RABIES BULLETIN EUROPE

Volume 21/No 1 Quarter 1 1997

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 **First Quarter 1997**, 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 international **symposium in China** is mentioned giving an overall situation of rabies in Asia. 4.2 is a report on a research project of **oral vaccination of dogs** in Turkey.

The **rabies case data** are tabulated **for the First Quarter 1997** in SECTION 5. The arrangement of countries follows practical considerations, not alphabetical ones.

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

The **geographical distribution** of rabies cases in Europe **of the First Quarter 1997** is shown on maps of the Russian Federation, Turkey and Europe in the ANNEX.

2. SUMMARY OF RABIES IN EUROPE

During ***"This Quarter"***, **1583 rabies cases** were reported **in Europe**. Of these 1210 were in wild animals (76.4% of total), and 373 in domestic animals. There were no human cases reported.

Of the **1210 cases in wild animals**, 1105 (69.8% of total) were foxes, 4 wolves, 36 raccoon dogs, 5 wild cats, 2 badgers, 5 stone martens, 10 pine martens, 5 polecats, 2 fish otters, 11 roe deer, 1 wild boar, 1 bat, 1 nutria, 22 unspecified wild animals. Of the **373 domestic animals**, 173 were dogs, 106 cats, 4 horses, 1 donkey, 74 bovines, 10 sheep, 3 camels, 1 domestic rabbit, 1 dog living wild.

The 1 **bat rabies case** occurred in France. Because of the distinct epidemiological feature of the disease, the case is marked in a different colour in the map of the ANNEX.

The **dog-mediated rabies** is only found in Europe in Turkey. Out of 19 animals affected during ***"This Quarter"*** only 1 case was in a wolf; all others were domestic animals.

For the countries with **fox-mediated rabies** there is usually an increase of rabies cases expected during the first quarter of a year when compared to the last quarter of the previous year; the reason being the increased contact rate in the mating season of the fox. However, this pattern is interfered with due to oral vaccination. Therefore, ***"This Quarter"*** is a mixture of countries following the above pattern, practicing oral vaccination successfully or experiencing set-backs. Overall for Europe a reduction of 177 cases is noticed compared to the previous quarter and a reduction of 1248 cases compared to the first quarter 1996 (2831).

Rabies-free countries in Europe during ***"This Quarter"*** were: Denmark, Finland, Greece, Iceland, Ireland, Norway, Portugal, the mainland and islands of Spain, Sweden and Macedonia.

There were no cases in Italy, Luxembourg, the Netherlands, Spain (Centa and Melilla), Switzerland and the United Kingdom of Britain and Northern Ireland, 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 cannot be judged.

3. RABIES IN INDIVIDUAL COUNTRIES

3.1 Albania ALB

No data.

3.2 Austria AUT

by Helmut Schnabl

Of 8624 samples examined for rabies *"This Quarter"* only 5 (0.06%) were diagnosed rabid.

One case occurred in a bovine in the federal province Tyrol and 4 cases (all foxes) in the federal province Burgenland.

3.3 Belgium BEL

by L. Hallet

During *"This Quarter"*, 6 cases of rabies were diagnosed in 5 different localities of the country: 2 foxes at Rochefort, 1 fox each at Wellin, Herbeumont and Tenneville and 1 bovine at Libramont.

3.4 Bosnia and Hercegovina BIH

No data.

3.5 Bulgaria BUL

by L. Lavchev

During *"This Quarter"*, 5 rabies cases were reported in Bulgaria. They occurred in 4 provinces, all in the north of the country.

3.6 Belarus BYE

by S.N. Shpilevsky

During *"This Quarter"*, 26 rabies cases were diagnosed in animals (19 wild animals not specified, 6 dogs and 1 cat).

The cases occurred in 4 regions -Vitebsk, Gomel, Grodno, Minsk - with concentration in the Vitebssk region (16 cases).

3.7 Croatia CRO

by Sanja Šeparović

During *"This Quarter"*, 174 rabies cases were recorded in 50 municipalities of Croatia, 56 cases less (24.3 %) compared to the same quarter of 1996 and 49 cases more in comparison with the previous quarter.

Of the total, 157 cases were wild animals (152 foxes, 1 wolf, 2 wild cats, 1 badger, 1 wild boar) and 17 domestic animals (8 dogs, 6 cats, 2 bovines, 1 donkey).

3.8 Czech Republic CZH

by Oldrich Matouch

A total of 117 rabies cases was reported during *"This Quarter"*, 51 cases more than in the first quarter 1996.

115 cases were registered in wild animals (98.3%) and 2 cases (1.7%) in domestic animals. Of the wild animals the disease was noticed in 112 foxes, 2 martens and 1 roedeer. Of the domestic animals 2 cases were diagnosed in cats.

The increase of rabies cases seems to be connected to an increase of the fox population as is indicated by hunting bags in some areas. The majority of rabies cases occurred in Central Bohemia and North Bohemia with 63 and 25 cases recorded respectively.

3.9 Denmark DEN

by Eric Stougaard

The country remained rabies-free.

3.10 Germany, Federal Republic DEU

by Winfried W. Müller and Hartmut Schlüter

A total of 34 rabies cases was reported during *"This Quarter"*. During the first quarter 1996 there were 65 cases reported.

In the western part of Germany 3 active foci can be noticed: in Nordrhein-Westfa-

len (13 cases); Saarland (12 cases), 1 case in nearby Rheinland-Pfalz, and Hessen (5 cases) with 2 cases in nearby Bayern. A single case occurred in eastern Germany at the state border to the Czech Republic.

3.11 Estonia EST

by Matti Nautras

During ***"This Quarter"***, 26 rabies cases were registered in Estonia (16 foxes, 6 raccoon dogs, 3 dogs, 1 cat).

In 10 districts between 1 and 6 cases were recorded.

3.12 Finland FIN

by Riitta Heinonen

The country remained rabies-free.

Surveillance: 91 animals (41 foxes, 1 wolf, 22 raccoon dogs, 2 lynx, 1 fish otter, 2 large weasels, 1 pine marten, 3 badgers, 3 dogs, 6 cats, 9 other wild animals) were examined for rabies during ***"This Quarter"*** but revealed negative results.

3.13 France FRA

by Michel F.A. Aubert

Out of 1243 samples examined for rabies in the country no case in terrestrial animals was diagnosed.

In March in the département Meurthe et Moselle 1 bat (*Eptesicus serotimus*) was found rabid. It was characterized genotype 6 (EBL1).

3.14 Federal Republic of Yugoslavia FRY

by Nedeljko Sipovac

43 rabies cases (in 31 foxes, 6 dogs, 4 cats and 2 sheep) were registered during ***"This Quarter"*** in the Federal Republic of Yugoslavia, 15 cases more than during the previous quarter.

30 cases were located in Wojwodina and 13 in Serbia.

3.15 Greece GRE

by B. Stylas

The country remained rabies-free.

3.16 Hungary HUN

by Bálint Kerekes

During ***"This Quarter"***, 176 rabies cases in animals were registered, 84 cases less than during the previous quarter and 410 cases less than during the first quarter 1996.

Of the grand total 149 cases (84.7%) were foxes, 5 other wild animals and 19 domestic animals.

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 Italy.

Oral vaccination of foxes will be carried out during spring in the provinces of Trieste, Gorizia and Udine bordering Slovenia.

3.20 Lithuania LTU

by K. Lukauskas and A. Dranseika

During ***"This Quarter"***, 19 cases of rabies were recorded in the country. 13 cases were diagnosed in wild animals (11 foxes, 1 polecat and 1 raccoon dog), 5 in cats and 1 in a bovine.

There were no human rabies cases reported.

During ***"This Quarter"***, more than 35 thousand dogs were vaccinated against rabies.

3.21 Luxembourg LUX

by Joseph Kremer

There were no rabies cases during ***"This Quarter"*** in the Grand Duchy of Luxembourg, in spite of cases across the border in Saarland (Germany) and in the province of Luxembourg of Belgium. The last case in the country was recorded in August 1996.

In order to insure the immunity of the fox population against rabies the following vaccination campaigns for 1997 are planned:
24.3.-29.3.1997:
distribution of 44.000 "Rab-oral" vaccine baits by helicopter to vaccinate foxes
31.5.1997:
hand placing of 16.000 "Rab-oral" near dens to increase the vaccination rate of fox cubs
22.9.-27.9.1997:
distribution of 48.000 "Rab-oral" by helicopter.

Surveillance: 5 foxes and 1 stone marten were examined for rabies but revealed negative results.

