RABIES BULLETIN EUROPE - VOL. 13/No 1/1989

C O N T E N T S

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Suggestion: Transfer of letters, tables, maps are not always of good quality on arrival, depending on the original and the apparatus; therefore, when reports are late, please make use of **TELEFAX** but send off the original report by usual mail as well!

1. INTRODUCTION

This BULLETIN describes the reported rabies cases in Europe for the first quarter 1989. The situation in general appears under 2., and in individual countries under 2.1 to 2.26.

In the miscellaneous section under 3.1 an international symposium in Italy is announced which includes a workshop on rabies. A detailed course of a human rabies case in the U.S.A. with comments on the disease history and the clinical picture is presented under 3.2. New recommendations for post-exposure treatment of rabies with cell-culture vaccine have been proposed by experts in a series of meetings organized by WHO during 1988. Under 3.3 the most important of these recommendations are summarized.

The rabies case data are tabulated for the first quarter 1989 under 4.

The last section lists the official contributors to the BULLETIN.

The geographical distribution of cases in Europe of the first quarter 1989 is shown on maps of Europe, Finland and Turkey in the Annex.

2. RABIES IN EUROPE, 1ST QUARTER 1989

During the first quarter 1989, 6269 rabies cases were reported in Europe. These were 5482 in wild animals (87.4%) and 786 in domestic animals (12.5%). Of the cases in wild animals 5063 (80.8% of total) were foxes, 48 raccoon dogs, 89 badgers, 87 stone martens, 18 pine martens, 6 polecats, 2 wolves, 1 lynx, 146 roe deer, 2 red deer, 7 fallow deer, 1 chamois, 4 wild boars, 3 European bisons, 1 bat and 4 other wild animals. Of the 786 cases in domestic animals 290 were dogs (134 = 46.2% of all dogs were reported from Turkey, a country with dog-mediated rabies), 203 cats, 112 cattle, 144 sheep, 5 goats, 24 horses, 1 donkey, 3 pigs, 1 rabbit and 3 other domestic animals. These data are summarized in Tables 1 and 2.

In comparison with the first quarter 1988 (4394 cases) Europe experienced an increase of rabies by 42.7%. The following countries had a substantial rise of rabies cases: Belgium, Czechoslovakia, German Democratic Republic, Federal Republic of Germany, France and Yugoslavia. Italy was newly infected during the third quarter 1988 and cases are on the increase.

Rabies-free countries in Europe participating in the surveillance were: Bulgaria, Iceland, Ireland, the mainland of Norway, Portugal, Sweden and the United Kingdom of Britain and Northern Ireland. There were no cases reported from Denmark, Greece, Svalbard (Norway) and Spain, but their last indigenously acquired case was recorded less than two years ago.

There was only one bat rabies case reported, from the Netherlands.

One human case occurred in Czechoslovakia, but it was imported from Vietnam.

Individual country reports follow:

2.1 Rabies in Austria (AUT)

by H. Schnabl

During the first quarter 1989, 594 rabies cases in animals were diagnosed out of 3318 samples submitted.

Compared to the previous quarter 1988 (328 animals rabid) there was an increase by 81%.

Of 577 rabid wild animals (97.1% of total) 536 were foxes (90.2%), 19 badgers (3.2%), 10 stone martens (1.7%) and 12 roe deer (2%). Of 17 domestic animals were 2 dogs (0.3%), 10 cats (1.7%) and 5 cattle (0.8%).

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

Burgenland:	29 cases (4.9% of total); no cases in the Bezirke (districts) Rust, Neusiedl, Oberwart.
Kärnten:	97 cases (16.3%); no cases in Klagenfurt-Stadt, Feldkirchen, Hermagor, Klagenfurt-Land.
Niederösterreich:	69 cases (11.6%); Bezirke affected were Bruck/Leitha, Gmünd, Krems, Melk, Wiener Neustadt, Zwettl.
Oberösterreich:	84 cases (14.1%); Bezirke affected were Freistadt, Perg, Vöcklabruck.
Salzburg:	9 cases (1.5%); Bezirke affected were Salzburg-Umgebung, Tamsweg.
Steiermark:	304 cases (51.2%); Bezirke affected were Graz-Stadt, Bruck/Mur, Deutschlandsberg, Graz-Umgebung, Hartberg, Weiz.
Tirol:	2 cases (0.3%) in Bezirk Lienz.

Free of rabies were the Bundesländer Wien and Vorarlberg.

2.2 Rabies in Belgium (BEL)

by J. Tambeur

244 rabies cases were confirmed in 134 localities of the provinces Brabant, Hainaut, Liege, Luxembourg and Namur during the first quarter 1989. 56 of these cases were in domestic animals (7 dogs, 10 cats, 19 cattle,

1 horse and 19 small ruminants) and 188 in wild animals (181 foxes, 3 badgers, 2 other mustelids and 2 roe deer).

There was an increase of cases by 11% compared to the fourth quarter 1988 and by 455% compared to the first quarter 1988.

The disease has crossed the line of the rivers Sambre/Meuse, there were four cases to the north of it.

2.3 Bulgaria (BUL)

The country remained rabies-free.

2.4 Rabies in Czechoslovakia (CZE)

by M. Olach and J. Neumann

In the first quarter of 1989 a total of 568 rabies cases in animals was ascertained in Czechoslovakaia (CSR - 498, SSR - 70). In comparison with the first quarter of 1988, the total increased by 113 cases, i.e. by 24.8%.

The wildlife species accounted for 539 cases (94.9%). They included 525 foxes, 2 badgers, 3 martens, 7 roe-deer, 1 raccoon dog and 1 wolf. The affected domestic animals included 9 dogs, 17 cats, 1 sheep, 1 Vietnamese pig and 1 domestic rabbit, i.e. 5.1% of the total number of rabies cases.

The highest number of rabies findings was ascertained in the West Bohemian Region (125 cases), followed by the North Bohemian Region (109 cases), Central Bohemian Region (93 cases), North Moravian Region (73 cases), etc. In regard to the districts, the highest incidence was found in the districts Louny and Chomutov (35 each), followed by Plzen-South (32), Benesov (23), Pribram and Decin (20 each) etc.

At present, rabies cases were recorded in 511 foci involving 85 districts in the whole territory of Czechoslovakia (446 foci in 62 districts of the CSR and 65 foci in 23 districts of the SSR).

