

RABIES BULLETIN EUROPE

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1. Introduction

This BULLETIN describes the reported rabies cases in Europe for the **Third Quarter 1994**, subsequently referred to as "*This Quarter*".

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

SECTION 3 (3.1-3.36) reflects the situation for individual countries.

In the Miscellaneous SECTION (4) under 4.1 an article describes two rabies

cases following corneal transplantation in the Islamic Republic of Iran. Under 4.2 the first case of bat rabies in the Czech Republic is reported. 4.3 is a review of a recently published book *Rabies in Bats - Natural History and Public Health Implications*, by Danny A. Brass. 4.4 reflects on advances in genetic manipulation of the rabies virus and the prospect of further research.

The rabies case data are tabulated for the **Third Quarter 1994** 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 for the **Third Quarter 1994** is shown on maps of Russia, Turkey and Europe in the ANNEX.

2. Summary of Rabies in Europe

During "*This Quarter*", 1726 rabies cases were reported in Europe. Of these were 1313 in wild animals (76.1% of total), 411 in domestic animals and there were 2 human cases.

Of the cases in wild animals, 1166 were foxes, 1 wolf, 39 raccoon dogs, 1 lynx, 24 badgers, 11 stone martens, 26 pine martens, 5 polecats, 24 roe deer, 2 fallow deer, 1 moose, 1 other cervine, 2 wild boars, 1 hedgehog, 7 bats, 1 black rat, 1 muskrat. Of the 411 cases in domestic animals, 113 were dogs, 109 cats, 8 horses, 164 cattle, 13 sheep, 2 goats, 1 domestic rabbit and 1 other domesticated carnivore. These data are summarized in TABLES 1 and 3.

TABLE 2 adds up quarters 1 to 3 of 1994. Comparing the total to the same time span of 1993 (6676 cases - corrected figure) there has been a reduction of 643 cases in 1994.

For the third quarter a seasonal increase of rabies cases is expected in countries with **fox-mediated rabies**, due to the dispersal of the young foxes born in spring increasing the contact rate in the population. Oral vaccination interferes though with this seasonal increase. During "*This Quarter*", only 4 countries noticed an increase; Belgium and Germany likely for outbreaks originating from residual foci in areas of oral vaccination and Hungary and Poland for the

above quoted seasonal reasons as the areas where oral vaccination was practiced are small in comparison to the size of the country.

Turkey, the only country with **dog-mediated rabies**, registered a drastic decrease of cases in comparison to the previous quarter, from 77 to 5 cases which is difficult to explain.

There were 7 **bat rabies** cases reported, from the Czech Republic (the very first case in this country), from Denmark (3), Germany (1), the Netherlands (1) and Spain (1). Because of the distinct features of bat rabies, the cases are marked in the map of the ANNEX in a different colour.

There were 2 **human**

cases reported from the Russian Federation.

Rabies-free countries in Europe participating in the surveillance were: Finland, Greece, Iceland, Ireland, Nor

way, Portugal, Sweden and the United Kingdom of Britain and Northern Ireland.

There were no cases reported during "*This Quarter*" from the Grand Duchy of

Luxembourg but the last indigenously acquired case was less than 2 years ago.

The status of the countries irregularly supplying data cannot be judged.

3. Rabies in Individual Countries

3.1 Albania ALB

No data.

3.2 Austria AUT

by Helmut Schnabl

Of 8772 samples examined for rabies during "*This Quarter*", 31 cases (0.4%) were diagnosed rabid, 19 cases less than during the previous quarter. 25 cases occurred in wild animals (20 foxes, 3 badgers, 1 marten, 1 roe deer), and 6 in cattle.

The distribution of cases by Bundesländer (federal provinces) and Bezirke (districts) was as follows:

Burgenland: 2 cases in the Bezirke Jennersdorf and Neusiedl/See.

Tirol: 19 cases (61.3% of total) in the Bezirke Innsbruck/Land, Kitzbühel, Kufstein, Reutte and Schwaz.

Vorarlberg: 10 cases in the Bezirke Bregenz and Dornbirn.

The Bundesländer Kärnten, Salzburg, Niederösterreich, Oberösterreich, Wien and Steiermark recorded no cases.

3.3 Belgium BEL

by L. Hallet

During "*This Quarter*", 12 rabies cases were diagnosed in the country, 10 in foxes and 2 in cattle, all in the province of Luxembourg.

Three foxes and one bovine were found rabid in Florenville, three foxes in Herbeumont. Two foxes were found rabid at Bertrix, two foxes at Chiny and one calf at Paliseul.

An oral vaccination campaign of foxes against rabies is to be started at 24 October 1994. It is going to cover an area of 2400 km², 39,000 vaccine baits are to be used, and they are distributed by helicopter.

Prior and parallel to the above vaccination campaign a publicity campaign is organized to motivate hunters to counteract the present recrudescence of rabies by reducing the fox population. A diminution of the foxes may improve the percentage of the population to immunize.

3.4 Bulgaria BUL

by I. Kaloyanov

Two rabies cases were registered in Bulgaria during "*This Quarter*", one dog in Tchernibryag in the region of Targovichte and one fox in Svichtov in the region of Veliko Tarnovo.

3.5 Belarus BYE

by S.N. Shpilevsky

During "*This Quarter*", 19 rabies cases were diagnosed in Belarus. Of the total 13 cases occurred in domestic animals (5 dogs, 3 cats, 3 cattle, 2 horses) and 6 in foxes.

In all 6 regions of Belarus cases were noticed (between 1 and 7).

3.6 Croatia CRO

by Mate Brstilo

During "*This Quarter*", 82 rabies cases were registered in animals. Of the 82

cases 74 were in foxes. The number of rabies cases in foxes was almost the same compared to the second quarter 1994 (75), but increased considerably compared to the 3rd quarter of 1993 (40). In other wild animals there was only one case in a marten. In domestic animals rabies cases were registered in 4 dogs, 2 cats and 1 cow.

During "*This Quarter*", one fox rabies case occurred for the first time in the municipality of Dubrovnik (in August).

In the beginning of 1991, oral vaccination of foxes was started in Croatia but it was interrupted due to the war in the region.

An autumn campaign of oral vaccination is going to be carried out in November 1994 in an area of 4500 km² near the border to Slovenia (districts of Županija Istarska and Županija Primorsko-goranska). Further details will be presented in the next reports.

3.7 Czech Republic CZH

by Oldrich Matouch

During "*This Quarter*", 2639 animals were examined, of which 1.1% (30) were positive for rabies. In the previous quarter 3.1% (55 out of 1770) had been recorded rabies positive.

Of the total 28 cases were reported in wild animals, of which 25 cases were in foxes, 2 in martens and 1 case in a bat, an *Eptesicus serotinus*.

This is the first case in a bat in the Czech Republic.

Of the domestic animals, rabies was confirmed in 1 dog and 1 sheep.

The highest incidence of the country's regions was registered in North Bohemia (12 cases).

There was no human rabies case reported.

3.8 Denmark DEN

by Eric Stougaard

During "*This Quarter*", 3 bat rabies cases were registered in Denmark. An indigenously acquired case occurred in Arhus.

The two other bats were imported from USA for experimental purposes and kept at the Institut of Biology at Odense University.

3.9 Germany, Federal Republic DEU

by Winfried W. Müller
and Thomas Müller

A total of 281 rabies cases was reported during "*This Quarter*", 18 cases more than during the previous quarter and 122 cases more than during the 3rd quarter 1993.

There were two very active foci with a high incidence of rabies cases due to presently high fox populations - in the federal states (Bundesländer) Nordrhein-Westfalen (121 cases) and Saarland (64

cases). The cases in the federal state Rheinland-Pfalz, in the first half of 1994 heavily affected by the disease decreased during "*This Quarter*". An other coherent infected area exists in the federal states Hessen, Baden-Württemberg and Bayern. Oral vaccination has been applied for a lengthy period, but residual foci remained.

In Mecklenburg-Vorpommern one isolated case in a bovine occurred. The last case in the vicinity of this case occurred 2 years ago.

There was one bat rabies case in Niedersachsen.

3.10 Estonia EST

by Matti Nautras

During "*This Quarter*", 28 rabies cases were registered in Estonia, just as many as in the previous quarter. 16 cases were in wild animals (13 foxes, 1 badger, 1 raccoon dog, 1 other cervine), and 12 in domestic animals (3 dogs, 6 cats, 3 cattle). The cases were scattered throughout the country.

3.11 Finland FIN

by Bengt Westerling

The country remained rabies-free.

Surveillance

A total of 60 animals were examined for rabies by immunofluorescence on brain

tissue, all with negative results. The animals examined were: 44 raccoon dogs, 5 foxes, 1 bat, 7 dogs, 3 cats.

3.12 France FRA

by Michel F.A. Aubert

18 rabies cases were registered during "*This Quarter*", 11 less than in the previous quarter. The cases were diagnosed in 12 foxes, 1 badger, 3 stone martens, 1 dog, 1 cat. Five départements (departments) in the north-east of the country were affected by the disease.

3.13 Greece GRE

by I. Koykidis

The country remained rabies-free.

