This Quarter"***.

Surveillance:

939 samples were examined during ***"This Quarter"*** with negative results.

3.14 Federal Republic of Yugoslavia FRY

No data.

3.15 Greece GRE

The country remained rabies-free.

3.16 Hungary HUN

by Bálint Kerekes

During ***"This Quarter"***, 140 rabies cases in animals were reported. Of these 6 cases were located west of the river Danube and 134 east of it due to the oral vaccination practised in Transdanubia.

There were 113 cases in foxes (80.7% of total) and 27 cases in domestic animals (9 dogs, 13 cats, 2 bovines, 1 horse, 1 sheep, 1 pig).

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. Lukauskas and A. Dranseika

During ***"This Quarter"***, rabies cases increased in comparison with the same period of last year from 39 to 65 cases. 56 cases of the 65 were diagnosed in wild animals (23 foxes, 29 raccoon dogs, 2 polecats, 1 pine marten and 1 roe deer), 9 cases in domestic animals (1 heifer, 3 dogs and 5 stray cats).

During ***"This Quarter"***, the most affected district was Lazdijai with 13 cases in wild animals (9 raccoon dogs, 4 foxes). Lazdijai district is in the South of Lithuania near the border with Poland and it was free from rabies since 1990. In

Utena district 9 cases were registered.

Rabies control becomes often difficult because of the high density of raccoon dogs in some of the districts of Lithuania. In the 1998-1999 hunting season the fox and raccoon dog populations increased approximately by 6000-7000 in comparison to the last hunting season.

During ***"This Quarter"***, more than 77,000 dogs, 9400 cats and other domestic animals were vaccinated against rabies.

There were no human rabies cases registered in the country.

3.21 Luxembourg LUX

by Arthur Besch

After 12 months recording no rabies case, there was 1 case recorded in a horse near the Belgian border in January 1999. There were no cases in February and March.

During 22-30 March 1999 an oral vaccination campaign was carried out covering the whole country. 44,000 *Raboral* vaccine baits were distributed by helicopter. A second campaign is planned for September 1999.

Additionally, in the beginning of June vaccine baits are going to be distributed manually near dens to reach the young foxes. Approx. 16,000 *Raboral* vaccine baits are going to be used.

Surveillance:

12 foxes and 1 ferret were examined for rabies during ***"This Quarter"*** revealing negative results.

3.22 Latvia LVA

by J. Rimeicāns and E. Jēgers

36 rabies cases were registered during ***"This Quarter"*** in 15 districts. 27 cases were diagnosed in wild animals (75% of total). 22 of the cases in wild animals were foxes, 4 raccoon dogs, 1 red deer. Of 9 rabies cases in domestic animals 5 were dogs, 2 cats, 1 bovine and 1 horse. The most affected districts were Kuldīgas and Ludzas with 5 cases each.

3.23 Moldova MLD

by Vasile Bahau, A. Ganea and V.Kilary

During ***"This Quarter"***, 49 samples (originating from 6 bovines, 1 sheep, 16 dogs, 7 cats, 18 wild animals, 1 rodent) were examined for rabies by the Central Veterinary Investigation Laboratory. 21 animals were diagnosed rabid: Slobozia - 3 bovines; Town Kichinev - 1 dog, 1 cat; Rezina - 1 bovine, 1 fox; Town Taraclia - 1 cat; Hincheshti - 1 dog, 1 fox; New Anena - 1 dog, 3 foxes; Chimishlia - 1 dog, 1 fox; Rishcani - 1 fox; Kausheni - 1 bovine, 1 fox; Nisporeni - 1 dog; Glodeni - 1 fox.

3.24 Netherlands NET

by G. Visser

There was no rabies case diagnosed during ***"This Quarter"***.

Surveillance:

13 animals (2 dogs, 2 cats, 9 bats) were examined for rabies but revealed negative results.

3.25 Norway NOR

by Eivind Liven

The country remained rabies-free.

3.26 Poland POL

by Andrzej Komorowski

During ***"This Quarter"***, 262 rabies cases in animals were registered in Poland including 1 bat rabies case. The total number of cases decreased by 81 cases compared to the previous quarter, it decreased by 118 cases compared to the first quarter 1998.

With an oral vaccination programme going since 1992 the western half of the country has large areas free of rabies while the untreated eastern half is still infected.

In 1999 a new administrative structure has been introduced to Poland. The country is

now divided into 16 provinces compared to 49 previously.

3.27 Portugal POR

The country remained rabies-free.

3.28 Romania ROM

by Niculai Popârlan

During *"This Quarter"*, 19 rabies cases were recorded in Romania, 11 in domestic animals (2 dogs, 3 cats, 2 bovines, 4 sheep) and 8 in wild animals (6 foxes, 2 other wild animals).

The cases were scattered throughout the country.

3.29 Russia RUS European part only

by V.A.Vedernikov, V.A.Sedov, P.N.Pitalev,A.M.Juljukin, B.L.Cherkasskiy, V.J. Ladnyi, V.V.Seliverstov, V.F.Pilinin, and S.A. Kolomizev

During *"This Quarter"*, 978 rabies cases in animals were reported.

Of the total number of cases 563 were in domestic animals - 193 dogs, 76 cats, 212 cattle, 32 horses, 28 sheep, 2 pigs, 20 domestic reindeer.

Of 415 wild animals rabies was diagnosed in 395 foxes, 7 wolves, 4 raccoon dogs, 5 korsars (*Vulpes corsac L.*), 1 pine marten, 1 arctic fox, 1 jackal (*Canis aurous L.*), 1 roe deer.

Most affected by the disease were the Republic of Bashkortostan with 269 cases, the Orenburg Region with 99 cases, the Republic of Tatarstan with 95 cases, the Samara Region with 65 cases and the Volgograd Region with 61 cases.

3.30 Spain SPA

by Carlos Abellán García

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

There were no cases in the Spanish territory of North Africa, however, the last case in this area was less than two years ago to gain the status of rabies-free.

3.31 Slovak Republic SVK

by Jozef Sokol and Bohuslav Lovas

During *"This Quarter"*, there were 188 rabies cases in animals in the Slovak Republic. Of these 166 (88.3% of total) were in wild animals (157 foxes, 1 badger, 4 other mustelides, 3 deer, 1 wild boar) and 22 (11.7% of total) domestic animals (10 dogs, 12 cats).

3.32 Slovenia SVN

by Zoran Kovač

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

3.33 Sweden SWE

The country remained rabies-free.

3.34 Switzerland SWI

by Urs Breitenmoser

The country remained rabies-free.

See surveillance report in this BULLETIN under 4.1.

3.35 Turkey TUR

by Celal Özcan

During *"This Quarter"*, 34 rabies cases in animals were reported in Turkey. All cases were in domestic animals: 31 dogs, 3 bovines.

Bursa and Istanbul provinces recorded 11 and 9 cases respectively. All others less than 4.

3.36 Macedonia TYM

The country remained rabies-free.

3.37 Ukraine UKR

No data.

3.38 United Kingdom UNK

by W.J. Pollitt

The country remained rabies-free.

