RABIES BULLETIN EUROPE

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Contents

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1. INTRODUCTION

This BULLETIN describes the reported rabies cases in **Europe** for the **First Quarter 1996**, subsequently referred to as ***"This Quarter"***.

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

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

In the Miscellaneous SECTION (4) under 4.1 an article comments on a recent publication, a mathematical model considering rabies, fox population density and oral vaccination. Under 4.2 follow-up cases of pediatric patients as the result of an imported dog rabies case in Düsseldorf are described. Under 4.3 information is given on a cross border cooperation in regard to oral vaccination plans in western Europe.

The rabies case data are tabulated for the **First Quarter 1996** in SECTION 5. The arrangement of countries follows practical, not alphabetical considerations.

SECTION 6 lists the official contributors to the BULLETIN.

The geographical distribution of rabies cases in Europe for the **First Quarter 1996** is shown on maps of the Russian Federation, Turkey and Europe in the ANNEX.

2. SUMMARY OF RABIES IN EUROPE

During ***"This Quarter"***, 2831 rabies cases were reported in Europe. Of these 1905 were in wild animals (63.7% of total), 913 in domestic animals, 11 in unspecified animals and 2 in humans.

Of the cases in wild animals, 1804 were foxes, 3 jackals, 4 wolves, 23 raccoon dogs, 2 wild cats, 1 lynx, 1 badger, 6 stone martens, 8 pine martens, 2 polecats, 1 fish otter, 1 other wild carnivore, 43 roe deer, 1 squirrel, 2 black rats, 3 other small rodents. Of the 913 domestic animals, 318 were dogs, 152 cats, 45 horses, 3 pigs, 312 bovines, 78 sheep, 4 goats, 1 other domesticated herbivore. There were 11 unspecified animals.

Two **human cases** were reported, 1 imported case in Italy and 1 indigenously acquired case in the Russian Federation.

No **bat rabies case** was reported.

The **dog-mediated rabies** is only found in Europe in Turkey. Out of 28 reported animals affected in the country 24 were dogs and 4 bovines.

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. This pattern is no longer valid due to oral vaccination.

"This Quarter" is a mixture of countries successfully practicing oral vaccination - showing a decrease of cases- the ones less successful and the ones not practicing oral vaccination showing an increase of cases.

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

There were no cases in Denmark, Italy (only 1 imported case), the Netherlands and Spain, but the last indigenously acquired case (terrestrial animal or bat) was less than two years ago.

3. RABIES IN INDIVIDUAL COUNTRIES

3.1 Albania ALB

No data.

3.2 Austria AUT

by Helmut Schnabl

Of 9597 samples examined for rabies during ***"This Quarter"*** 9 animals (0.09%) were diagnosed rabid. There was a reduction of 14 cases compared to the previous quarter and a reduction of 31 cases compared to the first quarter 1995.

The cases occurred in 2 districts: 6 cases in Neusiedl am See (Burgenland) and 3 cases in Kufstein (Tirol).

3.3 Belgium BEL

by L. Hallet

During ***"This Quarter"***, 22 rabies cases were diagnosed - 16 in foxes, 4 in bovines, 1 each in a cat and a horse.

One fox each was found rabid in: Paliseul, Neufchateau, Daverdisse, Libin, Couvin, Vresse-sur-Semois, Meix-Devant-Virton, Etalle and Messancy. Two foxes each were found rabid in Chimay and Bertrix. Two foxes and 1 cat were found rabid in Libramont. Two bovines were found rabid in Gedinne. One fox and one bovine were found rabid in Sainte-Ode. One horse was found rabid in Bouillon.

3.4 Bosnia and Hercegovina BIH

No data.

3.5 Bulgaria BUL

During ***"This Quarter"***, 11 rabies cases in animals were reported. Seven provinces were affected, all in the northern part of the country.

3.6 Belarus BYE

by S.N. Shpilevsky

During ***"This Quarter"***, 12 rabies cases were diagnosed in animals (10 foxes, 1 cat, 1 bovine).

Four of the six regions of the country were affected by the disease with 1 to 4 cases.

3.7 Croatia CRO

by Mate Brstilo

During ***"This Quarter"***, 230 cases of rabies were diagnosed in 53 municipalities of Croatia, 62 cases (36.9%) more compared to the same quarter of 1995 and 100 cases (76.9%) more than in the 4th quarter 1995.

Municipalities mostly affected were the following: Bjelovar (18 cases), Kutina (15), Nova Gradiška, Požega and Varaždin (11 each).

The rabies cases were diagnosed in 218 wild animals (94.8%) and in 12 domestic animals (5.2%). Of the wild animals 212 were foxes (92.2% of total) and six other wild animals (among these were three jackals and a wolf of the Pelješac peninsula near Dubrovnik). Of the domestic animals, 7 were dogs, 3 cats and two goats.

The increased number of the rabies cases during ***"This Quarter"*** are the result of an increased number of animals subjected to testing, particularly in areas of the Republic of Croatia in which an improved veterinary service was re-established after the war.

"This Quarter" highlights the following:

- there was an increased number of cases recorded in comparison with previous quarters of 1995;
- an increased number of cases was recorded in the northern areas of the Republic of Croatia;
- a decreased number of cases was recorded on the

territory of the Istrian peninsula;

- the total number of cases was particularly increased due to the fact that in certain areas of the Republic of Croatia veterinary services were re-established;
- the Adriatic islands were free from rabies.

3.8 Czech Republic CZH

by Oldrich Matouch

During ***"This Quarter"***, 3583 animals (2968 foxes, 145 roe-deer, 133 cats, 182 dogs, 88 martens and 67 other animals) were examined for rabies, 66 (1.8%) of these were rabid.

64 cases were reported in wild animals (97%) and 2 cases in domestic animals. Of the wild animals 63 were noticed in foxes and 1 in a roe-deer. Of the domestic animals 2 cases were diagnosed in cats. There was an increase of the rabies incidence compared to the same period of 1995 by 24 cases.

Cases were most frequent in the region of North Bohemia (20 cases) and North Moravia (18). Unfortunately, further outbreaks occurred also in the more recently reinfected districts Plzeň-Jih (4), Strakonice (3), Benešov (5), and Pelhřimov (8).

3.9 Denmark DEN

by Eric Stougaard

The country remained rabies-free in terrestrial animals.

There was no bat rabies case reported during ***"This Quarter"***.

3.10 Germany, Federal Republic DEU

by Winfried W. Müller and Hartmut Schlüter

A total of 65 rabies cases was reported during ***"This Quarter"***, 311 cases less than during the first quarter 1995.

The worsening of the rabies situation in 1994 and 1995 seems to be coped with. There is a continuous reduction of cases starting with the fourth quarter 1994 (455 cases). The reason for the improved situation is no doubt an alternative practicing of the oral vaccination (increased application of vaccine baits) as described in the previous issue of this BULLETIN.

The federal states (Bundesländer) which were lately most affected (Nordrhein-Westfalen, Hessen, Rheinland-Pfalz, Saarland) in the west of the country reported between 10 and 15 cases. Bayern, the largest federal state, once heavily infected, reported only 2 cases. Baden-Württemberg with 8 cases seems to improve as well. The two cases in Sachsen (in the east of the country) occurred in the border areas of the Czech Republic and Poland.

3.11 Estonia EST

by Matti Nautras

During ***"This Quarter"***, 23 animal rabies cases were registered in Estonia, 7 cases more than during the previous quarter. The cases occurred in 12 foxes, 3 raccoon dogs, 1 wolf, 3 dogs and 4 cats.

11 districts out of the 15 districts of the country recorded 1 to 5 cases.

3.12 Finland FIN

by Bengt Westerling

The country remained rabies-free.

Surveillance: 51 animals (29 foxes, 8 raccoon dogs, 3 weasels, 3 lynx, 1 stoat, 1 fish otter, 1 wolf, 1 bat, 2 dogs, 2 cats) were examined for rabies during ***"This Quarter"*** but revealed negative results.

3.13 France FRA

by Michel F.A. Aubert

There were 5 rabies cases (3 foxes, 1 bovine, 1 sheep) reported from France during ***"This Quarter"***. 3 cases were located close to the border to Belgium in the

département (department) Ardennes and 2 cases close to the border to Switzerland in the département Doubs.

3.14 Federal Republic FRY of Yugoslavia

by Jan Kišgeci

24 rabies cases (19 foxes, 1 dog, 4 cats) were registered during *"This Quarter"* in the Federal Republic of Yugoslavia. 17 cases occurred in Vojvodina and 7 cases in Serbia.

3.15 Greece GRE

by I. Koykidis

The country remained rabies-free.

3.16 Hungary HUN

by Balint Kerekes

During *"This Quarter"*, 586 rabies cases were reported in Hungary. These were 57% cases more than during the first quarter 1995 (373) and 137% more than during the first quarter 1994 (247).

The Komitate (provinces) mostly affected were Somogy (southwest of the country), Fejer (centre) and Borsod-Abanj-Zemplén (northeast) with 94, 63 and 50 cases respectively.

Rabies cases are no doubt on the increase in Hungary. The three provinces mentioned above recorded three times more cases for Somogy compared to same time last year and twice as many for Fejer and Borsod-Abanj-Zemplén.

The increase of rabies cases seems to be connected to an increase of foxes. The increase of the fox population density seems due to a change of feeding habits and a change in the biotope for the fox.