3.14 Hungary HUN

by Balint Kerekes

A total of 148 rabies cases were reported in Hungary during "*This Quarter*", 15 cases more than during the previous quarter and 72 cases less than during the third quarter 1993. In regard to the animal distribution of the rabid samples the percentage of foxes was higher than last year (3/93 = 74.5%; 3/94 = 78.4%), and lower in dogs (3/93 = 5%; 3/94 = 4.1%) and cats (3/93 = 14.5%; 3/94 = 10.8%).

There were cases in all Komitates (provinces) of the country. Komitates with the highest incidence were in the centre Fejer with 40 cases and Pest with 14 and in the north-east Borsod-Abanj-Zemplén with 17 cases and Szabolcs-Szatmár-Bereg with 13.

In the west bordering Austria cases diminished as oral vaccination of foxes is practiced.

3.15 Iceland ICE

The country remained rabies-free.

3.16 Ireland IRE

The country remained rabies-free.

3.17 Italy ITA

by Santino Proserpi

During "*This Quarter*", 6 cases of rabies were reported in Italy, 4 foxes were found positive in the province of Trieste, one fox in the province of Gorizia and one badger in the province of Bolzano. Of these 6 cases 5 occurred in July and one case in September.

3.18 Lithuania LTU

by K. Lukauskas and A. Dranseika

During "*This Quarter*", 12 animal rabies cases

were diagnosed in 9 districts. The disease occurred in 1 dog, 1 cat, 4 cattle, 2 foxes, 1 pine marten and 3 raccoon dogs.

More than 27,000 dogs were vaccinated against rabies during "*This Quarter*".

3.19 Luxembourg LUX

by Joseph Kremer

No case of rabies was diagnosed during "*This Quarter*". The last case noticed was in June 1993.

During "*This Quarter*", 3 foxes, 1 stone marten and 1 roe deer were examined for rabies, but revealed negative results.

3.20 Latvia LVA

by J. Rimeicans, Z. Andersons and A. Dedziņš

56 rabies cases were registered during "*This Quarter*" in 19 districts, 22 cases less than during the previous quarter. 41 cases were diagnosed in wild animals (73.2% of total). Of the cases in wild animals 31 were foxes, 8 raccoon dogs, 2 badgers. Of 15 rabies cases in domestic animals 8 were dogs, 6 cats and 1 bovine. The most affected districts were Talsi with 8 cases and Riga with 7 cases.

3.21 Moldova MLD

No data.

3.22 Netherlands NET

by G. Visser

Only one bat, an *Eptesicus serotinus* was diagnosed rabid during "This Quarter". It was located in the province of Gelderland.

A total of 54 wild animals (3 foxes, 2 dogs, 2 cats, 2 squirrels and 46 bats) and 9 bats of the *Rousettus aegyptiacus* species from the Blijdorp Zoo in Rotterdam was examined for rabies revealing negative results.

3.23 Norway NOR

by Gudbrand Bakken

The country remained rabies-free.

3.24 Poland POL

by Bogdan Twarowski

A total of 596 rabies cases were registered in Poland during "This Quarter", 197 cases more than during the previous quarter but 97 less than during the third quarter 1993. Of the total cases 477 (80%) were in wild animals (408 foxes, 3 badgers, 24 pine martens, 4 polecats, 27 raccoon dogs, 7 roe deer, 1 wild boar, 1 hedgehog, 1 black rat, 1 muskrat) and 119 in domestic animals (27 dogs, 49 cats, 37 cattle, 1 horse, 3 sheep, 1 goat, 1 other domesticated carnivore).

3.25 Portugal POR

The country remained rabies-free.

3.26 Romania ROM

by Gheorghe Stratulat

Six cases of rabies in animals were reported in Romania during "This Quarter". They occurred in 5 domestic animals (1 dog, 2 cats, 2 horses) and in a fox.

The cases were isolated and were located in 6 provinces throughout the country.

**3.27 Russia RUS
(European part only)**

V.A.Vedernikov, B.L.Cherkasskiy
P.N. Pitalev, S.A. Kolomycev
P.K. Shumilov and A.E. Khairushev

During "This Quarter", 105 rabies cases of animals were reported from the European Part of Russia. Of the total number of cases 90 were in domestic animals, 26 dogs, 10 cats, 52 cattle, 1 horse and 1 sheep. Of 15 wild animals rabies was diagnosed in 12 foxes, 1 wolf, 1 polecat and 1 elk.

Areas mostly affected were the Republic of Bashkortostan with 27 cases and the Krasnodar Territory with 15 cases.

There were 2 human cases, one in the Oryol Region and one in the Kursk Region.

3.28 Slovak Republic SVK

by Bohuslav Lovas and Jozef Sokol

During "This Quarter", 96 cases of rabies were confirmed in the Slovak Republic. There were 63 cases (65.6% of total) in foxes, 18 in dogs, 9 in cats, 2 in roe deer, 1 in a wild boar, 1 in a goat, 1 in a badger and 1 in a domesticated rabbit.

Compared to the previous quarter (151 cases) there has been a reduction of cases by 36%; there was little difference compared to the third quarter 1993 (109 cases).

3.29 Spain SPA

by Carlos Abellán García

During "This Quarter", two rabies cases were diagnosed in Spain, one bat in Granada and 1 dog in Melilla in the Spanish territory of North Africa.

3.30 Slovenia SVN

by Armin Tomašič

A total of 131 animal rabies cases was noticed in Slovenia during "This Quarter", 18 cases less than during the previous quarter. Of the 131 cases 118 (90.1%) were in foxes, 9 in other wild animals and 4 in domestic animals (3 dogs, 1 cat).

In Kranj 21 cases were registered, in Kamik 17, all

other communities reported less than 10 cases.

3.31 Sweden SWE

The country remained rabies-free.

3.32 Switzerland SWI

by Urs Breitenmoser

During "*This Quarter*", the Swiss Rabies Centre examined a total of 426 animals, of which 10.6% (45) were positive for rabies. In the previous quarter 7.5% (44 out of 590) and in the third quarter of 1993, 6.3% (56 out of 885) had been recorded positive, respectively. The cases of rabies observed in this quarter involved 36 red foxes, 3 badgers, 1 roe deer, and 5 cattle. As in the previous quarters, the cases

recorded came from the larger vicinity of Basel, in the north of Switzerland and from the northwestern part of the Jura Mountains.

5 bats (3 *Pipistrellus pipistrellus*, 1 *Vespertilio murinus*, 1 *Plecotus auritus*) were examined during the reporting period. None was found to be positive for rabies.

One person was known to have been bitten by a rabid animal. The number of people treated for non-bite exposures is not recorded.

3.33 Turkey TUR

by A. Nizamettin Güvener

During "*This Quarter*", only 9 cases of rabies (5 dogs, 2 cattle, 2 sheep) were reported in Turkey compared to 77 in the previous quarter and compared to 79 in the third quarter 1993.

The province (Il) most-ly affected was Istanbul with 5 cases.

3.34 Ukraine UKR

No data.

3.35 United Kingdom UNK

by P.J. Thomas

The country remained rabies-free.

3.36 Yugoslavia YUG

by Dušan Jakovljević

5 rabies cases were reported during "*This Quarter*" from Yugoslavia, 1 in Montenegro (1 bovine) and 4 in Vojvodina (2 foxes, 1 dog, 1 cat).

4. Miscellaneous Articles

4.1 Two Rabies Cases Following Corneal Transplantation in the Islamic Republic of Iran

A 32-year-old man was admitted to a hospital in Tehran on 10 April 1994. He was suspected of having encephalitis with exaggerated reflexes to noise, muscle spasms, photophobia and hydrophobia.

The patient had received a corneal transplant 39 days earlier (laminar keratoplasty). He died 3 days after admission (on 13 April). Saliva samples were taken on 12 April. Brain necropsy was made on 14 April. The Pasteur Institute of Iran confirmed the diagnosis of rabies from brain samples (cell culture and immunofluorescence).

The investigation showed that the donor was a 23-year-old soldier from Ardebil

with no history of contact exposure to an animal, but who had been injured by a hunting knife 2 months earlier. The injury sites were on his left fingers and left foot which healed 2 weeks after the accident. A month later he started complaining about pain and paresis of the left arm, sleeplessness, anorexia and aggressiveness. One week later he developed abnormal gait, photophobia and hydrophobia. He was transferred to Tehran for further investigation and management. Upon arrival, the patient was in deep coma, and died on the same day (10 March 1994). His corneas were donated for transplantation. Both transplantation operations were carried out the next day.

The second cornea was transplanted in a 40-year-old man by penetrating keratoplasty. Investigation showed that the receiver died in Arak City 26 days after surgery. He had shown signs of muscle twitching and spasm, photophobia, hydrophobia, and convulsion diagnosed as tetanus. No autopsy was performed. Rabies is suspected to be the likely cause of this death.

The above information is based on a report from the Ministry of Health of the Islamic Republic of Iran.

(Taken from WHO Weekly Epidemiological Record No. 44, 4 November 1994)

4.2 First Case of Bat Rabies in the Czech Republic

by O. Matouch
National Reference Laboratory for Rabies,
Liberec, Czech Republic

On 28 August 1994 a paralysed bat was found in the loft of a house in the Uherské Hradiště district (South Moravia). The bat was taken into the care of a family and artificially fed. Despite this care the bat

died 3 days later.

