RABIES BULLETIN EUROPE

Volume 20/No 2 Quarter 2 1996

Contents

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The Rabies Bulletin Europe *is sponsored by the*
World Health Organization, Geneva and the
International Office of Epizootics, Paris

Gratefully acknowledged is the *financial support*
of the WHO Collaborating Centre by the

Bundesministerium für Gesundheit
Bonn - Bad Godesberg

1. INTRODUCTION

This BULLETIN describes the reported rabies cases in **Europe** for the **Second 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 imported human rabies case to Germany is described; with comments on how to inform travellers on pre-exposure vaccination against rabies and on the post-exposure treatment of contact persons to rabies patients. Under 4.2 a new WHO publication "Laboratory Techniques in Rabies (Fourth edition)" is announced. 4.3 is an article on a descriptive and estimative study of the dog population in Istanbul, Turkey, a method helpful and often necessary for planning vaccination here in a country with dog-mediated rabies.

SECTION 6 lists the official contributors to the BULLETIN.

The geographical distribution of rabies cases in Europe for the **Second 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"***, **2035 rabies cases** were reported in Europe. Of these 1373 were in wild animals (67.5% of total), 660 in domestic animals and 2 in humans.

Of the cases in wild animals, 1151 were foxes, 1 arctic fox, 1 other fox species, 2 wolves, 53 raccoon dogs, 3 wild cats, 1 lynx, 19 badgers, 14 stone martens, 24 pine martens, 9 polecats, 1 ferret, 31 roe deer, 1 red deer, 33 reindeer, 1 wild boar, 1 hedgehog, 5 bats, 4 squirrels, 2 black rats, 2 musk rats, 5 hares, 6 other wild animals, 3 unspecified animals. Of the cases in domestic animals 298 were dogs (of which 35 were recorded in Turkey, a country with urban or dog-mediated rabies), 144 cats, 158 bovines, 24 horses, 28 sheep, 5 goats, 1 donkey, 2 pigs. These data are summarized in TABLES 1 and 3. TABLE 2 summarizes the quarters 1 and 2 of 1996.

There has been a reduction of cases from 2831 in the previous quarter to 2035 during ***"This Quarter"***. It is the expected seasonal decrease in **fox-medicated rabies** countries. There were 2 exceptions: the countries Poland and Latvia. In these countries dense fox populations most likely accounted for the increased rabies cases in certain infected areas.

Turkey recorded an increase of cases. However, it follows a different pattern being a **dog-mediated rabies** country, where seasonal fluctuations are not that pronounced.

Bat rabies follows a different epidemiological pattern. There were 4 cases noticed in Germany during ***"This Quarter"*** and for the very first time 1 case was recorded in the United Kingdom of Britain and Northern Ireland.

Human cases were reported in Germany (1 imported case from Sri Lanka) and in the Russian Federation (1 case in Krasnodar territory).

Rabies-free countries in Europe during ***"This***

Quarter" were: Finland, Greece, Iceland, Ireland, Norway, Portugal and Sweden.

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

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

3. RABIES IN INDIVIDUAL COUNTRIES

3.1 Albania ALB

No data.

3.2 Austria AUT

by Helmut Schnabl

Of 4971 samples examined for rabies during *"This Quarter"* only 1 fox was diagnosed rabid. There was a reduction of 8 cases compared to the previous quarter and a reduction of 16 cases compared to the second quarter 1995.

The case occurred in Fügenberg of the Schwaz district in the federal province of Tyrol.

3.3 Belgium BEL

by L. Hallet

During *"This Quarter"*, 9 rabies cases were diagnosed (4 foxes, 1 bovine, 1 sheep, 1 horse, 1 dog, 1 badger).

One fox each was found rabid in Paliseul and Bastogne, 1 sheep in Bertrix, 2 foxes in Couvin, 1 bovine in Arlon, 1 horse in Libramont, 1 badger in Vresse-sur-Semois, and 1 dog in Paliseul. The latter was not vaccinated, in spite of article 9 of a law of 10.02.1967 ruling conditions on rabies. An immediate investigation was carried out and the mayor of the municipality checked the validity of the vaccination certificate of the dog with the owner of the animal.

3.4 Bosnia and Hercegovina BIH

No data.

3.5 Bulgaria BUL

During *"This Quarter"*, 3 rabies cases in animals were reported from Bulgaria. The cases occurred in 3 districts of the north: Pleven, Razgrad and Dobrich.

3.6 Belarus BYE

by S.N. Shpilevsky

During *"This Quarter"*, 10 rabies cases were diagnosed in animals (4 dogs and 6 other wild animals).

Three of the 6 regions of the country were affected by the disease with 1 to 5 cases.

Editors note: There was no report for the month of June 1996.

3.7 Croatia CRO

by Mate Brstilo

During *"This Quarter"*, 66 rabies cases were diagnosed in wild and domestic animals in 36 municipalities of Croatia. There were 10 cases more when compared to the same quarter of the year 1995 and 164 cases less in comparison with the 1st quarter 1996.

58 cases of the total were in wild animals (53 foxes, 1 wolf, 1 wildcat, 3 stone martens) and 8 in domestic animals (1 dog, 2 cats, 1 donkey, 2 bovines, 1 sheep, 1 goat).

"This Quarter" highlights the following: a pronounced decrease of cases in wild and domestic animals in comparison with the previous quarter, which is most likely due to a favourable epizootiological development in the country and additonally,

due to oral vaccination of foxes which was carried out on a larger scale compared to previous campaigns.

3.8 Czech Republic CZH

by Oldrich Matouch

During *"This Quarter"*, 2511 samples (2073 wild animals and 438 domestic animals) were examined for rabies in the Czech Republic. 50 (2%) of these were diagnosed rabid compared to 66 in the previous quarter and 31 in the second quarter 1995. All cases were registered in wild animals (47 foxes and 3 martens).

The highest incidence of rabies cases was registered in the districts of Liberec (11) and C. Lípa (8) in North Bohemia and in the district of Benesov (11) in Central Bohemia.

A campaign of oral vaccination of foxes was carried out in April 1996. 767,400 Lysvulpen vaccine baits were distributed in 52 districts covering an area of 46,900 km².

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 25 rabies cases in animals was reported during *"This Quarter"*, 179 cases less than during the second quarter 1995. Of the total there were 4 bat rabies cases (1 in Schleswig-Holstein, 2 in Niedersachsen, 1 in Nordhrein-Westfalen).

In all presently infected parts of Germany the seasonal effect of a decrease of cases compared to the first quarter of this year was noticed. This means as well that there are no new foci with a tendency to spread at this time.

It is now important to continue on oral vaccination up to at least 2 years after the last case in an area, to effectively treat residual foci.

There was 1 imported rabies case from Sri Lanka in a human in Düsseldorf (see as well under 4.1 of this BULLETIN).

3.11 Estonia EST

by Matti Nautras

During *"This Quarter"*, 24 animal rabies cases were registered in Estonia, 1 case more than in the previous quarter. The cases occurred in 13 foxes, 3 raccoon dogs, 4 dogs, 2 cats, 1 bovine and 1 goat.

9 districts out of the 15 districts of the country recorded between 1 and 7 cases.

3.12 Finland FIN

by Bengt Westerling

The country remained rabies-free.

Surveillance: 47 animals (34 foxes, 4 raccoon dogs, 4 stoats, 1 badger, 3 cats, 1 dog) were examined for rabies during *"This Quarter"* but revealed negative results.

3.13 France FRA

by Michel F.A. Aubert

There were 4 rabies cases (1 fox, 1 sheep, 2 cats) reported from France during *"This Quarter"*. They were located near the northern state border to Belgium and Luxembourg.

3.14 Federal Republic of Yugoslavia FRY

by Tihomir Vrebalov

23 rabies cases (17 foxes, 1 dog, 1 cat, 1 horse, 3 sheep) were registered during *"This Quarter"* in the Federal Republic of Yugoslavia, 1 more than in the previous quarter.

9 cases were scattered throughout Wojwodina. 14 cases in Serbia were in 3 foci in border areas toward Wojwodina, Bulgaria and Montenegro/Bosnia and Hercegovina.

3.15 Greece GRE

by I. Koykidis

The country remained rabies-free.

3.16 Hungary HUN

by Balint Kerekes

During ***"This Quarter"***, 247 rabies cases were reported in Hungary. There were 91 cases (58%) more than during the second quarter 1995.

Concentration of cases was noticed in the Komitate (provinces) west of the river Danube and east of the area where oral vaccination of foxes is carried out along the state border with Austria. Here the spring vaccination campaign was organized from 15-22 April 1996. In an area of approx. 15,000 km² vaccine baits were distributed by aircraft.

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 in Italy. The last case in a fox was reported in December 1995 in the province of Trieste. Intensive surveillance was carried out in all risk areas.