4. MISCELLANEOUS ARTICLES

4.1 Rabies Surveillance in Switzerland and in the Principality of Liechtenstein 01 January 1997 - 28 February 1999

by Urs Breitenmoser , Uli Müller and Reto Zanoni
University of Berne, Institute of Veterinary-Virology
Swiss Rabies Center, Länggass-Str. 122, CH-3012 Bern, Switzerland

Editors Note

Surveillance plays an important part in the planning of rabies control. It is expected that countries have a significant sample size of good quality collected and an up-to-date laboratory technology is practised to examine these samples. Furthermore, the received results need to be distributed to the appropriate offices, national as well as international, for evaluation.

With the well established oral fox vaccination against rabies in Europe the surveillance obtains a special status.

***Before** vaccination, in infected countries, rabies surveillance is usually satisfactory, particularly when hunting incentives (e.g. bounties) are granted. Generally, surveillance is also sufficiently intensive **during** vaccination campaigns, particularly where hunters and wildlife services are engaged in follow-up examinations of bait-uptake and seroconversion of foxes. However, problems arise with rabies surveillance **after** vaccination as the need for samples is not recognised by the hunters since rabies seems to be eradicated. This of course can be problematical as far as residual foci could remain and hamper final eradication of the disease.*

Therefore, at a WHO Seminar on Wildlife Rabies Control (Geneva 2 to 5 July, 1990) "Proposed Guiding Principles for Post-Vaccination Surveillance of Wildlife Rabies in Europe" were presented (WHO Report WHO/CDS/VPH/ 90.93 pp. 23-25). These general principles may need to be adjusted for certain countries; they should be seen as minimum requirements.

The Swiss colleagues followed the above guidelines. Here is their report.

On December 21, 1996 a dog from the community of Birsfelden (canton of Basel-Landschaft) was sent to the Swiss Rabies Center for diagnosis. Cell culture isolation revealed the animal to be rabies positive early in January 1997. This dog was the last endemic case (a rabid dog imported from Morocco in summer 1997 is not considered here) of rabies in Switzerland. The previous rabies case had been diagnosed in a stone marten on September 2, 1996. This turned out to be the last case of rabies in a wild animal. The last case of rabies in the principality of Liechtenstein was detected in a fox on July 25, 1986.

Vaccination campaigns since the last case of rabies

According to the current concept of rabies control in Switzerland (See: "An adapted concept for the elimination of sylvatic rabies in Switzerland." by Breitenmoser, U. & R. Zanoni in RABIES BULLETIN EUROPE 19[4]: 13-16; 1995) campaigns of orally vaccinating foxes against rabies must continue for two years after the last case confirmed. In 1997 oral vaccination was applied over 5080 km² during the spring and autumn campaigns. The area vaccinated included the cantons of Neuenburg, Berne, Jura, Basel-Landschaft, Solothurn, Basel-Stadt, Aargau, Luzern, Schaffhausen, Zürich (see FIGURE 4.1.1 on rabies surveillance 1997). In parts of the cantons of Basel-Landschaft, Solothurn, and Aargau, an additional campaign for the vaccination of fox cubs at the den took place in early summer 1997. At the annual meeting for the coordination of rabies control in February 1998 the Swiss Federal Veterinary Office (BVET), the cantons involved, the principality of Liechtenstein and the Swiss Rabies Center decided to carry out only one more vaccination campaign in spring 1998, and to discontinue the den vaccinations. This seemed to be justified because the last case dated back to over a year before and the last case of rabies in a wild animal had occurred 17 months before. The vaccinated area in spring 1998 covered 1420 km² in the cantons of Solothurn, Basel-Landschaft, Basel-Stadt, and Aargau (FIGURE 4.1.2 on rabies surveillance 1998/99). In all spring and autumn vaccination campaigns in 1997 and 1998, baits produced by VIRBAC with the attenuated SAG2® vaccine were distributed at a density of 25/km².

TABLE 4.1.1

Surveillance of rabies in 1997/98 (until the end of the 1998/99 hunting season). Area vaccinated (AV) in 1997:5080 km², 1998: 1420 km². Density values are in animals/100 km² and relate to AV 1997.

Species	*1997*			*1998/99*		
	Total	*Within AV 1997*	*Density*	*Total*	*Within AV 1997*	*Density*
Red foxes	724	496	9.8	714	494	9.7
Other wildlife	145	101	2.0	76	57	1.1
Domestic animals	138	71	1.4	89	48	0.9
TOTAL	**1007**	**668**	**13.2**	**879**	**599**	**11.8**
Bats	28			18		

Surveillance

TABLE 4.1.1 (see previous page) shows the number of animals analysed for rabies at the Swiss Rabies Center since January 1, 1997. Animals sampled until February 28, 1999 are included in the table (end of the 1998/99 hunting season and end of the two-year surveillance period after the last known case). Origin and distribution of animals analysed is shown in the maps (FIGURES 4.1.1 and 4.1.2 next page).

According to the guidelines of the WHO regarding the attainment of the "rabies free" status, rabies surveillance must be carried out for an area of at least 5000 km² for a preceding period of two years with a sample size of at least 8 animals per 100 km². Since the vaccinated zone in 1998 was considerably smaller than 5000 km², all density values in TABLE 4.1.1 relate to the vaccination zone 1997. After the sharp decrease of rabies in 1995 (25 cases) and 1996 (6 cases including 1 fox) it became difficult to sustain a sufficient surveillance. Still, the required density was reached. The distribution of the samples was satisfactory (see FIGURES 4.1.1 and 4.1.2). In line with the official directives, suspect animals from all over Switzerland and the principality of Liechtenstein were collected and analysed for rabies. This should ensure that no rabies cases remained undetected outside the last vaccination zones.

Situation in the neighbouring countries

There have been no rabies cases close to the Swiss border over the past two years. Italy is rabies free. In Austria the last rabies case was diagnosed in Tyrol in the first quarter of 1997; since then rabies persisted in Austria only close to the borders with the Czech Republic and Hungary. Within Germany the closest rabies foci were found in the federal state of Saarland at a distance of some 200 km from Switzerland. France had single cases only in its border region to the Saarland in Germany and to Belgium. All neighbouring countries will probably be rabies free in the near future.

Future rabies surveillance

In parallel with increasing temporal and spatial distance to the nearest rabies cases, a reinfection will become increasingly less likely. Nonetheless the risk of undetected residual foci has to be kept in mind. In northwestern Switzerland, where the last endemic areas were situated, we consider the risk of the existence of a residual focus to be very low. However, the possibility of an extremely prolonged incubation period in wild animals cannot be completely excluded. Due to the current reproductive period the herd immunity amongst foxes will be significantly reduced. A residual focus would immediately induce a striking eruption of new cases under these conditions.

It must also be stressed that rabies in bats persists in the whole of Europe and could, at worst, be transmitted to animals and even man. Bat rabies is rare and only 2 cases have been diagnosed in Switzerland to date. However, since it is epidemiologically independent of fox rabies, the risk of this zoonosis will continue to persist after the eradication of sylvatic rabies.

Therefore, it is necessary to continue sampling of clinically suspect wild and domestic animals for rabies diagnosis not only in northwestern Switzerland but also in the rest of the country and the principality of Liechtenstein. This is of major importance in relation with any exposure of humans to suspect animals.