A private veterinarian was consulted the following day and the dead bat was sent to an office of the Health Department. It was stored there for 6 days in a deep freezer

and then submitted to the State Veterinary Institute in Olomouc for rabies examination. The bat brain was positive with the direct fluorescent antibody test (FAT). The mouse inoculation test was performed at the same

time. Subsequently, the frozen bat carcass and the brain suspension were transported to the National Reference Laboratory in Liberec.

The bat was identified in Liberec as a male *Eptesicus serotinus*. Though the carcass showed signs of autolysis when the brain smears were retested with the FAT, it revealed typical specific particles of rabies with a 3 + intensity. The spinal cord material was positive with less intensity of the FAT.

Suckling and adult mice were inoculated i.c. with a 10% suspension of the brain material. All mice survived the observation period of 30 days. On day 32, mice were sacrificed and a blind passage was carried out from their brains, also with negative results. The virus isolation by inoculation in cell culture was not successful. The virus isolation was probably unsuccessful due to inappropriate handling of the carcass.

The case was concluded

as an FAT positive rabies case and postexposure rabies treatment was administered to persons in contact with the bat.

It is regrettable that it was not possible to isolate the virus strain for further investigation. Bats are not expected to be associated with rabies by many people. They have been very rarely submitted for examination in the last years. Altogether, 42 bats have been examined for rabies in the country since 1985; all were negative for rabies.

4.3 Rabies in Bats - Natural History and Public Health Implications

by Winfried W. Müller

WHO Collaborating Centre for Rabies Surveillance and Research,
Tübingen/Germany

The above is the title of a book by **Danny A. Brass** which has been published in 1994 by Livia Press (P.O.Box 983, Ridgefield, Connecticut 06877, U.S.A.).

The book presents a comprehensive review of rabies and rabies related viruses in bat populations worldwide. After a section on the nature of rabies in general, the following sections are headed: vampire bats and rabies in Latin America, insectivorous bats and rabies in North America, rabies infection in Old World bats and, public health concerns.

The author has gathered a massive amount of information on rabies in bats, puts it into perspective to the biology of these animals and mentions

the public health implications. In exploring the nature of the disease in bats, he considers species-specific epidemiologic importance and association with deep-rooted cultural phobias. And there are great species differences in this rich order of *Chiroptera*, thinking of the "blood-lapping" vampire bats, the insectivorous and frugivorous bats. These differences generate topics like the vampire bat rabies in relation to cattle rabies, the airborne transmission of rabies by cave bats, or the rabies related viruses in bats of the various continents, to name a few. When the author elaborates on these topics he does it on the background of the latest scientific literature which is quoted after

each of the 25 chapters of the book.

Although humans are only rarely affected by bat rabies, several hundred human deaths have been documented worldwide. Most of these have occurred in Latin America, following the bite of a vampire bat.

Education about the dangers of handling bats remains the single most important safeguard against bat-borne disease. The book elaborates as well on preventional methods like management of unwanted bats in the home, the precautions for cavers, the indication for pre-exposure vaccination against rabies and the value of post-exposure vaccination.

The fully illustrated well written text is a complete and up-to-date reference work, tracing the evolution of scientific thought and knowledge on

bat rabies since the turn of the century.

The book will be of great interest to anyone dealing with bats and of enormous

value to physicians, veterinarians, and public health authorities, as well as zoologists and naturalists.

4.4 Genetic Engineering of Infectious Rabies Virus

by K.-K. Conzelmann

Federal Research Centre for Virus Diseases of Animals, Paul-Ehrlich-Str. 28, D-72076 Tübingen

The genetic manipulation of animal viruses has led to extraordinary advances in the understanding of how viruses replicate, how they interact with the host cell, and what determines virulence. In addition, genetically altered viruses have been successfully used to express foreign genes and to generate efficient recombinant vaccines.

Viruses containing DNA, such as SV40- (1), Herpes-, Adeno-, and Poxviruses were the first to become amenable to genetic manipulation. After transfection into cells, the DNA of many of these viruses is infectious *per se* and gives rise to infectious particles. Alternatively, homologous recombination can be used to introduce defined DNA into the genomes of helper virus.

For some time, viruses with a positive stranded RNA genome (Picornaviruses, Alphaviruses) have been amenable to specific alteration (2). The genomic RNA of positive strand RNA viruses serves as mRNA and is infectious after introduction into a cell. Either RNAs transcribed *in vitro* from

recombinant cDNA and then transfected into a cell or RNAs generated intracellularly from transfected cDNA may yield infectious virus.

The genetic engineering of negative stranded RNA viruses proved to be much more complicated. This group of viruses include many important human and animal pathogens, such as influenza, parainfluenza, respiratory syncytial, measles, and rabies viruses. Neither the naked genomic RNA nor the complementary (positive sense) RNA is infectious after transfection into cells. However, we recently showed for the first time that recombinant RNA corresponding to the entire genome of a negative stranded RNA virus, namely the rhabdovirus rabies virus, can be made infectious (3). This was achieved by simultaneous intracellular expression of the proteins constituting the viral polymerase complex and the viral RNA.

A full-length genomic cDNA copy of the rabies virus strain SAD B19, which is being used as a live vaccine for oral immunization of foxes,

was cloned between a T7 RNA polymerase promoter and a hepatitis delta virus ribozyme sequence. After transfection of the plasmid into cells infected previously with a recombinant vaccinia virus providing T7 RNA polymerase, full-length 12 kb RNA with precise ends was produced. In addition, three other T7 RNA polymerase driven plasmids were co-transfected. They expressed the rabies virus N, P, and L proteins, which make up the viral polymerase complex. Assembly of the plasmid encoded RNA and the proteins into transcriptionally active rabies virus nucleocapsids and subsequently autonomous expression of the envelope proteins M and G resulted in the formation of infectious rabies virus.

Site specific alterations were then introduced into the genomic cDNA copy in order to probe the genome flexibility of rabies virus and to generate viruses which are distinguishable from standard SAD B19 virus. The first experiments concentrated on the variable pseudogene region between the

G and L gene, which is present in all natural rabies viruses and which is being used to discriminate closely related rabies virus isolates in molecular epidemiology studies. Recombinant infectious viruses possessing the introduced genetic tags, namely insertions or deletions of four nucleotides at various locations, were successfully recovered. Even a virus lacking the entire pseudogene sequence could be isolated. Growth characteristics and final titers were identical to those of the SAD B19 virus, demonstrating that the pseudogen is not essential for propagation of rabies virus, at least in cell culture. In addition, recombinant viruses with alterations within coding regions resulting in amino acid exchanges in the viral G and L proteins could be recovered. Most likely, recombinant rabies

viruses mutated in all parts of the genome can be generated in the future. Since the vaccinia viruses, which are initially needed in the transfection experiments, can be removed easily from the culture supernatants by filtration, pure stocks of recombinant rabies viruses are obtained.

It is now possible to do structure/function studies of rabies virus genes and proteins and also to investigate virus-host interactions in detail. By using specifically designed mutant viruses, the mechanisms involved in rabies neurotropism, latency and pathogenesis may be revealed. It is also now feasible to identify virulence markers and to design safe attenuated, genetically marked viruses for use as live vaccines.

Moreover, it is likely that rabies virus possesses the capacity to express foreign

genes. It was possible to introduce into the pseudogene of a recombinant virus a functional transcription signal copy from another part of the genome resulting in generation of an additional transcription unit. As bacterial and eukaryotic reporter genes have already been expressed from defective virus-like-particles (4), it appears probable that infectious rabies virus might find useful application as a vector for the expression of foreign genes.

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Rabies Case Data from Europe
are tabulated on the following pages
of Section 5

TABLE 1

EUR		EUROPE		3/94		RABIES CASES							1. 7.94 - 30. 9.94				
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	
ALB	ALBANIA	**						0						0		0	
AUT	AUSTRIA		-	6	-	-	-	6	20	3	1	1	-	25		31	
BEL	BELGIUM		-	2	-	-	-	2	10	-	-	-	-	10		12	
BUL	BULGARIA		1	-	-	-	-	1	1	-	-	-	-	1		2	
BYE	BELARUS		5	3	3	2	-	13	6	-	-	-	-	6		19	
CRO	CROATIA		4	2	1	-	-	7	74	-	1	-	-	75		82	
CZH	CZECH REPUBLIC		1	-	-	-	1	2	25	-	2	-	1	28		30	
DEN	DENMARK	1)						0	-	-	-	-	3	3		3	
DEU	FED. REP. OF GERMANY		1	2	38	1	6	48	211	4	3	14	1	233		281	
EST	ESTONIA		3	6	3	-	-	12	13	1	-	1	1	16		28	
FIN	FINLAND	*						0						0		0	
FRA	FRANCE		1	1	-	-	-	2	12	1	3	-	-	16		18	
GRE	GREECE	*						0						0		0	
HUN	HUNGARY		6	16	9	1	-	32	116	-	-	-	-	116		148	
ICE	ICELAND	*						0						0		0	
IRE	IRELAND	*						0						0		0	
ITA	ITALY							0	5	1	-	-	-	6		6	
LTU	LITHUANIA		1	1	4	-	-	6	2	-	1	-	3	6		12	
LUX	LUXEMBOURG	*						0						0		0	
LVA	LATVIA		8	6	1	-	-	15	31	2	-	-	8	41		56	
MLD	MOLDOVA	**						0						0		0	
NET	NETHERLANDS							0	-	-	-	-	1	1		1	
NOR	NORWAY	*						0						0		0	
POL	POLAND		27	49	37	1	4	119	408	3	28	7	31	477		596	
POR	PORTUGAL	*						0						0		0	
ROM	ROMANIA		1	2	-	2	-	5	1	-	-	-	-	1		6	
RUS	RUSSIAN FEDERATION		26	10	52	1	1	90	12	-	1	1	1	15	2	107	
SPA	SPAIN		1	-	-	-	-	1	-	-	-	-	1	1		2	
SVK	SLOVAK REPUBLIC		18	9	-	-	1	29	63	1	-	2	1	67		96	
SVN	SLOVENIA		3	1	-	-	-	4	118	5	2	1	1	127		131	
SWE	SWEDEN	*						0						0		0	
SWI	SWITZERLAND + LIECHT		-	-	5	-	-	5	36	3	-	1	-	40		45	
TUR	TURKEY		5	-	2	-	-	9						0		9	
UKR	UKRAINE	**						0						0		0	
UNK	UNITED KINGDOM	*						0						0		0	
YUG	YUGOSLAVIA		1	1	1	-	-	3	2	-	-	-	-	2		5	
TOTAL			113	109	164	8	15	2	411	1166	24	42	28	53	1313	2	1726
PER CENT			6.5	6.3	9.5	0.5	0.9	0.1	23.8	67.6	1.4	2.4	1.6	3.1	76.1	0.1	100.0