A fatal case of rabies was diagnosed in man (Vietnamese citizen). The disease was acquired in Vietnam and the first symptoms of rabies appeared in the patient after his arrival in Czechoslovakia.

2.5 Rabies in Germany, Democratic Republic (DDR)

During the first quarter 1989, 941 rabies cases were diagnosed in animals in the Democratic Republic of Germany, 94 cases more than during the previous quarter and 467 cases more in comparison with the first quarter 1988. Of the 941 cases 739 (78.5% of total) were in foxes, 9 in badgers, 36 in other mustelids, 36 in roe deer, one in a wild boar. There were 120 cases in domestic animals (51 dogs, 49 cats, 2 cattle, 2 horses, 15 sheep and 1 ferret).

Of the 15 departments (Bezirke) only one (Hauptstadt Berlin) was rabies-free, 2 Bezirke had more than 100 cases (Dresden = 164, Halle = 104).

2.6 Rabies in Denmark (DEN)

by E. Stougaard

During the first quarter 1989, no case of bat rabies was reported in Denmark.

The country remained rabies free in terrestrial animals.

2.7 Rabies in Germany, Federal Republic (DEU)

A total of 1068 rabies cases were reported during the first quarter 1989, 145 cases more than during the previous quarter and 331 cases more compared to the first quarter 1988. Of the total 989 cases were in wild animals (874 foxes, 27 badgers, 20 stone martens, 6 pine martens, 1 polecat, 51 roe deer, 1 red deer, 7 fallow deer, 1 wild boar, 1 European Bison), 79 cases were in domestic animals (13 dogs, 20 cats, 21 cattle, 22 sheep, 3 goats).

The three city states Hamburg, Bremen, Berlin (West) and the state Schleswig-Holstein recorded no cases.

In general, figures kept at level in the other states due to practicing oral vaccination of foxes, except for the state of Hessen where the figure increased. Considering the number of rabies cases in relation to the total of the Federal Republic of Germany during the first quarters 1984 to 1987, the state of Hessen accounted for between 15 and 20%. The percentage increased in the first quarter 1988 to 27% and was 55% during the reporting period (593 cases out of 1068).

Since field trials of oral vaccination of foxes against rabies were started in the Federal Republic of Germany, rabies cases have not dropped continuesly in all areas. There have been set-backs in as much as rabies cases increased in previously vaccinated areas or rabies-free areas became reinfected. Most of these set-backs could be traced to lack of funds, wrong policy (not vaccinated half-annually, too few vaccine baits per km^2), negligent surveillance or little cooperation between neighbours during vaccination campaigns. Though there seems to be no need for the correction of recommended strategies, it appears that, in general, efforts to motivate all participating parties need to be increased so as not to hamper the method.

2.8 Rabies in Finland (FIN)

by S. Reinius

During the first quarter 1989, 6 positive rabies cases out of 333 examined animals were registered compared to 24 out of 685 examined animals in the last quarter of 1988. All cases were recorded in wildlife (4 raccoon dogs and 2 red foxes). One case involved human exposure.

All cases occured in the province of Kymi.

Only one case was recorded in the area where the oral vaccination campaign was carried out in September and October 1988. The other 5 cases were recorded south-east of the vaccination area. The oral vaccination campaign was repeated in April 1989 in an area of appr. 8000 km^2, which is about three times as big as the area that was vaccinated previously.

2.9 Rabies in France (FRA)

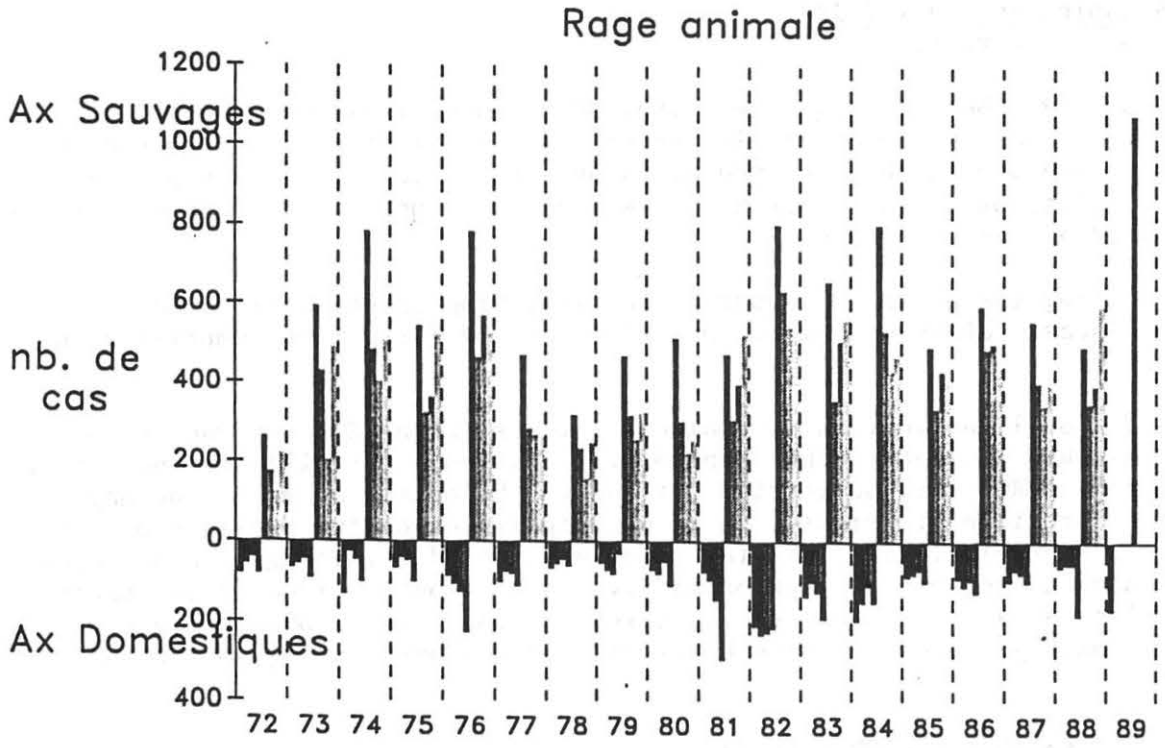
by J. Blancou

1252 rabies cases were registered during the first quarter 1989, 468 more than during the previous quarter. 1050 cases were noted in the fox (84% of total), 33 in other wild animals and 169 in domestic animals (17 dogs, 23 cats, 38 cattle, 77 small ruminants, 13 horses and 1 llama).