3.20 Lithuania LTU

by K. Lukauskas and A. Dranseika

During ***"This Quarter"***, 13 rabies cases (in 5 foxes, 2 pine martens, 1 raccoon dog, 3 bovines, 2 cats) were diagnosed in 10 districts.

More than 25,000 dogs were vaccinated against rabies during ***"This Quarter"***.

3.21 Luxembourg LUX

by Joseph Kremer

During ***"This Quarter"***, 4 rabies cases were diagnosed. All 4 in April and all 4 were foxes.

The cases occurred in the east of the country.

Additional to the oral vaccination campaign in March 1996, which was carried out by helicopter, approx. 10,000 vaccine baits were hand-placed near dens by hunters during the second half of May.

The next vaccination campaign using again the helicopter is planned from 16. - 20. September 1996.

Surveillance:

26 foxes, 1 badger, 1 pine marten, 3 stone martens, 3 roe deer and 1 polecat were examined for rabies but revealed negative results.

3.22 Latvia LVA

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

A total of 62 rabies cases was registered in Latvia during ***"This Quarter"*** in 20 districts, 28 cases more than during the previous quarter. 52 cases were diagnosed in wild animals. Of the cases in wild animals 39 were foxes, 12 raccoon dogs and 1 badger. Of 10 cases in domestic animals 4 were dogs and 6 cats. The most affected districts were Cēsis. Liepāja and Madona (with 6 cases in every district).

3.23 Moldova MLD

by V. Bahau

During ***"This Quarter"***, 29 animals were examined for rabies (2 bovines, 16 dogs, 7 cats, 1 horse, 3 other specifies). One cat was diagnosed rabid in the Telenesht Region.

53805 dogs were vaccinated against rabies during *"This Quarter"*.

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:

31 animals (4 foxes, 1 rat, 1 ferret, 1 rabbit, 2 hamsters and 22 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 867 rabies cases was registered in Poland during *"This Quarter"*, 220 cases more than during the previous quarter and 447 cases more than during the second quarter 1995. For the wildlife or fox-mediated rabies which exists in Poland (67,7% of animals involved during *"This Quarter"* were foxes, 14,2% other wild animals, 18,1% domestic animals) a seasonal decrease of cases would have been expected compared to the first quarter. That this is not so, indicates, that rabies has moved into new areas or in certain infected areas the fox density has increased.

Concentration of cases occurred in the center and the southeast of the country. However, the area in the west where oral vaccination is practiced the rabies situation continued to improve.

3.27 Portugal POR

The country remained rabies-free.

3.28 Romania ROM

by Gheorghe Stratulat

During *"This Quarter"*, 9 rabies cases (1 fox, 3 dogs, 1 cat, 2 horses, 2 bovines) were reported in Romania.

Out of 41 provinces in the country 5 (Caras-Severin, Gorj, Ialomita, Iasi, Timis) were reporting 1-4 cases.

3.29 Russia RUS (European part only)

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

During *"This Quarter"*, 437 rabies cases in animals were reported. Of the total number of cases 353 were in domestic animals - 137 dogs, 18 cats, 124 bovines, 19 horses, 19 sheep, 2 goats, 1 pig, 33 reindeer. Of 84 wild animals rabies was diagnosed in 72 foxes, 2 badgers, 4 raccoon dogs, 1 wolf, 1 ferret, 1 lynx, 1 corsac fox (Vulpes corsac L.), 2 rats.

Most affected by the disease were Bashkortostan with 94 cases, the Orenburg Region with 61 cases and the Krasnodar Territory with 43 cases.

There was one human rabies case in Krasnodar Territory.

3.30 Spain SPA

by Carlos Abellán García

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

No case of rabies was reported from the Spanish Territory in North Africa (Ceuta and Melilla).

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

3.31 Slovak Republic SVK

by Jozef Sokol and Bohuslav Lovas

A total of 82 rabies cases in animals was reported in the Slovak Republic during *"This Quarter"*. Of these were 64 (78%) in wild animals (60 foxes, 2 pine martens, 1 roe deer, 1 arctic fox) and 18 (22%) in domestic animals (9

dogs, 9 cats).

Oral vaccination

The oral vaccination of foxes with 552,800 vaccine baits used was carried out in April 1996. KAMARK vaccine baits (SAD-Vnukovo strain) were distributed in 33 districts of the Slovak Republic.

3.32 Slovenia SVN

by Zoran Kovač

A total of 51 rabies cases was recorded during ***"This Quarter"*** in Slovenia. There was a decrease of 114 cases compared to the previous quarter. 37 of the total were in foxes, 4 in other wild animals and 10 in domestic animals (6 cats, 3 dogs and 1 bovine).

As planned, an oral vaccination campaign was conducted during ***"This Quarter"***. The campaign started on 22.04.1996. 300,000 vaccine baits in an area of 20,000 km² were used.

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 368 animals, of which 0.54% (2) were positive for rabies. In the previous quarter, 0.31% (2 out of 638) and in the second quarter of 1995, 0.88% (5 out of 568) were recorded positive. The cases of rabid animals from this quarter were two domestic cats, one in May and one in June. Both originated from the northern part of the Jura Mountains. During the last 12 months, only one rabid red fox was discovered; the other 7 animals found positive for rabies were three domestic cats, two badgers, a goat and a roe deer.

9 bats (5 *Pipistrellus pipistrellus*, 1 *Pipistrellus kuhli*, 1 *Eptesicus serotinus*, 1 *Nyctalus noctula*, 1 *Myotis mystacinus*) were received for rabies analysis during this quarter. All were negative for rabies.

Two persons were known to have been bitten by the rabid cat in May. The number of people treated for non-bite exposures is not recorded.

3.35 Turkey TUR

by Mehmet Alkan

From only one province (Il), Istanbul, rabies cases in domestic animals were reported during ***"This Quarter"***. A total of 42 cases (35 dogs, 2 cats, 2 bovines, 3 sheep) were noticed in the European and Asiatic parts of the 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 in terrestrial animals.

In one case the European Bat Lyssavirus 2 was isolated from a bat found on the South Coast of England on the 29 May 1996.

Surveillance 1996

First Quarter 1996

Reports of suspect rabies outside quarantine were investigated on two occassions during the period, both involving foxes. These were resolved following examination of material submitted to the Central Veterinary Labortory.

Material from 36 deaths in quarantine was submitted to the Central Veterinary Laboratory, with negative results in all cases.

Four bats were examined for rabies during the period, all with negative results.

No cases of human rabies occurred during the period.

Second Quarter 1996

Reports of suspect rabies were investigated on 5 occasions during ***"This Quarter"***, involving 3 foxes, 1 cat and 1 squirrel. All were found to be negative following examination of material by the

Central Veterinary Laboratory.

Material from 48 deaths in quarantine was submitted to the Central Veterinary Laboratory, Weybridge, with negative results in all cases.

Surveillance of bats found dead or moribund in Great Britain has been carried out since 1986 and 79 bats were examined as part of this survey during the quarter. One Daubenton's bat (*Myotis daubentonii*) found in Sussex was confirmed as being infected with European Bat Lyssavirus 2 (see above). This is the first time that a bat naturally infected with a rabies related virus has been found in the United Kingdom. Intensified surveillance since confirmation of the case has not revealed any other affected bats. The origin of the outbreak is unknown.

No cases of human rabies occurred during the period.

4. MISCELLANEOUS ARTICLES

4.1 Imported Human Rabies Case in Germany

by W.W. Müller
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The case

A 49 year old man residing near the town of Düsseldorf, Germany spent 4 weeks of leave in Sri Lanka. During a celebration in Sri Lanka on 15 April 1996 he was bitten by a dog in his right forearm while on the veranda of a house. The dog was unknown to the host and ran away. A doctor was not consulted. The person received no anti-rabies vaccination.

The man returned to Germany on 22 April 1996. On 13 May he became a patient in a hospital with a rather unclear clinical picture. He was confused and was transfered to a psychiatric clinic a few days later. Soon after this change the physicians suspected rabies and further tests indicated the disease. The patient was now taken to a hospital with an intensive care unit and soon after he was transfered a fourth time to a larger hospital with better technical facilities.

The patient died on 29 May 1996. Rabies was confirmed by the fluorescent antibody technique and isolation of the virus in tissue culture.

During the patients illness when he was possibly disseminating the virus, 52 contact persons were registered: relatives, hospital staff, and people transporting the patient. 46 of these were vaccinated against rabies, 6 refused.

Commentary of the *"EPIDEMIOLOGISCHES BULLETIN":*

The editors of the BULLETIN elaborate especially on two issues in connection with the above case: how to inform German travellers to countries of other continents regarding rabies and on the postexposure treatment of contact persons to rabies patients.