3.22 Latvia LVA

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

During ***"This Quarter"***, there were 30 rabies cases in 17 districts, 10 cases less than during the previous quarter. Of these, 26 were in wild animals (86.7% of total), 4 in domestic animals. Of the cases in wild animals 20 were foxes, 5 raccoon dogs and 1 wolf. Of the 4 domestic animals 3 were dogs and 1 cat.

The most affected district was Saldus with 9 cases. All other districts recorded 1 and 2 cases. There were no rabies cases in humans.

3.23 Moldova MLD

by V. Bahau, V. Orlov and L. Tertiak

During ***"This Quarter"***, 35 animals were examined for rabies - 15 canines, 12 felines, 2 bovines, 3 ovines and 3 wild animals.

5 cases of rabies were diagnosed in the following regions: Sinjereya (1 fox), Chimishliya (1 dog), Yaloveni (1 fox), Shetefan-Voda (1 fox) and Taraclya (1 sheep).

3.24 Netherlands NET

by G. Visser

Out of 8 animals (4 bats, 3 foxes, 1 dog) examined for rabies during ***"This Quarter"*** none were positive.

3.25 Norway NOR

by Gudbrand Bakken

The country remained rabies-free.

3.26 Poland POL

by Jan Smiechowicz

A total of 515 rabies cases was registered in Poland during ***"This Quarter"***, 32 cases more than during the previous quarter and 132 cases less than during the first quarter 1996. There were 456 cases in wild animals (88.5% of total) and 59 cases in domestic animals.

Note of the editor: In issue 4/96 on page 34 the table of rabies case data Poland has to be corrected. Row **81 Szczecin** mentions 4 cases but should read in all columns **0 cases**. To row **83 Tarnobrzeg 1 dog and 3 foxes** have to be added amounting to a total of 15 cases. All other data remain the same.
It goes without saying that the corrected situation in Szczecin documents the good record of oral vaccination over the last years in this area.

3.27 Portugal POR

The country remained rabies-free.

3.28 Romania ROM

by Ion Teveloiu

During ***"This Quarter"***, 5 rabies cases were registered in Romania in 3 foxes, 1 other wild animal and 1 bovine. The cases were scattered

throughout the country and occurred in 4 provinces: Gorj, Iasi, Prahova and Suceava.

3.29 Russia RUS (European part only)

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

During ***"This Quarter"***, 258 rabies cases in animals were reported. Of the total 187 were in domestic animals - 92 dogs, 38 cats, 46 bovines, 2 horses, 6 sheep, 3 camels. Of 71 wild animals rabies was diagnosed in 67 foxes, 1 wolf, 2 raccoon dogs, 1 nutria (*Myocastor coypus*).

Most affected were Bashkortostan with 38 cases, the Orenburg Region with 26 cases, the Krasnodar Territory with 22 cases and the region of Voronezh and Smolensk with 17 cases each.

3.30 Spain SPA

by Carlos Abellán García

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

There was no rabies reported from the Spanish territory in North Africa (Centa and Melilla).

3.31 Slovak Republic SVK

by Jozef Sokol and Bohuslav Lovas

A total of 108 rabies cases in animals was reported in the Slovak Republic during ***"This Quarter"***. Of these were 89 (82.4% of total) wild animals (85 foxes, 2 wild cats, 1 fish otter and 1 pine marten) and 19 (17.6% of total) domestic animals (7 dogs, 10 cats, 1 bovine and 1 domesticated rabbit).

3.32 Slovenia SVN

by Zoran Kovač

A total of 11 rabies cases was recorded during ***"This Quarter"*** in Slovenia. There was a slight decrease from 14 cases compared to the previous quarter. 5 cases of the total were diagnosed in foxes, 3 in domestic cats, 1 in a dog, 1 in a bovine and 1 in a marten.

There is a tremendous improvement of the rabies situation compared to the last year, when 165 rabies cases were recorded during the first quarter.

The continuation of oral vaccination of foxes is planned for 1997.

3.33 Sweden SWE

The country remained rabies-free.

3.34 Switzerland SWI

by Urs Breitenmoser and Dora Strahm

During ***"This Quarter"***, a total of 349 animals (271 red foxes) were analysed for rabies by the Swiss Rabies Centre. None of them (0%) were positive. This is the first time since 1967, when the epizootic entered the country, that no case was diagnosed during an entire quarter. During the 4th quarter of 1996, 0.31% of all analyses were positive (1 out of 322), whereas in the first quarter of 1996, two rabies cases had been diagnosed (0.31% from 638 samples). The potential area of rabies in Switzerland is situated in the northwest of the country, from the Canton of Neuchâtel in the west to the Canton of Aargau in the north. This region is the same as the area of oral vaccination of the red fox population, extending over parts of the cantons of Vaud, Neuchâtel, Jura, Bern, Solothurn, Basel-Landschaft, Basel-Stadt, Aargau, Luzern, Zürich, and Schaffhausen.

It is now over a year ago (06.03.96) since the last case of a fox found to be rabid in Switzerland. This indicates that the epizootic is coming to an end in the population of its main vector species. In no other species existing in Switzerland can the disease persist for a longer period. Animals such as badgers or domestic cats are often found as the last infected specimens of a rabies epizootic. To prevent a resurgence of this disease, the oral vaccination campaigns of the foxes against rabies will continue for another two years after the detection of the "last" case. The present area of vaccination stretches

over a total of 5050 km² in north-western Switzerland, where some 126,600 oral baits (25 per km²) will be distributed between April, 4 and May, 29, 1997. In addition to the large spring vaccination campaign, a special campaign will take place in a small area of some 180 km² in the north of the cantons of Aargau and Basel-Landschaft. This is the region, where the only two cases of rabies in wildlife were discovered last year. Here, vaccine baits will be placed near the fox dens during the second half of May 1997. This action aims to give the young foxes a better protection against rabies before they leave the den sites.

2 bats (1 *Pipistrellus nathusii*, 1 *Pipistrellus kuhli*) were examined for rabies in ***"This Quarter"***; both were found to be negative for rabies.

A quarterly report of the Swiss Rabies Centre at the University of Bern is also available on the Internet (http://ubeclu.unibe.ch/ivv/index.html) in English, German, and French.

3.35 Turkey TUR

by Mehdi Eker

During ***"This Quarter"***, 19 rabies cases were reported from Turkey in 15 dogs, 1 cat, 2 bovines and 1 wolf. In six provinces 1 to 8 cases were reported.

Note of the editor: In issue 4/96 on page 10 the second sentence on the report of Turkey should read: '16 cases were registered in the province (Il) of Istanbul and 1 case each in the provinces of Adiyaman, Izmir, Kirsehir, Kahramanmaras, Ordu, Sakarya and Batman'.

3.36 Macedonia TYM

The country remained rabies-free.

3.37 Ukraine UKR

No data.

3.38 United Kingdom UNK

by W.J. Pollitt

The country remained rabies-free in terrestrial mammals.

No cases of bat rabies have been reported.

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4. MISCELLANEOUS ARTICLES

4.1 Report of the 3rd International Symposium on Rabies in Asia

by W.W. Müller
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FOREWORD

In the previous issue of the RABIES BULLETIN EUROPE 4/96 on page 18 human rabies cases have been summarized in a table for Europe. Over 20 years 24 cases were reported to be imported from Africa and Asia. This is a reason to be at least generally informed on the rabies situation in these continents. It can help when making a diagnosis in Europe and when the history of the disease needs to be considered.

THE SYMPOSIUM

The 3rd International Symposium on Rabies in Asia was organized by the Marcel Mérieux Foundation and co-sponsored by the World Health Organization. It took place in Wuhan, China, from 11-15 September 1996. The Division of Emerging and other Communicable Diseases Surveillance and Control of the WHO, HQ, Geneva prepared and published a report under the reference WHO/EMC/ZOO/96.8 from which information is quoted.

The following countries participated in the symposium: Bangladesh, Cambodia, China, India, Indonesia, Republic of Korea, Lao People's Democratic Republic, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand and Viet Nam.

In country reports medical and veterinary authorities described the present situation of rabies and their approach on control measures. Here is a summary of these reports and I quote:

OVERALL RABIES SITUATION AND TRENDS IN ASIA

The above reports show that both successes and setbacks have been reported from the area. The most striking improvement which has been recorded in the field of rabies over the past few years is a very drastic reduction in some Asian countries of the number of human rabies deaths. This decrease is most certainly linked to the increased availability of efficacious and safe cell-culture rabies vaccines for human use rather than to the implementation of effective control measures in the dog population. This phenomenon has been documented in two Asian countries namely China and Thailand where numbers of human deaths were reduced by 80% in 10 to 15 years. In Thailand this followed the increased availability of imported modern rabies vaccines and the development of a new economical regimen for human post-exposure treatment, and in China the local production and wide distribution of large quantities (20 million doses approximately) of a primary hamster kidney cell vaccine (PHKC) for human use.