This first quarter 1989 was a 'historical' peak for a single quarter in France (see histogram).

The departments (départements) registering the greatest number of cases during this quarter were: Cote d'Or (172 cases), Meurthe et Moselle (141 cases) Meuse (107 cases) and Nièvre (100 cases).

Oral vaccination of foxes is going to be carried out in April and May 1989 in 8 départements of border areas, namely Lorraine and in alpine regions comprising a total of 12 699 km². The zones previously vaccinated (1987-1988) resisted the extension of rabies into these areas satisfactorily.



2.10 Rabies in Greece (GRE)

by A. Saravanos

During the first quarter of 1989, no case of rabies was reported in Greece.

2.11 Rabies in Hungary (HUN)

by L. Koltai

During the first quarter 1989, 350 rabies cases were registered in Hungary, 14.8% less than during the same period of last year (411 cases). The percentages of foxes involved in the disease were as follows: 1/1988 = 86.6% and 1/1989 = 80.3%.

The greatest density of cases were again found in the south-west of the country: Somogy 52 cases, Zala and Vas 35 cases each.

2.12 Iceland (ICE)

The country remained rabies-free.

2.13 Ireland (IRE)

The country remained rabies-free.

2.14 Rabies in Italy (ITA)

by S. Prosperi

During the first quarter 1989, 38 cases of rabies have been diagnosed, all of them in foxes: 30 in the province of Trieste, 7 in the province of Gorizia and one in the province of Udine. The latter case was reported in the municipality of Gemona, approx. 15 km away from the border of Yugoslavia, and remained an isolated case.

During the prevailing quarter the following epidemic trend was observed: the disease affected 7 municipalities for the first time comprising an area of 159 km².

The oral vaccination programme for foxes (using SAD B19 vaccine produced by the WHO Collaborating Centre for Rabies, Surveillance and Research, Tübingen, FRG) will be carried out during the months of April and May in the entire province of Trieste, in 21 municipalities of the province of Gorizia, and 33 municipalities of the province of Udine. The geographic area represents a cordon of approximately 25 km from the Yugoslavian border and comprises an area of 1,600 km², located at less than 1,700 m above sea level. Approximately 30,000 vaccine-baits will be employed during spring and autumn 1989.

2.15 Rabies in Luxembourg (LUX)

by F. Kons

Though rabies cases decreased tremendously after oral vaccination was applied in the country, for the first quarter 1989 a set-back was registered. There were 5 cases in foxes, 3 in the centre and 2 in the western part of the country.

To control the new outbreak a focal vaccination (oral vaccination) is intended toward end of May 1989.

Should the focal vaccination not show the intended success, a revaccination of the whole country is considered during autumn 1989 or spring 1990.

2.16 Rabies in the Netherlands (NET)

by J.H.M. Nieuwenhuijs

During the first quarter of this year, one bat was found positive. The bat was captured in the city Almelo (province Overijssel) after a two year old child had been bitten.

As soon as the rabies diagnosis was confirmed, the child received post-exposure treatment.

In this quarter 99 animals have been investigated (see table). Thirty one young red foxes however are still under investigation. The results of the tests (mouse tests) will be presented later. These young animals are not investigated with the IF-test because:

- the parents were found negative;
- in some cases the brain material was not enough for both the IF and mouse test.

Animals investigated for rabies; 1e quarter of 1989.

Province	Red fox adult neg.	Red fox young neg.	Cat neg.	Marten neg.	Badger neg.	Muskrat neg.	Rat neg.	Bat neg.	Bat pos.	Number investigated per prov.
Groningen	11							2		13
Friesland								4		4
Drenthe	22							3		25
Overijssel	3								1	4
Gelderland	3		3					9		15
Utrecht	1							2		3
Flevoland										
N-Holland			1					1		2
Z-Holland								7		7
Zeeland										
N-Brabant								1		1
Limburg	17	1		1	4	1	1			25
Total Number	57	1	4	1	4	1	1	29	1	99

Total number of animals sent in: 133.

Three red foxes adult were not suitable for investigation.
The investigation of thirty one red foxes young with the mouse test is not yet concluded; results of these tests will be presented later.

2.17 Rabies in Norway (NOR)

by H.O. Bach-Gansmo

No case of rabies has been reported in Svalbard during the first quarter 1989.

The mainland remained rabies-free.

2.18 Rabies in Poland (POL)

A total of 457 cases of rabies was reported in Poland during the first quarter 1989, 5 cases less than in the previous quarter and 33 cases more than in the first quarter 1988.

400 cases were registered in wild animals (87.5% of total) - 314 foxes, 43 raccoon dogs, 7 badgers, 10 pine martens, 1 polecat, 22 roe deer, 1 red deer, 2 European bisons; and 57 in domestic animals - 28 dogs, 24 cats, 2 cattle, 1 horse, 1 sheep, 1 other domesticated carnivore.

Of 49 provinces (voivodeships) 42 were infected during the said period. Free of rabies were 3 provinces in the central part of the country (Lodz, Sieradz, Piotrkow), 3 in the south-east (Tarnow, Rzeszow, Krosno) and 1 at the polish/russian border (Biala Podlaska). The distribution of cases in the infected provinces resembled the one in the previous quarter: there was a concentration of cases in the western half of the country.

2.19 Portugal (POR)

The country remained rabies-free.

2.20 Rabies in Romania (ROM)

Nine rabies cases were diagnosed in Romania during the first quarter 1989: 1 dog, 1 cat, 2 cattle, 1 sheep, 1 fox and 3 other wild animals.

The rabies cases occurred in the northern half of the country in the following provinces: Botosani (2), Suceava (1), Mures (3), Alba (2) and Covasna (1).

2.21 Rabies in Spain (SPA)

by J.L. de Filipe

During the first quarter 1989, the mainland of Spain remained rabies-free in terrestrial animals.

There was no case of bat rabies reported and there was no case of rabies in the Spanish territory in North Africa (Ceuta and Melilla).

2.22 Sweden (SWE)

The country remained rabies-free.

2.23 Rabies in Switzerland (SWI)

by A.I. Wandeler

During the first quarter of 1989, the Swiss Rabies Diagnostic Center received 603 animals for examination. 13 (2.2%) of these were positive for rabies compared to 16 (2.2% of 729) in the previous quarter and 40 (7.2% of 552) in the first quarter of 1988. 11 were observed in foxes and 2 in badgers. Three bats examined with immunofluorescence and i.c. inoculation into suckling mice revealed no rabies virus.