The editors recommend that holiday makers should ideally get specific information on the rabies situation in the country to which they are travelling. Their length of stay in such a country could determine if a rabies preexposure treatment would be

advisable. Some rules on first aid treatment of a dog (animal) bite would be advisable.

In regard to postexposure treatment of rabies to contact persons it is mentioned that there is no case described in the literature of rabies infection through a contact person. Nevertheless, the saliva of a patient is potentially infectious. And, if virus penetrates skin lesions of a contact person or comes in contact with mucous membranes, an infection could develop.

Of course, the most important question for the physician remains the preservation of life even if this entails questionable postexposure treatment.

(Based on: "Tollwuterkrankung nach Aufenthalt in Sri Lanka", Epidemiologisches Bulletin, issue 23/96, page 156, Robert-Koch-Institut, Berlin, Germany).

4.2 New WHO Publication:

Laboratory Techniques in Rabies (Fourth edition)

This manual provides an authoritative guide to the full range of laboratory techniques needed to support rabies control activities - whether involving diagnosis, prevention in dogs and wildlife, or the production and testing of human and animal vaccines. Now in its fourth edition, the manual has been thoroughly revised in line with considerable recent progress, particularly in the areas of molecular biology and immunology. Thirty new chapters are included. Although recently developed - and vastly improved - techniques are emphasized, the manual also explains how to achieve reliable results using classical methods.

The manual has 47 chapters presented in six parts. Chapters in the opening part outline procedures for safe laboratory practice, introduce the different techniques needed in rabies diagnosis and research, and summarize the latest knowledge about the characteristics and molecular biology of the virus. Against this background, the seven chapters in part two provide detailed instructions for conducting routine procedures in rabies diagnosis and research. These range from the use of microscopic examination and histopathological diagnosis, through the mouse inoculation test, to the fluorescent antibody test, enzyme-linked immunosorbent assays (ELISAs) and cell cultures. Special diagnostic and research techniques are covered in part three, which describes procedures involving the use of monoclonal antibodies, the polymerase chain reaction, and purification techniques.

The most extensive part, on methods of vaccine production, contains seventeen chapters describing techniques for the production of human and animal brain-tissue vaccines, embronating egg vaccines, and cell-culture vaccines. Genetically en-gineered vaccine for veterinary use are also covered. Although the superiority of cell-culture vaccines and purified avian embryo vaccines has been clearly demonstrated in humans, chapters on vaccines produced in suckling mice and adult sheep are included to assist the many countries where these vaccines continue to be used because of cost constraints.

Vaccine quality control is addressed in part five, which describes classical and new tests for potency, including antigen quantification. Advice on the comparative simplicity and economy of different tests is also provided. The final part covers techniques for the production and control of equine antirabies serum and human immunoglobulin.

Further practical advice

is provided in a seres of appendices, which describe techniques for the collection and shipment of brain specimens for rabies diagnosis, preparation of rabies conjugates, and methods for the calculation of virus titres.

Laboratory Techniques in Rabies
Fourth edition
edited by F.-X. Meslin, M.M. Kaplan, and H. Koprowski
1996, xvii +476 pages
Available in English; French in preparation

ISBN 92 4 154479 1
Sw.fr. 115.-/US $103.50
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4.3 A Descriptive and Estimative Study of the Dog Population in Istanbul, Turkey

by Ad Vos
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Dogs (*Canis familiaris*) are more numerous than ever before, no other wild canid populations are known to exist at such high densities. Also, they remain the most important transmitter of rabies to man, even in areas where the main reservoir are wildlife species. In Turkey, the only European country with dog mediated rabies, the annual number of rabies cases has decreased constantly since 1981. However, rabies persists in the Province of Istanbul, which includes both the metropolitan and surrounding rural areas. This city has expanded enormously in the last decades, new suburbs have mushroomed everywhere. Due to constant rural migration into this city the local government is not able to meet the increasing demands for housing, sanitation and waste disposal. Hence, a high percentage of the population have to settle in marginal areas. The habitat resulting from these conditions favours an increase in the urban dog population. A study was planned with the objective of estimating the approximate density of the owned dog population and the ratio of households to dogs in Istanbul. Furthermore, some of the characteristics of the owned dog population were also studied.

A questionnaire survey (house-to-house visits) including all households with dogs was carried out in selected areas of Istanbul, representing different socio-economic and geographical areas (Table 1). The survey included censusing of (owned) dogs in relation to the numbers of people or households, confinement of dogs, purpose of keeping dogs, sex ratio, age distribution and vaccination status of the animals. A total of 10137 households in seven areas of Istanbul were visited, of these only 5.2% owned one or more dogs (Table 2). The highest percentage of households with dog(s) was found in the rural areas; Hüseyinliköy (45.7%) and Cavusbasi (19.1%). The lowest percentages of households with dog(s) were found in areas with high-rise apartment buildings with few (public) open areas; Erenköy (4.3%) and G.Osmanpasa (0.1%). The variation in the dog to household ratio, as observed in this study, can be explained by the great contrasts that exist in urbanistic infrastructure and socio-economic conditions. A conservative estimate of the human population of Istanbul would be 12 million. The average

number of people per households was estimated at 4.4 (s.d. = 1.93) in a sample of 957 households. In view of the obtained data the total number of owned dogs in Istanbul was estimated to be around 150.000.

The ratio of male to female owned dogs was strongly biased towards males; 6.8:1 (χ^2-Test, χ^2 = 477.2, df=1, P<0.001, n=861). The finding of more male than female owned dogs in Istanbul is consistent with other surveys. Although in this study the sex ratio was extremely biased towards males: 87.2%. This disequilibrium of sex ratio is probably a result of the preference of man for male dogs (guarding purposes). When asked about the reasons for keeping dogs 81.7% of the owners gave guard duties as their dog's main function, followed by companionship (6%) and hunting purposes (4.5%). According to the owners an average of 61.6% of all dogs were always restricted, 23% were sometimes confined and 5.4% were never restricted. However, big differences were found between the areas; e.g. in Tokatköy and Hüseyinliköy, 86.3% and 9.1% of the dogs were always restricted, respectively.

It was extremely difficult to obtain data on the rabies vaccination-status of the dogs. On many occasions the owner claimed that the dog was vaccinated against rabies. However, the date of the last vaccination was unknown; they were not able to present a valid rabies vaccination certificate. The average vaccination-coverage of the owned dog population in areas investigated was 31.9% (Table 3). The overall vaccination coverage of the dog population, including the ownerless dogs, would be lower. However, the number of ownerless dogs remains unknown for Istanbul. Only for Kavacik a more accurate estimation of the overall dog population was determined (capture-recapture-study). The overall population in South-Kavacik was 148 dogs (231 dogs/km^2), of which 36% were ownerless dogs. In North-Kavacik a total number of 65 dogs (101 dogs/km^2) were estimated, here only 17% were ownerless. To estimate the population turn-over of the owned dog population in Kavacik between 1994 and 1995, 148 and 131 owned dogs were counted, respectively. Of the dogs counted in 1995, 69 animals (50.7%) entered the population after the first survey was conducted in 1994 and of 6 dogs no decisive answer could be given by the owners on this matter.

Although a questionnaire survey can give useful information on the owned dog population, the results should not be overrated. It was observed that basic questions about e.g. age and vaccination-status of the dogs were often answered inaccurately and a second visit to the same household would produce sometimes completely different answers to the same questions. Also in some areas the people were reluctant to cooperate, even if the purpose of the survey was explained carefully to them; e.g. by denying the existence of their dog. The data obtained on the age distribution of the owned dog population was found to be so unreliable, that no further data analysis was conducted.