In many other countries although the results were not as spectacular as in China and Thailand, larger and larger quantities of modern rabies vaccines are imported or locally produced (mainly through technology transfer projects) and administered. This trend is increasing in the area in spite of the costs of modern human biologicals and the indication that rabies elimination by vaccination of the dog population is the most cost-beneficial strategy in the long term. In many countries ministries of health

are obliged to respond to the strong demand from people for safer rabies vaccine whilst national veterinary services encounter huge difficulties to establish sustainable programmes for parenteral dog vaccination, and often public opposition when carrying out activities aiming at the reduction of the dog population.

During the past few years some improvements associated with the activities carried out by local veterinary services have nonetheless been noted in some Asian countries and territories such as Indonesia, Republic of Korea and Hong Kong. In Indonesia the number of rabies cases has considerably decreased over the past few years in Java and Kalimantan. Rabies was even eliminated from some provinces of Java and Kalimantan. In the Republic of Korea no human rabies deaths have been reported since 1984 although foci of wildlife rabies have recently emerged in this country. Hong Kong has not reported any rabies case for many years now. Temporary success were recorded in other countries, for example in parts of Sri Lanka, where rabies was brought under control following dog mass immunization campaigns and the number of human cases reduced by 60%. Difficulties in maintaining a high enough vaccination coverage in dogs have recently led to an increasing number of reports of human rabies deaths on the island.

No successful country-wide dog rabies elimination programmes have however been implemented in the area in spite of the availability of improved methods of surveillance and control. The Korean example also shows that continuous surveillance should be carried out in countries where dog rabies is eliminated to monitor susceptible wildlife species which may become hosts and transmitters of the disease.

During the symposium technical papers were given relevant to the Asian rabies problems. A compilation of all lectures and the forementioned country reports will be published by Elsevir and the Mérieux Foundation.

In working groups obstacles were identified in regard to the inforcement of the existing legislation. Diagnosis, control of animal rabies, prevention of human rabies and research needs were discussed in detail.

Considering the present situation and planning to include the recent progress on rabies for Asia can best be noticed from the résumé of the symposium and I quote:

RESOLUTION

The participants from medical and veterinary services from the Asian countries attending the Symposium on Rabies Control in Asia;

Recognizing the health significance of rabies in their countries, where altogether about 35 000 rabies-related human deaths are officially reported each year, though the true figure may be much higher;

Recognizing that the presence of the disease in their countries leads to the application of more than 6 million post-exposure treatments in humans as well as millions of preventive treatments in animals, thus making rabies a significant and continuously increasing economic burden for these countries, particularly for the health and agriculture sectors;

Acknowledging the dramatic progress reported by some Asian countries in their efforts to control human rabies through discontinuing the local production of animal brain vaccines for human post-exposure treatment, procuring larger quantities of modern vaccines and improving their country-wide availability;

Acknowledging the efficacy of mass vaccination of dogs for rabies control and elimination and the usefulness of new economical regimens for post-exposure treatment of humans as recommended by WHO;

Acknowledging the potential of oral vaccination of dogs to increase dog population immunization coverage and ongoing research projects on new vaccines and substances for pre- and post-exposure immunization of humans;

Acknowledging the lack of resources and intersectorial collaboration for rabies control

in humans and animals in most Asian countries;

REQUEST

(1) All national rabies project leaders to review and, if necessary, redirect their rabies control activities by first targeting high risk areas and expanding to other areas in a progressive manner to finally reach the goal of disease elimination;

(2) Their governments to provide increased support to activities for the surveillance and control of rabies in humans and animals and to take measures to ensure availability of affordable rabies vaccines and immunoglobulin;

(3) Donor agencies to further collaborate with the countries by providing training and supporting their sustained efforts particularly at field level;

(4) The WHO Regional Committee of the South-east Asia Region (SEARO) and the Western Pacific Region (WPRO) to reinforce their capabilities to meet the demands from Member States for technical assistance, technology transfer, and to consider launching of regional initiatives for dog rabies control and elimination in Asia by exploring possibilities of involving regional organizations such as ASEAN and SAARC;

(5) WHO Headquarters to increase its ability to promote research on new concepts for human and animal rabies prevention and control, and to further cooperate with all parties involved to increase worldwide availability of affordable rabies vaccines and rabies immunoglobulin.

4.2 Oral Vaccination (OV) of Dogs against Rabies - Studies in Turkey to Combine this Technique with the Traditional Method of Parenteral Vaccination if Indicated, to Reach a Better Overall Vaccination Coverage

by Ad Vos[1], Orhan Aylan[2], Belgün Turan[3] and Necdet Güzel[4]
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[4]School of Veterinary Medicine, Adnan Menderes University, Aydin, Turkey

REASONS FOR OV

In countries with dog-mediated or urban rabies, the classic methods of control are parenteral vaccination of dogs and population management, usually by the removal of stray dogs. Voluntary parenteral vaccination in dogs at governmental or private clinics has often not been very successful because of the low vaccination coverage of the owned dog population achieved. Mass vaccination campaigns implemented by the authorities can be more efficient. To have an impact for the control, however, it is important to have a sufficient number of dogs vaccinated. WHO suggests the achievement of a 75% vaccination coverage to insure that control programmes lead to the eradication of urban rabies. With a high proportion of free-roaming and poorly supervised dogs and true feral dogs there is however a major obstacle.

Removal of dogs, as mentioned above, to help disrupt the chain of rabies infection usually upsets the public. And, there is worldwide experience that the reduction of the population will only be transient; due to the reproduction rate of the dogs and the habits of people.

OV used additionally to parenteral vaccination if indicated may be a new approach, permitting an increase in the vaccination coverage of the

overall dog population.

OV of wildlife is well established in Europe, but can not be copied for dogs without adaptation. Due to the use of attenuated live virus vaccines there have to be stringent precautions for humans because of the closeness of dogs to humans (and here especially to children) and therefore the likelihood of direct exposure.

PRELIMINARY RESULTS OF A RESEARCH PROJECT ON THE FEASIBILITY OF OV

Next to a suitable vaccine for OV, an effective bait is needed to present the vaccine to the ownerless dogs which could be classified either as "community dogs", or the less numerous true feral dogs. If vaccine and bait is found, a delivery system needs to be developed and all has to be cost-effective.

During intensive laboratory safety trials the feasibility of oral vaccination of dogs against rabies with the rabies vaccine virus strain SAD B19 has been tested in Turkey between 1992 - 1996, and partly for 4 years in a different project prior to 1992.

This report gives selected features of the work. Detailed results will be published soon.

THE CANDIDATE VACCINE TESTED - SAD B19

The SAD B19 vaccine strain is a live virus and used successfully since 1983 in the field in Europe for OV of wildlife rabies. To use this strain meant that a great number of safety tests on target (fox) and non-target animals (other wild and domestic animals) were already carried out in laboratory and field. In addition, a WHO recommended safety test on primates (here with 10 chimpanzees) in regard to OV of dogs was carried out. In 14 years millions of doses of this strain have been used in Central Europe by hand and aerial distribution without accident.

Nevertheless, as mentioned above, because of the closeness of dogs to humans special precautions in the application of the vaccine should be observed.

Hence, we carried out additional tests. 28 puppies were vaccinated parenterally and orally. None of the puppies aged less than 10 weeks, died of rabies. Four dogs were inoculated intracerebrally without neuropathogenic effect. The animals developed rabies antibodies. In searching for residual vaccine virus after inoculation swabs were taken of these dogs on days 1, 3, 5 and 16. No vaccine virus was detected. Vaccine virus dissemination in saliva was tested as well after oral application (18 dogs) and parenteral application (6 dogs) with negative results.

The two major bait competitors in Turkey, cats and corvines as non-target animals were completely innocuous toward the SAD B19 vaccine virus.

TRANSPORTING THE VACCINE-BAIT AND SEROCONVERSION RATE

From the beginning of the project different baits were tested. In the end one bait was selected that was extremely well accepted (96%) by dogs under all circumstances; a mixture of locally produced minced meat and bread crumbs (Köftebait). The bait covers a capsule consisting of a plastic foil which contains the vaccine and which is sealed by an aluminium foil. The latter is penetrated by the teeth and thus the vaccine is released onto the mucous membrane of the muzzle.

After elaborate studies on the dog population a bait delivery system was developed to maximize coverage of the target population and to minimize the availability to nontarget species, and humans. In urban areas of Istanbul, Turkey, it was shown that bait distribution as practiced for wildlife vaccination programmes in Central Europe was ineffective; only a small fraction of the ownerless dog population could be reached.