One rabid fox originated in the lower Rhone Valley of canton Valais, all others from the Jura mountains in northwestern Switzerland, relatively close to the Swiss-French border.

No bite exposures of humans to proven rabid animals were recorded in the fourth quarter of 1988. The number of people treated for non-bite exposures is not recorded.

2.24 Rabies in Turkey (TUR)

During the first quarter 1989, 162 rabies cases were reported from Turkey. There were 161 cases in domestic animals (134 dogs, 7 cats, 10 cattle, 4 horses, 5 sheep, 1 donkey) and only one in a wild animal, a wolf. There has been an increase by 16 cases compared to the previous quarter but a decrease by 45 cases compared to the first quarter 1988.

Out of 67 provinces 38 were reported infected. Three had more than 10 rabies cases (Sakarya-16, Izmir-16, Istanbul-12), all others registered less than 10.

2.25 United Kingdom (UNK)

The country remained rabies-free.

2.26 Rabies in Yugoslavia (YUG)

560 cases of rabies were reported in Yugoslavia during the first quarter 1989. Of these were 506 in foxes (90.4% of total) and 25 in other wild animals. 29 rabies cases occurred in domestic animals (5 dogs, 15 cats, 5 cattle, 3 horses and 1 sheep).

The distribution of cases was similar to the one in the previous quarter. There was a concentration of cases in Slovenia, taking the greatest share of cases (356 = 63.6% of total). Croatia recorded 157 cases, Bosnia and Hercegovina 20, Wojwodina 26 and only 1 case was reported in Serbia.

During the first quarter 1989, rabies cases increased compared to the previous quarter (473) by 87 and compared to the same period last year (347) by 213.

3. MISCELLANEOUS

3.1 Information

Perugia-Mantova, Italy, October 2-6, 1989

The World Association of Veterinary Microbiologists, Immunologists and Specialists in Infectious Diseases (W.A.V.M.I.) is holding its 11th International Symposium at Perugia under the heading:

"The most diffusive infectious diseases of animals in 1992 and after".

Of 10 workshops one deals entirely with RABIES.

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3.2 Human Rabies - Oregon, U.S.A. 1989

[The following text is taken from 'Morbidity and Mortality Weekly Report', May 19, 1989/Vol. 38/No. 19, produced by Centers for Disease Control, Atlanta, Georgia 30333, USA. The original contains additionally a list of contributing informants to the case as well as 16 references supplementing the editorial note.]

On February 7, 1989, rabies was identified as the cause of death in an 18-year-old Mexican man who had died 4 days earlier of acute encephalitis in Oregon. He had no known exposure to the disease. This was the first case of human rabies in the United States since 1987 and the first in Oregon since 1978.

The patient was well until January 17, 1989, when he developed fever, nausea, vomiting, dyspnea, and cough. On January 22, he was treated at a local emergency room for bronchitis. On January 24, he went to another clinic with complaints of chills, myalgias, and sore throat and was diagnosed as having a viral upper respiratory illness. He was admitted to a Portland, Oregon, hospital on January 26 with fever, chills, and localized periumbilical pain suggesting acute appendicitis; during the next 2 days, the pain continued. Although his fever persisted, serial peripheral white cell counts remained normal. Ultrasound and two computerized axial tomography (CAT) scans of his abdomen were normal.

On January 28, the patient developed vertigo and subsequent acute obtundation. CAT scan of his head was normal; however, examination of the cerebrospinal fluid (CSF) revealed a mild pleocytosis with 9 white blood cells/mm^3 (8% segmented polymorphonuclear cells, 78% lymphocytes, 10% macrophages, and 4% monocytes) and 10 red blood cells/mm^3. The CSF glucose level was 81 mg/dL, and protein was 39 mg/dL. Tests on spinal fluid, blood, urine, sputum, and stool were negative for bacterial, fungal, viral, and mycobacterial pathogens. An electroencephalogram revealed mild to moderate slowing of electrical activity and did not suggest herpes encephalitis. On

January 30, he had areflexia of all his deep tendons and asymmetrical palsies of cranial nerves VII and XII; that day, the patient had a cardiopulmonary arrest. He died February 3.

Although the possibility of rabies had been considered during hospitalization, specific diagnostic tests were not obtained until after the patient died. Direct fluorescent antibody staining of brain tissue collected at autopsy and submitted to the Oregon Public Health Laboratroy was positive for rabies virus. Monoclonal antibody testing by CDC determined the antigenic pattern of the vitrus was the one found in areas of Latin America with enzootic canine rabies and in areas of California with enzootic skunk rabies.

During the 72 hours after diagnosis, extensive interviews were conducted with the patient's co-workers in Oregon, including two who originally traveled with him from Michoacán, Mexico. In March 1988, 11 months before onset of symptoms, the patient and his companions had driven by car from Michoacán through California to Oregon. Except for two trips to Washington in September and December of 1988, the patient had remained in northern Oregon, where he worked as an agricultural laborer. Interviewsm failed to identify a possible source of rabies exposure. Mexican health officials conducted an investigation in the patient's home area but found no additional information on possible exposures to rabies. Postexposure rabies prophylaxis was recommended for seven of his co-workers and two hospital workers who reported nonbite exposures to the patient's saliva.

MMWR's Editorial Note: As human rabies has decreased in the United States, the proportion of rabies patients with no known exposures to rabid animals has increased. Between 1960 and 1979, a source of infection was not identified in 16% (6/38) of U.S. rabies cases. Since 1980, the proportion has increased to 60% (6/10); none of the three most recent patients reported exposure. Of the 38 human cases during 1960-1979, rabies was diagnosed before death in 30 (79%), in contrast to only 40% of the five most recent cases. Rabies is often not considered in the differential diagnosis in persons with no known recent exposure to animals.

It was unlikely that this patient's infection was acquired in Oregon for the following reasons. First, antigenic typing of the rabies virus, which can help determine the geographic source of infection, suggested that infection had occurred in areas of Latin America with enzootic dog rabies or areas of California with enzootic skunk rabies. Although the patient might have been bitten by a skunk during his 2-day trip through California, his traveling companions were unaware of such an event. Second, Oregon surveillance data since 1984 show that none of 33 skunks tested were positive for rabies. Based on this information and on the absence of reported indigenous skunk rabies in Oregon since 1966, Mexico was considered the most likely source of exposure. Regardless of whether the patient was exposed in Mexico or California, the incubation period would have exceeded 10 months.