The average owned dog to household ratio of 1:17.7 (Table 2) and the obtained estimation of the owned dog population in Istanbul suggest a relatively low population density when compared to estimates obtained in other countries. However, it is not the abundance of dogs *per se* that causes the urban rabies problem. The origin of the dogs play an important role. A large number of free roaming dogs combined with a low vaccination coverage of owned dogs can cause a persisting rabies situation. The local authorities in Istanbul try to control the number of free-roaming dogs through occasional dog elimination campaigns. However, removal of dogs by any method does usually have no long term effect on dog population size. Although, e.g. ownerless dogs adapt remarkably well to the urban environment, they are not capable of maintaining popul-ation levels due to a very low fecundity. It seems that continuous influx from the owned dog population (e.g. abandoned dogs) is the major source of recruitment. Therefore, the most effective

Table 1: Areas of Istanbul, Turkey, where a questionnaire survey was carried out, representing different socio-economic and geographical areas

Area	District	Date	Geographical category	Socio-economic category (income)	Number of households visited
Tokatköy	Beykoz	May '94	suburban	low/middle	506
Cavusbasi	Beykoz	Jun. '94	rural	low/middle	236
Kavacik	Beykoz	Jul. '94	urban	low/middle	551
Gümüssuyu	Beykoz	Aug. '94	urban	low/middle	457
Kanlica	Beykoz	Sept. '94	urban	high	27*
Erenköy	Kadiköy	Jan. '95	urban	high	5817
G.Osmanpasa	Eyüp	Apr. '95	urban	low/middle	2489
Hüseyinliköy	Beykoz	Jul. '95	rural	low	81
K.Karabekir	Ümraniye	Oct. '95	urban	low	173*
Hekimbasi	Ümraniye	Nov. '95	urban	low	81*
A.Dudullu	Ümraniye	Nov. '95	suburban	low	82*
Sarigazi	Ümraniye	Dec. '95	urban	low	125*

* - only households with dog(s) visited

Table 2: The ratio of owned dogs to households obtained during a survey in different areas of Istanbul

Area	Number of households visited	Number of households with dog(s)	Percentage of households with dog(s)	Number of owned dogs	Ratio dog:household
Tokatköy	506	63	12.5%	73	1: 6.9
Kavacik	551	73	13.2%	85	1: 6.5
Cavusbasi	236	45	19.1%	57	1: 4.1
Gümüssuyu	457	43	9.4%	48	1: 9.5
Erenköy	5817	252	4.3%	252	1: 23.1
G.Osmanpasa	2489	14	0.1%	14	1:177.8
Hüseyinliköy	81	37	45.7%	44	1: 1.8
Total	**10137**	**527**	**5.2%**	**573**	**1: 17.7**

Table 3: The vaccination-status of the owned dogs for rabies in different areas of Istanbul

Area	Number of dogs	VP[1]		NVP[2]		Unknown	
		n	%	n	%	n	%
Hüseyinliköy	44	34	77,3	6	13,6	4	9,1
Hekimbasi	99	25	25,3	66	66.6	8	8,1
Dudullu	99	32	32,3	66	66,6	1	1
K.Karabekir	188	41	21,8	142	75,5	5	2,7
Sarigazi	142	36	25,4	63	44,4	43	30,3
Kanlica	33	25	75,8	7	21,2	1	3
Total	**605**	**193**	**31,9**	**350**	**57,9**	**62**	**10,2**

[1] VP = vaccinated parenterally against rabies
[2] NVP = not vaccinated parenterally

solution is to change the people's attitude towards dog-keeping. Unfortunately, this will be very hard to achieve, the indifference to the dogs may simply reflect the (economic) hardship experienced by people living in marginal areas. This is, for example, reflected in the low rabies vaccination coverage of the owned dog population in the low-income urban areas of Istanbul; on average 25.4% (Table 3). Only in areas like the high income urban area of Kanlica and the rural village of Hüseyinliköy a vaccination coverage of the (owned) dog population of at least 70% was achieved. The low vaccination coverage of the free-roaming owned and ownerless dogs can be seen as the core of the present rabies problem in Istanbul. Therefore, intensified vaccination campaigns are suggested here. Dogs inaccessible to parenteral vaccination could be vaccinated orally in order to reach a sufficient level of vaccination coverage.

RBE's comment: Dog-mediated or urban rabies is the most important type of rabies as the dogs live with people (and especially with children) and rabies control by vaccinating dogs and partial removal of stray dogs have had transient success and only in certain countries. For some years studies on oral vaccination of dogs, especially for unowned and feral dogs were attempted. WHO supports these efforts in as much as it coordinates research work (WHO Reports "1st to 6th Consultation for the Oral vaccination of Dogs", 1988 to 1994). Laboratory and field trials on vaccines and baits have been conducted, as well as studies on dog populations and other affected animals. However, convincing steps toward progress have been scarce.

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TABLE 5.1

EUR EUROPE 2/96 RABIES CASES 1. 4.96 - 30. 6.96

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	1	-	-	-	-	1		1
BEL	BELGIUM	1	-	1	1	1	-	4	4	1	-	-	-	5		9
BIH	BOSNA I HERCEGOWI**							0						0		0
BUL	BULGARIA 1)							0	-	-	-	-	3	3		3
BYE	BELARUS 2)	4	-	-	-	-	-	4	-	-	-	-	6	6		10
CRO	CROATIA	1	2	2	-	2	1	8	53	-	3	-	2	58		66
CZH	CZECH REPUBLIC							0	47	-	3	-	-	50		50
DEN	DENMARK *							0						0		0
DEU	FED.REP. OF GERMANY	-	1	1	1	-	-	3	17	-	-	1	4	22	1	26
EST	ESTONIA	4	2	1	-	1	-	8	13	-	-	-	3	16		24
FIN	FINLAND *							0						0		0
FRA	FRANCE	-	2	-	-	1	-	3	1	-	-	-	-	1		4
FRY	FED.REP.OF YUGOSLAVI	1	1	-	1	3	-	6	17	-	-	-	-	17		23
GRE	GREECE *							0						0		0
HUN	HUNGARY	18	23	9	-	1	-	51	193	-	-	1	2	196		247
ICE	ICELAND *							0						0		0
IRE	IRELAND *							0						0		0
ITA	ITALY *							0						0		0
LTU	LITHUANIA	-	2	3	-	-	-	5	5	-	2	-	1	8		13
LUX	LUXEMBOURG							0	4	-	-	-	-	4		4
LVA	LATVIA	4	6	-	-	-	-	10	39	1	-	-	12	52		62
MLD	MOLDOVA	-	1	-	-	-	-	1						0		1
NET	NETHERLANDS *							0						0		0
NOR	NORWAY *							0						0		0
POL	POLAND	78	66	12	-	-	1	157	587	15	35	28	45	710		867
POR	PORTUGAL *							0						0		0
ROM	ROMANIA	3	1	2	2	-	-	8	1	-	-	-	-	1		9
RUS	RUSSIAN FEDERATION	137	18	124	19	21	1	320	72	2	1	33	9	117	1	438
SPA	SPAIN *							0						0		0
SVK	SLOVAK REPUBLIC	9	9	-	-	-	-	18	60	-	2	1	1	64		82
SVN	SLOVENIA	3	6	1	-	-	-	10	37	-	2	1	1	41		51
SWE	SWEDEN *							0						0		0
SWI	SWITZERLAND + LIECHT	-	2	-	-	-	-	2						0		2
TUR	TURKEY	35	2	2	-	3	-	42						0		42
TYM	MAKEDONIJA **							0						0		0
UKR	UKRAINE **							0						0		0
UNK	UNITED KINGDOM							0	-	-	-	-	1	1		1
TOTAL		298	144	158	24	33	3	660	1151	19	48	65	90	1373	2	2035
PER CENT		14.6	7.1	7.8	1.2	1.6	0.1	32.4	56.6	0.9	2.4	3.2	4.4	67.5	0.1	100.0

* NO CASES ** NO DATA 1) UNSPECIFIED 2) NO DATA FOR JUNE 1996

TABLE 5.2

EUR EUROPE 1-2/96 RABIES CASES 1. 1.96 - 30.06.96

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	9	-	-	1	-	10		10
BEL BELGIUM	1	1	5	2	1	-	10	20	1	-	-	-	21		31
BIH BOSNA I HERCEGOWI**							0						0		0
BUL BULGARIA 1)							0	-	-	-	-	14	14		14
BYE BELARUS 2)	4	1	1	-	-	-	6	10	-	-	-	6	16		22
CRO CROATIA	8	5	2	-	4	1	20	265	-	4	-	7	276		296
CZH CZECH REPUBLIC	-	2	-	-	-	-	2	110	-	3	1	-	114		116
DEN DENMARK *							0						0		0
DEU FED.REP. OF GERMANY	1	4	7	1	8	-	21	62	-	1	2	4	69	1	91
EST ESTONIA	7	6	1	-	1	-	15	25	-	-	-	7	32		47
FIN FINLAND *							0						0		0
FRA FRANCE	-	2	1	-	2	-	5	4	-	-	-	-	4		9
FRY FED.REP.OF YUGOSLAVI	2	5	-	1	3	-	11	36	-	-	-	-	36		47
GRE GREECE *							0						0		0
HUN HUNGARY	47	61	17	1	3	1	130	690	-	3	8	2	703		833
ICE ICELAND *							0						0		0
IRE IRELAND *							0						0		0
ITA ITALY 3)							0						0	1	1
LTU LITHUANIA	5	5	3	-	-	-	13	8	-	3	-	4	15		28
LUX LUXEMBOURG	-	-	3	-	2	-	5	9	-	-	1	-	10		15
LVA LATVIA	6	7	-	-	-	-	13	64	1	-	-	18	83		96
MLD MOLDOVA	1	1	-	-	-	-	2	1	-	-	-	-	1		3
NET NETHERLANDS *							0						0		0
NOR NORWAY *							0						0		0
POL POLAND	123	103	29	-	-	1	256	1089	15	42	56	56	1258		1514
POR PORTUGAL *							0						0		0
ROM ROMANIA	5	3	4	2	-	-	14	7	-	-	-	-	7		21
RUS RUSSIAN FEDERATION	322	58	389	62	88	4	923	224	2	1	34	17	278	2	1203
SPA SPAIN *							0						0		0
SVK SLOVAK REPUBLIC	16	15	1	-	-	-	32	137	-	4	1	4	146		178
SVN SLOVENIA	9	12	1	-	-	-	22	184	1	4	4	1	194		216
SWE SWEDEN *							0						0		0
SWI SWITZERLAND + LIECHT	-	3	-	-	-	-	3	1	-	-	-	-	1		4
TUR TURKEY	59	2	6	-	3	-	70						0		70
TYM MAKEDONIJA **							0						0		0
UKR UKRAINE **							0						0		0
UNK UNITED KINGDOM							0	-	-	-	-	1	1		1
TOTAL	616	296	470	69	115	7	1573	2955	20	65	108	141	3289	4	4866
PER CENT	12.7	6.1	9.7	1.4	2.4	0.1	32.3	60.7	0.4	1.3	2.2	2.9	67.6	0.1	100.0