Inaccessible dogs for parenteral vaccination (owned and ownerless) were given vaccine baits by hand in a systematic street-to-street campaign. Vaccine baits not taken and empty vaccine containers were collected, thus, there was no chance of contact to non-target animals or the public.

The quality of a bait determines the acception rate by the dog; the pierced or pe-

netrated capsule then initiates the immunization of the animal. While laboratory experiments, when the vaccine was applied onto the tongue, resulted in a 100% seroconversion rate, this could not be expected in the field.

In the Anatolian part of Istanbul, 109 owned and ownerless dogs which could be identified were vaccinated by direct application of $1,5x10^8$ FFU SAD B19 into the oral cavity. On average 21, 162 and 399 days after vaccination bloodsamples were taken from dogs which could be relocated; 92% (n=78), 83% (n=35) and 81% (n=21) still had an antibody titer above the threshold of 0,5 IU/ml, respectively. All of these dogs had no rabies neutralizing antibodies prior to vaccination. Ten of these dogs vaccinated with the same dose of SAD B19 were challenged 479 days after vaccination, 9 out of 10 dogs resisted the challenge.

During this field study 17 dogs were also vaccinated orally by offering a Köfte-bait containing a capsule filled with the same dose of SAD B19. On average 23 days after vaccination 9 out of 11 relocated dogs had a titer above 0.5 IU/ml. Unfortunately, the number of dogs which could be relocated after 165 (n=5) and 404 (n=2) days post vaccination became too small for statistical comparison.

FIELD TEST TO COMBINE PARENTERAL AND OV

Once there were data at hand that OV in the field is feasible it was decided to organize a pilot study to assess if a campaign, parenteral and oral vaccination as described above, was a practical alternative to the classic methods of dog rabies control. It has to be kept in mind that the logistic efforts exceed those required for traditional campaigns: considering transport, storage of vaccine and bait-material, preparation of baits, etc.

As study area, the Aegean coastal resort, Kuşadasi, was chosen. The organization and implementation of the campaign was carried out by the local veterinary department and student helpers. Permission for this pilot study was obtained from the General Directorate for Protection and Control of the Ministry of Agriculture and Rural Affairs in Ankara, Turkey. It was decided that all vaccinations be offered free of charge.

Prior to the vaccination campaign a survey (house-to-house visits) was carried out in Kuşadasi. It included censusing of owned dogs in relation to the number of households, confinement of dogs and the recording of vaccination-status.

4701 households were visited. The ratio of owned dogs to households was 1:12,4. At least 40% of the owned dogs were not vaccinated against rabies during the preceding 12 months. For only 20% of the owned dogs, it was proven (valid vaccination certificate) that they were vaccinated recently against rabies. According to the owners, 41.6% of all owned dogs were always restricted and 22.5% were always free-roaming.

The vaccinators, staff and students of the Adnan Menderes University - Faculty of Veterinary Medicine (AMU) in Aydin, received a short training during which they acquired general knowledge about dog vaccination techniques (oral and parenteral) and practical skills on how to approach and handle dogs. The week before the campaign the public was informed by means of newspapers, posters, radio and television. Also, all schools were informed about the campaign. The public information was aimed at securing the acceptance of the campaign and the participation of the community.

The city of Kuşadasi was divided into seven areas. For six areas a vaccination team from the AMU was responsible. Every team consisted of a veterinarian, a veterinary technician and two students. These teams had no previous experience with vaccination campaigns. A seventh team consisted of two persons experienced with both vaccination techniques, parenteral and oral.

During the campaign (5-7th April, 1997) 258 dogs were vaccinated, 69 (26.7%) of these orally. 13 'attempts' to vaccinate dogs orally failed while 10 dogs discarded the

vaccine container intact and 3 dogs swallowed the vaccine container without perforation. On day 1, all seven teams worked and 171 dogs were vaccinated (inclusive the failed attempts). The University-teams averaged 17 dogs vaccinated on this day, the experienced team vaccinated 61. The latter vaccinated significantly more unrestricted and ownerless dogs, no doubt an advantage of experience in approaching and handling of these dogs.

During the survey, it was shown that the vaccination rate of the unrestricted owned dogs (19.4%) was significantly lower than the vaccination rate of the restricted owned dogs (40.7%) (χ^2-Test). This means that especially the former group of dogs together with the ownerless dogs are at high risk of contracting and transmitting rabies. Their immunisation could be decisive in regard to eventual success or failure of a rabies control programme. Although, dogs were only offered a vaccine bait when the animals could not be vaccinated by the parenteral route during the campaign in Kuşadasi, significantly more unrestricted dogs (owned and ownerless) were vaccinated orally than parenteral. No less than 59% of the unrestricted dogs, inaccessible for parenteral vaccination, were vaccinated orally. Hence, oral vaccination can increase the vaccination coverage of the for rabies-transmission important subpopulation of free-roaming dogs significantly.

In summary: rabies transmission cycles among resident dogs can be controlled by a combination of oral and parenteral vaccination, however entry of rabid dogs (owned or ownerless) from outside remains a continual risk. In the latter case, a high vaccination coverage could prevent that rabies would spread among the local dog population and would become endemic. In time, the high dog population turnover leads to an increasing number of unvaccinated animals. As soon as, or preferably before, a sufficient susceptible population rebuilds to a level that would support rabies transmission, revaccination of the population is necessary.

EDITORS NOTE

Here several years of a study on OV indicate the feasibility of this new method. A vaccine which was tested in many safety tests, a bait with a high acception rate, an immunogenic vaccine in the laboratory and the field, a safe delivery system to the dogs and a field method suitable for mass application to combine parenteral and oral vaccination may at this point be specific for Turkey, but it is a good start to try it in other countries as well. The reasons for the method are obvious and WHO supports this work. Therefore, it is hoped that other research groups elaborate on the subject as there are no doubt details to improve.

See as well the paper in the RABIES BULLETIN EUROPE 2/96, pp. 11-14.

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TABLE 5.1

EUR EUROPE 1/97 RABIES CASES 1. 1.97 - 31. 3.97

LOCATION CODE	NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
		DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
ALB	ALBANIA **							0						0		0
AUT	AUSTRIA	-	-	1	-	-	-	1	4	-	-	-	-	4		5
BEL	BELGIUM	-	-	1	-	-	-	1	5	-	-	-	-	5		6
BIH	BOSNA I HERCEGOWI**							0						0		0
BUL	BULGARIA	1	-	-	1	-	1	3	-	-	-	-	2	2		5
BYE	BELARUS	5	1	1	-	-	-	7	-	-	-	-	19	19		26
CRO	CROATIA	8	6	2	-	-	1	17	152	1	-	-	4	157		174
CZH	CZECH REPUBLIC	-	2	-	-	-	-	2	112	-	2	1	-	115		117
DEN	DENMARK *							0						0		0
DEU	FED.REP. OF GERMANY	-	1	4	-	1	-	6	26	-	-	2	-	28		34
EST	ESTONIA	3	1	-	-	-	-	4	16	-	-	-	6	22		26
FIN	FINLAND *							0						0		0
FRA	FRANCE							0	-	-	-	-	1	1		1
FRY	FED.REP.OF YUGOSLAVI	6	4	-	-	2	-	12	31	-	-	-	-	31		43
GRE	GREECE *							0						0		0
HUN	HUNGARY	6	9	4	-	-	-	19	149	-	3	4	1	157		176
ICE	ICELAND *							0						0		0
IRE	IRELAND *							0						0		0
ITA	ITALY *							0						0		0
LTU	LITHUANIA	-	5	1	-	-	-	6	11	-	1	-	1	13		19
LUX	LUXEMBOURG *							0						0		0
LVA	LATVIA	3	1	-	-	-	-	4	20	-	-	-	6	26		30
MLD	MOLDOVA	1	-	-	-	1	-	2	3	-	-	-	-	3		5
NET	NETHERLANDS *							0						0		0
NOR	NORWAY *							0						0		0
POL	POLAND	25	24	9	1	-	-	59	416	1	13	4	22	456		515
POR	PORTUGAL *							0						0		0
ROM	ROMANIA	-	-	1	-	-	-	1	3	-	-	-	1	4		5
RUS	RUSSIAN FEDERATION	92	38	46	2	6	3	187	67	-	-	-	4	71		258
SPA	SPAIN *							0						0		0
SVK	SLOVAK REPUBLIC	7	10	1	-	-	1	19	85	-	2	-	2	89		108
SVN	SLOVENIA	1	3	1	-	-	-	5	5	-	1	-	-	6		11
SWE	SWEDEN *							0						0		0
SWI	SWITZERLAND + LIEC*							0						0		0
TUR	TURKEY	15	1	2	-	-	-	18	-	-	-	-	1	1		19
TYM	MAKEDONIJA *							0						0		0
UKR	UKRAINE **							0						0		0
UNK	UNITED KINGDOM *							0						0		0
TOTAL		173	106	74	4	10	6	373	1105	2	22	11	70	1210	0	1583
PER CENT		10.9	6.7	4.7	0.3	0.6	0.4	23.6	69.8	0.1	1.4	0.7	4.4	76.4	0.0	100.0