For this patient, specific diagnostic tests for rabies might have been delayed because the initial clinical presentation suggested respiratory and gastrointestinal infection. Although respiratory tract infection is the most common diagnosis initially considered in patients with rabies, it was present in <20% of cases in one review.

Although only six cases of human-to-human rabies transmission-all in cornea transplant patients- have been well documented, there is a

theoretical risk of human-to-human transmission by bites or direct saliva contact to mucous membranes or broken skin. This risk, although low, was of sufficient concern that postexposure prophylaxis was recommended for nine persons in the Oregon case.

For this episode, only a small proportion of health-care workers and other persons received postexposure prophylaxis. In contrast, for the 10 U.S. cases from 1977 to 1979, an average of 49 contacts per patient were treated. An average of 92 contacts per case for four recent U.S. human rabies cases received prophylaxis. However, hospitals are moving toward the implementation of universal precautions; this practice may help explain why so few health-care workers in Oregon needed prophylaxis.

3.3 WHO Recommendations - Rabies Treatment

New recommendations for post-exposure treatment of rabies with cell-culture vaccine have been proposed by experts in a series of meetings organized by WHO during 1988. The need for revised treatment practices was triggered by the observed occurence of rabies in some persons after post-exposure treatment. The new recommendations, with particular emphasis on post-exposure treatment in countries where canine rabies is enzootic, will be considered for inclusion in the report of the next WHO Expert Committee on Rabies. Implementation of the recommendations will depend on the epidemiology of the disease and on local socioeconomic conditions, as well as on the cost and availability of different vaccine formulations and serum preparations.

Post-exposure treatment

The recommendations for post-exposure treatment re-emphasize the importance of immediate and appropriate local wound treatment, and simultaneous and proper application of vaccine and immunoglobulin.

Regarding vaccine and immunoglobulin administration, the following points are stressed:

(a) The vaccine should be administered into the deltoid muscle in adults and the antero-lateral zone of the thigh in small children whereas inoculation into the gluteal region should be discouraged.

(b) Rabies antibody preparations (human rabies immunoglobulin, or equine rabies immunoglobulin) may be administered in anticipation of active immunization only under exceptional circumstances (e.g. in the absence of vaccine). If rabies immunoglobulin has been administered prior to the vaccine, the first dose of vaccine should be increased to double or triple the normal amount and administered into several locations.

(c) Increasing the initial dose of vaccine should be considered for patients at higher risk such as those with underlying chronic disease(e.g. liver cirrhosis), patients who are immunodeficient, immunosuppressed or severely malnourished. Increased initial dose might also be required for patients starting treatment after a delay of at least 48 hours or when rabies immunoglobulin is indicated but unavailable.

(d) A skin test is required when equine serum (equine rabies serum or equine immunoglobulin) is used. However, a positive reaction should not necessarily be regarded as a contraindication provided that all necessary precautions are taken (adrenalin, antihistamins, etc.).

The duration of the post-exposure treatment can be shortened through selected multisite post-exposure regimens with potent vaccines (>2.5 IU/ml), administered in association with rabies immunoglobulin whenever indicated. The recommended shortened regimens are:

(a) The 2-1-1 dose intramuscular schedule with 2 doses (1 ml each) into each deltoid region at day 0 followed by 1 dose at day 7 and 1 dose at day 21.

(b) The multisite (e.g. 8 or 4 sites) intradermal schedule as currently used in Thailand, at days 0, 3, 7 plus 1 or 2 site(s) on day 30, but only in vaccination centres with staff well trained for intradermal injection. This regimen requires less than 2 ml of vaccine in total.

Classification of injuries

It was also suggested that the categories of injuries, adopted by the rabies committee of the Thai Red Cross in 1987, be considered for incorporation into the current WHO guide for rabies post-exposure treatment:

Category I: Touching or feeding animals, licking by dog of healthy skin with no open wound, and no documented contact of dog saliva with mucous membrane.

Category II: Nibbling of uncovered skin, superficial scratch that does not break the skin, licking over broken skin or healing wounds, and situations as in Category I, but with unreliable history.

Category III: Single or multiple transdermal bite or scratch which penetrates the skin, at any location; lick over mucous membrane.

It should be noted that this classification does not distinguish between bites over covered and uncovered areas since a bite through clothing may still be severe and sufficient saliva may have entered the wound in spite of the covering cloth.

Research

Future research should include a cost-benefit analysis of rabies pre-exposure immunization by the intradermal route in developing countries, focusing on children in hyperendemic countries. Other research projects should aim at further reducing the number of visits required for treating the patient, e.g. through application of the 3-1 doses schedule (i.e. 3 ml in 2 sites [deltoid regions] on day 0, 1 ml on day 7), the replacement of human rabies immunoglobulin by rabies monoclonal antibodies and selection of the most effective monoclonal antibody (anti-G or anti-RNP) for post-exposure prophylaxis. The efficacy of interferon should be investigated in clinical trials.

Other recommendations

Human rabies cases reported in patients who received post-exposure treatment (whatever the lapse of time between exposure and death) should not be considered as vaccine failures unless careful analysis of all circumstances of the exposure and modalities of treatment indicates that the only explanation for the occurrence of the disease was the lack of efficacy of the vaccine. Antigenic analysis of isolates from these cases should be carried out.

Post-exposure vaccination of domestic animals, which is common even in regions with a high incidence of canine rabies, should be discouraged since it does not provide protection after severe exposure and it creates a false sense of security among owners of animals who may be subjected to further risk of infection.

(Taken from Weekly Epidemiological Record: No. 15-14 April 1989, World Health Organisation, Geneva - The full report of the Consultation (**European bat rabies, post-exposure treatment and potency testing for rabies vaccines,** Essen, Federal Republic of Germany, July 1988 - unpublished document WHO/Rab.Res./88.30) can be obtained from: Chief, Veterinary Public Health, World Health Organization, 1211 Geneva 27, Switzerland).