* NO CASES ** NO DATA 1) UNSPECIFIED 2) NO DATA FOR JUNE 1996 3) 1 MAN IMPORTED FROM NEPAL

TABLE 5.3

EUR EUROPE 2/96

RABIES CASES
'OTHER ANIMAL SPECIES'

1. 4.96 - 30. 6.96

COUNTRY	OTHER DOMESTIC ANIMALS		OTHER WILD ANIMALS														UNSPECI-FIED	TOTAL
	DONKEY	PIG	ARCTIC FOX	OTH.FOX SPECIES	WOLF	RACCOON DOG	WILD CAT	LYNX	WILD BOAR	HEDGEHOG	INSECTIV BATS	SQUIRREL	BLACK RAT	MUSKRAT	HARE	OTHERS		
BUL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	3
BYE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	6
CRO	1	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	3
DEU	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	4
EST	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	3
HUN	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	2
LTU	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1
LVA	-	-	-	-	-	12	-	-	-	-	-	-	-	-	-	-	-	12
POL	-	1	-	-	-	33	-	-	1	-	-	4	-	2	5	-	-	46
RUS	-	1	-	1	1	4	-	1	-	-	-	-	2	-	-	-	-	10
SVK	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
SVN	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
UNK	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
TOT	1	2	1	1	2	53	3	1	1	1	5	4	2	2	5	6	3	93
PER	1.1	2.2	1.1	1.1	2.2	57.0	3.2	1.1	1.1	1.1	5.4	4.3	2.2	2.2	5.4	6.5	3.2	100.0

RABIES CASES 1. 4.96 - 30. 6.96

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		
AUT AUSTRIA															
709 SCHWAZ							0	1	-	-	-	-	1		1
TOTAL	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
BEL BELGIUM															
LX LUXEMBOURG	1	-	1	1	1	-	4	2	-	-	-	-	2		6
NA NAMUR							0	2	1	-	-	-	3		3
TOTAL	1	0	1	1	1	0	4	4	1	0	0	0	5	0	9
PER CENT	11.1	0.0	11.1	11.1	11.1	0.0	44.4	44.4	11.1	0.0	0.0	0.0	55.6	0.0	100.0
DEU FEDERAL REPUBLIC OF GERMANY															
01 SCHLESWIG-HOLSTEIN							0	-	-	-	-	1	1		1
03 NIEDERSACHSEN							0	-	-	-	-	2	2		2
05 NORDRHEIN-WESTFALEN	-	-	1	1	-	-	2	2	-	-	-	1	3	1	6
06 HESSEN							0	8	-	-	-	-	8		8
07 RHEINLAND-PFALZ	-	1	-	-	-	-	1	-	-	-	1	-	1		2
08 BADEN-WUERTTEMBERG							0	3	-	-	-	-	3		3
09 BAYERN							0	2	-	-	-	-	2		2
10 SAARLAND							0	2	-	-	-	-	2		2
TOTAL	0	1	1	1	0	0	3	17	0	0	1	4	22	1	26
PER CENT	0.0	3.8	3.8	3.8	0.0	0.0	11.5	65.4	0.0	0.0	3.8	15.4	84.6	3.8	100.0
FRA FRANCE															
08 ARDENNES	-	1	-	-	1	-	2	1	-	-	-	-	1		3
57 MOSELLE	-	1	-	-	-	-	1						0		1
TOTAL	0	2	0	0	1	0	3	1	0	0	0	0	1	0	4
PER CENT	0.0	50.0	0.0	0.0	25.0	0.0	75.0	25.0	0.0	0.0	0.0	0.0	25.0	0.0	100.0

RABIES CASES 1. 4.96 - 30. 6.96

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															
08 DOBRICH							0	-	-	-	-	1	1		1
15 PLEVEN							0	-	-	-	-	1	1		1
17 RAZGRAD							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
ROM ROMANIA															
11 CARAS-SEVERIN							0	1	-	-	-	-	1		1
20 GORJ	-	-	1	-	-	-	1						0		1
23 IALOMITA	1	-	-	-	-	-	1						0		1
24 IASI	2	-	-	2	-	-	4						0		4
36 TIMIS	-	1	1	-	-	-	2						0		2
TOTAL	3	1	2	2	0	0	8	1	0	0	0	0	1	0	9
PER CENT	33.3	11.1	22.2	22.2	0.0	0.0	88.9	11.1	0.0	0.0	0.0	0.0	11.1	0.0	100.0
TUR TURKEY															
34 ISTANBUL	35	2	2	-	3	-	42						0		42
TOTAL	35	2	2	0	3	0	42	0	0	0	0	0	0	0	42

RABIES CASES 1. 4.96 - 30. 6.96

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															
02	Vitebsk Region	2	-	-	-	-	-	2	-	-	-	-	2	2		4
04	Grodno Region							0	-	-	-	-	1	1		1
05	Minsk Region	2	-	-	-	-	-	2	-	-	-	-	3	3		5
TOTAL		4	0	0	0	0	0	4	0	0	0	0	6	6	0	10
PER CENT		40.0	0.0	0.0	0.0	0.0	0.0	40.0	0.0	0.0	0.0	0.0	60.0	60.0	0.0	100.0
LTU	LITHUANIA															
36	Birzu							0	1	-	-	-	-	1		1
54	Kelmes	-	1	-	-	-	-	1	-	-	1	-	-	1		2
56	Kretdingos							0	1	-	-	-	-	1		1
57	Kupiskio							0	1	-	-	-	-	1		1
61	Mazeikiu	-	-	1	-	-	-	1						0		1
65	Pakruojo	-	-	1	-	-	-	1						0		1
66	Panevezio	-	-	1	-	-	-	1						0		1
71	Radviliskio	-	1	-	-	-	-	1	-	-	-	-	1	1		2
81	Ukmerges							0	1	-	-	-	-	1		1
94	Jurbarko							0	1	-	1	-	-	2		2
TOTAL		0	2	3	0	0	0	5	5	0	2	0	1	8	0	13
PER CENT		0.0	15.4	23.1	0.0	0.0	0.0	38.5	38.5	0.0	15.4	0.0	7.7	61.5	0.0	100.0
MLD	MOLDOVA															
01	MOLDOVA	-	1	-	-	-	-	1						0		1
TOTAL		0	1	0	0	0	0	1	0	0	0	0	0	0	0	1