The increase of the fox population can be seen in most parts of Hungary. It is assumed that the food resources for the fox, and in this connection especially the rodents have increased.

Within the last few years a change of behaviour in the fox has been noticed. The usually nocturnal animals can be seen more and more during the daytime. They are less shy toward humans, sometimes they look for human habitation. They move into urban areas and they can be seen in places where waste is handled. More food let more cubs survive.

At this point investigations in Hungary do not correlate with the assumption that in areas of oral vaccination against rabies the fox population density increases. However, oral vaccination has been applied in only 15,000 km² of 93,000 km² (total of country) having started in 1992.

In two tables (Table 3.16.1 and Table 3.16.2 next page) the fox hunting bags of areas of oral vaccination and no oral vaccination of 1990 and 1994 are compared. In Table 3.16.1 with Komitate (provinces) practicing oral vaccination it can be seen that there was a decrease from 1990 to 1994, except for one Komitat (Komaron-Esztergom) which in fact was least involved in oral vaccination.

Table 3.16.2 concerns all Komitate which are heavily infected by rabies. They all have a significant increase in the hunting bag from 1990 to 1994.

The above figures contradict what is discussed nowadays by the west European hunters who conclude that the drastic increase of fox population density is due to oral vaccination.

There will be no doubt an increase in fox population density due to the eradication of rabies but it can not be explained solely by that fact. One has to especially consider the oversupply (abundance) of food. And one should be cautioned with a quick judgement against the oral vaccination. Next to an increase of rabies cases there could be a disturbance in biological balance in-as-much that there is an explosion of rodents.

Veterinary authorities should consider a programme of reducing the food resources of the fox. That would additionally have a good hygienic and environmental impact.

Table 3.16.1

Komitat	1990	1994	Difference
Györ-Moson-Sopron	1646	1602	-44
Komárom-Esztergom	552	587	+35
Vas	775	745	-30
Veszprém	905	846	-59
Zala	764	763	- 1
Total	**4642**	**4543**	**-99**

Table 3.16.2

Komitat	1990	1994	Difference
Baranya	1419	1619	+200
Bács-Kiskun	1671	2132	+461
Fejér	1275	1516	+241
Pest	2280	2720	+440
Szabolcs-Szatmár-Bereg	1469	1708	+239
Tolna	1327	1983	+656
Total	**9441**	**11678**	**+2237**

Note of the editor: A similar experience that hunters did shoot more foxes in areas with rabies infection (increase of hunting bag) was made in Germany. Here it was concluded that the motivation to shoot animals was lacking in rabies free areas as the hunters considered themselves involved in controlling the disease in infected areas. Quite often there were not enough animals for a significant sample size to carry out the laboratory follow up examinations in regard to oral vaccination.

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

During ***"This Quarter"***, no rabies cases were diagnosed in domestic and wild animals. One human case was diagnosed in March in the province of Venice. It was an imported case: the person visited Nepal in January 1996, where he was bitten by a dog.

3.20 Lithuania LTU

by K. Lukauskas and A. Dranseika

During ***"This Quarter"***, rabies was diagnosed in 9 districts. Of 15 cases 8 were in domestic animals (3

cats and 5 dogs) and 7 in wild animals (3 foxes, 3 raccoon dogs, 1 pine marten).

The districts recorded between 1 and 3 cases.

During ***"This Quarter"*** more than 30,000 dogs and 3,500 cats were vaccinated against rabies.

3.21 Luxembourg LUX

by Joseph Kremer

The rabies situation during ***"This Quarter"*** was similar to the one in the previous quarter. There were 11 cases noticed during ***"This Quarter"*** whereas 9 cases were noticed during the previous quarter, all in the southeast of the country.

From 25 to 30 March 1996, 49,000 RABORAL vaccine baits were distributed by helicopter for the control of the epizootic. A vaccine bait density of 19 per km² was used. Additionally, at the centre and eastern parts of the country approximately 10,000 vaccine baits will be hand-placed near fox dens during the second half of May 1996.

Surveillance:

26 foxes, 2 badgers and 1 ferret were examined for rabies but revealed negative results.

3.22 Latvia LVA

by J.Rimeicāns, Z. Andersons and A. Dedzinš

Of 122 samples examined for rabies during ***"This Quarter"***, 34 (27.9%) were diagnosed rabid. There has been a decrease of 20 cases compared to the previous quarter. 17 districts out of a total of 26 in the country were affected by the disease. The most affected districts were Ogre with 6 cases and Riga with 5 cases.

31 cases were diagnosed in wild animals (91.2% of total). Of these 25 were foxes, 5 raccoon dogs and 1 wolf. Of 3 rabid domestic animals 2 were dogs and 1 cat.

There were no rabies cases in humans.

3.23 Moldova MLD

by V. Bahau

During ***"This Quarter"***, 2 rabies cases were registered in Moldova. One case occurred in a fox in the district of Brichany and 1 in a dog in the district of Kichinev. 17 other animals where rabies was suspected were examined but the samples revealed negative results.

43,749 dogs received an antirabies vaccination.

There was no human rabies case reported in the country.

3.24 Netherlands NET

by G. Visser

The country remained rabies-free in terrestrial animals.

There was no bat rabies case reported during ***"This Quarter"***.

Surveillance:

12 animals (6 foxes, 2 dogs and 4 bats) were investigated for rabies. None of these was diagnosed rabid.

3.25 Norway NOR

by Gudbrand Bakken

The country remained rabies-free.

3.26 Poland POL

by Henryk Maciołek

A total of 647 rabies cases was registered in Poland during ***"This Quarter"***, 27 cases more than during the previous quarter and 89 cases more than during the first quarter 1995. There were 548 cases in wild animals (502 foxes, 9 raccoon dogs, 7 pine martens, 28 roe deer, 1 squirrel, 1 black rat) and 99 cases in domestic animals (45 dogs, 37 cats, 17 bovines).

The rabies situation along the state border to Germany and the Czech Republic has continued to improve due to oral vaccination of foxes which was started here in 1993.

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

3.27 Portugal POR

The country remained rabies-free.

3.28 Romania ROM

by Gheorghe Stratulat

During ***"This Quarter"***, 12 rabies cases (6 foxes, 2 dogs, 2 cats, 2 bovines) were reported in Romania.

Out of 41 provinces in the country 10 were reporting 1-2 cases. These cases were located in the north, the east and the south of the country.

3.29 Russia RUS (European part only)

by V.A.Vedernikov, B.L.Cherkasskiy, V.E.Semljanova and P.N.Pitalev

During ***"This Quarter"***, 764 rabies cases in animals were reported from the European part of the Russian Federation. Of the total number of cases 603 were in domestic animals - 185 dogs, 40 cats, 265 bovines, 43 horses, 67 sheep, 2 pigs, 1 camel. Of 161 wild animals rabies was diagnosed in 152 foxes, 2 wolves, 3 raccoon dogs, 1 mink, 1 lynx, 1 rat, 1 reindeer.

Most affected by the disease were Bashkortostan with 259 cases, the Orenburg Region with 172 cases and the Astrakhan Region with 70 cases.

There was 1 human case reported in Bashkortostan.

There were 764 cases in animals during ***"This Quarter"*** and 274 during the first quarter 1995.

3.30 Spain SPA

by Carlos Abellán García

The mainland and islands of Spain remained rabies-free in terrestrial animals.

The country is not yet free of bat rabies as the last case (in Granada during the third quarter 1994) was less than two years ago.

No case of rabies was reported during ***"This Quarter"*** from the Spanish territory of North Africa (Ceuta and Melilla).

3.31 Slovak Republic SVK

by Jozef Sokol and Bohuslav Lovas

During ***"This Quarter"***, 96 cases of rabies were reported in the Slovak Republic, 33 cases more than during the first quarter 1995. 77 cases were in foxes (80.2% of total), 5 in other wild animals and 14 in domestic animals (14.6%).

3.32 Slovenia SVN

by Zoran Kovač

The rabies situation in Slovenia during ***"This Quarter"*** was much better in comparison with the same period of the last year. While 165 cases were recorded during ***"This Quarter"***, 435 cases were recorded during the first quarter 1995.

As can be seen from the geographical distribution of the cases, there was a concentration of cases in the centre of the country, especially in the communities Kočevje, Zagorje, Kamnik and Litija. There were 147 cases in foxes, 6 in cats, 6 in dogs, 1 in a badger, 2 in stone martens and 3 in roe deer.

For April 1996 the spring campaign of oral immunisation of foxes is planned. The whole country will be treated. 300,000 vaccine baits will be used in an area of 20,000 km². The distribution of vaccine baits will be carried out by aeroplane.

3.33 Sweden SWE

The country remained rabies-free.

3.34 Switzerland SWI

by Urs Breitenmoser

During ***"This Quarter"***, the Swiss Rabies Centre examined a total of 638 animals, of which 0.31% (2) were positive for rabies. In the previous quarter, 0.32% (2 out of 618) and in the first quarter of 1995, 2% (14 out of 699) were recorded positive, respectively. The cases of rabid animals from this quarter were

one domestic cat in January and one red fox in March. This has been the first rabid fox discovered since April 1995, when two foxes from the same area were diagnosed positive for rabies. As the fox found positive in this quarter was a young male, it is rather improbable that he was already infected 11 months ago. Consequently, we have to assume that there was an undiscovered focus in this region. As the spring vaccination campaign for this region was only two weeks ahead when the rabid fox was discovered, no special measurements were taken to react on this new rabies case. In late May 1996, there will be an additional fox den vaccination campaign covering the whole area where the last few cases were found.