* NO CASES ** NO DATA

TABLE 5.2

EUR EUROPE 1/97 RABIES CASES 'OTHER ANIMAL SPECIES' 1. 1.97 - 31.03.97

LOCATION		OTHER DOMESTIC ANIMALS				OTHER WILD ANIMALS								TOTAL
CODE	NAME	DONKEY	OTH.DOM. HERBIV.	DOM. RABBIT	DOG LIV. WILD	WOLF	RACCOON DOG	WILD CAT	WILD BOAR	INSECTIV. BATS	OTH.SMALL RODENTS	OTHERS	UNSPECI-FIED	
BUL	BULGARIA	-	-	-	1	-	-	-	-	-	-	-	2	3
BYE	BELARUS	-	-	-	-	-	-	-	-	-	-	19	-	19
CRO	CROATIA	1	-	-	-	1	-	2	1	-	-	-	-	5
EST	ESTONIA	-	-	-	-	-	6	-	-	-	-	-	-	6
FRA	FRANCE	-	-	-	-	-	-	-	-	1	-	-	-	1
HUN	HUNGARY	-	-	-	-	-	-	1	-	-	-	-	-	1
LTU	LITHUANIA	-	-	-	-	-	1	-	-	-	-	-	-	1
LVA	LATVIA	-	-	-	-	1	5	-	-	-	-	-	-	6
POL	POLAND	-	-	-	-	-	22	-	-	-	-	-	-	22
ROM	ROMANIA	-	-	-	-	-	-	-	-	-	-	1	-	1
RUS	RUSSIAN FEDERATION	-	3	-	-	1	2	-	-	-	1	-	-	7
SVK	SLOVAK REPUBLIC	-	-	1	-	-	-	2	-	-	-	-	-	3
TUR	TURKEY	-	-	-	-	1	-	-	-	-	-	-	-	1
TOTAL		1	3	1	1	4	36	5	1	1	1	20	2	76
PER CENT		1.3	3.9	1.3	1.3	5.3	47.4	6.6	1.3	1.3	1.3	26.3	2.6	100.0

RABIES CASES 1. 1.97 - 31. 3.97

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															
103 EISENSTADT - LAND							0	1	-	-	-	-	1		1
106 MATTERSBURG							0	1	-	-	-	-	1		1
108 OBERPULLENDORF							0	2	-	-	-	-	2		2
709 SCHWAZ	-	-	1	-	-	-	1						0		1
TOTAL	0	0	1	0	0	0	1	4	0	0	0	0	4	0	5
PER CENT	0.0	0.0	20.0	0.0	0.0	0.0	20.0	80.0	0.0	0.0	0.0	0.0	80.0	0.0	100.0
BEL BELGIUM															
LX LUXEMBOURG	-	-	1	-	-	-	1	3	-	-	-	-	3		4
NA NAMUR							0	2	-	-	-	-	2		2
TOTAL	0	0	1	0	0	0	1	5	0	0	0	0	5	0	6
PER CENT	0.0	0.0	16.7	0.0	0.0	0.0	16.7	83.3	0.0	0.0	0.0	0.0	83.3	0.0	100.0
DEU FEDERAL REPUBLIC OF GERMANY															
05 NORDRHEIN-WESTFALEN	-	-	1	-	-	-	1	12	-	-	-	-	12		13
06 HESSEN							0	5	-	-	-	-	5		5
07 RHEINLAND-PFALZ	-	1	-	-	-	-	1						0		1
09 BAYERN	-	-	-	-	1	-	1	1	-	-	-	-	1		2
10 SAARLAND	-	-	3	-	-	-	3	7	-	-	2	-	9		12
14 Sachsen							0	1	-	-	-	-	1		1
TOTAL	0	1	4	0	1	0	6	26	0	0	2	0	28	0	34
PER CENT	0.0	2.9	11.8	0.0	2.9	0.0	17.6	76.5	0.0	0.0	5.9	0.0	82.4	0.0	100.0
FRA FRANCE															
54 MEURTHE ET MOSELLE							0	-	-	-	-	1	1		1

RABIES CASES 1. 1.97 - 31. 3.97

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															
05 VIDIN	1	-	-	-	-	-	1						0		1
08 DOBRICH							0	-	-	-	-	1	1		1
19 SILISTRA	-	-	-	1	-	-	1						0		1
25 TARGOVITCHE	-	-	-	-	-	1	1	-	-	-	-	1	1		2
TOTAL	1	0	0	1	0	1	3	0	0	0	0	2	2	0	5
PER CENT	20.0	0.0	0.0	20.0	0.0	20.0	60.0	0.0	0.0	0.0	0.0	40.0	40.0	0.0	100.0
ROM ROMANIA															
20 GORJ	-	-	1	-	-	-	1						0		1
24 IASI							0	1	-	-	-	-	1		1
30 PRAHOVA							0	1	-	-	-	-	1		1
34 SUCEAVA							0	1	-	-	-	1	2		2
TOTAL	0	0	1	0	0	0	1	3	0	0	0	1	4	0	5
PER CENT	0.0	0.0	20.0	0.0	0.0	0.0	20.0	60.0	0.0	0.0	0.0	20.0	80.0	0.0	100.0
TUR TURKEY															
16 BURSA	1	-	-	-	-	-	1						0		1
27 GAZIANTEP							0	-	-	-	-	1	1		1
34 ISTANBUL	6	1	1	-	-	-	8						0		8
35 IZMIR	5	-	-	-	-	-	5						0		5
37 KASTAMONU	2	-	1	-	-	-	3						0		3
56 SIIRT	1	-	-	-	-	-	1						0		1
TOTAL	15	1	2	0	0	0	18	0	0	0	0	1	1	0	19
PER CENT	78.9	5.3	10.5	0.0	0.0	0.0	94.7	0.0	0.0	0.0	0.0	5.3	5.3	0.0	100.0

RABIES CASES 1. 1.97 - 31. 3.97

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	3	-	-	-	-	-	3	-	-	-	-	13	13		16
03 Gomel Region							0	-	-	-	-	1	1		1
04 Grodno Region	1	-	-	-	-	-	1	-	-	-	-	2	2		3
05 Minsk Region	1	1	1	-	-	-	3	-	-	-	-	3	3		6
TOTAL	5	1	1	0	0	0	7	0	0	0	0	19	19	0	26
PER CENT	19.2	3.8	3.8	0.0	0.0	0.0	26.9	0.0	0.0	0.0	0.0	73.1	73.1	0.0	100.0
LVA LATVIA															
03 Balvi							0	1	-	-	-	-	1		1
07 Dobele							0	1	-	-	-	-	1		1
08 Gulbene							0	1	-	-	-	-	1		1
09 Jekabpils							0	1	-	-	-	-	1		1
10 Jelgava							0	-	-	-	-	1	1		1
11 Kraslava							0	-	-	-	-	1	1		1
12 Kuldiga	-	1	-	-	-	-	1	1	-	-	-	-	1		2
13 Liepaja	1	-	-	-	-	-	1	-	-	-	-	1	1		2
15 Ludza	1	-	-	-	-	-	1	1	-	-	-	-	1		2
16 Madona							0	-	-	-	-	1	1		1
17 Ogre							0	1	-	-	-	-	1		1
19 Rezekne	1	-	-	-	-	-	1						0		1
20 Riga							0	2	-	-	-	-	2		2
21 Saldus							0	7	-	-	-	2	9		9
23 Tukums							0	2	-	-	-	-	2		2
25 Valmiera							0	1	-	-	-	-	1		1
26 Ventspils							0	1	-	-	-	-	1		1
TOTAL	3	1	0	0	0	0	4	20	0	0	0	6	26	0	30
PER CENT	10.0	3.3	0.0	0.0	0.0	0.0	13.3	66.7	0.0	0.0	0.0	20.0	86.7	0.0	100.0