Rabies Surveillance in Switzerland and Liechtenstein

FIGURE 4.1.1 - 01.01-31.12.1997

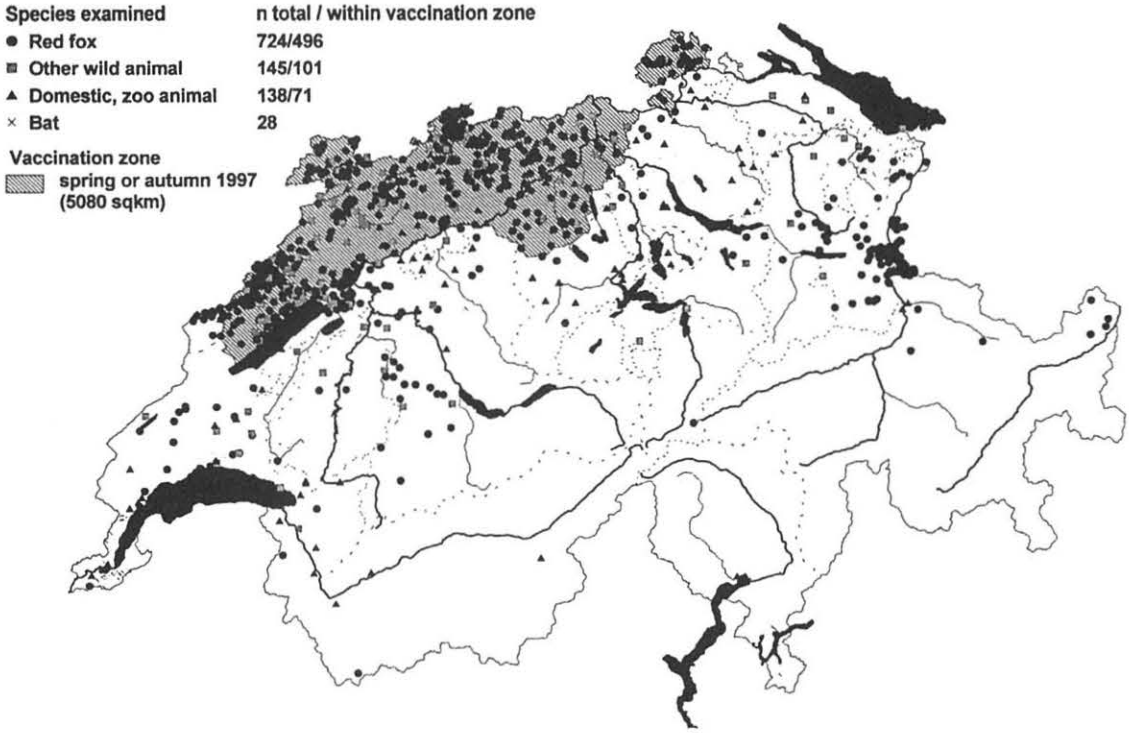
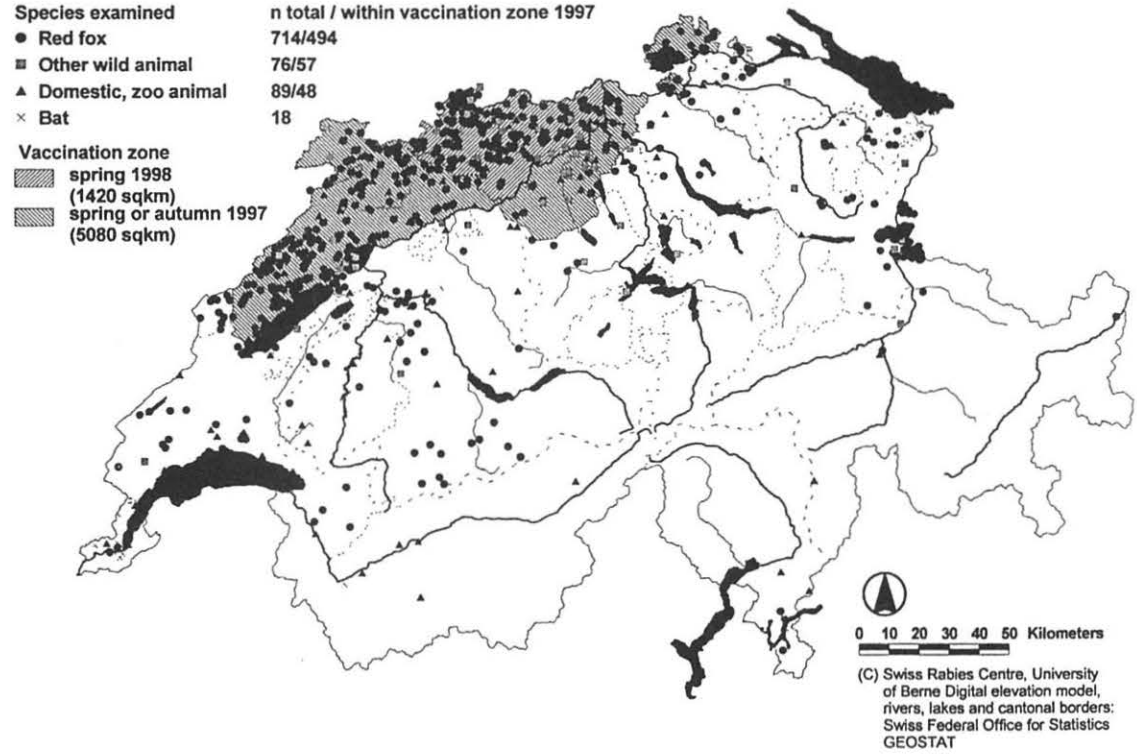


FIGURE 4.1.2 - 01.01.1998 - 28.02.1999



4.2 Human Rabies - Virginia, USA, 1998

On December 31, 1998, a 29-year-old man in Richmond, Virginia, died from rabies encephalitis caused by a rabies virus variant associated with insectivorous bats. This report summarizes the clinical and epidemiologic investigations by the Virginia Department of Health and CDC.

On December 14, 1998, an inmate at the Nottoway Correctional Center in Nottoway County, Virginia, developed malaise and back pain while working on a roadside clean-up crew. He sought medical care at the prison on December 15, complaining of muscle pains, vomiting, and abdominal cramps, and was treated with acetaminophen. His clinical signs progressed to include persistent right wrist pain, muscle tremors in his right arm, and difficulty walking. On December 18, the patient was sent to a Richmond emergency department, where he had a temperature of 103 F (39.4 C). He initially was alert and oriented but had visual hallucinations. During the next 12 hours, he became increasingly agitated and less oriented. Physical examination revealed anisocoria, increased tone in the right forearm, and hyperesthesia over the entire right side of the body. Intoxication with anticholinergic agents such as pesticides or Jimson weed was considered; however, toxicology studies were negative.