7 bats (6 *Pipistrellus kuhli*, 1 *Pipistrellus nathusii*) were received for rabies analysis during this quarter. All were negative for rabies.

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

3.35 Turkey TUR

by Mehmet Alkan

During *"This Quarter"*, 28 animal rabies cases were reported, all in domestic animals (24 dogs and 4 bovines).

There was only 1 case in Bursa province (Il), and the remaining 27 cases occurred in Istanbul province.

3.36 Macedonia TYM

No data.

3.37 Ukraine UKR

No data.

3.38 United Kingdom UNK

by W.J. Pollitt

The country remained rabies-free.

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4. MISCELLANEOUS ARTICLES

4.1 Fox Population Density, Rabies, and Oral Vaccination - a Mathematical Model by D. Schenzle

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Introduction

By means of a mathematical model the question is raised whether and how rabies can be eradicated in Germany by oral vaccination of foxes. This article elaborates on a recent publication by D. SCHENZLE (see reference at the end of article) who evaluated the success of oral vaccination of foxes by relating it to fox population density and the course of rabies. Because immunization of foxes causes an increase in the fox population size, the number of available vaccine baits per fox decreases.

At this point, the fox population density is considered high. It is measured by the changes of the annual fox hunting bag. Graphs comparing hunting bag and rabies cases show clearly: when rabies decreases or disappears (due to oral vaccination), the hunting bag of foxes rises (see Figure 4.1.1 on page 12).

Records indicate that there are great differences in regard to the hunting bag in various parts of Germany. These differences could be related to more or less favourable biotopes for the fox and thus lead to a different carrying capacity of foxes in a given area.

One of the most prominent reasons of D. SCHENZLE's study was to find an explanation for the experience of often having residual rabies foci in areas long treated by oral vaccination and even occassionally developing fierce outbreaks. SCHENZLE's answers, as well as further results and explanations from the model, will be presented under the heading Conclusions.

Description of the model

The model is firstly derived for a rabies free fox population, secondly for one with endemic rabies and thirdly for a situation applying oral vaccination.

It is not intended to describe the model here in detail but to mention the parameters used and the results as presented in the figures.

Many of the parameters are based on assumptions, but relate to experience or they are taken from literature. The life expectancy for the fox is taken as one year, the per capita annual reproduction rate as two cubs.

As an example of an area (35,000 km²) with an assumed carrying capacity of 200,000 foxes and an average annual rabies incidence rate of 40,000 the federal state of Baden-Württemberg was chosen.

To describe the rabies situation it was distinguished between susceptible, infected and immunized foxes. The average incubation time was taken as 25 days. In order to determine an important epidemiological value -the basic rabies reproduction number within foxes- a certain value for the effective contact rate between foxes had to be assumed. In this way the basic rabies reproduction number was fixed as 4. This means that 1 infected fox causes 4 secondary cases. The number of animals infected by one rabid fox increases as the fox population density increases.

The fox population and the rabies prevalence change when the third factor comes in - the oral vaccination. In order to eradicate the disease the population immunity has to reach a certain percentage and this over a lengthy time (several campaigns over several years).

All parameters mentioned above have been related in mathematical equations and applied to different conditions (variations) in a computer programme to present the results in graphs.

Graphical presentation of results

D. SCHENZLE presents 4 graphs in regard to the results of the study; in one case a successful eradication (75% population immunity) and 3 variations with a population immunity less than 75% and other different conditions with residual foci remaining and starting new outbreaks.

Two shall be described on page 12.

Figure 4.1.2

In a fox population of size N and an endemic rabies situation with incidence C a vaccination campaign starts at time zero. The fox population immunity is supposed to be 75%. After repeated vaccination campaigns (biannually) the epidemic is eradicated three years later. With continued vaccination the population would be protected against further introduction of rabies.

Figure 4.1.3

Conditions as in Fig. 4.1.2 but with the more realistic assumption that with constant bait density the number of baits per fox decreases, because the fox population becomes denser under vaccination. Rabies cases decrease in the beginning drastically, but the immunity of the total population for the eradication of the disease can not be reached even though the vaccination programme is continued. In spite of a 70% population immunity, residual foci remain or even outbreaks of a greater dimension develop.

Figure 4.1.1

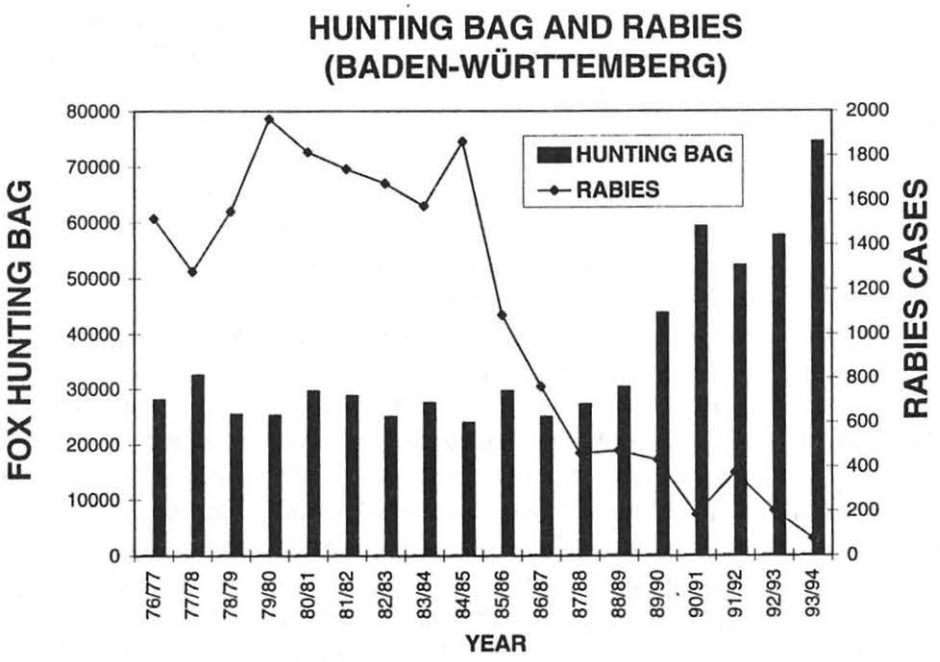

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Figure 4.1.2

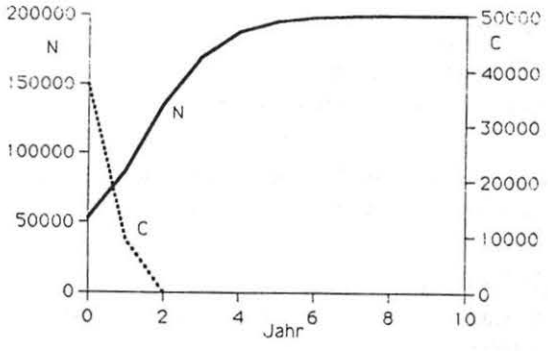
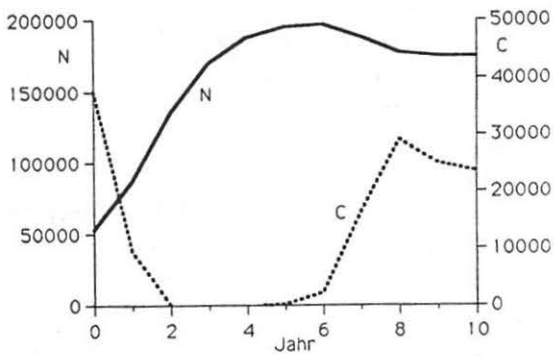


Figure 4.1.3



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Conclusions

The author cautions that from the success of oral vaccination obtained so far with fox rabies one should not yet assume to have rabies under control. Nevertheless, the model shows that under certain conditions (for example a 75% immunity of the fox population as shown in Fig. 4.1.2) an eradication is possible.

The model makes it obvious that a certain critical immunity of the fox population needs to be reached for an eradication. However, it depends strongly on the fox population density where this point is. It is much easier to control rabies if the oral vaccination is applied at a time of a long-standing rabies epidemic and a not very suitable fox biotope than a few years after applied oral vaccination (no reduction of the fox population by rabies any more) and a good fox biotope.

A solution to the above mentioned problem is given in as much as the application of vaccine baits in a given area can be increased by a factor which compensates for the reduction of seroconversion rate. The critical point of population immunity must be reached, otherwise residual foci would lead to failure in eradication of the disease.

Commentary

1. During more than 10 years of follow up examinations in regard to oral vaccination of foxes in our laboratory, samples of different campaigns in different federal states indicated a population immunity between approx. 35% and 90%. Rabies cases decreased resulting in an increase in the fox population until obviously, at certain places, the critical population immunity was not reached due to dense fox populations. Only an increase in the number of vaccine baits applied could promote the downward trend of rabies cases.