CRO CROATIA	RABIES CASES													1. 1.97 - 31. 3.97	
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		
004 BJELOVAR	2	-	-	-	-	-	2	16	-	-	-	-	16		18
009 CRIKVENICA							0	1	-	-	-	-	1		1
017 DONJI MIHOLJAC							0	-	-	-	-	1	1		1
018 DRNIS	-	-	-	-	-	1	1	3	-	-	-	-	3		4
019 DUBROVNIK	-	-	1	-	-	-	1						0		1
021 DUGO SELO							0	1	-	-	-	-	1		1
022 DVOR							0	1	-	-	-	-	1		1
023 DAKOVO							0	1	-	-	-	-	1		1
024 DURDEVAC	-	1	-	-	-	-	1	2	-	-	-	-	2		3
025 GARESNICA							0	1	-	-	-	-	1		1
026 GLINA							0	1	-	-	-	-	1		1
029 GRUBISNO POLJE							0	1	-	-	-	-	1		1
031 IMOTSKI							0	2	-	-	-	-	2		2
032 IVANEC	-	1	-	-	-	-	1	1	-	-	-	-	1		2
034 JASTREBARSKO	-	1	-	-	-	-	1						0		1
036 KARLOVAC	-	1	-	-	-	-	1						0		1
040 KOPRIVNICA	2	-	-	-	-	-	2	12	-	-	-	-	12		14
044 KRIZEVCI							0	8	-	-	-	-	8		8
049 LUDBREG	-	1	-	-	-	-	1	1	-	-	-	-	1		2
050 MAKARSKA							0	5	-	-	-	-	5		5
052 NASICE							0	2	-	-	-	-	2		2
053 NOVA GRADISKA	-	1	-	-	-	-	1	1	-	-	-	-	1		2
054 NOVI MAROF							0	2	-	-	-	-	2		2
059 OPATIJA							0	1	-	-	-	-	1		1
062 OTOCAC							0	3	1	-	-	-	4		4
066 PAZIN							0	3	-	-	-	-	3		3
067 PETRINJA							0	2	-	-	-	-	2		2

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		
069	POREC							0	2	-	-	-	-	2		2
071	PULA							0	23	-	-	-	-	23		23
073	RIJEKA							0	4	-	-	-	-	4		4
074	ROVINJ							0	2	-	-	-	-	2		2
075	SENJ							0	9	-	-	-	-	9		9
076	SINJ							0	3	-	-	-	-	3		3
077	SISAK							0	2	-	-	-	-	2		2
078	POZEGA							0	-	-	-	-	1	1		1
079	SLAVONSKI BROD							0	1	-	-	-	-	1		1
081	SOLIN							0	2	-	-	-	-	2		2
082	SPLIT	-	-	1	-	-	-	1						0		1
083	SIBENIK							0	1	-	-	-	-	1		1
084	TITOVA KORENICA							0	-	-	-	-	1	1		1
087	VARAZDIN							0	3	-	-	-	-	3		3
088	VINKOVCI							0	5	-	-	-	1	6		6
089	VIROVITICA							0	2	-	-	-	-	2		2
092	VRBOVEC							0	14	-	-	-	-	14		14
095	VRGORAC	1	-	-	-	-	-	1						0		1
098	ZADAR	1	-	-	-	-	-	1						0		1
099	SVETI IVAN ZELINA							0	2	-	-	-	-	2		2
100	ZLATAR BISTRICA							0	2	-	-	-	-	2		2
101	ZUPANJA							0	1	-	-	-	-	1		1
102	GRAD ZAGREB	2	-	-	-	-	-	2	3	-	-	-	-	3		5
TOTAL		8	6	2	0	0	1	17	152	1	0	0	4	157	0	174
PER CENT		4.6	3.4	1.1	0.0	0.0	0.6	9.8	87.4	0.6	0.0	0.0	2.3	90.2	0.0	100.0

RABIES CASES 1. 1.97 - 31. 3.97

LOCATION CODE NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
	DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
CZH CZECH REPUBLIC															
00 DISTRICT OF PRAGUE							0	4	-	-	-	-	4		4
01 CENTRAL BOHEMIA	-	2	-	-	-	-	2	60	-	1	-	-	61		63
02 SOUTH BOHEMIA							0	15	-	-	-	-	15		15
03 WEST BOHEMIA							0	3	-	-	-	-	3		3
04 NORTH BOHEMIA							0	24	-	-	1	-	25		25
06 SOUTH MORAVIA							0	6	-	-	-	-	6		6
07 NORTH MORAVIA							0	-	-	1	-	-	1		1
TOTAL	0	2	0	0	0	0	2	112	0	2	1	0	115	0	117
PER CENT	0.0	1.7	0.0	0.0	0.0	0.0	1.7	95.7	0.0	1.7	0.9	0.0	98.3	0.0	100.0
SVK SLOVAK REPUBLIC															
1 Bratislavsky kraj							0	13	-	-	-	-	13		13
2 Trnavsky kraj	1	-	-	-	-	-	1	11	-	-	-	-	11		12
3 Trenciansky kraj	-	1	-	-	-	-	1	2	-	-	-	-	2		3
4 Nitriansky kraj	-	1	-	-	-	-	1	1	-	-	-	-	1		2
5 Zilinsky kraj							0	1	-	-	-	-	1		1
6 Banskobystricky kraj	-	1	-	-	-	-	1	6	-	-	-	-	6		7
7 Presovsky kraj	6	5	1	-	-	1	13	23	-	2	-	2	27		40
8 Kosicky kraj	-	2	-	-	-	-	2	28	-	-	-	-	28		30
TOTAL	7	10	1	0	0	1	19	85	0	2	0	2	89	0	108
PER CENT	6.5	9.3	0.9	0.0	0.0	0.9	17.6	78.7	0.0	1.9	0.0	1.9	82.4	0.0	100.0

RABIES CASES 1. 1.97 - 31. 3.97

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	2	-	-	-	-	2		2
05	Jaervamaa	1	-	-	-	-	-	1	4	-	-	-	1	5		6
07	Laeaene-Virumaa	1	-	-	-	-	-	1	2	-	-	-	1	3		4
08	Polvamaa							0	1	-	-	-	-	1		1
09	Paernumaa							0	-	-	-	-	1	1		1
10	Raplamaa							0	2	-	-	-	-	2		2
11	Saaremaa	1	-	-	-	-	-	1	1	-	-	-	3	4		5
12	Tartumaa	-	1	-	-	-	-	1						0		1
14	Viljandimaa							0	2	-	-	-	-	2		2
15	Vorumaa							0	2	-	-	-	-	2		2
TOTAL		3	1	0	0	0	0	4	16	0	0	0	6	22	0	26
PER CENT		11.5	3.8	0.0	0.0	0.0	0.0	15.4	61.5	0.0	0.0	0.0	23.1	84.6	0.0	100.0
LTU	LITHUANIA															
33	Alytaus							0	1	-	-	-	-	1		1
38	Varenos							0	-	-	-	-	1	1		1
45	Ignalinos							0	1	-	-	-	-	1		1
47	Joniskio	-	2	-	-	-	-	2						0		2
54	Kelmes							0	2	-	1	-	-	3		3
57	Kupiskio							0	1	-	-	-	-	1		1
71	Radviliskio	-	-	1	-	-	-	1						0		1
77	Taurages	-	1	-	-	-	-	1	2	-	-	-	-	2		3
91	Siauliu							0	2	-	-	-	-	2		2
94	Jurbarko	-	2	-	-	-	-	2	2	-	-	-	-	2		4
TOTAL		0	5	1	0	0	0	6	11	0	1	0	1	13	0	19
PER CENT		0.0	26.3	5.3	0.0	0.0	0.0	31.6	57.9	0.0	5.3	0.0	5.3	68.4	0.0	100.0

RABIES CASES 1. 1.97 - 31. 3.97

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		
FRY FED.REP.OF YUGOSLAVIA															
60 SR SRBIJA	2	1	-	-	-	-	3	10	-	-	-	-	10		13
61 SAP VOJVODINA	4	3	-	-	2	-	9	21	-	-	-	-	21		30
TOTAL	6	4	0	0	2	0	12	31	0	0	0	0	31	0	43
PER CENT	14.0	9.3	0.0	0.0	4.7	0.0	27.9	72.1	0.0	0.0	0.0	0.0	72.1	0.0	100.0
MLD MOLDOVA															
01 MOLDOVA	1	-	-	-	1	-	2	3	-	-	-	-	3		5
TOTAL	1	0	0	0	1	0	2	3	0	0	0	0	3	0	5
SVN SLOVENIA															
013 CERKNICA							0	1	-	-	-	-	1		1
048 KOCEVJE							0	1	-	-	-	-	1		1
054 KRSKO	-	1	-	-	-	-	1						0		1
079 MOZIRJE							0	1	-	-	-	-	1		1
080 MURSKA SOBOTA	1	-	-	-	-	-	1	1	-	-	-	-	1		2
094 POSTOJNA	-	-	1	-	-	-	1						0		1
110 SEVNICA							0	1	-	-	-	-	1		1
124 SMARJE PRI JELSAH	-	1	-	-	-	-	1						0		1
130 TREBNJE	-	1	-	-	-	-	1						0		1
145 ZALEC							0	-	-	1	-	-	1		1
TOTAL	1	3	1	0	0	0	5	5	0	1	0	0	6	0	11
PER CENT	9.1	27.3	9.1	0.0	0.0	0.0	45.5	45.5	0.0	9.1	0.0	0.0	54.5	0.0	100.0