The patient's condition worsened, with hypersalivation, priapism, and wide fluctuations in body temperature and blood pressure. He was intubated and heavily sedated on December 20. Laboratory findings included a white blood cell count of 20,800/µL (normal: 3700-9400/µL), myoglobinuria, and a compensated metabolic anion gap acidosis with renal insufficiency. Peak creatine phosphokinase levels were 130,900 U/L (normal: 50-450 U/L), indicating rhabdomyolysis. Analysis of cerebrospinal fluid (CSF) showed a white blood cell count of pf 57/µL (normal: 0-5/µL), protein levels of 128 mg/dL (normal: 12-60 mg/dL), and glucose levels of 46 mg/dL (normal: at least two thirds of a concurrent serum glucose value, which was approximately 136 mg/dL). A computed tomography scan of the patient's head revealed no abnormal findings.

A diagnosis of rabies was first considered by the patient's physician on December 20. Samples sent to CDC for testing on December 21 included a nuchal skin biopsy, which tested positive for rabies virus by direct fluorescent antibody test on December 22, and saliva and skin, which were positive by reverse-transcriptase polymerase chain reaction (RT-PCR) assay on December 23. The sequence of the amplified RT-PCR product showed >99.7% DNA homology to a rabies virus variant associated with eastern pipistrelle bats (*Pipistrellus subflavus*) and silver-haired bats (*Lasionycteris noctivagans*). Serum and CSF samples obtained December 21 contained rabies virus neutralizing antibody titers of 1:50 and 1:36, respectively, by rapid fluorescent focus inhibition test (RFFIT). A serum sample obtained December 28 showed a rabies virus neutralizing antibody titer of 1:1200 by RFFIT. After the removal of all sedatives, the patient showed no purposeful movement and loss of brainstem reflexes. He died December 31.

Post-exposure prophylaxis (PEP) was administered to 48 persons who possibly had contact with the patient's saliva between December 4 (10 days preceding the first clinical signs of illness) and death. Of the 48, 29 were prison inmates who reported possible contact with the patient's saliva, either while caring for him during his illness or through shared cigarettes or drinking and eating utensils. Three family members who visited the patient at the prison on December 6, 15 health-care providers, and the pathologist who conducted the autopsy also received PEP.

Family members, friends, and prison staff reported the patient had not indicated any contact with or bite from an animal in recent months, and prison medical records did not document evidence of a bite or scratch. The

patient lived at a work center that housed up to 160 inmates in two separate dormitories. He had worked around the prison on a farm repairing fence lines and feeding cattle, in a paper recycling facility, and along roadside cleaning up trash and debris. No evidence of bats was found within the prison or on prison grounds, although inmates reported occasionally seeing bat flying near the outdoor lights in the summer. Several stray cats were reported to occasionally approach inmates at the facility; however, the patient was not known to have handled them.

The patient had been incarcerated at Nottoway for approximately 6 weeks after transfer from another correctional unit. At the other correctional facility, the patient worked inside the prison and on a road crew cutting brush and picking up trash along highways. No evidence of bats was found in the prison, and inmates reported that they had never seen bats inside the facility.

MMWR's Editorial Note: This report describes the only case of human rabies diagnosed in the United States during 1998 and the first case in Virginia since 1953. A definitive history of an animal bite could not be established for this patient, and the most likely explanation is an unrecognized bat bite occurring either at the farm or recycling facility or while the patient was working on a road crew. Because the incubation period for rabies varies from several weeks to several months, he may have contracted rabies before his transfer to Nottoway.

Since 1990, 27 human rabies cases have occurred in the United States (an average of three cases per year). Although 20 (74%) have been attributed to bat-associated variants of the rabies virus, a definitive history of a bat bite was established for only one of these cases. Of the 20 attributed to bat-associated variants, 15 (75%) have been caused by the same eastern pipistrelle/silver-haired bat variant responsible for the death described in this report. Although bat-associated rabies virus variants theoretically can be secondarily transmitted from terrestrial mammals, an unrecognized bat bite is the most likely explanation for these cases.

The reasons for the preponderance of human rabies cases associated with the eastern pipistrelle/silver-haired bat virus variant remain speculative. Epidemiologic findings suggest that it can be transmitted following minor, undetected exposure. Insectivorous bats, such as those implicated in the human rabies deaths in the United States, have small teeth that may not cause an obvious wound in human skin. Accordingly, it is important to treat persons for rabies exposure when the possibility of a bat bite cannot be reasonably excluded. In all cases where bat-human contact has occurred, the bat should be collected and tested for rabies if possible. If the bat is not available for rabies testing, the need for PEP should be assessed by public health officials familiar with recent recommendations.

The total of 48 persons who received PEP after contact with the patient described in this report is similar to the mean of 49.8 persons who received PEP after exposures to human rabies cases during 1990-1997. Consideration of rabies before the patient's death may have minimized the number of hospital staff that received PEP in this case.

Although this patient did not exhibit classic hydrophobia, other typical clinical signs, such as hypersalivation, hallucinations, priapism, paresthesias, muscle spasms, and autonomic instability occurred. The use of sedatives may have masked hydrophobia in this patient. Medical personnel should consider rabies as a diagnosis in any case presenting with the acute onset and rapid progression of compatible neurologic signs, regardless of whether the patient reports a history of an animal bite. Although early diagnosis cannot save the patient, it may help minimize the number of potential exposures and the need for PEP.

(Taken from Morbidity and Mortality Weekly Report [MMWR], Vol. 48, No. 5, 1999; Centers for Disease Control and Prevention, Atlanta, Georgia 30333, U.S.A.)

TABLE 5.1

EUR EUROPE 1/99 RABIES CASES 1. 1.99 - 31. 3.99

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 *							0						0		0
BEL BELGIUM *							0						0		0
BIH BOSNA I HERCEGOWIN**							0						0		0
BUL BULGARIA							0	-	-	-	-	1	1		1
BYE BELARUS 1)	3	5	-	1	-	-	9	15	-	-	-	3	18		27
CRO CROATIA	18	14	1	-	4	1	38	246	-	1	-	1	248		286
CZH CZECH REPUBLIC	1	-	-	-	-	-	1	69	-	-	2	-	71		72
DEN DENMARK *							0						0		0
DEU FED.REP.OF GERMANY	-	-	-	1	5	-	6	14	-	1	6	1	22		28
EST ESTONIA	5	5	-	-	-	-	10	19	-	-	-	14	33		43
FIN FINLAND *							0						0		0
FRA FRANCE *							0						0		0
FRY FED.REP.OF YUGOSLA**							0						0		0
GRE GREECE *							0						0		0
HUN HUNGARY	9	13	2	1	1	1	27	113	-	-	-	-	113		140
ICE ICELAND *							0						0		0
IRE IRELAND *							0						0		0
ITA ITALY *							0						0		0
LTU LITHUANIA	3	5	1	-	-	-	9	23	-	3	1	29	56		65
LUX LUXEMBOURG	-	-	-	1	-	-	1						0		1
LVA LATVIA	5	2	1	1	-	-	9	22	-	-	1	4	27		36
MLD MOLDOVA	5	2	5	-	-	-	12	9	-	-	-	-	9		21
NET NETHERLANDS *							0						0		0
NOR NORWAY *							0						0		0
POL POLAND	10	6	15	-	-	-	31	198	1	1	1	30	231		262
POR PORTUGAL *							0						0		0
ROM ROMANIA	2	3	2	-	4	-	11	6	-	-	-	2	8		19
RUS RUSSIAN FEDERATION	193	76	212	32	28	22	563	395	-	1	1	18	415		978
SPA SPAIN *							0						0		0
SVK SLOVAK REPUBLIC	10	11	-	-	-	1	22	157	1	4	3	1	166		188
SVN SLOVENIA *							0						0		0
SWE SWEDEN *							0						0		0
SWI SWITZERLAND + LIEC*							0						0		0
TUR TURKEY	31	-	3	-	-	-	34						0		34
TYM MAKEDONIJA *							0						0		0
UKR UKRAINE **							0						0		0
UNK UNITED KINGDOM *							0						0		0
TOTAL	295	142	242	37	42	25	783	1286	2	11	15	104	1418	0	2201
PER CENT	13.4	6.5	11.0	1.7	1.9	1.1	35.6	58.4	0.1	0.5	0.7	4.7	64.4	0.0	100.0