2. Due to the fact that fox populations cannot be exactly determined and, therefore, the critical population immunity (75% of the fox population) only vaguely estimated, it is to be expected that areas assumed to be rabies-free following a three year campaign of oral vaccination may, in the end phase, be treated with a much too low number of vaccine baits. This could result in the presence of residual foci with the prospect of massive re-infection thereby negating all previous efforts. Therefore, a consideration of alternate vaccination techniques as mentioned below would, in the long-run, insure that the substantial funds invested in the previous years were not wasted.

3. To obtain at least an approximate value of fox population size and critical population immunity to plan oral vaccination, data on the hunting bag should be considered and the laboratory examination of an appropriate sample size of foxes for antibody determination should be carried out.

4. Considering the need of the technical realization of an increased vaccine bait application of oral vaccination in the field, several attempts have been made in what is commonly called alternative strategies. Reference is made here to two articles in this BULLETIN issue 1/95, page 14 and 4/95, page 13.

(Taken from: D. SCHENZLE (1995): "Zur Frage der weiteren Tollwutbekämpfung in Deutschland". Dtsch. tierärztl. Wschr. 102, 421-424).

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4.2 Imported Dog Rabies Case in Düsseldorf in 1995 - Follow-up Cases of the Pediatric Patients

by S. Hopp, K. Terwolbeck and H. Schroten
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Director: Prof. Dr. med. H. G. Lenard

In developing countries dog rabies is a common disease. In central Europe, however, it is rare and therefore rabies is often not considered when early symptoms occur. We describe here a case of dog rabies in Düsseldorf which appeared in April 1995 (see as well this BULLETIN 2/95). A family acquired a 16 week old male shepherd dog in Turkey and brought it to Düsseldorf. The first symptoms of the animal were itching and aggressive behaviour. The dog also roamed daily for some hours in the city of Düsseldorf. Only several weeks after the occurrence of the first symptoms did the owner consult a private veterinarian who suspected rabies. The animal was euthanized and the diagnosis of rabies was confirmed by direct fluorescent antibody technique (FAT) in the Veterinary Investigation Centre Krefeld on 13 July 1995.

The main problem of this first described case of dog rabies in Düsseldorf was that the number of contact persons and animals was unknown. Therefore, the public had to be informed through newspapers, radio and loudspeaker van. Furthermore, roaming dogs and cats had to be killed and animals had to be kept on a leash in the whole city until the 14th of October.

194 adults and 86 children (48 males, 38 females) were identified as contact persons and received postexposure treatment. The mean age of the children was 8,6 years. In the majority (88%) of the exposed children saliva-skin contacts were described. 8 children were bitten (1 child by the rabid dog and 7 children by dogs suspected to have had contact with the rabid dog). One child was bitten several times. In all other cases they were bitten only once. Interestingly, all of the bitten children were males. Since in many cases reports of exposure were given by children only, it frequently remained unclear if a direct saliva-skin contact had occurred or not. In order to minimize the risk for possible contact persons, all of them received human rabies immunoglobulin (Berirab; 20 I.E./kg bodyweight) simultaneously with the first active vaccination. Active immunization was performed as soon as possible (mainly day 5-7, in a few cases up to 14 days after exposure) in the University Hospital of Düsseldorf according to the Essen scheme with intramuscular administration of six single doses on days 0, 3, 7, 14, 30, 90.

For active immunization we used the human diploid cell strain vaccine (HDC Pasteur-Merieux®, Lyon or Rabivac® Behringwerke AG, Marburg) and the purified chick embryo cell culture vaccine (Rabipur®, Behringwerke AG). In some cases vaccinations were performed by the general practitioners, e.g. private pediatricians. In 9% of the cases local reactions at the site of the vaccination were observed. In 31% mild general reactions, such as fever, headache, muscle pain, malaise and gastrointestinal symptoms were described by the parents of the children.

An exposed and vaccinated 10 year old boy developed after the fourth vaccination a transient weakness of the lower extremities, which disappeared one day later. Two days after the fifth vaccination the same symptoms occurred which were accompanied with tremorlike movements in the legs. He was admitted to our pediatric department, because a beginning acute neuroparalytic illness of the Guillain-Barré type was suspected. Since the symptoms disappeared rapidly

again, the diagnosis of Guillain-Barré-Syndrom could not be confirmed. Retrospectively the symptoms were attributed to a mild reaction against the vaccination combined with a strong physical stress by jogging on the day following the vaccination.

Following active immunization sufficient antibody titers were found 3 weeks later by RFFIT (rapid focus fluorescent inhibition test) in all except for 2 children. In these 2 cases active immunization with doubled dose at day 30 was necessary. The increase of antibody levels ranged between 1:4 and 1:1073, with a mean of 1:300.

In spite of the increasing time intervalls between the repetitive vaccinations, the compliance of the patients was very good. In 96% of the cases all vaccinations were performed. In three children only one vaccination could be given (in one case the parents of the child could not be contacted, despite all our efforts; in the other two cases the parents refused to come to further vaccinations, because the dogs eventually proved to have been vaccinated before exposure, although an antibody titer of the dogs was not available). In one case the last vaccination was not given, because of the side effects after the fourth and fifth vaccination and already sufficient antibody titers. Until April 1996 no signs of rabies have occurred in all exposed children.

4.3 Cross Border Cooperation on Oral Vaccination of Foxes against Rabies - Western Europe

by W.W. Müller
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The annual meeting to coordinate oral vaccination of foxes against rabies in western Europe was called by the WHO Collaborating Centre for Research and Management in Zoonosis Control, Malzéville , in Metz, France, on 31 January 1996. Representatives of five countries (Belgium, France, Germany, Luxembourg, Switzerland) and one representative each of the WHO Headquarters Geneva and the European Union Brussels participated in the meeting.

As usual reports were presented on the more recent development of rabies and oral vaccination as well as the plans for the coming year.

Belgium and Luxembourg experienced setbacks as rabies cases increased. Germany and Switzerland seem to have overcome their setbacks and rabies cases decreased. Only France has a continued record of improvement of the rabies situation since 1989.

Most problem areas are nowadays treated with an alternative strategy in-as-much as a third vaccine campaign during the year is added, compared to biannual campaigns.

There is a coherent test area in the Jura mountains where France and Switzerland on both sides of the border carry out a common field trial. Here the efficiency of the placing of vaccine baits around the dens is tested starting end of May/beginning of June to especially immunize the young foxes in an additional campaign of the year.

(Source: Report of the meeting by the WHO Collaborating Centre of Malzéville)

TABLE 5.1

EUR EUROPE 1/96 RABIES CASES 1. 1.96 - 31. 3.96

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	8	-	-	1	-	9		9
BEL	BELGIUM	-	1	4	1	-	-	6	16	-	-	-	-	16		22
BIH	BOSNA I HERCEGOWI**							0						0		0
BUL	BULGARIA 1)							0	-	-	-	-	11	11		11
BYE	BELARUS	-	1	1	-	-	-	2	10	-	-	-	-	10		12
CRO	CROATIA	7	3	-	-	2	-	12	212	-	1	-	5	218		230
CZH	CZECH REPUBLIC	-	2	-	-	-	-	2	63	-	-	1	-	64		66
DEN	DENMARK *							0						0		0
DEU	FED.REP. OF GERMANY	1	3	6	-	8	-	18	45	-	1	1	-	47		65
EST	ESTONIA	3	4	-	-	-	-	7	12	-	-	-	4	16		23
FIN	FINLAND *							0						0		0
FRA	FRANCE	-	-	1	-	1	-	2	3	-	-	-	-	3		5
FRY	FED.REP.OF YUGOSLAVI	1	4	-	-	-	-	5	19	-	-	-	-	19		24
GRE	GREECE *							0						0		0
HUN	HUNGARY	29	38	8	1	2	1	79	497	-	3	7	-	507		586
ICE	ICELAND *							0						0		0
IRE	IRELAND *							0						0		0
ITA	ITALY 2)							0						0	1	1
LTU	LITHUANIA	5	3	-	-	-	-	8	3	-	1	-	3	7		15
LUX	LUXEMBOURG	-	-	3	-	2	-	5	5	-	-	1	-	6		11
LVA	LATVIA	2	1	-	-	-	-	3	25	-	-	-	6	31		34
MLD	MOLDOVA	1	-	-	-	-	-	1	1	-	-	-	-	1		2
NET	NETHERLANDS *							0						0		0
NOR	NORWAY *							0						0		0
POL	POLAND	45	37	17	-	-	-	99	502	-	7	28	11	548		647
POR	PORTUGAL *							0						0		0
ROM	ROMANIA	2	2	2	-	-	-	6	6	-	-	-	-	6		12
RUS	RUSSIAN FEDERATION	185	40	265	43	67	3	603	152	-	-	1	8	161	1	765
SPA	SPAIN *							0						0		0
SVK	SLOVAK REPUBLIC	7	6	1	-	-	-	14	77	-	2	-	3	82		96
SVN	SLOVENIA	6	6	-	-	-	-	12	147	1	2	3	-	153		165
SWE	SWEDEN *							0						0		0
SWI	SWITZERLAND + LIECHT	-	1	-	-	-	-	1	1	-	-	-	-	1		2
TUR	TURKEY	24	-	4	-	-	-	28						0		28
TYM	MAKEDONIJA **							0						0		0
UKR	UKRAINE **							0						0		0
UNK	UNITED KINGDOM *							0						0		0
TOTAL		318	152	312	45	82	4	913	1804	1	17	43	51	1916	2	2831
PER CENT		11.2	5.4	11.0	1.6	2.9	0.1	32.3	63.7	0.0	0.6	1.5	1.8	67.7	0.1	100.0