BYE NO DATA FOR JUNE 1996

CRO CROATIA — RABIES CASES — 1. 4.96 - 30. 6.96

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	-	-	-	-	1	-	1	2	-	-	-	-	2		3
014	DELNICE							0	-	-	-	-	1	1		1
017	DONJI MIHOLJAC							0	1	-	-	-	-	1		1
018	DRNIS							0	1	-	-	-	-	1		1
019	DUBROVNIK	-	-	1	-	-	1	2	1	-	1	-	-	2		4
020	DUGA RESA							0	1	-	-	-	-	1		1
024	DURDEVAC	1	-	-	-	-	-	1	1	-	-	-	-	1		2
031	IMOTSKI	-	-	-	-	1	-	1	1	-	1	-	1	3		4
033	IVANIC GRAD							0	1	-	-	-	-	1		1
034	JASTREBARSKO							0	3	-	-	-	-	3		3
039	KNIN							0	2	-	-	-	-	2		2
050	MAKARSKA							0	1	-	-	-	-	1		1
053	NOVA GRADISKA	-	1	-	-	-	-	1	5	-	-	-	-	5		6
055	NOVSKA							0	1	-	-	-	-	1		1
056	OBROVAC							0	2	-	-	-	-	2		2
057	OGULIN							0	3	-	-	-	-	3		3
060	ORAHOVICA							0	2	-	-	-	-	2		2
061	OSIJEK							0	2	-	-	-	-	2		2
065	PAKRAC	-	1	-	-	-	-	1						0		1
067	PETRINJA							0	1	-	-	-	-	1		1
071	PULA							0	3	-	-	-	-	3		3
075	SENJ							0	1	-	-	-	-	1		1
076	SINJ							0	-	-	1	-	-	1		1
079	SLAVONSKI BROD							0	2	-	-	-	-	2		2
080	SLUNJ							0	1	-	-	-	-	1		1
081	SOLIN							0	1	-	-	-	-	1		1
083	SIBENIK							0	1	-	-	-	-	1		1
085	TROGIR	-	-	1	-	-	-	1	2	-	-	-	-	2		3
086	VALPOVO							0	1	-	-	-	-	1		1
087	VARAZDIN							0	2	-	-	-	-	2		2
092	VRBOVEC							0	1	-	-	-	-	1		1
093	VRBOVSKO							0	1	-	-	-	-	1		1
095	VRGORAC							0	1	-	-	-	-	1		1
098	ZADAR							0	1	-	-	-	-	1		1
100	ZLATAR BISTRICA							0	2	-	-	-	-	2		2
102	GRAD ZAGREB							0	2	-	-	-	-	2		2
TOTAL		1	2	2	0	2	1	8	53	0	3	0	2	58	0	66
PER CENT		1.5	3.0	3.0	0.0	3.0	1.5	12.1	80.3	0.0	4.5	0.0	3.0	87.9	0.0	100.0

RABIES CASES 1. 4.96 - 30. 6.96

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	14	-	-	-	-	14		14
02	SOUTH BOHEMIA							0	7	-	1	-	-	8		8
03	WEST BOHEMIA							0	4	-	-	-	-	4		4
04	NORTH BOHEMIA							0	19	-	2	-	-	21		21
07	NORTH MORAVIA							0	3	-	-	-	-	3		3
TOTAL		0	0	0	0	0	0	0	47	0	3	0	0	50	0	50
PER CENT		0.0	0.0	0.0	0.0	0.0	0.0	0.0	94.0	0.0	6.0	0.0	0.0	100.0	0.0	100.0
FRY	**FED.REP.OF YUGOSLAVIA**															
60	SR SRBIJA	1	-	-	-	3	-	4	10	-	-	-	-	10		14
61	SAP VOJVODINA	-	1	-	1	-	-	2	7	-	-	-	-	7		9
TOTAL		1	1	0	1	3	0	6	17	0	0	0	0	17	0	23
PER CENT		4.3	4.3	0.0	4.3	13.0	0.0	26.1	73.9	0.0	0.0	0.0	0.0	73.9	0.0	100.0
SVK	**SLOVAK REPUBLIC**															
10	DISTRICT OF BRATISLAV	-	1	-	-	-	-	1						0		1
11	WEST SLOVAKIA							0	30	-	-	1	1	32		32
12	CENTRAL SLOVAKIA	3	3	-	-	-	-	6	16	-	1	-	-	17		23
13	EAST SLOVAKIA	6	5	-	-	-	-	11	14	-	1	-	-	15		26
TOTAL		9	9	0	0	0	0	18	60	0	2	1	1	64	0	82
PER CENT		11.0	11.0	0.0	0.0	0.0	0.0	22.0	73.2	0.0	2.4	1.2	1.2	78.0	0.0	100.0

RABIES CASES 1. 4.96 - 30. 6.96

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	1	-	-	-	-	-	1	1	-	-	-	1	2		3
05	Jaervamaa	-	1	-	-	-	-	1	3	-	-	-	1	4		5
07	Laeaene-Virumaa	-	-	1	-	-	-	1	2	-	-	-	-	2		3
08	Polvamaa	-	-	-	-	1	-	1						0		1
10	Raplamaa							0	1	-	-	-	-	1		1
11	Saaremaa	1	-	-	-	-	-	1						0		1
12	Tartumaa							0	2	-	-	-	-	2		2
13	Valgamaa							0	-	-	-	-	1	1		1
14	Viljandimaa	2	1	-	-	-	-	3	4	-	-	-	-	4		7
TOTAL		4	2	1	0	1	0	8	13	0	0	0	3	16	0	24
PER CENT		16.7	8.3	4.2	0.0	4.2	0.0	33.3	54.2	0.0	0.0	0.0	12.5	66.7	0.0	100.0
LVA	**LATVIA**															
01	Aizkraukle							0	2	-	-	-	-	2		2
02	Alukasne							0	3	-	-	-	-	3		3
05	Cesis							0	6	-	-	-	-	6		6
07	Dobele							0	1	-	-	-	1	2		2
08	Gulbene	-	1	-	-	-	-	1	1	-	-	-	1	2		3
09	Jekabpils							0	1	-	-	-	-	1		1
10	Jelgava							0	3	-	-	-	2	5		5
11	Kraslava	-	1	-	-	-	-	1	-	-	-	-	1	1		2
12	Kuldiga	-	1	-	-	-	-	1	-	1	-	-	-	1		2
13	Liepaja	1	1	-	-	-	-	2	3	-	-	-	1	4		6
14	Limbazi							0	2	-	-	-	-	2		2
16	Madona	-	1	-	-	-	-	1	4	-	-	-	1	5		6
17	Ogre							0	1	-	-	-	2	3		3
19	Rezekne	1	-	-	-	-	-	1	-	-	-	-	1	1		2
20	Riga	-	1	-	-	-	-	1	3	-	-	-	1	4		5
21	Saldus							0	3	-	-	-	-	3		3
22	Talsi	1	-	-	-	-	-	1						0		1
23	Tukums	1	-	-	-	-	-	1	3	-	-	-	1	4		5
25	Valmiera							0	2	-	-	-	-	2		2
26	Ventspils							0	1	-	-	-	-	1		1
TOTAL		4	6	0	0	0	0	10	39	1	0	0	12	52	0	62
PER CENT		6.5	9.7	0.0	0.0	0.0	0.0	16.1	62.9	1.6	0.0	0.0	19.4	83.9	0.0	100.0

HUN HUNGARY — RABIES CASES — 1. 4.96 - 30. 6.96

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	3	-	-	-	1	4		4
02	BARANYA	2	1	-	-	-	-	3	13	-	-	-	-	13		16
03	BACS-KISKUN	3	1	-	-	-	-	4	5	-	-	-	-	5		9
04	BEKES							0	6	-	-	-	-	6		6
05	BORSOD-ABAUJ-ZEMPLEN	2	1	1	-	-	-	4	14	-	-	-	1	15		19
06	CSONGRAD	-	1	-	-	-	-	1	16	-	-	-	-	16		17
07	FEJER	1	2	2	-	-	-	5	17	-	-	-	-	17		22
08	GYOER-SOPRON	-	1	-	-	-	-	1	2	-	-	-	-	2		3
09	HAJDU-BIHAR	1	4	2	-	-	-	7	11	-	-	-	-	11		18
10	HEVES	-	1	-	-	-	-	1	1	-	-	-	-	1		2
11	KOMAROM	2	1	-	-	-	-	3	10	-	-	-	-	10		13
12	NOGRAD	-	-	-	-	1	-	1	11	-	-	-	-	11		12
13	PEST	-	2	1	-	-	-	3	13	-	-	-	-	13		16
14	SOMOGY	4	4	-	-	-	-	8	26	-	-	-	-	26		34
15	SZABOLCS-SZAT							0	9	-	-	-	-	9		9
16	SZOLNOK							0	1	-	-	-	-	1		1
17	TOLNA	2	3	1	-	-	-	6	16	-	-	1	-	17		23
18	VAS							0	3	-	-	-	-	3		3
19	VESZPREM	-	1	1	-	-	-	2	14	-	-	-	-	14		16
20	ZALA	1	-	1	-	-	-	2	2	-	-	-	-	2		4
TOTAL		18	23	9	0	1	0	51	193	0	0	1	2	196	0	247
PER CENT		7.3	9.3	3.6	0.0	0.4	0.0	20.6	78.1	0.0	0.0	0.4	0.8	79.4	0.0	100.0

RABIES CASES 1. 4.96 - 30. 6.96

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		
LUX	LUXEMBOURG															
04	LUXEMBOURG-CAMPAGNE							0	2	-	-	-	-	2		2
13	REMICH							0	2	-	-	-	-	2		2
TOTAL		0	0	0	0	0	0	0	4	0	0	0	0	4	0	4
PER CENT		0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0
SWI	SWITZERLAND AND LIECHTENSTEIN															
05	BASEL-LAND	-	1	-	-	-	-	1						0		1
26	JURA	-	1	-	-	-	-	1						0		1
TOTAL		0	2	0	0	0	0	2	0	0	0	0	0	0	0	2
PER CENT		0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
UNK	UNITED KINGDOM OF GREAT BRIT.															
04	EAST SUSSEX							0	-	-	-	-	1	1		1
TOTAL		0	0	0	0	0	0	0	0	0	0	0	1	1	0	1