TABLE 1

EUR EUROPE 1/89	RABIES CASES													1. 1.89 - 31. 3.89	
LOCATION	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
CODE NAME	DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
AUT AUSTRIA	2	10	5	-	-	-	17	536	19	10	12	-	577		594
BEL BELGIUM	7	10	19	1	19	-	56	181	3	2	2	-	188		244
BUL BULGARIA *							0						0		0
CZE CZECHOSLOVAKIA 1)	9	17	-	-	1	2	29	525	2	3	7	2	539	1	569
DDR GERMAN DEM. REPUBLIC	51	49	2	2	15	1	120	739	9	36	36	1	821		941
DEN DENMARK *							0						0		0
DEU FED.REP. OF GERMANY	13	20	21	-	25	-	79	874	27	27	59	2	989		1068
FIN FINLAND							0	2	-	-	-	4	6		6
FRA FRANCE	17	23	38	13	77	1	169	1050	8	17	5	3	1083		1252
GRE GREECE *							0						0		0
HUN HUNGARY	23	27	8	-	4	2	64	281	-	-	4	1	286		350
ICE ICELAND *							0						0		0
IRE IRELAND *							0						0		0
ITA ITALY							0	38	-	-	-	-	38		38
LUX LUXEMBOURG							0	5	-	-	-	-	5		5
NET NETHERLANDS							0	-	-	-	-	1	1		1
NOR NORWAY *							0						0		0
POL POLAND	28	24	2	1	1	1	57	314	7	11	23	45	400		457
POR PORTUGAL *							0						0		0
ROM ROMANIA	1	1	2	-	1	-	5	1	-	-	-	3	4		9
SPA SPAIN *							0						0		0
SWE SWEDEN *							0						0		0
SWI SWITZERLAND + LIECHT							0	11	2	-	-	-	13		13
TUR TURKEY	134	7	10	4	5	1	161	-	-	-	-	1	1		162
UNK UNITED KINGDOM *							0						0		0
YUG YUGOSLAVIA	5	15	5	3	1	-	29	506	12	5	7	1	531		560
TOTAL	290	203	112	24	149	8	786	5063	89	111	155	64	5482	1	6269
PER CENT	4.6	3.2	1.8	0.4	2.4	0.1	12.5	80.8	1.4	1.8	2.5	1.0	87.4	0.0	100.0

* NO CASES, 1) HUMAN CASE ACQUIRED IN VIETNAM.

TABLE 2

EUR EUROPE 1/89

RABIES CASES
'OTHER ANIMAL SPECIES'

1. 1.89 - 31. 3.89

LOCATION CODE	NAME	OTHER DOMESTIC ANIMALS							OTHER WILD ANIMALS								TOTAL
		FERRET	OTH.DO CARNIV	DONKEY	VIET. PIG	PIG	LAMA	DOMEST RABBIT	WOLF	RACOON DOG	LYNX	WILD BOAR	EUROP BISON	CHAMOIS	INSECT BAT	OTHER	
CZE	CZECHOSLOVAKIA	-	-	-	1	-	-	1	1	1	-	-	-	-	-	-	4
DDR	GERMAN DEM. REPUBLIC	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2
DEU	FED.REP. OF GERMANY	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	2
FIN	FINLAND	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	4
FRA	FRANCE	-	-	-	-	-	1	-	-	-	1	1	-	1	-	-	4
HUN	HUNGARY	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	3
NET	NETHERLANDS	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
POL	POLAND	-	1	-	-	-	-	-	-	43	-	-	2	-	-	-	46
ROM	ROMANIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3
TUR	TURKEY	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	2
YUG	YUGOSLAVIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
TOTAL		1	1	1	1	2	1	1	2	48	1	4	3	1	1	4	72
PER CENT		1.4	1.4	1.4	1.4	2.8	1.4	1.4	2.8	66.7	1.4	5.6	4.2	1.4	1.4	5.6	100.0

AUT AUSTRIA — RABIES CASES — 1. 1.89 - 31. 3.89

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		
103	EISENSTADT - LAND							0	1	-	-	-	-	1		1
104	GUESSING	-	1	-	-	-	-	1	4	-	-	-	-	4		5
105	JENNERSDORF							0	1	-	-	-	-	1		1
106	MATTERSBURG							0	9	-	-	-	-	9		9
108	OBERPULLENDORF							0	13	-	-	-	-	13		13
202	VILLACH-STADT							0	2	-	-	-	-	2		2
205	SANKT VEIT AN DER GL	1	-	-	-	-	-	1	26	-	-	-	-	26		27
206	SPITTAL AN DER DRAU	1	1	-	-	-	-	2	12	1	-	-	-	13		15
207	VILLACH-LAND							0	2	-	-	-	-	2		2
208	VOELKERMARKT	-	-	1	-	-	-	1	22	-	-	-	-	22		23
209	WOLFSBERG							0	26	1	-	1	-	28		28
307	BRUCK AN DER LEITHA							0	2	-	-	-	-	2		2
309	GMUEND							0	2	-	-	-	-	2		2
313	KREMS AN DER DONAU-L	-	2	-	-	-	-	2	13	-	1	-	-	14		16
315	MELK							0	6	-	1	-	-	7		7
323	WIENER NEUSTADT-LAND							0	26	-	-	-	-	26		26
325	ZWETTL							0	14	-	2	-	-	16		16
406	FREISTADT							0	7	1	-	-	-	8		8
411	PERG							0	15	-	-	-	-	15		15
417	VOECKLABRUCK	-	1	-	-	-	-	1	53	6	1	-	-	60		61
503	SALZBURG-LAND	-	1	-	-	-	-	1	1	-	1	-	-	2		3
505	TAMSWEG	-	-	1	-	-	-	1	5	-	-	-	-	5		6
601	GRAZ-STADT							0	2	-	-	-	-	2		2
602	BRUCK AN DER MUR							0	6	1	-	-	-	7		7
603	DEUTSCHLANDSBERG							0	2	-	-	-	-	2		2
605	FUERSTENFELD							0	1	-	-	-	-	1		1
606	GRAZ-LAND							0	7	1	-	1	-	9		9
607	HARTBERG							0	109	3	-	4	-	116		116
608	JUDENBURG							0	2	-	-	-	-	2		2
609	KNITTELFELD							0	3	-	-	-	-	3		3
610	LEIBNITZ							0	10	-	-	-	-	10		10
611	LEOBEN							0	2	1	-	-	-	3		3
612	LIEZEN	-	1	-	-	-	-	1	19	-	1	2	-	22		23
613	MUERZZUSCHLAG							0	1	-	-	-	-	1		1
614	MURAU	-	1	1	-	-	-	2	12	-	-	-	-	12		14
616	VOITSBERG							0	1	-	-	-	-	1		1
617	WEIZ	-	2	2	-	-	-	4	96	4	2	4	-	106		110
707	LIENZ							0	1	-	1	-	-	2		2
TOTAL		2	10	5	0	0	0	17	536	19	10	12	0	577	0	594
PER CENT		0.3	1.7	0.8	0.0	0.0	0.0	2.9	90.2	3.2	1.7	2.0	0.0	97.1	0.0	100.0