* NO CASES ** NO DATA 1) UNSPECIFIED 2) 1 MAN IMPORTED FROM NEPAL

TABLE 5.2

EUR EUROPE 1/96

RABIES CASES
'OTHER ANIMAL SPECIES'

1. 1.96 - 31. 3.96

LOCATION		OTHER DOMESTIC ANIMALS		OTHER WILD ANIMALS										TOTAL
CODE	NAME	PIG	OTHER DOMESTIC HERBIVORES	JACKAL	WOLF	RACCOON DOG	WILD CAT	LYNX	OTH.WILD CARNIVOR	SQUIRREL	BLACK RAT	OTH.SM. RODENTS	UNSPECIFIED	
BUL	BULGARIA	-	-	-	-	-	-	-	-	-	-	-	11	11
CRO	CROATIA	-	-	3	-	-	2	-	-	-	-	-	-	5
EST	ESTONIA	-	-	-	1	3	-	-	-	-	-	-	-	4
HUN	HUNGARY	1	-	-	-	-	-	-	-	-	-	-	-	1
LTU	LITHUANIA	-	-	-	-	3	-	-	-	-	-	-	-	3
LVA	LATVIA	-	-	-	1	5	-	-	-	-	-	-	-	6
POL	POLAND	-	-	-	-	9	-	-	-	1	1	-	-	11
RUS	RUSSIAN FEDERATION	2	1	-	2	3	-	1	1	-	1	-	-	11
SVK	SLOVAK REPUBLIC	-	-	-	-	-	-	-	-	-	-	3	-	3
TOTAL		3	1	3	4	23	2	1	1	1	2	3	11	55
PER CENT		5.5	1.8	5.5	7.3	41.8	3.6	1.8	1.8	1.8	3.6	5.5	20.0	100.0

RABIES CASES 1. 1.96 - 31. 3.96															
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															
107 NEUSIEDL AM SEE							0	6	-	-	-	-	6		6
705 KUFSTEIN							0	2	-	-	1	-	3		3
TOTAL	0	0	0	0	0	0	0	8	0	0	1	0	9	0	9
PER CENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	88.9	0.0	0.0	11.1	0.0	100.0	0.0	100.0
BEL BELGIUM															
HH HAINHAUT							0	2	-	-	-	-	2		2
LX LUXEMBOURG	-	1	2	1	-	-	4	12	-	-	-	-	12		16
NA NAMUR	-	-	2	-	-	-	2	2	-	-	-	-	2		4
TOTAL	0	1	4	1	0	0	6	16	0	0	0	0	16	0	22
PER CENT	0.0	4.5	18.2	4.5	0.0	0.0	27.3	72.7	0.0	0.0	0.0	0.0	72.7	0.0	100.0
DEU FEDERAL REPUBLIC OF GERMANY															
05 NORDRHEIN-WESTFALEN	-	-	2	-	1	-	3	9	-	-	1	-	10		13
06 HESSEN	-	1	2	-	-	-	3	12	-	-	-	-	12		15
07 RHEINLAND-PFALZ	1	-	1	-	7	-	9	6	-	-	-	-	6		15
08 BADEN-WUERTTEMBERG							0	7	-	1	-	-	8		8
09 BAYERN	-	-	1	-	-	-	1	1	-	-	-	-	1		2
10 SAARLAND	-	2	-	-	-	-	2	8	-	-	-	-	8		10
14 Sachsen							0	2	-	-	-	-	2		2
TOTAL	1	3	6	0	8	0	18	45	0	1	1	0	47	0	65
PER CENT	1.5	4.6	9.2	0.0	12.3	0.0	27.7	69.2	0.0	1.5	1.5	0.0	72.3	0.0	100.0
FRA FRANCE															
08 ARDENNES	-	-	1	-	1	-	2	1	-	-	-	-	1		3
25 DOUBS							0	2	-	-	-	-	2		2
TOTAL	0	0	1	0	1	0	2	3	0	0	0	0	3	0	5
PER CENT	0.0	0.0	20.0	0.0	20.0	0.0	40.0	60.0	0.0	0.0	0.0	0.0	60.0	0.0	100.0

RABIES CASES 1. 1.96 - 31. 3.96

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															
04 V.TARNOVO							0	-	-	-	-	1	1		1
08 DOBRICH							0	-	-	-	-	1	1		1
11 LOVETCH							0	-	-	-	-	1	1		1
12 MONTANA							0	-	-	-	-	2	2		2
15 PLEVEN							0	-	-	-	-	2	2		2
17 RAZGRAD							0	-	-	-	-	1	1		1
25 TARGOVITCHE							0	-	-	-	-	3	3		3
TOTAL	0	0	0	0	0	0	0	0	0	0	0	11	11	0	11
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
ROM ROMANIA															
04 BACAU	1	-	-	-	-	-	1	1	-	-	-	-	1		2
07 BOTOSANI	1	-	-	-	-	-	1						0		1
10 BUZAU							0	1	-	-	-	-	1		1
13 CLUJ							0	1	-	-	-	-	1		1
17 DOLJ	-	1	-	-	-	-	1						0		1
20 GORJ	-	-	1	-	-	-	1						0		1
24 IASI	-	1	-	-	-	-	1	1	-	-	-	-	1		2
31 SATU-MARE							0	1	-	-	-	-	1		1
32 SALAJ							0	1	-	-	-	-	1		1
38 VASLUI	-	-	1	-	-	-	1						0		1
TOTAL	2	2	2	0	0	0	6	6	0	0	0	0	6	0	12
PER CENT	16.7	16.7	16.7	0.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0	0.0	50.0	0.0	100.0
TUR TURKEY															
16 BURSA	1	-	-	-	-	-	1						0		1
34 ISTANBUL	23	-	4	-	-	-	27						0		27
TOTAL	24	0	4	0	0	0	28	0	0	0	0	0	0	0	28
PER CENT	85.7	0.0	14.3	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. 1.96 - 31. 3.96

LOCATION CODE NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
	DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
BYE BELARUS															
01 Brest Region	-	-	1	-	-	-	1	2	-	-	-	-	2		3
02 Vitebsk Region	-	1	-	-	-	-	1	3	-	-	-	-	3		4
04 Grodno Region							0	1	-	-	-	-	1		1
05 Minsk Region							0	4	-	-	-	-	4		4
TOTAL	0	1	1	0	0	0	2	10	0	0	0	0	10	0	12
PER CENT	0.0	8.3	8.3	0.0	0.0	0.0	16.7	83.3	0.0	0.0	0.0	0.0	83.3	0.0	100.0
LTU LITHUANIA															
36 Birzu	1	-	-	-	-	-	1						0		1
41 Vilniaus	1	-	-	-	-	-	1						0		1
49 Kaisiadoriu	-	1	-	-	-	-	1						0		1
53 Kedainiu	1	-	-	-	-	-	1	-	-	-	-	1	1		2
54 Kelmes							0	1	-	-	-	2	3		3
65 Pakruojo	-	1	-	-	-	-	1						0		1
67 Pasvalio	1	-	-	-	-	-	1						0		1
68 Plunges							0	1	-	1	-	-	2		2
91 Siauliu	1	1	-	-	-	-	2	1	-	-	-	-	1		3
TOTAL	5	3	0	0	0	0	8	3	0	1	0	3	7	0	15
PER CENT	33.3	20.0	0.0	0.0	0.0	0.0	53.3	20.0	0.0	6.7	0.0	20.0	46.7	0.0	100.0
MLD MOLDOVA															
01 MOLDOVA	1	-	-	-	-	-	1	1	-	-	-	-	1		2
TOTAL	1	0	0	0	0	0	1	1	0	0	0	0	1	0	2

RABIES CASES 1. 1.96 - 31. 3.96

LOCATION CODE NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
	DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
CZH CZECH REPUBLIC															
01 CENTRAL BOHEMIA							0	6	-	-	-	-	6		6
02 SOUTH BOHEMIA							0	13	-	-	-	-	13		13
03 WEST BOHEMIA							0	5	-	-	-	-	5		5
04 NORTH BOHEMIA	-	1	-	-	-	-	1	19	-	-	-	-	19		20
05 EAST BOHEMIA							0	3	-	-	-	-	3		3
06 SOUTH MORAVIA							0	1	-	-	-	-	1		1
07 NORTH MORAVIA	-	1	-	-	-	-	1	16	-	-	1	-	17		18
TOTAL	0	2	0	0	0	0	2	63	0	0	1	0	64	0	66
PER CENT	0.0	3.0	0.0	0.0	0.0	0.0	3.0	95.5	0.0	0.0	1.5	0.0	97.0	0.0	100.0
FRY FED.REP.OF YUGOSLAVIA															
60 SR SRBIJA	-	1	-	-	-	-	1	6	-	-	-	-	6		7
61 SAP VOJVODINA	1	3	-	-	-	-	4	13	-	-	-	-	13		17
TOTAL	1	4	0	0	0	0	5	19	0	0	0	0	19	0	24
PER CENT	4.2	16.7	0.0	0.0	0.0	0.0	20.8	79.2	0.0	0.0	0.0	0.0	79.2	0.0	100.0
SVK SLOVAK REPUBLIC															
10 DISTRICT OF BRATISLAV							0	1	-	-	-	-	1		1
11 WEST SLOVAKIA	3	1	-	-	-	-	4	33	-	1	-	-	34		38
12 CENTRAL SLOVAKIA	-	3	-	-	-	-	3	19	-	-	-	-	19		22
13 EAST SLOVAKIA	4	2	1	-	-	-	7	24	-	1	-	3	28		35
TOTAL	7	6	1	0	0	0	14	77	0	2	0	3	82	0	96
PER CENT	7.3	6.3	1.0	0.0	0.0	0.0	14.6	80.2	0.0	2.1	0.0	3.1	85.4	0.0	100.0