* NO CASES ** NO DATA 1) 2 CASES IMPORTED FROM USA

TABLE 2

EUR		EUROPE		1-3/94		RABIES CASES							1. 1.94 - 30.09.94				
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	
ALB	ALBANIA	**	-	7	12	1	-	0	138	16	3	6	2	0	0		
AUT	AUSTRIA		-	-	2	-	-	20	20	-	-	-	-	165	185		
BEL	BELGIUM		3	1	1	-	1	2	2	-	-	-	-	20	22		
BUL	BULGARIA		5	3	3	2	-	6	2	-	-	-	-	2	8		
BYE	BELARUS	1)	11	16	4	-	5	13	6	-	-	-	-	6	19		
CRO	CROATIA		6	4	-	-	1	37	321	2	4	2	2	331	368		
CZH	CZECH REPUBLIC		6	4	-	-	1	11	154	2	9	3	1	169	180		
DEN	DENMARK	2)	5	17	64	5	41	0	-	-	-	-	3	3	3		
DEU	FED. REP. OF GERMANY		12	12	3	-	1	133	726	24	12	25	3	790	923		
EST	ESTONIA		1	2	4	-	9	28	43	2	1	1	12	59	87		
FIN	FINLAND	*	1	2	4	-	9	0	67	1	5	-	-	0	0		
FRA	FRANCE		32	64	30	1	1	16	394	-	2	2	-	73	89		
GRE	GREECE	*	32	64	30	1	1	0	0	-	2	2	-	0	0		
HUN	HUNGARY		32	64	30	1	1	128	394	-	2	2	-	398	526		
ICE	ICELAND	*	0	0	0	0	0	0	0	0	0	0	0	0	0		
IRE	IRELAND	*	0	0	0	0	0	0	0	0	0	0	0	0	0		
ITA	ITALY		9	7	7	-	-	0	25	3	2	-	-	30	30		
LTU	LITHUANIA		9	7	7	-	-	23	11	-	1	-	3	15	38		
LUX	LUXEMBOURG	*	0	0	0	0	0	0	0	0	0	0	0	0	0		
LVA	LATVIA		30	17	4	-	-	51	109	7	3	-	29	148	199		
MLD	MOLDOVA	3)	0	0	0	0	0	0	1	-	-	-	-	1	1		
NET	NETHERLANDS		0	0	0	0	0	0	-	-	-	-	1	1	1		
NOR	NORWAY	*	0	0	0	0	0	0	0	0	0	0	0	0	0		
POL	POLAND		78	143	71	4	4	301	1035	6	66	35	93	1235	1536		
POR	PORTUGAL	*	0	0	0	0	0	0	0	0	0	0	0	0	0		
ROM	ROMANIA		6	4	4	3	-	17	9	-	-	-	-	9	26		
RUS	RUSSIAN FEDERATION		72	30	184	12	69	369	55	-	2	1	11	69	442		
SPA	SPAIN		1	-	-	-	-	1	-	-	-	-	1	1	2		
SVK	SLOVAK REPUBLIC		53	26	2	-	2	84	316	1	5	5	6	333	417		
SVN	SLOVENIA		5	6	3	1	-	16	492	15	11	16	1	535	551		
SWE	SWEDEN	*	0	0	0	0	0	0	0	0	0	0	0	0	0		
SWI	SWITZERLAND + LIECHT		1	3	8	1	7	20	146	18	2	3	-	169	189		
TUR	TURKEY		134	2	17	1	4	158	0	0	0	0	0	0	158		
UKR	UKRAINE	**	0	0	0	0	0	0	0	0	0	0	0	0	0		
UNK	UNITED KINGDOM	*	0	0	0	0	0	0	0	0	0	0	0	0	0		
YUG	YUGOSLAVIA		6	6	3	-	1	16	17	-	-	-	-	17	33		
TOTAL			470	370	426	31	146	7	1450	4087	97	128	99	168	4579	4	6033
PER CENT			7.8	6.1	7.1	0.5	2.4	0.1	24.0	67.7	1.6	2.1	1.6	2.8	75.9	0.1	100.0

* NO CASES ** NO DATA 1) THIRD QUARTER ONLY 2) 2 CASES IMPORTED FROM USA 3) NO DATA FOR 2 ND AND 3 RD QUARTERS

TABLE 3

EUR		EUROPE		3/94		RABIES CASES 'OTHER ANIMAL SPECIES'						1. 7.94 - 30. 9.94	
LOCATION		OTHER DOMESTIC ANIMALS		OTHER WILD ANIMALS							TOTAL		
CODE	NAME	OTH.DOMESTIC CARNIVORES	DOMESTIC. RABBIT	WOLF	RACCOON DOG	LYNX	WILD BOAR	HEDGEHOG	INSECTIV. BAT	BLACK RAT		MUSKRAT	
CZH	CZECH REPUBLIC	-	-	-	-	-	-	-	1	-	-	1	
DEN	DENMARK	-	-	-	-	-	-	-	3	-	-	3	
DEU	FED.REP. OF GERMANY	-	-	-	-	-	-	-	1	-	-	1	
EST	ESTONIA	-	-	-	1	-	-	-	-	-	-	1	
LTU	LITHUANIA	-	-	-	3	-	-	-	-	-	-	3	
LVA	LATVIA	-	-	-	8	-	-	-	-	-	-	8	
NET	NETHERLANDS	-	-	-	-	-	-	-	1	-	-	1	
POL	POLAND	1	-	-	27	-	1	1	-	1	1	32	
RUS	RUSSIAN FEDERATION	-	-	1	-	-	-	-	-	-	-	1	
SPA	SPAIN	-	-	-	-	-	-	-	1	-	-	1	
SVK	SLOVAK REPUBLIC	-	1	-	-	-	1	-	-	-	-	2	
SVN	SLOVENIA	-	-	-	-	1	-	-	-	-	-	1	
TOTAL		1	1	1	39	1	2	1	7	1	1	55	
PER CENT		1.8	1.8	1.8	70.9	1.8	3.6	1.8	12.7	1.8	1.8	100.0	

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RABIES CASES																1. 7.94 - 30. 9.94	
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			
AUT AUSTRIA																	
105	JENNERSDORF							0	1	-	-	-	-	1		1	
107	NEUSIEDL AM SEE							0	1	-	-	-	-	1		1	
703	INNSBRUCK-LAND	-	-	1	-	-	-	1	1	1	-	-	-	2		3	
704	KITZBUEHEL							0	1	-	-	-	-	1		1	
705	KUFSTEIN							0	2	-	-	-	-	2		2	
708	REUTTE	-	-	2	-	-	-	2	8	1	1	-	-	10		12	
709	SCHWAZ							0	1	-	-	-	-	1		1	
802	BREGENZ	-	-	3	-	-	-	3	4	1	-	1	-	6		9	
803	DORNBIRN							0	1	-	-	-	-	1		1	
TOTAL		0	0	6	0	0	0	6	20	3	1	1	0	25	0	31	
PER CENT		0.0	0.0	19.4	0.0	0.0	0.0	19.4	64.5	9.7	3.2	3.2	0.0	80.6	0.0	100.0	
CZH CZECH REPUBLIC																	
01	CENTRAL BOHEMIA							0	7	-	-	-	-	7		7	
02	SOUTH BOHEMIA							0	2	-	-	-	-	2		2	
04	NORTH BOHEMIA	1	-	-	-	-	-	1	9	-	2	-	-	11		12	
05	EAST BOHEMIA							0	2	-	-	-	-	2		2	
06	SOUTH MORAVIA							0	-	-	-	-	1	1		1	
07	NORTH MORAVIA	-	-	-	-	1	-	1	5	-	-	-	-	5		6	
TOTAL		1	0	0	0	1	0	2	25	0	2	0	1	28	0	30	
PER CENT		3.3	0.0	0.0	0.0	3.3	0.0	6.7	83.3	0.0	6.7	0.0	3.3	93.3	0.0	100.0	
SVK SLOVAK REPUBLIC																	
10	DISTRICT OF BRATISLAV	-	-	-	-	1	-	1						0		1	
11	WEST SLOVAKIA	1	1	-	-	-	-	2	9	-	-	-	-	9		11	
12	CENTRAL SLOVAKIA	1	1	-	-	-	-	2	26	1	-	-	-	27		29	
13	EAST SLOVAKIA	16	7	-	-	-	1	24	28	-	-	2	1	31		55	
TOTAL		18	9	0	0	1	1	29	63	1	0	2	1	67	0	96	
PER CENT		18.8	9.4	0.0	0.0	1.0	1.0	30.2	65.6	1.0	0.0	2.1	1.0	69.8	0.0	100.0	