RABIES CASES 1. 1.89 - 31. 3.89

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		
BEL	**BELGIUM**															
BR	BRABANT							0	1	-	-	-	-	1		1
HH	HAINHAUT							0	1	-	-	-	-	1		1
LG	LIEGE	4	-	2	1	3	-	10	55	1	1	-	-	57		67
LX	LUXEMBOURG	2	2	9	-	6	-	19	85	1	-	-	-	86		105
NA	NAMUR	1	8	8	-	10	-	27	39	1	1	2	-	43		70
TOTAL		7	10	19	1	19	0	56	181	3	2	2	0	188	0	244
PER CENT		2.9	4.1	7.8	0.4	7.8	0.0	23.0	74.2	1.2	0.8	0.8	0.0	77.0	0.0	100.0
FIN	**FINLAND**															
05	KYMI							0	2	-	-	-	4	6		6
LUX	**LUXEMBOURG**															
05	MERSCH							0	1	-	-	-	-	1		1
06	CLERVAUX							0	1	-	-	-	-	1		1
07	DIEKIRCH							0	1	-	-	-	-	1		1
08	REDANGE							0	1	-	-	-	-	1		1
09	WILTZ							0	1	-	-	-	-	1		1
TOTAL		0	0	0	0	0	0	0	5	0	0	0	0	5	0	5
NET	**NETHERLANDS**															
08	OVERIJSSEL							0	-	-	-	-	1	1		1

CZE C Z E C H O S L O V A K I A R A B I E S C A S E S 1. 1.89 - 31. 3.89

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		
00	DISTRICT OF PRAGUE							0						0	1	1
01	CENTRAL BOHEMIA	-	2	-	-	-	2	4	89	-	-	-	-	89		93
02	SOUTH BOHEMIA	1	-	-	-	-	-	1	28	-	-	-	-	28		29
03	WEST BOHEMIA	1	4	-	-	-	-	5	116	-	2	2	-	120		125
04	NORTH BOHEMIA	2	4	-	-	-	-	6	101	1	-	1	-	103		109
05	EAST BOHEMIA	-	1	-	-	-	-	1	27	-	-	-	-	27		28
06	SOUTH MORAVIA							0	39	1	-	1	-	41		41
07	NORTH MORAVIA	-	2	-	-	-	-	2	68	-	1	1	1	71		73
0	CZECH SOCIALIST REPUBL	4	13	-	-	-	2	19	468	2	3	5	1	479	1	499
10	DISTRICT OF BRATISLAV							0						0		0
11	WEST SLOVAKIA	-	1	-	-	-	-	1	6	-	-	1	-	7		8
12	CENTRAL SLOVAKIA	3	1	-	-	-	-	4	26	-	-	-	-	26		30
13	EAST SLOVAKIA	2	2	-	-	1	-	5	25	-	-	1	1	27		32
1	SLOVAC SOCIALIST REPUB	5	4	-	-	1	-	10	57	-	-	2	1	60		70
TOTAL		9	17	0	0	1	2	29	525	2	3	7	2	539	1	569
PER CENT		1.6	3.0	0.0	0.0	0.2	0.4	5.1	92.3	0.4	0.5	1.2	0.4	94.7	0.2	100.0

DDR GERMAN DEMOCRATIC REPUBLIC — RABIES CASES — 1. 1.89 - 31. 3.89

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	HAUPTSTADT BERLIN							0						0		0
02	COTTBUS	5	3	-	-	1	1	10	61	-	3	5	1	70		80
03	DRESDEN	1	7	-	2	4	-	14	137	2	7	4	-	150		164
04	ERFURT	-	2	-	-	1	-	3	70	1	1	3	-	75		78
05	FRANKFURT/ODER	2	4	-	-	2	-	8	74	2	1	5	-	82		90
06	GERA	1	-	1	-	3	-	5	26	1	1	1	-	29		34
07	HALLE	12	14	-	-	1	-	27	66	-	5	6	-	77		104
08	KARL-MARX-STADT	1	1	-	-	-	-	2	26	-	3	2	-	31		33
09	LEIPZIG	-	1	-	-	-	-	1	36	1	1	2	-	40		41
10	MAGDEBURG	1	1	-	-	-	-	2	48	-	-	2	-	50		52
11	NEUBRANDENBURG	7	1	-	-	-	-	8	29	-	2	-	-	31		39
12	POTSDAM	7	7	-	-	1	-	15	59	-	2	1	-	62		77
13	ROSTOCK	8	1	-	-	2	-	11	38	1	3	3	-	45		56
14	SCHWERIN	4	4	-	-	-	-	8	39	1	6	1	-	47		55
15	SUHL	2	3	1	-	-	-	6	30	-	1	1	-	32		38
TOTAL		51	49	2	2	15	1	120	739	9	36	36	1	821	0	941
PER CENT		5.4	5.2	0.2	0.2	1.6	0.1	12.8	78.5	1.0	3.8	3.8	0.1	87.2	0.0	100.0