CRO CROATIA — RABIES CASES — 1. 1.96 - 31. 3.96

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	3	-	-	-	-	-	3	15	-	-	-	-	15		18
006	BUJE	-	-	-	-	1	-	1						0		1
009	CRIKVENICA							0	1	-	-	-	-	1		1
011	CAKOVEC							0	1	-	-	-	-	1		1
012	CAZMA							0	2	-	-	-	-	2		2
013	DARUVAR	-	2	-	-	-	-	2	3	-	-	-	-	3		5
017	DONJI MIHOLJAC							0	7	-	1	-	-	8		8
019	DUBROVNIK	-	-	-	-	1	-	1	4	-	-	-	3	7		8
020	DUGA RESA	2	-	-	-	-	-	2	3	-	-	-	-	3		5
023	DAKOVO							0	3	-	-	-	-	3		3
025	GARESNICA							0	4	-	-	-	-	4		4
027	GOSPIC							0	1	-	-	-	-	1		1
029	GRUBISNO POLJE							0	1	-	-	-	-	1		1
031	IMOTSKI							0	1	-	-	-	-	1		1
032	IVANEC							0	6	-	-	-	-	6		6
036	KARLOVAC							0	1	-	-	-	-	1		1
038	KLANJEC							0	1	-	-	-	-	1		1
039	KNIN							0	2	-	-	-	-	2		2
040	KOPRIVNICA	-	1	-	-	-	-	1	4	-	-	-	-	4		5
043	KRAPINA							0	2	-	-	-	-	2		2
044	KRIZEVCI							0	2	-	-	-	-	2		2
046	KUTINA							0	14	-	-	-	1	15		15
049	LUDBREG							0	4	-	-	-	-	4		4
052	NASICE							0	1	-	-	-	-	1		1
053	NOVA GRADISKA							0	11	-	-	-	-	11		11
054	NOVI MAROF							0	9	-	-	-	-	9		9
057	OGULIN							0	8	-	-	-	1	9		9
060	ORAHOVICA							0	1	-	-	-	-	1		1
062	OTOCAC							0	1	-	-	-	-	1		1

CRO 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		
065	PAKRAC							0	6	-	-	-	-	6		6
067	PETRINJA							0	2	-	-	-	-	2		2
068	PODRAVSKA SLATINA							0	7	-	-	-	-	7		7
070	PREGRADA							0	1	-	-	-	-	1		1
071	PULA							0	1	-	-	-	-	1		1
073	RIJEKA							0	4	-	-	-	-	4		4
074	ROVINJ							0	1	-	-	-	-	1		1
075	SENJ							0	6	-	-	-	-	6		6
077	SISAK							0	2	-	-	-	-	2		2
078	POZEGA							0	11	-	-	-	-	11		11
079	SLAVONSKI BROD							0	5	-	-	-	-	5		5
080	SLUNJ							0	1	-	-	-	-	1		1
081	SOLIN							0	2	-	-	-	-	2		2
082	SPLIT							0	2	-	-	-	-	2		2
085	TROGIR							0	1	-	-	-	-	1		1
086	VALPOVO							0	3	-	-	-	-	3		3
087	VARAZDIN							0	11	-	-	-	-	11		11
088	VINKOVCI							0	1	-	-	-	-	1		1
089	VIROVITICA	1	-	-	-	-	-	1	2	-	-	-	-	2		3
092	VRBOVEC	1	-	-	-	-	-	1	4	-	-	-	-	4		5
093	VRBOVSKO							0	3	-	-	-	-	3		3
097	ZABOK							0	6	-	-	-	-	6		6
100	ZLATAR BISTRICA							0	10	-	-	-	-	10		10
102	GRAD ZAGREB							0	7	-	-	-	-	7		7
TOTAL		7	3	0	0	2	0	12	212	0	1	0	5	218	0	230
PER CENT		3.0	1.3	0.0	0.0	0.9	0.0	5.2	92.2	0.0	0.4	0.0	2.2	94.8	0.0	100.0

RABIES CASES 1. 1.96 - 31. 3.96

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							0	1	-	-	-	-	1		1
04 Jogevamaa							0	2	-	-	-	-	2		2
05 Jaervamaa	1	-	-	-	-	-	1	3	-	-	-	-	3		4
07 Laeaene-Virumaa	-	1	-	-	-	-	1						0		1
08 Polvamaa	1	1	-	-	-	-	2						0		2
09 Paernumaa							0	-	-	-	-	1	1		1
10 Raplamaa	1	-	-	-	-	-	1	4	-	-	-	-	4		5
11 Saaremaa	-	1	-	-	-	-	1						0		1
12 Tartumaa							0	-	-	-	-	2	2		2
14 Viljandimaa							0	2	-	-	-	1	3		3
15 Vorumaa	-	1	-	-	-	-	1						0		1
TOTAL	3	4	0	0	0	0	7	12	0	0	0	4	16	0	23
PER CENT	13.0	17.4	0.0	0.0	0.0	0.0	30.4	52.2	0.0	0.0	0.0	17.4	69.6	0.0	100.0
LVA LATVIA															
01 Aizkraukle							0	-	-	-	-	1	1		1
05 Cesis							0	4	-	-	-	-	4		4
06 Daugavpils							0	-	-	-	-	2	2		2
08 Gulbene							0	1	-	-	-	-	1		1
10 Jelgava							0	1	-	-	-	1	2		2
11 Kraslava							0	1	-	-	-	-	1		1
12 Kuldiga	-	1	-	-	-	-	1						0		1
13 Liepaja							0	1	-	-	-	1	2		2
14 Limbazi							0	1	-	-	-	-	1		1
17 Ogre	2	-	-	-	-	-	2	4	-	-	-	-	4		6
18 Preili							0	1	-	-	-	-	1		1
19 Rezekne							0	1	-	-	-	1	2		2
20 Riga							0	5	-	-	-	-	5		5
21 Saldus							0	1	-	-	-	-	1		1
22 Talsi							0	2	-	-	-	-	2		2
23 Tukums							0	1	-	-	-	-	1		1
25 Valmiera							0	1	-	-	-	-	1		1
TOTAL	2	1	0	0	0	0	3	25	0	0	0	6	31	0	34
PER CENT	5.9	2.9	0.0	0.0	0.0	0.0	8.8	73.5	0.0	0.0	0.0	17.6	91.2	0.0	100.0

HUN HUNGARY — RABIES CASES — 1. 1.96 - 31. 3.96

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		
01	BUDAPEST							0	10	-	-	-	-	10		10
02	BARANYA	3	2	-	-	1	-	6	40	-	-	1	-	41		47
03	BACS-KISKUN	1	2	-	-	-	-	3	28	-	1	-	-	29		32
04	BEKES							0	14	-	-	-	-	14		14
05	BORSOD-ABAUJ-ZEMPLEN	1	3	-	1	-	-	5	45	-	-	-	-	45		50
06	CSONGRAD	1	2	-	-	-	-	3	13	-	-	-	-	13		16
07	FEJER	2	1	2	-	-	-	5	58	-	-	-	-	58		63
08	GYOER-SOPRON							0	4	-	-	-	-	4		4
09	HAJDU-BIHAR	-	1	2	-	-	-	3	16	-	-	-	-	16		19
10	HEVES	2	4	1	-	-	-	7	19	-	1	-	-	20		27
11	KOMAROM	4	1	-	-	-	1	6	27	-	-	-	-	27		33
12	NOGRAD							0	19	-	-	-	-	19		19
13	PEST	2	8	2	-	-	-	12	24	-	1	-	-	25		37
14	SOMOGY	8	7	1	-	1	-	17	72	-	-	5	-	77		94
15	SZABOLCS-SZAT	2	1	-	-	-	-	3	28	-	-	-	-	28		31
16	SZOLNOK	-	1	-	-	-	-	1	3	-	-	-	-	3		4
17	TOLNA	2	2	-	-	-	-	4	35	-	-	1	-	36		40
19	VESZPREM	1	1	-	-	-	-	2	24	-	-	-	-	24		26
20	ZALA	-	2	-	-	-	-	2	18	-	-	-	-	18		20
TOTAL		29	38	8	1	2	1	79	497	0	3	7	0	507	0	586
PER CENT		4.9	6.5	1.4	0.2	0.3	0.2	13.5	84.8	0.0	0.5	1.2	0.0	86.5	0.0	100.0