R A B I E S C A S E S																1. 7.94 - 30. 9.94	
LOCATION		D O M E S T I C A N I M A L S						W I L D A N I M A L S						HUMAN CASES	TOTAL		
CODE	NAME	DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS			TOTAL	
BEL B E L G I U M																	
LX	LUXEMBOURG	-	-	2	-	-	-	2	10	-	-	-	-	10		12	
TOTAL		0	0	2	0	0	0	2	10	0	0	0	0	10	0	12	
PER CENT		0.0	0.0	16.7	0.0	0.0	0.0	16.7	83.3	0.0	0.0	0.0	0.0	83.3	0.0	100.0	
DEN D E N M A R K																	
042	FYN							0	-	-	-	-	2	2		2	
070	ARHUS							0	-	-	-	-	1	1		1	
TOTAL		0	0	0	0	0	0	0	0	0	0	0	3	3	0	3	
PER CENT		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	0.0	100.0	
NET N E T H E R L A N D S																	
03	GELDERLAND							0	-	-	-	-	1	1		1	
TOTAL		0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	

RABIES CASES																1. 7.94 - 30. 9.94	
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	
BUL BULGARIA																	
24	TARGOVITCHE	1	-	-	-	-	-	1	1	-	-	-	-	0	1		
25	V.TARNOVO	-	-	-	-	-	-	0	-	-	-	-	-	1	1		
TOTAL		1	0	0	0	0	0	1	1	0	0	0	0	1	0	2	
PER CENT		50.0	0.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0	0.0	50.0	0.0	100.0	
BYE BELARUS																	
01	Brest Region	-	2	-	-	-	-	2	-	-	-	-	-	0	2		
02	Vitebsk Region	-	-	2	-	-	-	2	-	-	-	-	-	0	2		
03	Gomel Region	5	-	-	-	-	-	5	2	-	-	-	-	2	7		
04	Grodno Region	-	-	-	-	-	-	0	1	-	-	-	-	1	1		
05	Minsk Region	-	1	1	-	-	-	2	2	-	-	-	-	2	4		
06	Mogilev Region	-	-	-	2	-	-	2	1	-	-	-	-	1	3		
TOTAL		5	3	3	2	0	0	13	6	0	0	0	0	6	0	19	
PER CENT		26.3	15.8	15.8	10.5	0.0	0.0	68.4	31.6	0.0	0.0	0.0	0.0	31.6	0.0	100.0	
ROM ROMANIA																	
12	CALARASI	-	1	-	-	-	-	1	-	-	-	-	-	0	1		
15	COVASNA	1	-	-	-	-	-	1	-	-	-	-	-	0	1		
22	HUNEDOARA	-	1	-	-	-	-	1	-	-	-	-	-	0	1		
27	MURES	-	-	-	-	-	-	0	1	-	-	-	-	1	1		
31	SATU-MARE	-	-	-	1	-	-	1	-	-	-	-	-	0	1		
40	VRANCEA	-	-	-	1	-	-	1	-	-	-	-	-	0	1		
TOTAL		1	2	0	2	0	0	5	1	0	0	0	0	1	0	6	
PER CENT		16.7	33.3	0.0	33.3	0.0	0.0	83.3	16.7	0.0	0.0	0.0	0.0	16.7	0.0	100.0	

CRO CROATIA		RABIES CASES											1. 7.94 - 30. 9.94			
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
004	BJELOVAR							0	2	-	-	-	-	2		2
007	BUZET							0	6	-	-	-	-	6		6
009	CRIKVENICA							0	4	-	-	-	-	4		4
011	CAKOVEC							0	2	-	-	-	-	2		2
017	DONJI MIHOLJAC							0	1	-	-	-	-	1		1
019	DUBROVNIK							0	1	-	-	-	-	1		1
020	DUGA RESA							0	1	-	-	-	-	1		1
021	DUGO SELO							0	2	-	-	-	-	2		2
034	JASTREBARSKO	-	1	-	-	-	-	1	2	-	-	-	-	2		3
036	KARLOVAC							0	1	-	-	-	-	1		1
040	KOPRIVNICA							0	5	-	-	-	-	5		5
043	KRAPINA	1	-	-	-	-	-	1	3	-	-	-	-	3		4
044	KRIZEVCI							0	2	-	-	-	-	2		2
046	KUTINA	-	1	-	-	-	-	1	2	-	-	-	-	2		3
050	MAKARSKA							0	1	-	-	-	-	1		1
052	NASICE							0	3	-	-	-	-	3		3
057	OGULIN							0	1	-	-	-	-	1		1
059	OPATIJA							0	-	-	1	-	-	1		1
062	OTOCAC							0	1	-	-	-	-	1		1
067	PETRINJA							0	1	-	-	-	-	1		1
073	RIJEKA							0	5	-	-	-	-	5		5
079	SLAVONSKI BROD							0	1	-	-	-	-	1		1
081	SOLIN	3	-	1	-	-	-	4	3	-	-	-	-	3		7
083	SIBENIK							0	3	-	-	-	-	3		3
086	VALPOVO							0	1	-	-	-	-	1		1
087	VARAZDIN							0	1	-	-	-	-	1		1
089	VIROVITICA							0	1	-	-	-	-	1		1
092	VRBOVEC							0	2	-	-	-	-	2		2
099	SVETI IVAN ZELINA							0	2	-	-	-	-	2		2
102	GRAD ZAGREB							0	14	-	-	-	-	14		14
TOTAL		4	2	1	0	0	0	7	74	0	1	0	0	75	0	82
PER CENT		4.9	2.4	1.2	0.0	0.0	0.0	8.5	90.2	0.0	1.2	0.0	0.0	91.5	0.0	100.0

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DEU		FEDERAL REPUBLIC OF GERMANY						R A B I E S C A S E S						1. 7.94 - 30. 9.94		
LOCATION		D O M E S T I C A N I M A L S						W I L D A N I M A L S						HUMAN CASES	TOTAL	
CODE	NAME	DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS			TOTAL
01	SCHLESWIG-HOLSTEIN							0						0	0	
02	HAMBURG							0						0	0	
03	NIEDERSACHSEN							0	-	-	-	-	1	1	1	
04	BREMEN							0						0	0	
05	NORDRHEIN-WESTFALEN	1	1	25	1	4	-	32	80	1	1	7	-	89	121	
06	HESSEN	-	-	4	-	1	-	5	18	-	-	1	-	19	24	
07	RHEINLAND-PFALZ	-	-	2	-	-	-	2	37	2	-	4	-	43	45	
08	BADEN-WUERTTEMBERG	-	-	-	-	1	-	1	11	1	1	1	-	14	15	
09	BAYERN							0	9	-	1	-	-	10	10	
10	SAARLAND	-	1	6	-	-	-	7	56	-	-	1	-	57	64	
11	Berlin							0						0	0	
12	Brandenburg							0						0	0	
13	Mecklenb.-Vorpommern	-	-	1	-	-	-	1						0	1	
14	Sachsen							0						0	0	
15	Sachsen-Anhalt							0						0	0	
16	Thueringen							0						0	0	
TOTAL		1	2	38	1	6	0	48	211	4	3	14	1	233	0	281
PER CENT		0.4	0.7	13.5	0.4	2.1	0.0	17.1	75.1	1.4	1.1	5.0	0.4	82.9	0.0	100.0