* NO CASES ** NO DATA 1) NO DATA FOR JANUARY

TABLE 5.2

EUR EUROPE 1/99 RABIES CASES 'OTHER ANIMAL SPECIES' 1. 1.99 - 31. 3.99

LOCATION		OTHER DOMESTIC ANIMALS				OTHER WILD ANIMALS											UNSPEC.	TOTAL
CODE	NAME	PIG	OTH.DOM HERBIVO	DOMEST RABBIT	CAT LIV WILD	ARCTIC FOX	OTHER FOX	JACKAL	WOLF	RACCOON DOG	WILD CAT	LYNX	RACCOON	WILD BOAR	INSECT BAT	OTH.W ANIMA		
BUL	BULGARIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
BYE	BELARUS	-	-	-	-	-	-	-	2	-	-	-	1	-	-	-	-	3
CRO	CROATIA	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	2
DEU	FED.REP.OF	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
EST	ESTONIA	-	-	-	-	-	-	-	-	13	-	1	-	-	-	-	-	14
HUN	HUNGARY	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
LTU	LITHUANIA	-	-	-	-	-	-	-	-	29	-	-	-	-	-	-	-	29
LVA	LATVIA	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	4
POL	POLAND	-	-	-	-	-	-	-	-	29	-	-	-	-	1	-	-	30
ROM	ROMANIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2
RUS	RUSSIAN FE	2	20	-	-	1	5	1	7	4	-	-	-	-	-	-	-	40
SVK	SLOVAK REP	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	2
TOTAL		3	20	1	1	1	5	1	9	79	1	1	1	1	2	2	1	129
PER CENT		2.3	15.5	0.8	0.8	0.8	3.9	0.8	7.0	61.2	0.8	0.8	0.8	0.8	1.6	1.6	0.8	100.0

RABIES CASES 1. 1.99 - 31. 3.99

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
ROM ROMANIA															
01 ALBA	-	1	-	-	-	-	1						0		1
04 BACAU							0	2	-	-	-	-	2		2
18 GALATI							0	1	-	-	-	-	1		1
24 IASI	-	1	1	-	-	-	2						0		2
31 SATU-MARE	-	1	-	-	-	-	1						0		1
34 SUCEAVA	1	-	-	-	-	-	1	-	-	-	-	1	1		2
37 TULCEA	1	-	1	-	1	-	3	3	-	-	-	-	3		6
39 VILCEA	-	-	-	-	3	-	3	-	-	-	-	1	1		4
TOTAL	2	3	2	0	4	0	11	6	0	0	0	2	8	0	19
PER CENT	10.5	15.8	10.5	0.0	21.1	0.0	57.9	31.6	0.0	0.0	0.0	10.5	42.1	0.0	100.0
TUR TURKEY															
10 BALIKESIR	2	-	-	-	-	-	2						0		2
16 BURSA	11	-	-	-	-	-	11						0		11
27 GAZIANTEP	2	-	-	-	-	-	2						0		2
31 HATAY	-	-	1	-	-	-	1						0		1
34 ISTANBUL	8	-	1	-	-	-	9						0		9
35 IZMIR	3	-	-	-	-	-	3						0		3
36 KARS	1	-	-	-	-	-	1						0		1
45 MANISA	2	-	-	-	-	-	2						0		2
46 KAHRAMANMARAS	1	-	-	-	-	-	1						0		1
54 SAKARYA	-	-	1	-	-	-	1						0		1
68 AKSARAY	1	-	-	-	-	-	1						0		1
TOTAL	31	0	3	0	0	0	34	0	0	0	0	0	0	0	34
PER CENT	91.2	0.0	8.8	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0

RABIES CASES 1. 1.99 - 31. 3.99

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 1)															
02	Vitebsk Region							0	5	-	-	-	1	6		6
03	Gomel Region	3	2	-	-	-	-	5	2	-	-	-	-	2		7
04	Grodno Region	-	1	-	-	-	-	1	3	-	-	-	-	3		4
05	Minsk Region	-	1	-	1	-	-	2	2	-	-	-	-	2		4
06	Mogilev Region	-	1	-	-	-	-	1	3	-	-	-	2	5		6
TOTAL		3	5	0	1	0	0	9	15	0	0	0	3	18	0	27
PER CENT		11.1	18.5	0.0	3.7	0.0	0.0	33.3	55.6	0.0	0.0	0.0	11.1	66.7	0.0	100.0
LTU	LITHUANIA															
34	Anyksciu							0	-	-	-	-	1	1		1
38	Varenos	-	1	-	-	-	-	1	2	-	-	-	-	2		3
41	Vilniaus							0	1	-	-	-	-	1		1
49	Kaisiadoriu							0	-	-	-	-	1	1		1
51	Marijampoles	-	-	1	-	-	-	1	2	-	-	-	1	3		4
52	Kauno							0	2	-	-	1	-	3		3
53	Kedainiai							0	1	-	-	-	-	1		1
55	Klaipedos	1	-	-	-	-	-	1	2	-	-	-	2	4		5
59	Lazdiju							0	4	-	-	-	9	13		13
62	Moletu							0	-	-	-	-	2	2		2
65	Pakruojo							0	2	-	-	-	-	2		2
66	Panevezio	1	1	-	-	-	-	2						0		2
67	Pasvalio	-	1	-	-	-	-	1	4	-	-	-	-	4		5
72	Raseiniai	-	1	-	-	-	-	1	-	-	1	-	1	2		3
73	Rokiskio							0	-	-	-	-	1	1		1
79	Traku							0	-	-	-	-	1	1		1
82	Utenos							0	2	-	-	-	7	9		9
85	Salcininku	1	1	-	-	-	-	2	1	-	-	-	1	2		4
87	Silales							0	-	-	-	-	1	1		1
89	Sirvintu							0	-	-	1	-	1	2		2
91	Siauliu							0	-	-	1	-	-	1		1
TOTAL		3	5	1	0	0	0	9	23	0	3	1	29	56	0	65
PER CENT		4.6	7.7	1.5	0.0	0.0	0.0	13.8	35.4	0.0	4.6	1.5	44.6	86.2	0.0	100.0