HUN HUNGARY — RABIES CASES — 1. 1.97 - 31. 3.97

LOCATION	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
CODE NAME	DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
01 BUDAPEST							0	1	-	-	-	-	1		1
02 BARANYA	1	1	-	-	-	-	2	7	-	-	-	-	7		9
03 BACS-KISKUN	-	1	1	-	-	-	2	13	-	1	-	-	14		16
04 BEKES	2	-	-	-	-	-	2	5	-	-	-	-	5		7
05 BORSOD-ABAUJ-ZEMPLEN	-	2	-	-	-	-	2	13	-	-	-	-	13		15
06 CSONGRAD	1	-	-	-	-	-	1	6	-	-	1	-	7		8
07 FEJER	1	1	2	-	-	-	4	12	-	-	1	-	13		17
08 GYOER-SOPRON	-	-	1	-	-	-	1	3	-	-	-	-	3		4
09 HAJDU-BIHAR	-	1	-	-	-	-	1	9	-	-	-	-	9		10
10 HEVES							0	8	-	-	-	-	8		8
11 KOMAROM							0	1	-	1	-	-	2		2
12 NOGRAD							0	5	-	-	-	-	5		5
13 PEST	-	1	-	-	-	-	1	12	-	-	-	1	13		14
14 SOMOGY	1	-	-	-	-	-	1	17	-	1	1	-	19		20
15 SZABOLCS-SZAT	-	1	-	-	-	-	1	11	-	-	-	-	11		12
16 SZOLNOK							0	6	-	-	-	-	6		6
17 TOLNA							0	8	-	-	1	-	9		9
19 VESZPREM	-	1	-	-	-	-	1	10	-	-	-	-	10		11
20 ZALA							0	2	-	-	-	-	2		2
TOTAL	6	9	4	0	0	0	19	149	0	3	4	1	157	0	176
PER CENT	3.4	5.1	2.3	0.0	0.0	0.0	10.8	84.7	0.0	1.7	2.3	0.6	89.2	0.0	100.0

POL POLAND — RABIES CASES — 1. 1.97 - 31. 3.97

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	2	-	-	-	-	-	2	30	-	-	-	-	30		32
03	BIALA PODLASKA							0	1	-	-	-	-	1		1
05	BIALYSTOK	-	2	-	-	-	-	2	7	-	-	-	-	7		9
07	BIELSKO-BIALA							0	2	-	1	-	-	3		3
09	BYDGOSZCZ							0	3	-	-	-	-	3		3
13	CIECHANOW	-	1	2	-	-	-	3	17	-	1	-	1	19		22
15	CZESTOCHOWA							0	4	-	-	-	-	4		4
17	ELBLAG	-	1	1	-	-	-	2	6	-	-	-	1	7		9
19	GDANSK							0	1	-	-	-	-	1		1
23	JELENIA GORA	-	1	-	1	-	-	2						0		2
25	KALISZ							0	3	-	-	-	-	3		3
27	KATOWICE	1	2	-	-	-	-	3	3	-	-	-	-	3		6
29	KIELCE	3	1	-	-	-	-	4	33	-	-	-	-	33		37
31	KONIN							0	6	-	-	-	-	6		6
35	KRAKOW	12	3	1	-	-	-	16	109	-	3	1	-	113		129
37	KROSNO							0	3	-	-	-	-	3		3
43	LUBLIN							0	4	-	-	-	-	4		4
45	LOMZA							0	5	-	-	-	-	5		5
49	NOWY SACZ							0	2	-	-	-	-	2		2
51	OLSZTYN	-	-	2	-	-	-	2	25	-	1	-	10	36		38
53	OPOLE	-	1	-	-	-	-	1	1	-	-	-	-	1		2
55	OSTROLEKA							0	18	1	2	1	1	23		23
59	PIOTRKOW TRYB	-	1	-	-	-	-	1	6	-	-	-	-	6		7
61	PLOCK							0	6	-	-	-	-	6		6
63	POZNAN							0	2	-	-	-	-	2		2
65	PRZEMYSL	1	-	-	-	-	-	1						0		1
67	RADOM	2	1	-	-	-	-	3	7	-	1	-	-	8		11
69	RZESZOW	-	1	-	-	-	-	1	5	-	1	-	-	6		7
71	SIEDLCE	1	3	2	-	-	-	6	40	-	1	-	-	41		47
73	SIERADZ							0	2	-	-	-	-	2		2
75	SKIERNIEWICE							0	1	-	-	-	-	1		1
79	SUWALKI	-	1	-	-	-	-	1	10	-	1	-	7	18		19
83	TARNOBRZEG	1	-	-	-	-	-	1	17	-	1	-	-	18		19
85	TARNOW	2	1	-	-	-	-	3	30	-	-	2	-	32		35
87	TORUN	-	3	1	-	-	-	4	3	-	-	-	2	5		9
91	WLOCLAWEK							0	4	-	-	-	-	4		4
93	WROCLAW	-	1	-	-	-	-	1						0		1
TOTAL		25	24	9	1	0	0	59	416	1	13	4	22	456	0	515
PER CENT		4.9	4.7	1.7	0.2	0.0	0.0	11.5	80.8	0.2	2.5	0.8	4.3	88.5	0.0	100.0

RUS RUSSIAN FEDERATION — RABIES CASES — 1. 1.97 - 31. 3.97

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		
08	Pskov Region	1	-	-	-	-	-	1	-	-	-	-	1	1		2
12	Twer Region	1	-	-	-	-	-	1	3	-	-	-	-	3		4
13	Kaluga Region	1	-	-	-	-	-	1	6	-	-	-	1	7		8
15	Moscow Region	1	-	-	-	-	-	1	1	-	-	-	1	2		3
16	Oryol Region	1	-	1	-	-	-	2						0		2
17	Ruazan Region	2	2	-	-	-	-	4						0		4
18	Smolensk Region	-	5	-	-	-	-	5	12	-	-	-	-	12		17
19	Tula Region	3	-	-	-	-	-	3	4	-	-	-	-	4		7
26	Belgorod Region	1	3	1	-	-	-	5						0		5
27	Voronezh Region	6	5	3	-	-	-	14	3	-	-	-	-	3		17
28	Kursk Region	1	1	-	1	-	-	3	1	-	-	-	-	1		4
29	Lipetsk Region	6	-	-	-	-	-	6	5	-	-	-	-	5		11
31	Astrakhan Region	3	2	8	-	-	-	13	3	-	-	-	-	3		16
32	Volgograd Region	4	-	4	-	-	-	8						0		8
33	Samara Region	3	-	-	-	-	-	3						0		3
34	Penza Region	4	-	-	-	-	-	4	10	-	-	-	-	10		14
35	Saratov Region	3	2	4	-	-	-	9	2	-	-	-	-	2		11
36	Ulyanovsk Region	-	2	-	-	-	-	2						0		2
37	Republic of Kalmykiya	1	-	3	-	4	3	11						0		11
38	Republic of Tatarstan	2	1	-	1	-	-	4	1	-	-	-	-	1		5
39	Krasnodar Territory	16	4	-	-	1	-	21	1	-	-	-	-	1		22
40	Stavropol Territory	1	4	1	-	-	-	6	-	-	-	-	1	1		7
41	Rostov Region	3	-	5	-	-	-	8						0		8
42	Orenburg Region	10	7	7	-	-	-	24	2	-	-	-	-	2		26
43	Perm Region	-	-	1	-	-	-	1						0		1
44	Republic of Bashkorto	16	-	8	-	1	-	25	13	-	-	-	-	13		38
45	Republic of Odmurtiya	1	-	-	-	-	-	1						0		1
46	Kaliningrad Region	1	-	-	-	-	-	1						0		1
TOTAL		92	38	46	2	6	3	187	67	0	0	0	4	71	0	258
PER CENT		35.7	14.7	17.8	0.8	2.3	1.2	72.5	26.0	0.0	0.0	0.0	1.6	27.5	0.0	100.0