RABIES CASES															1. 7.94 - 30. 9.94	
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	1	-	-	-	3						0		3
05	Jaervamaa	1	1	1	-	-	-	3						0		3
07	Laaene-Virumaa	-	1	-	-	-	-	1	2	-	-	-	-	2		3
08	Polvamaa	1	-	-	-	-	-	1	5	-	-	-	-	5		6
10	Raplamaa	-	-	1	-	-	-	1						0		1
11	Saaremaa	-	-	-	-	-	-	0	1	-	-	1	-	2		2
12	Tartumaa	-	2	-	-	-	-	2	3	-	-	-	-	3		5
13	Valgamaa	-	-	-	-	-	-	0	1	-	-	-	-	1		1
14	Viljandimaa	-	1	-	-	-	-	1	-	-	-	-	1	1		2
15	Vorumaa	-	-	-	-	-	-	0	1	1	-	-	-	2		2
TOTAL		3	6	3	0	0	0	12	13	1	0	1	1	16	0	28
PER CENT		10.7	21.4	10.7	0.0	0.0	0.0	42.9	46.4	3.6	0.0	3.6	3.6	57.1	0.0	100.0
LTU LITHUANIA																
36	Birzu							0	1	-	-	-	-	1		1
38	Varenos							0	-	-	-	-	1	1		1
47	Joniskio	-	-	1	-	-	-	1						0		1
52	Kauno	1	-	-	-	-	-	1						0		1
56	Kretdingos	-	-	1	-	-	-	1						0		1
65	Pakruojo							0	-	-	-	-	1	1		1
67	Paevalio	-	1	2	-	-	-	3	-	-	-	-	1	1		4
68	Plunges							0	-	-	1	-	-	1		1
91	Siauliu							0	1	-	-	-	-	1		1
TOTAL		1	1	4	0	0	0	6	2	0	1	0	3	6	0	12
PER CENT		8.3	8.3	33.3	0.0	0.0	0.0	50.0	16.7	0.0	8.3	0.0	25.0	50.0	0.0	100.0

RABIES CASES															1. 7.94 - 30. 9.94	
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
FRA FRANCE																
	25 DOUBS							0	6	1	1	-	-	8		8
	54 MEURTHE ET MOSELLE							0	-	-	1	-	-	1		1
	55 MEUSE	1	-	-	-	-	-	1	-	-	1	-	-	1		2
	70 SAONE (HAUTE)							0	1	-	-	-	-	1		1
	88 VOSGES	-	1	-	-	-	-	1	5	-	-	-	-	5		6
	TOTAL	1	1	0	0	0	0	2	12	1	3	0	0	16	0	18
	PER CENT	5.6	5.6	0.0	0.0	0.0	0.0	11.1	66.7	5.6	16.7	0.0	0.0	88.9	0.0	100.0
ITA ITALY																
	34 TRIESTE E GORIZIA							0	5	-	-	-	-	5		5
	39 BOLZANO							0	-	1	-	-	-	1		1
	TOTAL	0	0	0	0	0	0	0	5	1	0	0	0	6	0	6
	PER CENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	83.3	16.7	0.0	0.0	0.0	100.0	0.0	100.0
SWI SWITZERLAND AND LIECHTENSTEIN																
	01 AARGAU							0	10	-	-	-	-	10		10
	05 BASEL-LAND	-	-	1	-	-	-	1	11	-	-	1	-	12		13
	06 BERN							0	2	1	-	-	-	3		3
	17 SOLOTHURN							0	9	2	-	-	-	11		11
	26 JURA	-	-	4	-	-	-	4	4	-	-	-	-	4		8
	TOTAL	0	0	5	0	0	0	5	36	3	0	1	0	40	0	45
	PER CENT	0.0	0.0	11.1	0.0	0.0	0.0	11.1	80.0	6.7	0.0	2.2	0.0	88.9	0.0	100.0

HUN HUNGARY		RABIES CASES											1. 7.94 - 30. 9.94			
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
02	BARANYA	1	1	-	-	-	-	2	6	-	-	-	-	6	8	
03	BACS-KISKUN	-	-	-	-	-	-	0	7	-	-	-	-	7	7	
04	BEKES	-	1	-	-	-	-	1	2	-	-	-	-	2	3	
05	BORSOD-ABAUJ-ZEMPLEN	1	-	1	-	-	-	2	15	-	-	-	-	15	17	
06	CSONGRAD	-	1	2	-	-	-	3	5	-	-	-	-	5	8	
07	FEJER	-	-	-	-	-	-	0	20	-	-	-	-	20	20	
08	GYOER-SOPRON	-	-	-	-	-	-	0	2	-	-	-	-	2	2	
09	HAJDU-BIHAR	-	2	1	-	-	-	3	4	-	-	-	-	4	7	
10	HEVES	1	1	-	-	-	-	2	2	-	-	-	-	2	4	
11	KOMAROM	-	-	-	-	-	-	0	6	-	-	-	-	6	6	
12	NOGRAD	1	3	-	-	-	-	4	-	-	-	-	-	0	4	
13	PEST	-	1	1	-	-	-	2	12	-	-	-	-	12	14	
14	SOMOgy	1	2	-	-	-	-	3	6	-	-	-	-	6	9	
15	SZABOLCS-SZATMAR	-	1	1	1	-	-	3	9	-	-	-	-	9	12	
16	SZOLNOK	1	1	2	-	-	-	4	5	-	-	-	-	5	9	
17	TOLNA	-	-	1	-	-	-	1	4	-	-	-	-	4	5	
18	VAS	-	-	-	-	-	-	0	2	-	-	-	-	2	2	
19	VESZPREM	-	1	-	-	-	-	1	4	-	-	-	-	4	5	
20	ZALA	-	1	-	-	-	-	1	5	-	-	-	-	5	6	
TOTAL		6	16	9	1	0	0	32	116	0	0	0	0	116	0	148
PER CENT		4.1	10.8	6.1	0.7	0.0	0.0	21.6	78.4	0.0	0.0	0.0	0.0	78.4	0.0	100.0

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LVA LATVIA		RABIES CASES												1. 7.94 - 30. 9.94		
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	Aizkraukle							0	3	-	-	-	-	3		3
03	Balvi	1	-	-	-	-	-	1	-	-	-	-	-	1		2
05	Cesis							0	3	-	-	-	-	3		3
06	Daugavpils							0	1	-	-	-	-	1		1
08	Gulbene							0	1	-	-	-	-	1		1
09	Jekabpils							0	1	-	-	-	-	1		1
10	Jelgava							0	1	-	-	-	-	1		2
11	Kraslava	-	1	-	-	-	-	1	-	-	-	-	-	0		1
12	Kuldige	1	-	-	-	-	-	1	-	-	-	-	1	1		2
13	Liepaja	-	1	-	-	-	-	1	5	-	-	-	-	5		6
14	Limbazi	-	-	1	-	-	-	1	1	-	-	-	1	2		3
16	Madona							0	-	-	-	-	1	1		1
17	Ogre	1	1	-	-	-	-	2	3	-	-	-	1	4		6
19	Rezekne	-	1	-	-	-	-	1	-	-	-	-	-	0		1
20	Riga	3	1	-	-	-	-	4	2	-	-	-	1	3		7
21	Saldus							0	2	-	-	-	1	3		3
22	Talsi	2	-	-	-	-	-	2	4	2	-	-	-	6		8
23	Tukums	-	1	-	-	-	-	1	3	-	-	-	-	3		4
25	Valmiera							0	1	-	-	-	-	1		1
TOTAL		8	6	1	0	0	0	15	31	2	0	0	8	41	0	56
PER CENT		14.3	10.7	1.8	0.0	0.0	0.0	26.8	55.4	3.6	0.0	0.0	14.3	73.2	0.0	100.0

RUS		RUSSIAN FEDERATION						R A B I E S C A S E S						1. 7.94 - 30. 9.94		
LOCATION		D O M E S T I C A N I M A L S						W I L D A N I M A L S						HUMAN CASES	TOTAL	
CODE	NAME	DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS			TOTAL
08	Pskov Region	2	-	1	-	-	-	3	1	-	-	-	1	2		5
12	Tver Region	1	-	1	-	-	-	2						0		2
13	Kaluga Region							0	2	-	-	-	-	2		2
15	Moscow Region	-	1	1	-	-	-	2	2	-	-	-	-	2		4
16	Oryol Region	1	1	-	-	1	-	3						0	1	4
19	Tula Region	-	1	-	-	-	-	1						0		1
23	Republic of Mari-El	-	-	1	-	-	-	1						0		1
26	Belgorod Region	-	-	1	-	-	-	1	2	-	-	-	-	2		3
27	Voronezh Region	1	-	6	-	-	-	7	1	-	-	-	-	1		8
28	Kursk Region	-	1	-	-	-	-	1	-	-	1	-	-	1	1	3
31	Astrakhan Region	-	-	1	-	-	-	1						0		1
32	Volgograd Region	-	1	1	-	-	-	2						0		2
33	Samara Region	1	1	-	-	-	-	2	1	-	-	-	-	1		3
35	Saratov Region	2	1	-	-	-	-	3						0		3
36	Ulyanovsk Region	-	1	-	-	-	-	1						0		1
38	Republic of Tatarstan	6	1	-	-	-	-	7	-	-	-	1	-	1		8
39	Krasnodar Territory	-	-	15	-	-	-	15						0		15
40	Stavropol Territory	-	-	1	-	-	-	1						0		1
41	Rostov Region	2	-	2	-	-	-	4						0		4
42	Orenburg Region	5	1	1	-	-	-	7	1	-	-	-	-	1		8
43	Perm Region	1	-	-	-	-	-	1						0		1
44	Republic of Bashkorto	4	-	20	1	-	-	25	2	-	-	-	-	2		27
TOTAL		26	10	52	1	1	0	90	12	0	1	1	1	15	2	107
PER CENT		24.3	9.3	48.6	0.9	0.9	0.0	84.1	11.2	0.0	0.9	0.9	0.9	14.0	1.9	100.0