1) NO DATA FOR JANUARY

RABIES CASES 1. 1.99 - 31. 3.99

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															
00 District of Prague							0	3	-	-	-	-	3		3
01 Central Bohemia							0	10	-	-	1	-	11		11
02 South Bohemia							0	18	-	-	-	-	18		18
04 North Bohemia	1	-	-	-	-	-	1	33	-	-	1	-	34		35
06 South Moravia							0	5	-	-	-	-	5		5
TOTAL	1	0	0	0	0	0	1	69	0	0	2	0	71	0	72
PER CENT	1.4	0.0	0.0	0.0	0.0	0.0	1.4	95.8	0.0	0.0	2.8	0.0	98.6	0.0	100.0
MLD MOLDOVA															
01 MOLDOVA	5	2	5	-	-	-	12	9	-	-	-	-	9		21
TOTAL	5	2	5	0	0	0	12	9	0	0	0	0	9	0	21
PER CENT	23.8	9.5	23.8	0.0	0.0	0.0	57.1	42.9	0.0	0.0	0.0	0.0	42.9	0.0	100.0
POL POLAND															
04 Kujawsko-Pomorskie	2	3	6	-	-	-	11	31	1	-	-	5	37		48
06 Lubelskie							0	18	-	-	-	-	18		18
10 Lodzkie							0	5	-	-	-	-	5		5
12 Malopolskie	2	1	-	-	-	-	3	6	-	-	-	1	7		10
14 Mazowieckie	1	-	1	-	-	-	2	32	-	1	-	4	37		39
18 Podkarpackie	4	1	-	-	-	-	5	14	-	-	-	1	15		20
20 Podlaskie	-	-	4	-	-	-	4	28	-	-	-	6	34		38
26 Swietokrzyskie							0	8	-	-	-	-	8		8
28 Warminsko-Mazurskie	1	1	4	-	-	-	6	47	-	-	1	13	61		67
30 Wielkopolskie							0	9	-	-	-	-	9		9
TOTAL	10	6	15	0	0	0	31	198	1	1	1	30	231	0	262
PER CENT	3.8	2.3	5.7	0.0	0.0	0.0	11.8	75.6	0.4	0.4	0.4	11.5	88.2	0.0	100.0

R A B I E S C A S E S 1. 1.99 - 31. 3.99

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	-	2	-	-	-	-	2	46	-	-	-	-	46		48
03 Sisacko-Moslavaca	4	1	-	-	-	-	5	41	-	-	-	-	41		46
04 Karlovacka							0	9	-	-	-	-	9		9
06 Koprivnicko-Krizevack							0	31	-	-	-	-	31		31
07 Bjelovarsko-Bilogorsk	-	-	-	-	1	-	1	14	-	-	-	-	14		15
08 Primorsko-Goranska							0	7	-	-	-	-	7		7
09 Licko-Senjska							0	27	-	-	-	-	27		27
10 Viroviticko-Podravska	1	1	-	-	-	-	2	4	-	-	-	-	4		6
12 Brodsko-Posavska							0	7	-	-	-	-	7		7
13 Zadarska	1	3	-	-	1	-	5	5	-	-	-	-	5		10
14 Osijecko-Baranjska	4	1	-	-	-	-	5	18	-	-	-	-	18		23
15 Sibensko-Kninska	-	2	1	-	-	-	3	3	-	-	-	1	4		7
16 Vukovarsko-Srijemska	2	-	-	-	-	-	2	13	-	-	-	-	13		15
17 Splitsko-Dalmatinska	4	4	-	-	-	1	9	10	-	1	-	-	11		20
18 Istarska							0	2	-	-	-	-	2		2
19 Dubrovacko-Neretvansa	-	-	-	-	2	-	2						0		2
21 Zagreb	2	-	-	-	-	-	2	9	-	-	-	-	9		11
TOTAL	18	14	1	0	4	1	38	246	0	1	0	1	248	0	286
PER CENT	6.3	4.9	0.3	0.0	1.4	0.3	13.3	86.0	0.0	0.3	0.0	0.3	86.7	0.0	100.0
DEU FED.REP.OF GERMANY															
01 Schleswig-Holstein							0	-	-	-	-	1	1		1
05 Nordrhein-Westfalen	-	-	-	1	5	-	6	5	-	-	3	-	8		14
06 Hessen							0	6	-	-	-	-	6		6
14 Sachsen							0	3	-	1	3	-	7		7
TOTAL	0	0	0	1	5	0	6	14	0	1	6	1	22	0	28
PER CENT	0.0	0.0	0.0	3.6	17.9	0.0	21.4	50.0	0.0	3.6	21.4	3.6	78.6	0.0	100.0
LUX LUXEMBOURG															
09 WILTZ	-	-	-	1	-	-	1						0		1

RABIES CASES 1. 1.99 - 31. 3.99

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	**ESTONIA**															
01	Harjumaa	1	1	-	-	-	-	2	4	-	-	-	-	4		6
03	Ida-Virumaa							0	2	-	-	-	-	2		2
04	Jogevamaa	-	2	-	-	-	-	2	1	-	-	-	3	4		6
06	Laasanemaa	1	-	-	-	-	-	1						0		1
07	Laasane-Virumaa							0	-	-	-	-	3	3		3
08	Polvamaa							0	-	-	-	-	1	1		1
09	Paernumaa	2	-	-	-	-	-	2	1	-	-	-	-	1		3
10	Raplamaa							0	2	-	-	-	2	4		4
11	Saaremaa							0	1	-	-	-	-	1		1
12	Tartumaa	1	2	-	-	-	-	3	4	-	-	-	4	8		11
13	Valgamaa							0	1	-	-	-	-	1		1
14	Viljandimaa							0	2	-	-	-	-	2		2
15	Vorumaa							0	1	-	-	-	1	2		2
TOTAL		5	5	0	0	0	0	10	19	0	0	0	14	33	0	43
PER CENT		11.6	11.6	0.0	0.0	0.0	0.0	23.3	44.2	0.0	0.0	0.0	32.6	76.7	0.0	100.0
LVA	**LATVIA**															
02	Aluksne							0	1	-	-	-	1	2		2
04	Bauska							0	1	-	-	-	-	1		1
10	Jelgava							0	1	-	-	-	-	1		1
11	Kraslava							0	1	-	-	-	1	2		2
12	Kuldiga	2	1	-	-	-	-	3	1	-	-	1	-	2		5
14	Limbazi							0	2	-	-	-	-	2		2
15	Ludza	1	-	-	1	-	-	2	2	-	-	-	1	3		5
17	Ogre							0	1	-	-	-	-	1		1
18	Preili	-	-	1	-	-	-	1	1	-	-	-	-	1		2
19	Rezekne							0	2	-	-	-	-	2		2
21	Saldus							0	2	-	-	-	1	3		3
23	Tukums	1	-	-	-	-	-	1	1	-	-	-	-	1		2
24	Valka							0	4	-	-	-	-	4		4
25	Valmiera	-	1	-	-	-	-	1	1	-	-	-	-	1		2
26	Ventspils	1	-	-	-	-	-	1	1	-	-	-	-	1		2
TOTAL		5	2	1	1	0	0	9	22	0	0	1	4	27	0	36
PER CENT		13.9	5.6	2.8	2.8	0.0	0.0	25.0	61.1	0.0	0.0	2.8	11.1	75.0	0.0	100.0