POL POLAND — **RABIES CASES** — **1. 4.96 - 30. 6.96**

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	3	2	-	-	-	-	5	14	-	2	1	-	17		22
05	BIALYSTOK	-	1	-	-	-	-	1	12	-	1	-	2	15		16
09	BYDGOSZCZ	-	2	-	-	-	-	2	11	-	-	-	-	11		13
11	CHELM							0	1	-	-	-	-	1		1
13	CIECHANOW	1	-	-	-	-	-	1	14	-	-	-	1	15		16
15	CZESTOCHOWA	5	4	-	1	-	-	9	12	1	-	4	3	20		29
17	ELBLAG	-	2	3	-	-	-	5	32	1	2	-	6	41		46
23	JELENIA GORA							0	5	-	-	-	-	5		5
25	KALISZ	1	-	-	-	-	-	1	12	-	-	1	-	13		14
27	KATOWICE	1	-	-	-	-	-	1	9	-	1	-	-	10		11
29	KIELCE	5	6	-	-	-	-	11	63	3	10	2	4	82		93
31	KONIN							0	28	-	1	-	-	29		29
33	KOSZALIN	-	1	-	-	-	-	1						0		1
35	KRAKOW							0	10	-	-	1	-	11		11
37	KROSNO	1	-	-	-	-	-	1	15	-	-	-	-	15		16
39	LEGNICA							0	1	-	-	-	-	1		1
41	LESZNO							0	1	-	-	1	-	2		2
43	LUBLIN							0	3	1	-	-	-	4		4
45	LOMZA							0	6	1	-	-	1	8		8
47	LODZ	-	1	-	-	-	-	1	5	-	-	-	-	5		6
49	NOWY SACZ	-	1	-	-	-	-	1	3	-	-	1	-	4		5
51	OLSZTYN	3	1	4	-	-	-	8	32	1	-	-	8	41		49
53	OPOLE							0	2	-	1	-	-	3		3
55	OSTROLEKA	1	-	3	-	-	-	4	16	1	-	-	3	20		24
57	PILA							0	1	-	1	-	-	2		2
59	PIOTRKOW TRYB	2	-	-	-	-	-	2	37	-	-	-	1	38		40
61	PLOCK	1	-	-	-	-	-	1	25	-	-	-	-	25		26
63	POZNAN							0	6	-	-	1	1	8		8
65	PRZEMYSL	7	7	-	-	-	-	14	12	-	-	6	1	19		33
67	RADOM	15	19	-	-	-	-	34	76	3	7	2	8	96		130
69	RZESZOW	15	8	-	-	-	-	23	9	-	3	4	-	16		39
71	SIEDLCE	2	-	-	-	-	-	2	23	-	-	1	-	24		26
73	SIERADZ	1	-	-	-	-	-	1	16	-	2	-	-	18		19
75	SKIERNIEWICE	-	-	-	-	-	1	1	4	1	-	-	-	5		6
77	SLUPSK							0	2	-	-	-	-	2		2
79	SUWALKI	-	1	-	-	-	-	1	12	-	-	-	3	15		16
83	TARNOBRZEG	10	6	1	-	-	-	17	28	1	3	3	1	36		53
85	TARNOW	4	-	-	-	-	-	4	5	-	1	-	-	6		10
87	TORUN	-	2	1	-	-	-	3	7	-	-	-	1	8		11
91	WLOCLAWEK	-	1	-	-	-	-	1	13	-	-	-	1	14		15
93	WROCLAW							0	1	-	-	-	-	1		1
95	ZAMOSC	-	1	-	-	-	-	1	2	1	-	-	-	3		4
97	ZIELONA GORA							0	1	-	-	-	-	1		1
TOTAL		78	66	12	0	0	1	157	587	15	35	28	45	710	0	867
PER CENT		9.0	7.6	1.4	0.0	0.0	0.1	18.1	67.7	1.7	4.0	3.2	5.2	81.9	0.0	100.0

RUS RUSSIAN FEDERATION — RABIES CASES — 1. 4.96 - 30. 6.96

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	-	-	-	33	-	33		33
08	Pskov Region	3	1	-	-	-	-	4	3	-	-	-	1	4		8
12	Twer Region							0	1	-	-	-	-	1		1
15	Moscow Region	4	1	-	-	1	-	6	4	-	-	-	-	4		10
16	Oryol Region	3	-	-	-	-	-	3						0		3
18	Smolensk Region	3	-	-	-	-	-	3	1	-	-	-	-	1		4
19	Tula Region	1	-	-	-	-	-	1						0		1
23	Republic of Mari-El	1	-	-	-	-	-	1						0		1
26	Belgorod Region	5	2	3	-	-	-	10	1	-	-	-	-	1		11
27	Voronezh Region	2	-	6	1	-	-	9	1	-	-	-	-	1		10
28	Kursk Region	1	1	1	2	-	-	5	3	-	-	-	-	3		8
31	Astrakhan Region	6	1	5	-	2	-	14	-	-	-	-	1	1		15
32	Volgograd Region	2	1	13	-	3	-	19	1	-	-	-	-	1		20
33	Samara Region	2	-	4	-	-	-	6	5	-	-	-	-	5		11
34	Penza Region	1	-	-	-	-	-	1	4	-	-	-	-	4		5
35	Saratov Region	7	2	6	-	2	-	17	9	-	1	-	1	11		28
36	Ulyanovsk Region	1	3	2	-	-	-	6	4	-	-	-	-	4		10
37	Republic of Kalmykiya	1	-	-	-	8	-	9						0		9
38	Republic of Tatarstan	3	1	8	-	-	-	12	14	1	-	-	2	17		29
39	Krasnodar Territory	37	3	1	-	-	-	41	-	-	-	-	1	1	1	43
40	Stavropol Territory	2	-	6	3	-	-	11	1	-	-	-	-	1		12
41	Rostov Region	9	-	2	-	-	-	11						0		11
42	Orenburg Region	17	2	30	5	1	-	55	2	1	-	-	3	6		61
44	Republic of Bashkorto	26	-	37	8	4	1	76	18	-	-	-	-	18		94
TOTAL		137	18	124	19	21	1	320	72	2	1	33	9	117	1	438
PER CENT		31.3	4.1	28.3	4.3	4.8	0.2	73.1	16.4	0.5	0.2	7.5	2.1	26.7	0.2	100.0

SVN S L O V E N I A — R A B I E S C A S E S — 1. 4.96 - 30. 6.96

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		
011	CELJE							0	2	-	-	-	-	2		2
043	KAMNIK							0	1	-	-	-	-	1		1
048	KOCEVJE							0	2	-	-	-	-	2		2
054	KRSKO							0	2	-	-	-	-	2		2
057	LASKO							0	6	-	-	-	-	6		6
059	LENDAVA-LENDVA	1	-	-	-	-	-	1						0		1
060	LITIJA	-	1	1	-	-	-	2						0		2
061	LJUBLJANA							0	1	-	-	-	-	1		1
070	MARIBOR							0	1	-	1	-	-	2		2
079	MOZIRJE	1	1	-	-	-	-	2	5	-	1	-	-	6		8
080	MURSKA SOBOTA							0	1	-	-	-	-	1		1
087	ORMOZ							0	1	-	-	1	-	2		2
096	PTUJ							0	1	-	-	-	-	1		1
110	SEVNICA	1	-	-	-	-	-	1	2	-	-	-	-	2		3
111	SEZANA							0	-	-	-	-	1	1		1
114	SLOVENSKE KONJICE	-	1	-	-	-	-	1	1	-	-	-	-	1		2
120	SENTJUR PRI CELJU							0	1	-	-	-	-	1		1
122	SKOFJA LOKA							0	1	-	-	-	-	1		1
129	TRBOVLJE	-	2	-	-	-	-	2	3	-	-	-	-	3		5
130	TREBNJE							0	1	-	-	-	-	1		1
133	VELENJE							0	1	-	-	-	-	1		1
142	ZAGORJE OB SAVI	-	1	-	-	-	-	1	4	-	-	-	-	4		5
TOTAL		3	6	1	0	0	0	10	37	0	2	1	1	41	0	51
PER CENT		5.9	11.8	2.0	0.0	0.0	0.0	19.6	72.5	0.0	3.9	2.0	2.0	80.4	0.0	100.0