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POL		POLAND											RABIES CASES				1. 7.94 - 30. 9.94	
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	WARSZAWA	-	4	-	-	-	-	4	3	-	1	-	-	4	8			
03	BIALA PODLASKA	-	-	-	-	-	-	0	1	-	-	-	-	1	1			
05	BIALYSTOK	-	-	2	-	-	-	2	5	-	1	-	4	10	12			
07	BIELSKO-BIALA	-	2	-	-	2	-	4	27	-	8	1	-	36	40			
09	BYDGOSZCZ	1	3	4	-	-	-	8	16	-	2	-	3	21	29			
11	CHELM	-	1	-	-	-	-	1	1	-	-	-	-	1	2			
13	CIECHANOW	-	-	1	-	-	-	1	2	-	-	-	-	2	3			
15	CZESTOCHOWA	1	1	-	-	-	-	2	2	-	-	-	-	2	4			
17	ELBLAG	-	1	2	-	-	-	3	5	-	-	-	3	8	11			
19	GDANSK	3	3	4	-	-	-	10	31	-	5	2	3	41	51			
21	GORZOW	1	-	-	-	-	-	1	2	-	-	-	-	2	3			
23	JELENNIA GORA	-	1	-	-	-	-	1	9	-	-	-	-	9	10			
25	KALISZ	-	1	-	-	-	-	1	12	-	1	-	-	13	14			
27	KATOWICE	1	1	-	-	1	-	3	11	1	-	-	-	12	15			
29	KIELCE	-	-	-	-	-	-	0	2	-	-	-	-	2	2			
31	KONIN	-	-	-	-	-	-	0	3	-	-	-	-	3	3			
33	KOSZALIN	4	3	-	-	-	-	7	7	-	1	1	2	11	18			
37	KROSNO	-	-	-	-	-	-	0	11	-	-	-	-	11	11			
39	LEGNICA	-	1	1	-	-	-	2	18	-	-	-	-	18	20			
41	LESZNO	-	2	1	-	-	-	3	9	-	-	-	2	11	14			
43	LUBLIN	-	-	-	-	-	-	0	1	-	-	-	-	1	1			
45	LOMZA	-	-	-	-	-	-	0	1	-	-	-	-	1	1			
47	LODZ	-	2	-	-	-	-	2	4	-	-	-	-	4	6			
51	OLSZTYN	-	3	4	-	-	1	8	6	-	1	-	2	9	17			
53	OPOLE	-	5	2	-	1	-	8	30	-	2	-	-	32	40			

POL CONTINUED																
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
55	OSTROLEKA							0	6	-	-	-	-	6		6
57	PILA							0	4	-	1	-	-	6		6
59	PIOTRKOW TRYB	2	-	-	-	-	-	2	20	1	-	-	-	21		23
61	PLOCK							0	2	-	-	-	-	2		2
63	POZNAN	2	6	-	-	-	-	8	24	-	-	-	1	25		33
65	PRZEMYSL	1	2	-	-	-	-	3	5	-	-	-	-	5		8
67	RADOM							0	1	-	-	-	-	1		1
69	RZESZOW	1	1	-	-	-	-	2	11	-	-	1	-	12		14
71	SIEDLCE							0	1	-	1	-	1	3		3
73	SIERADZ							0	7	-	-	-	-	7		7
75	SKIERNIEWICE							0	8	-	-	-	-	8		8
77	SLUPSK	5	1	-	-	-	-	6	6	-	2	2	-	10		16
79	SUWALKI	1	-	6	1	-	-	8	11	-	1	-	7	19		27
83	TARNOBRZEG	1	1	-	-	-	-	2	7	-	1	-	-	8		10
87	TORUN	1	-	7	-	-	-	8	9	-	-	-	1	10		18
89	WALBRZYCH	-	-	1	-	-	-	1	12	-	-	-	-	12		13
91	WLOCLAWEK	2	1	1	-	-	-	4	3	-	-	-	-	3		7
93	WROCLAW	-	3	-	-	-	-	3	47	1	-	-	-	48		51
95	ZAMOSC							0	4	-	-	-	-	4		4
97	ZIELONA GORA	-	-	1	-	-	-	1	1	-	-	-	1	2		3
TOTAL		27	49	37	1	4	1	119	408	3	28	7	31	477	0	596
PER CENT		4.5	8.2	6.2	0.2	0.7	0.2	20.0	68.5	0.5	4.7	1.2	5.2	80.0	0.0	100.0

R A B I E S C A S E S																1. 7.94 - 30. 9.94	
LOCATION CODE NAME		D O M E S T I C A N I M A L S						W I L D A N I M A L S						HUMAN CASES	TOTAL		
		DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS			TOTAL	
SPA S P A I N																	
18	GRANADA							0	-	-	-	-	1	1		1	
52	MELILLA (NORTH AFRICA)	1	-	-	-	-	-	1	-	-	-	-	0	0		1	
TOTAL		1	0	0	0	0	0	1	0	0	0	0	1	1	0	2	
PER CENT		50.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	50.0	50.0	0.0	100.0	
TUR T U R K E Y																	
03	AFYON	2	-	-	-	-	-	2						0		2	
06	ANKARA	-	-	1	-	-	-	1						0		1	
10	BALIKESIR	1	-	-	-	-	-	1						0		1	
34	ISTANBUL	2	-	1	-	2	-	5						0		5	
TOTAL		5	0	2	0	2	0	9	0	0	0	0	0	0	0	9	
PER CENT		55.6	0.0	22.2	0.0	22.2	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	
YUG Y U G O S L A V I A																	
20	SR CRNA GORA	-	-	1	-	-	-	1						0		1	
61	SAP VOJVODINA	1	1	-	-	-	-	2	2	-	-	-	-	2		4	
TOTAL		1	1	1	0	0	0	3	2	0	0	0	0	2	0	5	
PER CENT		20.0	20.0	20.0	0.0	0.0	0.0	60.0	40.0	0.0	0.0	0.0	0.0	40.0	0.0	100.0	

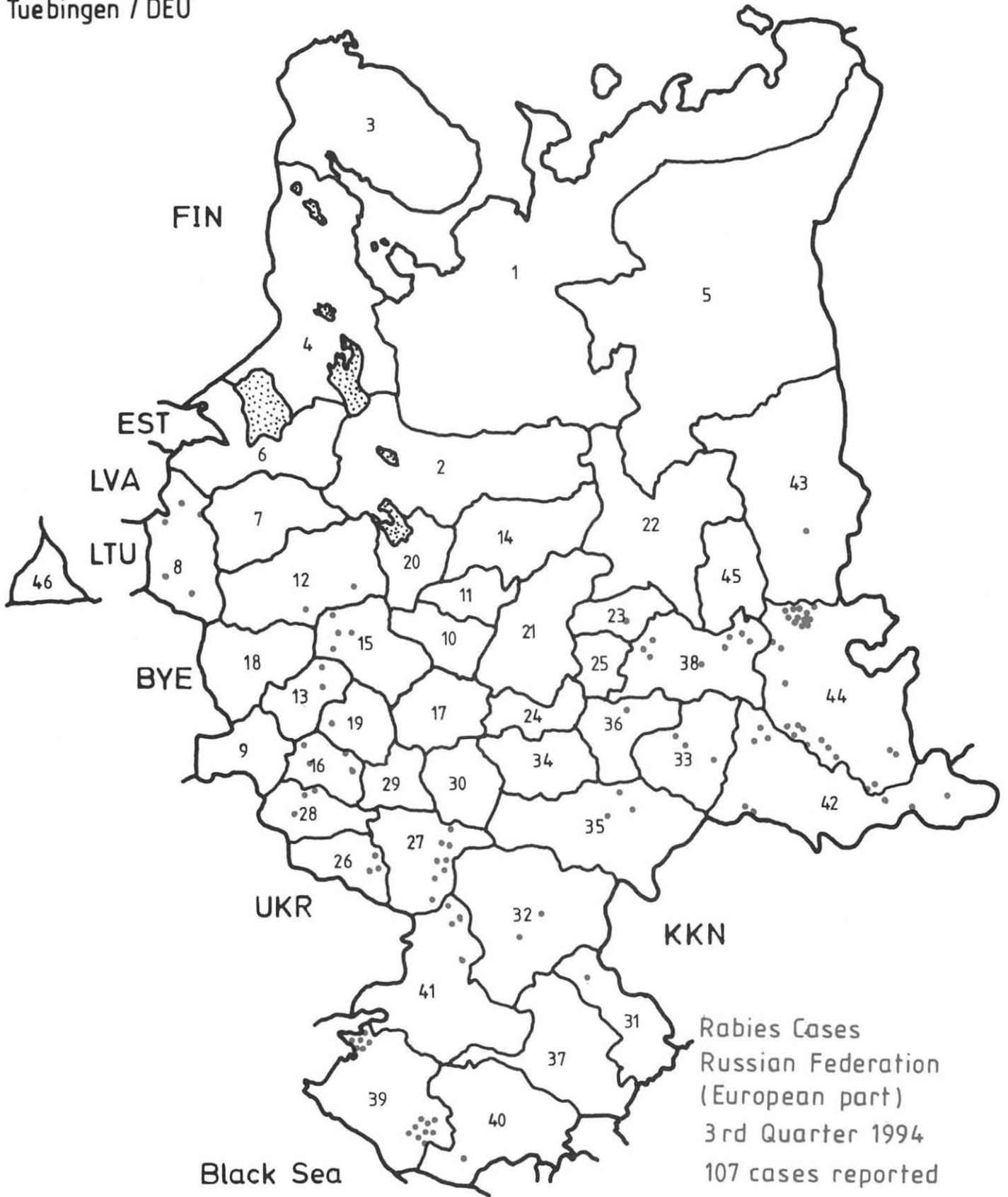
SVN SLOVENIA		RABIES CASES											1. 7.94 - 30. 9.94			
LOCATION		DOMESTIC ANIMALS						WILD ANIMALS						HUMAN CASES	TOTAL	
CODE	NAME	DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS			TOTAL
02	BREZICE							0	5	-	-	-	-	5		5
04	CERKNICA							0	5	-	-	-	-	5		5
05	CRNOMELJ	1	-	-	-	-	-	1	3	-	-	-	-	3		4
06	DOMZALE							0	1	-	-	-	-	1		1
09	GROSUPLJE							0	6	-	-	-	-	6		6
11	IDRIJA							0	4	2	-	-	-	6		6
12	ILIRSKA BISTRICA							0	2	-	-	-	-	2		2
14	JESENICE							0	7	-	2	-	-	9		9
15	KAMNIK							0	17	-	-	-	-	17		17
16	KOCEVJE							0	2	-	-	-	-	2		2
17	KOPER							0	9	-	-	-	-	9		9
18	KRANJ							0	20	-	-	1	-	21		21
26	LJUBLJANA MOSTE POLJE							0	1	-	-	-	-	1		1
27	LJUBLJANA SSKA							0	3	-	-	-	-	3		3
28	LJUBLJANA VIC RUDNIK							0	4	-	-	-	-	4		4
30	LOGATEC	1	-	-	-	-	-	1	1	-	-	-	-	1		2
34	METLIKA							0	2	-	-	-	-	2		2
36	MURSKA SOBOTA							0	5	-	-	-	-	5		5
37	NOVA GORICA							0	1	1	-	-	-	2		2
41	POSTOJNA							0	2	-	-	-	-	2		2
42	PTUJ	1	-	-	-	-	-	1						0		1
44	RADOVLJICA							0	1	1	-	-	-	2		2
45	RAVNE NA KOROSKEM							0	1	-	-	-	-	1		1
46	RIBNICA							0	1	-	-	-	-	1		1
48	SEZANA							0	4	-	-	-	-	4		4
53	SKOFJA LOKA							0	7	-	-	-	1	8		8
55	TOLMIN							0	-	1	-	-	-	1		1
60	VRHNIKA							0	4	-	-	-	-	4		4
62	ZALEC	-	1	-	-	-	-	1						0		1
TOTAL		3	1	0	0	0	0	4	118	5	2	1	1	127	0	131
PER CENT		2.3	0.8	0.0	0.0	0.0	0.0	3.1	90.1	3.8	1.5	0.8	0.8	96.9	0.0	100.0