RABIES CASES 1. 1.99 - 31. 3.99

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		
HUN HUNGARY															
02 Baranya	-	1	-	-	-	-	1						0		1
03 Bacs-Kiskun	3	6	2	-	-	1	12	26	-	-	-	-	26		38
04 Bekes							0	12	-	-	-	-	12		12
05 Borsod-Abauj-Zemplen	2	2	-	-	-	-	4	8	-	-	-	-	8		12
06 Csongrad	2	1	-	-	-	-	3	17	-	-	-	-	17		20
09 Hajdu-Bihar	-	1	-	-	-	-	1	18	-	-	-	-	18		19
10 Heves	1	1	-	-	-	-	2	4	-	-	-	-	4		6
11 Komarom-Esztergom	-	-	-	1	-	-	1						0		1
12 Nograd	1	1	-	-	1	-	3	6	-	-	-	-	6		9
13 Pest							0	10	-	-	-	-	10		10
14 Somogy							0	1	-	-	-	-	1		1
15 Szabolcs-Szatmar-Bere							0	6	-	-	-	-	6		6
16 Jasz-Nagykun-Szolnok							0	2	-	-	-	-	2		2
17 Tolna							0	3	-	-	-	-	3		3
TOTAL	9	13	2	1	1	1	27	113	0	0	0	0	113	0	140
PER CENT	6.4	9.3	1.4	0.7	0.7	0.7	19.3	80.7	0.0	0.0	0.0	0.0	80.7	0.0	100.0
SVK SLOVAK REPUBLIC															
1 Bratislavsky kraj							0	16	-	-	-	-	16		16
2 Trnavsky kraj	-	1	-	-	-	-	1	4	-	-	-	-	4		5
3 Trenciansky kraj	1	2	-	-	-	1	4	26	-	-	-	-	26		30
4 Nitriansky kraj	2	-	-	-	-	-	2	20	-	-	-	-	20		22
5 Zilinsky kraj	2	-	-	-	-	-	2	8	1	-	-	-	9		11
6 Banskobystricky kraj	3	3	-	-	-	-	6	30	-	1	-	-	31		37
7 Presovsky kraj	2	3	-	-	-	-	5	34	-	3	2	1	40		45
8 Kosicky kraj	-	2	-	-	-	-	2	19	-	-	1	-	20		22
TOTAL	10	11	0	0	0	1	22	157	1	4	3	1	166	0	188
PER CENT	5.3	5.9	0.0	0.0	0.0	0.5	11.7	83.5	0.5	2.1	1.6	0.5	88.3	0.0	100.0

RUS RUSSIAN FEDERATION — RABIES CASES — 1. 1.99 - 31. 3.99

LOCATION		DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
CODE	NAME	DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
01	Arkhangelsk Region	3	-	-	-	-	20	23	-	-	-	-	1	1		24
12	Twer Region	1	1	-	-	-	-	2	1	-	-	-	1	2		4
13	Kaluga Region							0	3	-	-	-	-	3		3
15	Moscow Region	6	5	-	-	-	-	11	7	-	-	-	-	7		18
16	Oryol Region	2	2	3	-	-	-	7	9	-	1	-	-	10		17
17	Ruazan Region	6	-	-	-	-	-	6	1	-	-	-	-	1		7
18	Smolensk Region							0	3	-	-	-	-	3		3
19	Tula Region	3	5	-	-	1	-	9	9	-	-	-	-	9		18
24	Rep. of Mordoviya	-	2	1	-	-	-	3						0		3
26	Belgorod Region	5	8	3	-	1	1	18	10	-	-	-	-	10		28
27	Voronezh Region	4	6	2	1	1	-	14	10	-	-	-	1	11		25
28	Kursk Region	7	4	5	-	-	-	16	16	-	-	-	-	16		32
29	Lipetsk Region							0	3	-	-	-	-	3		3
30	Tambov Region	2	-	2	-	-	-	4	8	-	-	-	-	8		12
31	Astrakhan Region	9	11	11	-	-	-	31	2	-	-	-	5	7		38
32	Volgograd Region	6	2	26	2	18	-	54	5	-	-	-	2	7		61
33	Samara Region	15	2	3	-	2	-	22	42	-	-	1	-	43		65
34	Penza Region	8	1	-	-	-	-	9	34	-	-	-	-	34		43
35	Saratov Region	8	4	8	-	-	-	20	18	-	-	-	-	18		38
36	Ulyanovsk Region	1	1	2	-	-	-	4	12	-	-	-	-	12		16
37	Rep. of Kalmykiya	1	1	8	-	-	-	10						0		10
38	Rep. of Tatarstan	10	4	40	4	-	-	58	37	-	-	-	-	37		95
39	Krasnodar Territory	2	-	-	-	1	-	3						0		3
40	Stavropol Territory	6	2	6	-	2	-	16	4	-	-	-	1	5		21
41	Rostov Region	2	2	3	-	-	-	7	6	-	-	-	4	10		17
42	Orenburg Region	37	7	19	-	-	-	63	33	-	-	-	3	36		99
44	Rep. of Bashkortostan	47	6	70	24	2	1	150	119	-	-	-	-	119		269
45	Rep. of Odmurtiya	2	-	-	1	-	-	3	3	-	-	-	-	3		6
TOTAL		193	76	212	32	28	22	563	395	0	1	1	18	415	0	978
PER CENT		19.7	7.8	21.7	3.3	2.9	2.2	57.6	40.4	0.0	0.1	0.1	1.8	42.4	0.0	100.0