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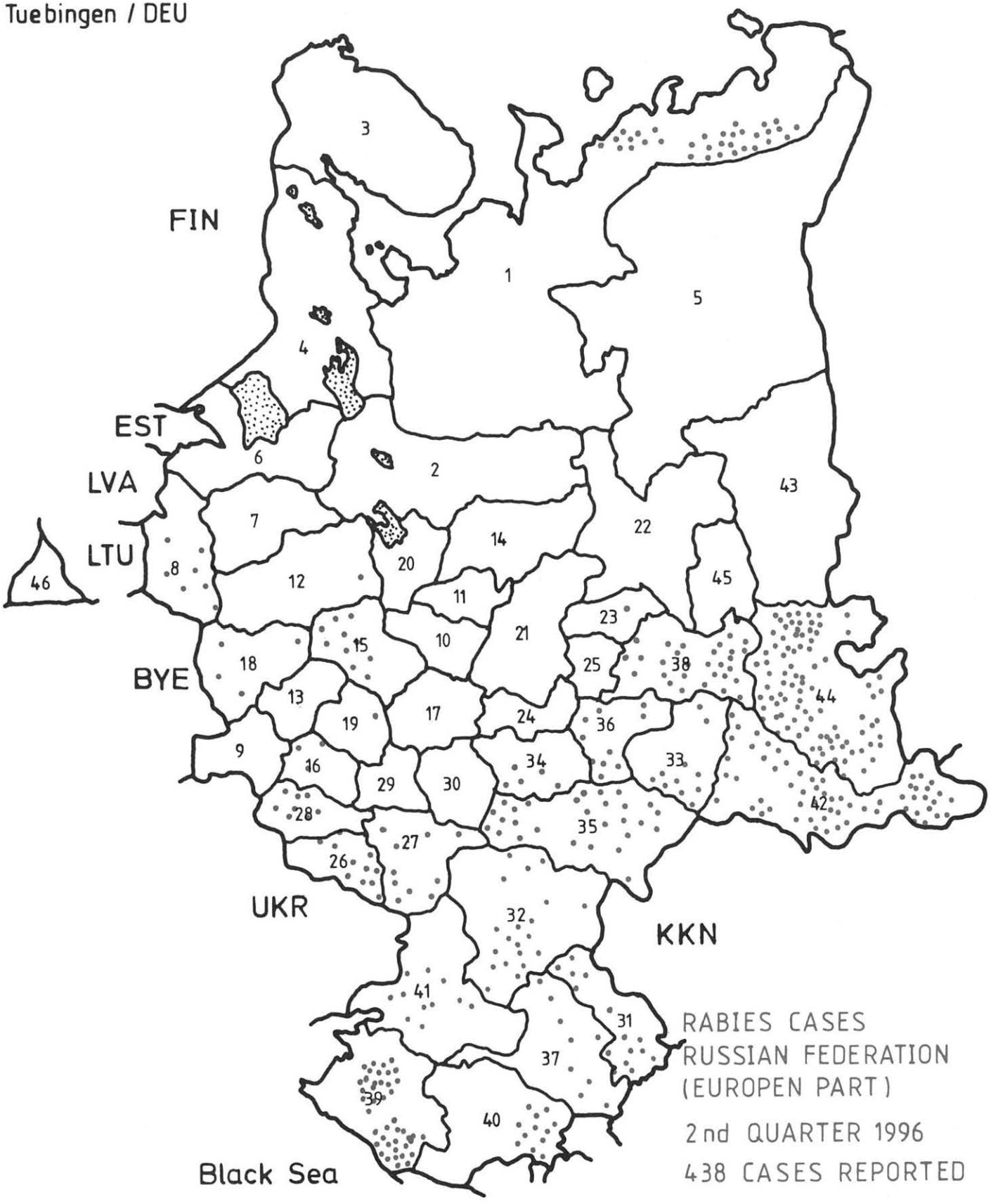
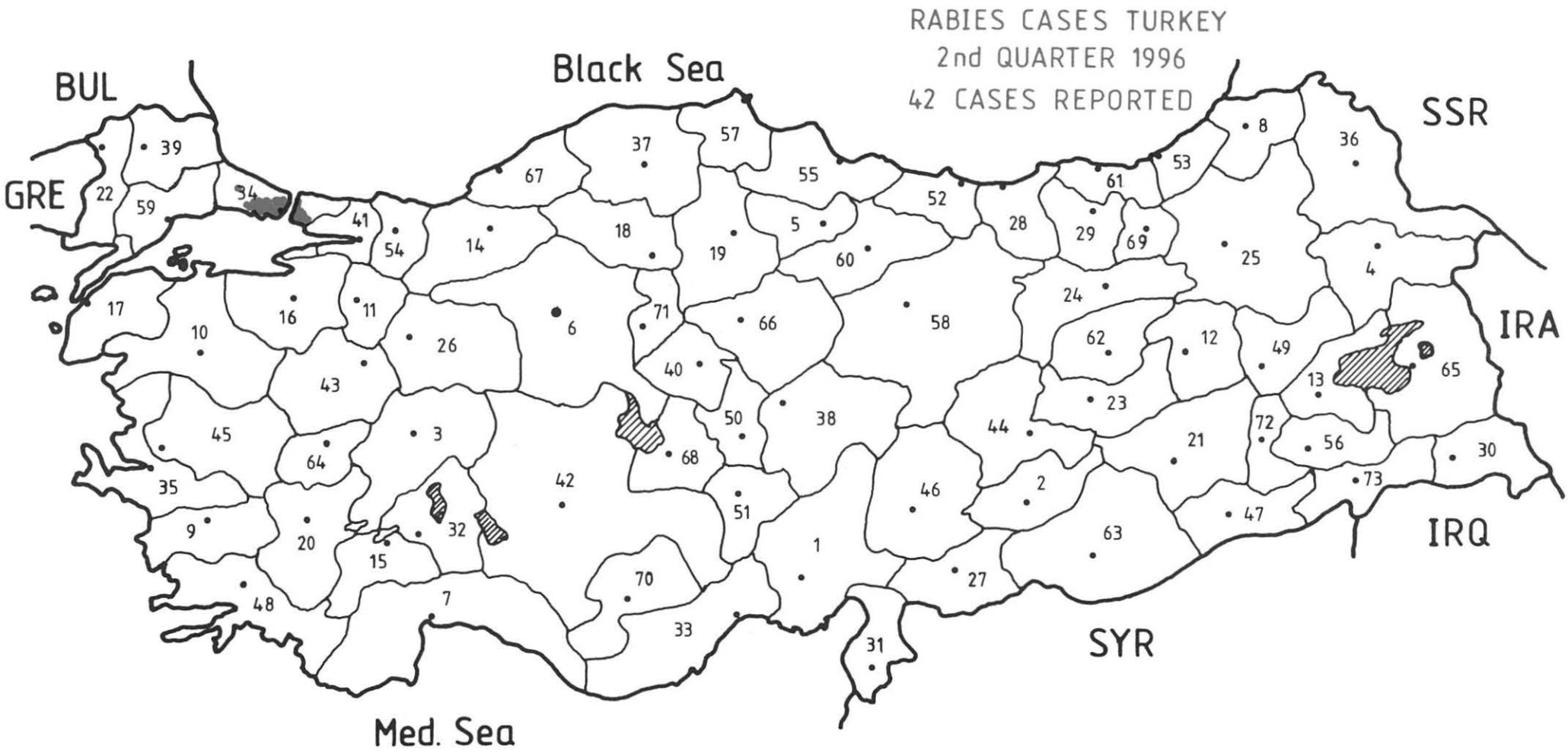


RABIES CASES
RUSSIAN FEDERATION
(EUROPEN PART)

2nd QUARTER 1996

438 CASES REPORTED

WHO Coll. Centre
Tuebingen / DEU



WHO Coll. Centre
Tuebingen / DEU

RABIES CASES EUROPE
2nd QUARTER 1996

2035 CASES REPORTED
5 BAT RABIES CASES INCLUDED

ICE
(rabies free)

NOR
(rabies free)

SWE
(rabies free)

FIN
(rabies free)

EST
(24)

LVA
(62)

RUS
(438)

DEN
(0)

LTU
(13)

RUS

BYE
(10)

IRE
(rabies free)

UNK
(1)

NET
(0)

BEL
(9)

DEU (22)
(4)

POL
(867)

UKR
(no data)

CZH
(50)

SVK
(82)

MLD
(1)

FRA
(4)

AUT
(1)

HUN (247)

(2)
SWI

SVN
(51)

CRO (66)

ROM
(9)

ITA
(0)

BIH
(no data)

FRY
(23)

BUL
(3)

TYM
(no data)

POR
(rabies free)

SPA
(0)

ALB
(no data)

TUR
(42)

GRE
(rabies free)

0 50 100 km

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