RABIES CASES															1. 1.96 - 31. 3.96
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		
ITA ITALY															
30 VENEZIA							0						0	1	1
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
LUX LUXEMBOURG															
04 LUXEMBOURG-CAMPAGNE	-	-	-	-	2	-	2	4	-	-	1	-	5		7
13 REMICH	-	-	3	-	-	-	3	1	-	-	-	-	1		4
TOTAL	0	0	3	0	2	0	5	5	0	0	1	0	6	0	11
PER CENT	0.0	0.0	27.3	0.0	18.2	0.0	45.5	45.5	0.0	0.0	9.1	0.0	54.5	0.0	100.0
SWI SWITZERLAND AND LIECHTENSTEIN															
05 BASEL-LAND							0	1	-	-	-	-	1		1
17 SOLOTHURN	-	1	-	-	-	-	1						0		1
TOTAL	0	1	0	0	0	0	1	1	0	0	0	0	1	0	2
PER CENT	0.0	50.0	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

RUS RUSSIAN FEDERATION — RABIES CASES — 1. 1.96 - 31. 3.96

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		
01	Arkhangelsk Region							0	-	-	-	1	-	1		1
08	Pskov Region	1	1	-	-	-	-	2	3	-	-	-	1	4		6
12	Twer Region	2	-	-	-	-	-	2	5	-	-	-	-	5		7
15	Moscow Region	1	-	-	-	-	-	1						0		1
16	Oryol Region							0	2	-	-	-	-	2		2
17	Ruazan Region	1	-	-	-	-	-	1						0		1
18	Smolensk Region	1	-	1	-	-	-	2	1	-	-	-	-	1		3
19	Tula Region	5	1	-	-	-	-	6	2	-	-	-	1	3		9
26	Belgorod Region	4	5	6	1	-	-	16	5	-	-	-	-	5		21
27	Voronezh Region	6	5	7	1	1	-	20	3	-	-	-	-	3		23
28	Kursk Region	2	-	-	1	-	-	3	1	-	-	-	-	1		4
29	Lipetsk Region	1	-	-	-	-	-	1	1	-	-	-	-	1		2
31	Astrakhan Region	8	5	12	1	37	1	64	3	-	-	-	3	6		70
32	Volgograd Region	1	3	19	-	2	-	25	1	-	-	-	-	1		26
33	Samara Region	-	2	3	1	-	-	6	2	-	-	-	-	2		8
34	Penza Region	2	-	-	-	-	-	2	3	-	-	-	-	3		5
35	Saratov Region	17	6	16	2	-	-	41	11	-	-	-	-	11		52
36	Ulyanovsk Region	1	2	1	-	-	-	4	5	-	-	-	-	5		9
38	Republic of Tatarstan	6	1	17	3	-	-	27	28	-	-	-	1	29		56
39	Krasnodar Territory	16	-	-	-	-	1	17	1	-	-	-	-	1		18
40	Stavropol Territory	-	-	5	-	-	-	5						0		5
41	Rostov Region	2	-	2	-	-	-	4	-	-	-	-	1	1		5
42	Orenburg Region	45	9	76	5	11	-	146	25	-	-	-	1	26		172
44	Republic of Bashkorto	63	-	100	28	16	1	208	50	-	-	-	-	50	1	259
TOTAL		185	40	265	43	67	3	603	152	0	0	1	8	161	1	765
PER CENT		24.2	5.2	34.6	5.6	8.8	0.4	78.8	19.9	0.0	0.0	0.1	1.0	21.0	0.1	100.0

POL POLAND — RABIES CASES — 1. 1.96 - 31. 3.96

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		
01	WARSZAWA	-	1	-	-	-	-	1	8	-	-	-	1	9		10
05	BIALYSTOK							0	4	-	-	-	-	4		4
09	BYDGOSZCZ	1	-	-	-	-	-	1	11	-	-	1	1	13		14
13	CIECHANOW							0	5	-	-	-	1	6		6
15	CZESTOCHOWA							0	13	-	-	-	-	13		13
17	ELBLAG	-	6	9	-	-	-	15	33	-	-	-	1	34		49
19	GDANSK							0	1	-	-	-	-	1		1
23	JELENIA GORA							0	4	-	-	-	-	4		4
25	KALISZ	1	1	-	-	-	-	2	16	-	-	-	-	16		18
27	KATOWICE	1	-	-	-	-	-	1	11	-	2	-	-	13		14
29	KIELCE	1	1	-	-	-	-	2	39	-	2	-	-	41		43
31	KONIN	1	-	-	-	-	-	1	13	-	-	-	-	13		14
33	KOSZALIN	2	2	-	-	-	-	4	7	-	-	-	-	7		11
37	KROSNO							0	11	-	-	-	-	11		11
39	LEGNICA							0	2	-	-	-	-	2		2
41	LESZNO	-	1	-	-	-	-	1	6	-	-	1	-	7		8
43	LUBLIN							0	2	-	-	-	-	2		2
45	LOMZA							0	8	-	-	-	-	8		8
47	LODZ	-	1	-	-	-	-	1	2	-	-	-	-	2		3
49	NOWY SACZ							0	3	-	-	-	-	3		3
51	OLSZTYN	-	1	-	-	-	-	1	17	-	-	-	3	20		21
53	OPOLE							0	9	-	-	1	-	10		10
55	OSTROLEKA							0	4	-	-	-	-	4		4

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		
57	PILA							0	2	-	-	-	-	2		2
59	PIOTRKOW TRYB	1	-	-	-	-	-	1	23	-	-	-	1	24		25
61	PLOCK	3	-	1	-	-	-	4	19	-	-	-	-	19		23
63	POZNAN	-	-	1	-	-	-	1	9	-	-	-	-	9		10
65	PRZEMYSL	16	8	-	-	-	-	24	26	-	-	15	-	41		65
67	RADOM	5	1	-	-	-	-	6	52	-	1	-	-	53		59
69	RZESZOW	8	6	1	-	-	-	15	23	-	1	6	-	30		45
71	SIEDLCE	2	-	1	-	-	-	3	10	-	1	-	-	11		14
73	SIERADZ							0	14	-	-	-	-	14		14
75	SKIERNIEWICE							0	9	-	-	-	-	9		9
77	SLUPSK							0	7	-	-	-	-	7		7
79	SUWALKI	-	2	1	-	-	-	3	2	-	-	-	1	3		6
83	TARNOBRZEG	1	1	-	-	-	-	2	23	-	-	2	1	26		28
85	TARNOW							0	9	-	-	1	-	10		10
87	TORUN	1	2	3	-	-	-	6	14	-	-	-	-	14		20
89	WALBRZYCH							0	5	-	-	1	-	6		6
91	WLOCLAWEK	-	1	-	-	-	-	1	11	-	-	-	-	11		12
93	WROCLAW	1	1	-	-	-	-	2	12	-	-	-	-	12		14
95	ZAMOSC	-	1	-	-	-	-	1	3	-	-	-	1	4		5
TOTAL		45	37	17	0	0	0	99	502	0	7	28	11	548	0	647
PER CENT		7.0	5.7	2.6	0.0	0.0	0.0	15.3	77.6	0.0	1.1	4.3	1.7	84.7	0.0	100.0

SVN SLOVENIA RABIES CASES 1. 1.96 - 31. 3.96

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		
009	BREZICE							0	2	-	-	-	-	2		2
011	CELJE	1	-	-	-	-	-	1	12	-	-	-	-	12		13
013	CERKNICA							0	2	-	-	-	-	2		2
023	DOMZALE							0	2	-	-	-	-	2		2
032	GROSUPLJE							0	2	-	-	-	-	2		2
034	HRASTNIK							0	1	-	-	-	-	1		1
038	ILIRSKA BISTRICA							0	1	-	-	-	-	1		1
040	IZOLA-ISOLA							0	1	-	-	-	-	1		1
043	KAMNIK	-	1	-	-	-	-	1	15	-	-	1	-	16		17
048	KOCEVJE	1	-	-	-	-	-	1	8	-	-	-	-	8		9
050	KOPER							0	1	-	-	-	-	1		1
052	KRANJ							0	1	-	-	-	-	1		1
054	KRSKO							0	3	-	-	-	-	3		3
057	LASKO	1	-	-	-	-	-	1	12	-	1	-	-	13		14
058	LENART							0	2	-	-	-	-	2		2
059	LENDAVA-LENDVA							0	1	-	-	-	-	1		1
060	LITIJA							0	10	-	-	-	-	10		10
061	LJUBLJANA							0	8	-	-	-	-	8		8
070	MARIBOR							0	4	-	-	-	-	4		4
079	MOZIRJE							0	6	-	-	-	-	6		6
080	MURSKA SOBOTA							0	3	-	-	-	-	3		3
084	NOVA GORICA	1	-	-	-	-	-	1						0		1
085	NOVO MESTO	1	-	-	-	-	-	1	4	1	-	-	-	5		6
087	ORMOZ							0	1	-	-	1	-	2		2
094	POSTOJNA							0	2	-	-	-	-	2		2
096	PTUJ	-	1	-	-	-	-	1	7	-	-	1	-	8		9
110	SEVNICA	-	1	-	-	-	-	1	3	-	-	-	-	3		4
111	SEZANA							0	2	-	-	-	-	2		2
113	SLOVENSKA BISTRICA							0	1	-	-	-	-	1		1
114	SLOVENSKE KONJICE							0	3	-	-	-	-	3		3
120	SENTJUR PRI CELJU	-	1	-	-	-	-	1	4	-	-	-	-	4		5
124	SMARJE PRI JELSAH	1	-	-	-	-	-	1	3	-	1	-	-	4		5
129	TRBOVLJE							0	3	-	-	-	-	3		3
130	TREBNJE							0	4	-	-	-	-	4		4
142	ZAGORJE OB SAVI	-	2	-	-	-	-	2	10	-	-	-	-	10		12
145	ZALEC							0	3	-	-	-	-	3		3
TOTAL		6	6	0	0	0	0	12	147	1	2	3	0	153	0	165
PER CENT		3.6	3.6	0.0	0.0	0.0	0.0	7.3	89.1	0.6	1.2	1.8	0.0	92.7	0.0	100.0