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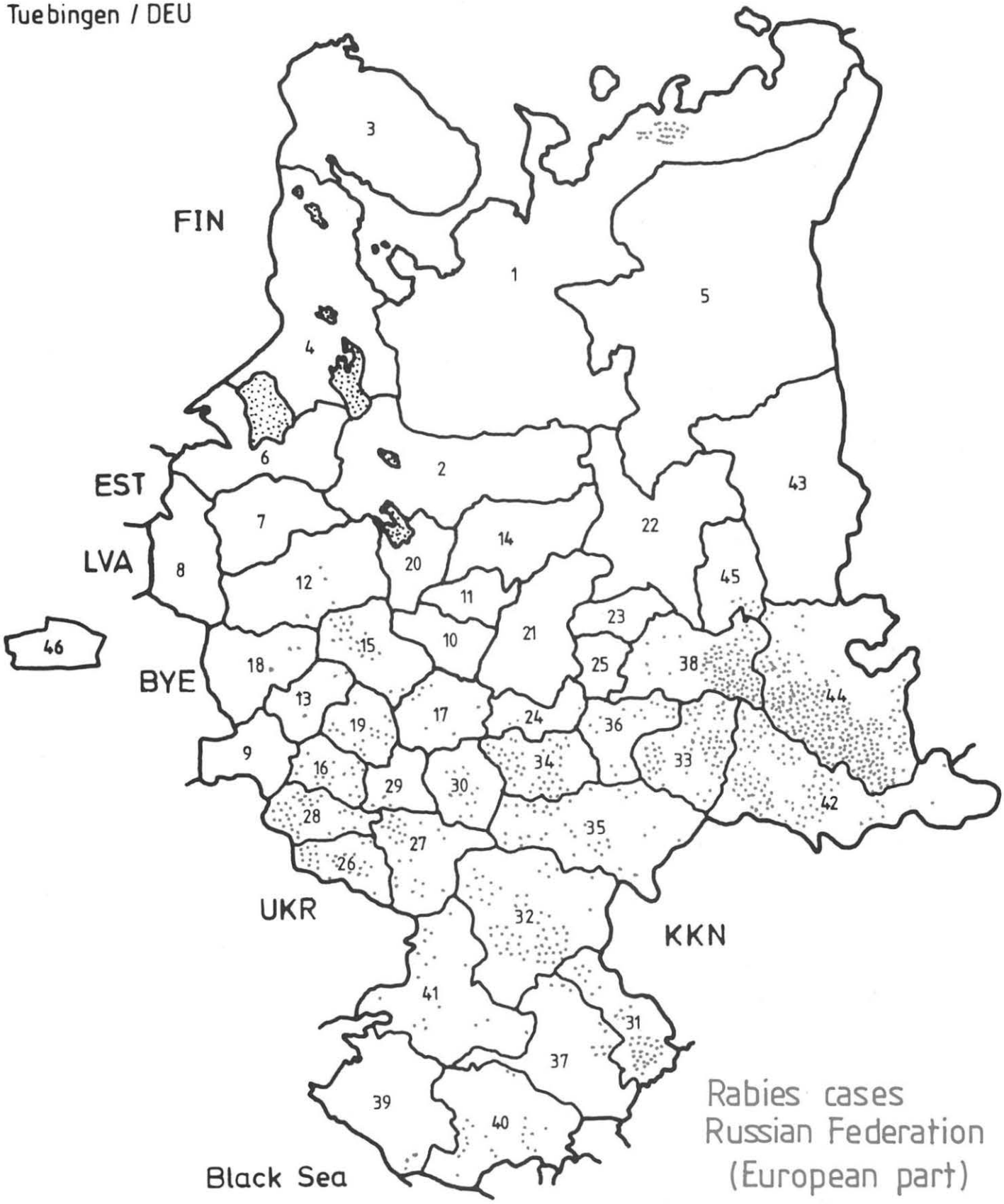


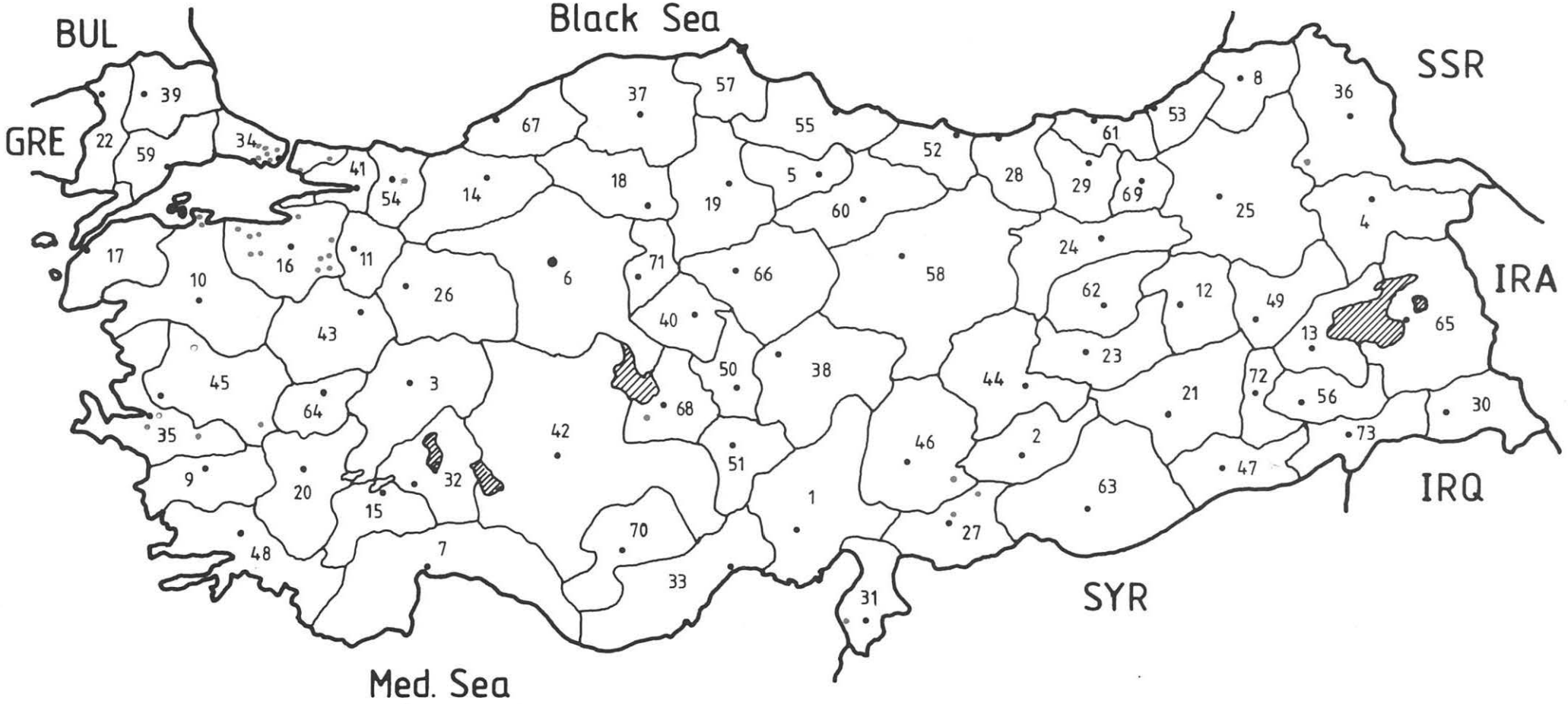
Rabies cases
Russian Federation
(European part)
1st quarter 1999
978 cases reported

WHO Coll. Centre
Tuebingen / DEU

Rabies Cases Turkey

1st Quarter 1999

34 Cases Reported



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Rabies Cases Europe

1st Quarter 1999

2201 Cases Reported

2 Bat Rabies Cases included

ICE
(rabies free)

NOR
(rabies free)

SWE
(rabies free)

FIN
(rabies free)

EST
(43)

LVA
(36)

RUS
(978)

DEN
(0)

LTU
(65)

RUS

BYE
(27)

IRE
(rabies free)

UNK
(rabies free)

POL
(261)
(1)

NET
(0)

DEU
(27)
(1)

BEL
(0)
(1)

UKR
(no data)

CZH (72)

(188)
SVK

MLD
(21)

FRA
(0)

AUT
(0)

HUN (140)

(rabies free)
SWI

ROM
(19)

SVN
(0)

CRO
(286)

ITA
(rabies free)

BIH
(no data)

FRY
(no data)

BUL
(1)

TYM
(rabies free)

POR
(rabies free)

SPA
(mainland and islands rabies free)
North Africa (0)

ALB
(rabies free)

TUR
(34)

GRE
(rabies free)

(rabies free) = No indigenous case reported for at least two years

0 50 100 km