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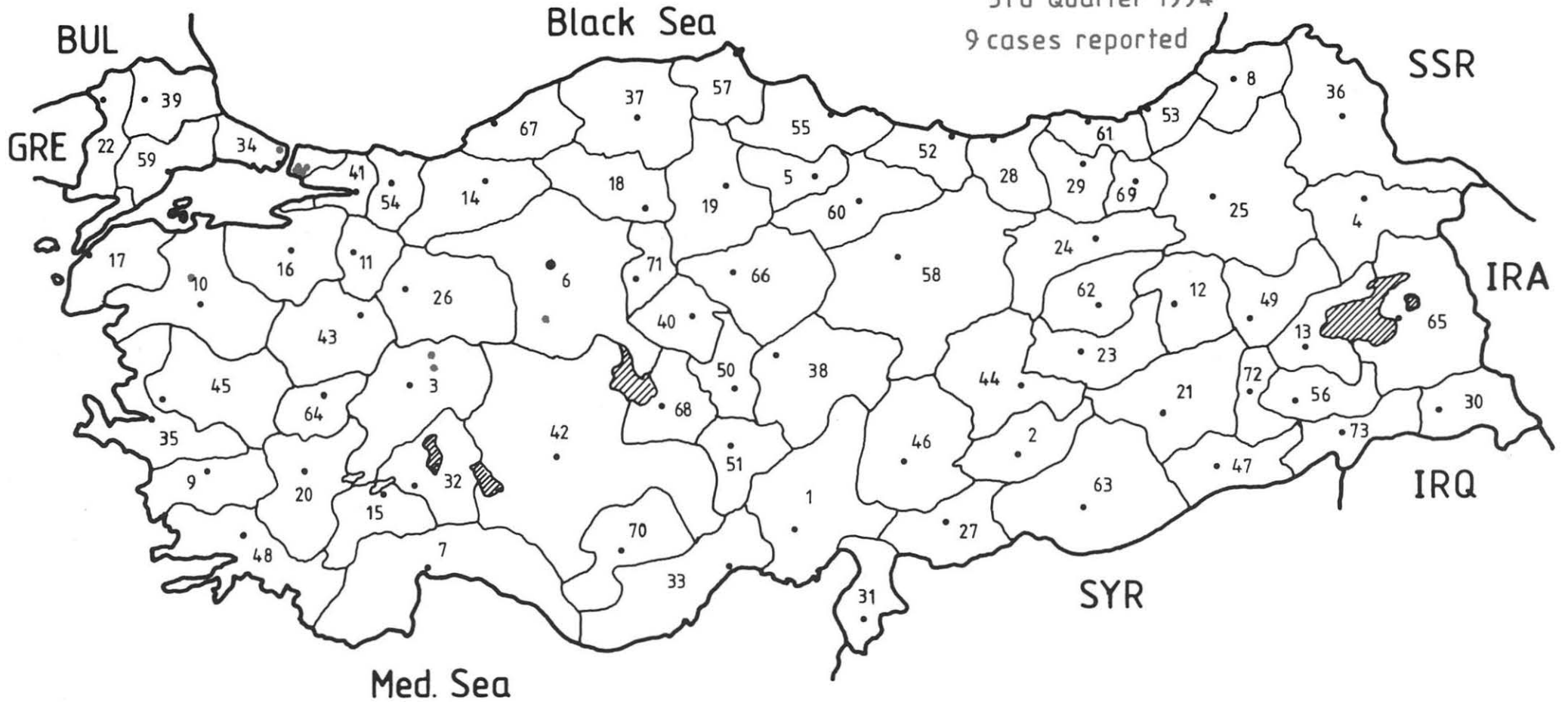
6. List of Contributors

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Dr. M. Brstilo				Dr. Danuta Serokova		Veterinary and Animal Production Department	
State Veterinary Service		Ireland	IRE	National Institute of Hygiene			
		Dr. J.A. Costelloe				Switzerland	SWI
Dr. Ž. Čač		Dr. I. O'Boyle		Portugal	POR	Dr. R. Zanoni	
Croatian Veterinary Institute		Department of Agriculture		Dr. C.A. de Andrade Fontes		Dr. U. Breitenmoser	
				Ministro da Agricultura		Swiss Rabies Centre	
						Institute of Veterinary Virology	
Czech Republic	CZH	Italy	ITA	Romania	ROM	Turkey	TUR
Dr. O. Matouch		Dr. S. Proserpi		Dr. Gheorghe Stratulat		Dr. A. Nizamettin Güvener	
National Rabies Laboratory		Istituto di Malatti Infettive		Ministère de l'Agriculture		Ministry of Agriculture, Forestry and Rural Affairs	
State Veterinary Institute		Univ. degli Studi di Bologna					
				Russian Federation	RUS		
Denmark	DEN	Latvia	LVA	(European part only)			
Dr. E. Stougaard		Prof. J. Rimeicans					
Veterinaerdirektoratet		State Veterinary Department		Prof. G.F. Koromyslov		United Kingdom	UNK
		Dr. Z. Andersons		WHO Coll. Centre on Prev. and Control of Zoonoses		Dr. K.C. Meldrum	
Estonia	EST	Latvian State Scientific Research Institute		The Kovalenko All-Union Institute of Experimental Veterinary Medicine, Moscow		Dr. P.J. Thomas	
Dr. M. Nautras						Ministry of Agriculture, Fisheries and Food	
Ministry of Agriculture		Lithuania	LTU				
		Dr. K. Lukauskas					
Finland	FIN	Dr. A. Dranseika		Prof. B.L. Cherkasskiy		Yugoslavia	YUG
Dr. Saara Reinius		State Veterinary Service		WHO Collaborating Centre on Zoonoses		Dr. M. Radovanovic	
Dr. B. Westerling				Central Research Institute of Epidemiology, Ministry of Public Health, Moscow		Dr. D. Jakovljevic	
Ministry of Agriculture and Forestry		Luxembourg	LUX			Fed. Committee Agriculture	
		Dr. J. Kremer				Dr. Milos Petrovic	
		Ministère de l'Agriculture				Pasteur Institute, Novi Sad	



WHO Coll. Centre
Tuebingen / DEU

Rabies Cases Turkey
3rd Quarter 1994
9 cases reported



WHO Coll. Centre
Tuebingen / DEU

ICE
(rabies free)

Rabies Cases Europe
3rd Quarter 1994
1726 cases reported
7 bat rabies cases included



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

0 50 100 km