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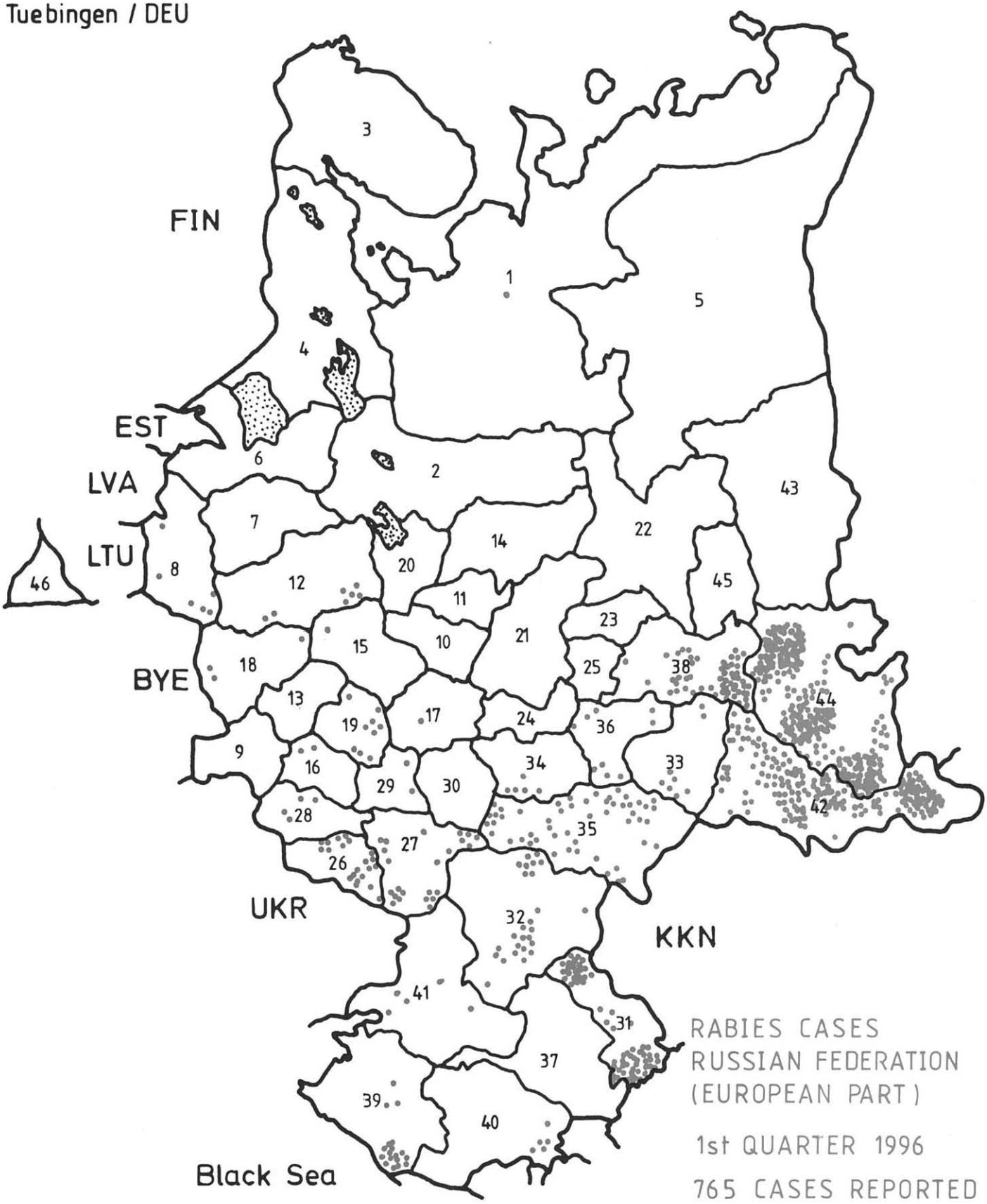
Pasteur Institute, Novi Sad

WHO Coll. Centre
Tuebingen / DEU



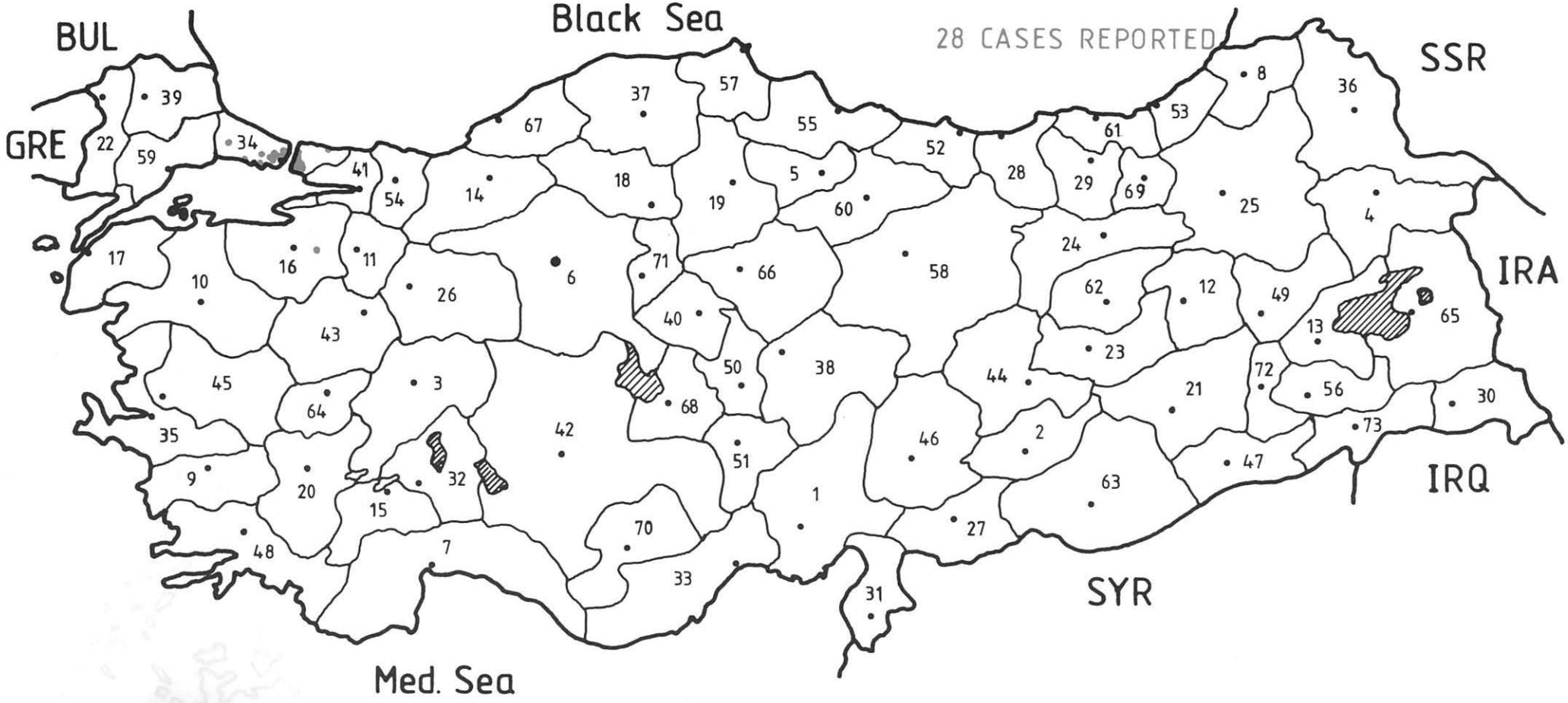
RABIES CASES
RUSSIAN FEDERATION
(EUROPEAN PART)

1st QUARTER 1996

765 CASES REPORTED

WHO Coll. Centre
Tuebingen / DEU

RABIES CASES TURKEY
1st QUARTER 1996
28 CASES REPORTED



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RABIES CASES EUROPE
1st QUARTER 1996

2831 CASES REPORTED

ICE
(rabies free)

NOR
(rabies free)

SWE
(rabies free)

FIN
(rabies free)

EST
(23)

LVA
(34)

RUS
(765)

LTU
(15)

RUS

BYE
(12)

DEN
(0)

IRE
(rabies free)

UNK
(rabies free)

(647)

POL

NET
(0)

DEU
(65)

BEL
(22)

11

UKR
(no data)

CZH
(66)

SVK
(96)

MLD
(2)

FRA
(5)

AUT
(9)

HUN
(586)

(2)
SWI

ROM
(12)

(165)
SVN

CRO
(230)

ITA
(1)

BIH
(no data)

FRY
(24)

BUL
(11)

TYM
(no data)

POR
(rabies free)

SPA
(0)

ALB
(no data)

TUR
(28)

GRE
(rabies free)

0 50 100 km

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