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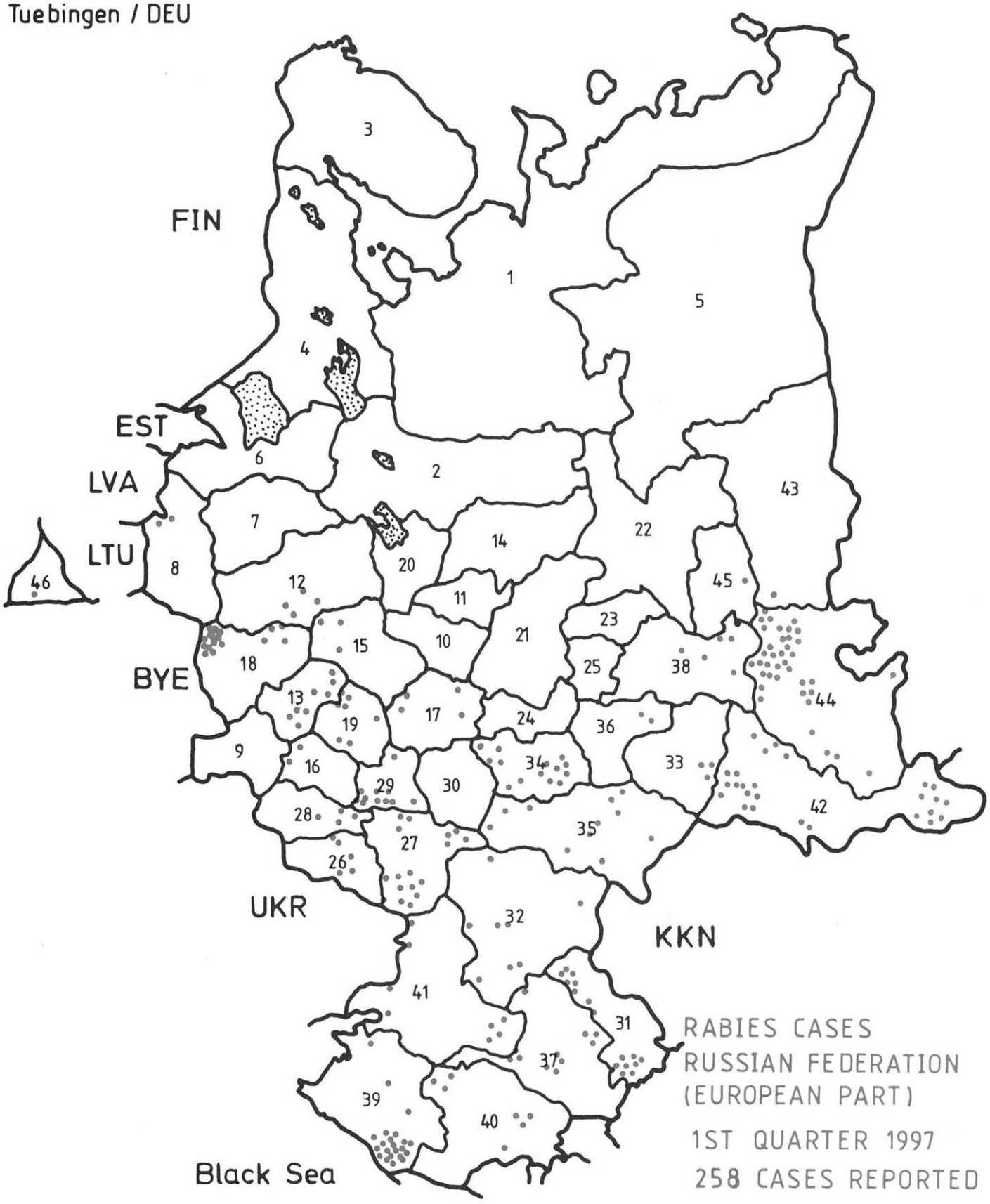

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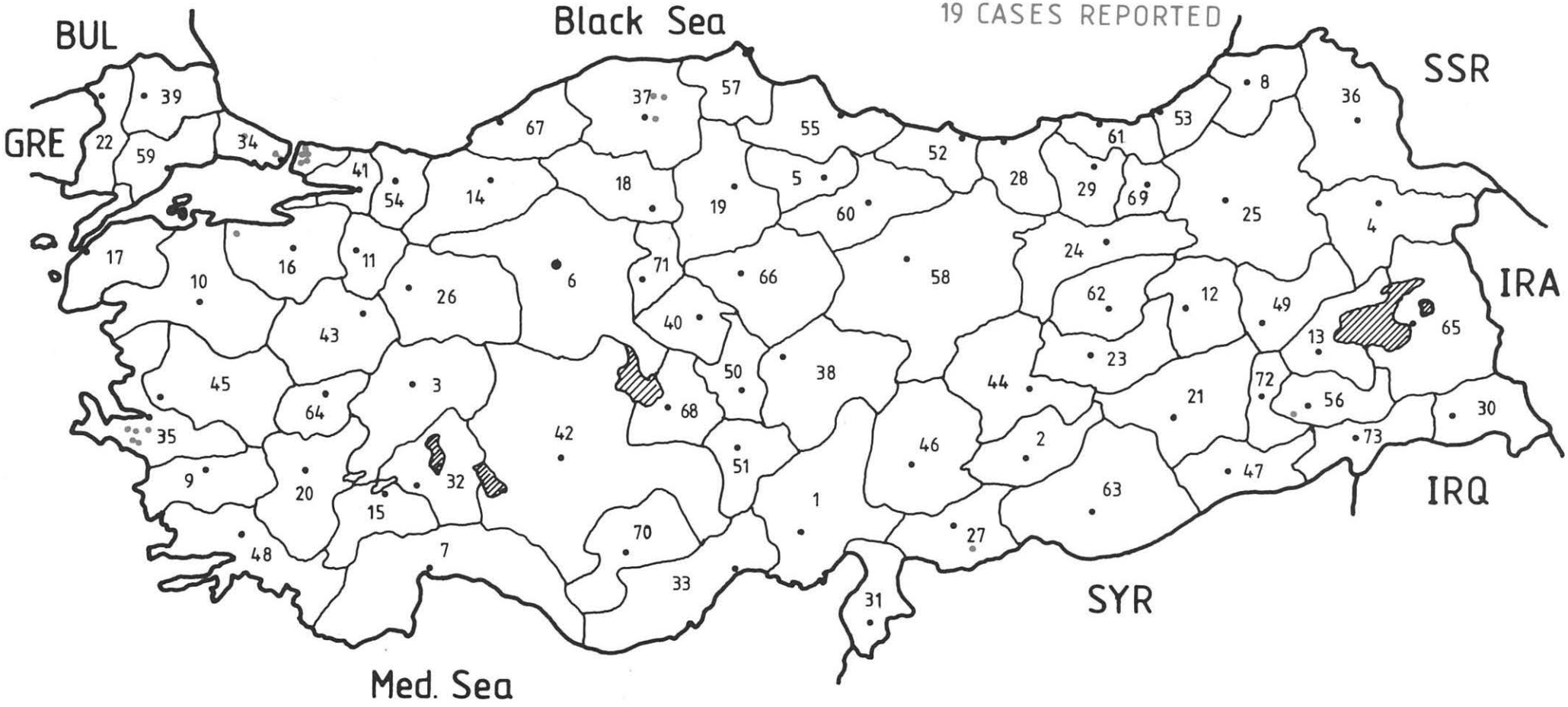
RABIES CASES TURKEY
1ST QUARTER 1997
19 CASES REPORTED



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RABIES CASES EUROPE
1ST QUARTER 1997

1583 CASES REPORTED
1 BAT RABIES CASE INCLUDED

ICE
(rabies free)

NOR
(rabies free)

FIN
(rabies free)

EST
(26)

SWE
(rabies free)

LVA
(30)

RUS
(258)

DEN
(rabies free)

LTU
(19)

RUS

BYE
(26)

IRE
(rabies free)

UNK
(0)

NET
(0)

POL
(515)

UKR
(no data)

BEL
(6)

DEU
(34)

CZH
(117)

SVK
(108)

MLD
(5)

FRA
(1)

AUT
(5)

HUN
(176)

SWI
(0)

ROM
(5)

SVN
(11)

CRO
(174)

ITA
(0)

BIH
(no data)

FRY
(43)

BUL
(5)

TYM
(rabies free)

POR
(rabies free)

SPA
(rabies free)
North Africa
(0)

ALB
(no data)

TUR
(19)

GRE
(rabies free)

0 50 100 km

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