DEU FEDERAL REPUBLIC OF GERMANY — RABIES CASES — 1. 1.89 - 31. 3.89

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		
010	SCHLESWIG-HOLSTEIN							0						0		0
020	HAMBURG							0						0		0
031	BRAUNSCHWEIG	-	-	2	-	1	-	3	15	-	-	2	-	17		20
032	HANNOVER	2	-	1	-	-	-	3	6	-	1	-	-	7		10
033	LUENEBURG							0						0		0
034	WESER-EMS							0						0		0
040	BREMEN							0						0		0
051	DUESSELDORF							0						0		0
053	KOELN							0						0		0
055	MUENSTER							0						0		0
057	DETMOLD							0	10	-	1	-	-	11		11
059	ARNSBERG	1	-	-	-	1	-	2	30	1	-	-	-	31		33
061	DARMSTADT	-	6	3	-	5	-	14	270	8	11	19	-	308		322
062	KASSEL	4	9	7	-	10	-	30	216	-	6	19	-	241		271
071	KOBLENZ							0	5	-	-	-	-	5		5
072	TRIER	-	-	3	-	2	-	5	5	1	-	-	-	6		11
073	RHEINHESSEN-PFALZ	-	1	-	-	1	-	2	39	2	-	1	-	42		44
081	STUTTGART	-	1	1	-	3	-	5	61	5	4	6	-	76		81
082	KARLSRUHE							0	5	-	-	-	-	5		5
083	FREIBURG							0	14	-	1	-	-	15		15
084	TUEBINGEN							0	28	5	1	1	-	35		35
091	OBERBAYERN							0						0		0
092	NIEDERBAYERN	-	1	-	-	-	-	1	1	-	-	-	-	1		2
093	OBERPFALZ							0	25	1	-	1	-	27		27
094	OBERFRANKEN	1	2	-	-	-	-	3	10	-	-	-	-	10		13
095	MITTELFRANKEN							0	32	-	-	3	-	35		35
096	UNTERFRANKEN	1	-	-	-	-	-	1	47	2	1	3	1	54		55
097	SCHWABEN	2	-	3	-	-	-	5	23	1	-	1	-	25		30
100	SAARLAND	2	-	1	-	2	-	5	32	1	1	3	1	38		43
110	BERLIN (WEST)							0						0		0
TOTAL		13	20	21	0	25	0	79	874	27	27	59	2	989	0	1068
PER CENT		1.2	1.9	2.0	0.0	2.3	0.0	7.4	81.8	2.5	2.5	5.5	0.2	92.6	0.0	100.0

FRA F R A N C E — R A B I E S C A S E S — 1. 1.89 - 31. 3.89

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	AIN							0	4	-	-	-	-	4		4
02	AISNE	1	-	-	-	1	-	2	21	1	1	-	-	23		25
08	ARDENNES	1	2	1	-	-	-	4	12	-	-	-	-	12		16
10	AUBE	-	-	-	1	-	-	1	56	-	1	-	-	57		58
21	COTE D'OR	1	-	5	-	24	-	30	142	-	-	-	-	142		172
25	DOUBS	-	2	-	-	1	-	3	65	-	3	-	1	69		72
39	JURA	1	1	-	1	-	-	3	71	-	-	1	-	72		75
51	MARNE	-	-	-	-	2	-	2	11	1	-	-	-	12		14
52	MARNE (HAUTE)	2	2	2	3	7	-	16	55	1	-	-	-	56		72
54	MEURTHE ET MOSELLE	1	10	7	2	15	-	35	101	1	3	1	-	106		141
55	MEUSE	2	1	11	-	4	-	18	88	-	1	-	-	89		107
57	MOSELLE	-	-	1	-	4	-	5	22	-	-	-	-	22		27
58	NIEVRE	1	-	1	-	4	-	6	93	-	1	-	-	94		100
60	OISE	1	-	6	-	-	-	7	48	-	-	1	-	49		56
67	RHIN (BAS)	1	1	-	-	4	-	6	9	1	1	-	-	11		17
68	RHIN (HAUT)	-	2	-	-	-	-	2	23	3	1	1	2	30		32
70	SAONE (HAUTE)	1	-	1	2	4	-	8	38	-	-	1	-	39		47
71	SAONE ET LOIRE	-	-	1	-	1	-	2	20	-	-	-	-	20		22
77	SEINE ET MARNE	-	1	-	-	-	-	1	35	-	-	-	-	35		36
78	YVELINES							0	3	-	-	-	-	3		3
80	SOMME	-	-	1	-	-	-	1	6	-	-	-	-	6		7
88	VOSGES	3	1	1	3	6	1	15	78	-	3	-	-	81		96
89	YONNE	-	-	-	1	-	-	1	40	-	2	-	-	42		43
90	TERR.DE BELFORT	1	-	-	-	-	-	1	8	-	-	-	-	8		9
95	VAL D'OISE							0	1	-	-	-	-	1		1
TOTAL		17	23	38	13	77	1	169	1050	8	17	5	3	1083	0	1252
PER CENT		1.4	1.8	3.0	1.0	6.2	0.1	13.5	83.9	0.6	1.4	0.4	0.2	86.5	0.0	100.0

HUN HUNGARY

RABIES CASES

1. 1.89 - 31. 3.89

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	2	-	-	-	-	2		2
02	BARANYA	2	5	2	-	-	-	9	20	-	-	-	-	20		29
03	BACS-KISKUN	4	2	2	-	-	-	8	19	-	-	-	-	19		27
04	BEKES	-	1	-	-	-	-	1	2	-	-	-	-	2		3
05	BORSOD-ABAUJ-ZEMPLEN	-	1	-	-	-	-	1	7	-	-	-	-	7		8
06	CSONGRAD	1	-	-	-	-	-	1	9	-	-	-	-	9		10
07	FEJER	3	1	2	-	1	-	7	25	-	-	-	-	25		32
08	GYOER-SOPRON	1	-	-	-	-	-	1	9	-	-	-	-	9		10
09	HAJDU-BIHAR	-	3	-	-	1	-	4	3	-	-	-	-	3		7
10	HEVES	1	2	-	-	-	-	3	4	-	-	-	-	4		7
11	KOMAROM	1	2	-	-	-	-	3	15	-	-	-	-	15		18
12	NOGRAD							0	6	-	-	-	-	6		6
13	PEST	2	-	-	-	-	-	2	7	-	-	-	-	7		9
14	SOMOGY	3	2	1	-	1	-	7	44	-	-	-	1	45		52
15	SZABOLCS-SZATMAR	-	1	-	-	1	-	2	6	-	-	-	-	6		8
16	SZOLNOK	-	2	-	-	-	1	3	2	-	-	-	-	2		5
17	TOLNA	4	1	1	-	-	-	6	17	-	-	2	-	19		25
18	VAS	-	-	-	-	-	1	1	33	-	-	1	-	34		35
19	VESZPREM	-	2	-	-	-	-	2	20	-	-	-	-	20		22
20	ZALA	1	2	-	-	-	-	3	31	-	-	1	-	32		35
TOTAL		23	27	8	0	4	2	64	281	0	0	4	1	286	0	350
PER CENT		6.6	7.7	2.3	0.0	1.1	0.6	18.3	80.3	0.0	0.0	1.1	0.3	81.7	0.0	100.0

RABIES CASES 1. 1.89 - 31. 3.89

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		
ITA	**ITALY**															
33	UDINE							0	1	-	-	-	-	1		1
34	TRIESTE E GORIZIA							0	37	-	-	-	-	37		37
TOTAL		0	0	0	0	0	0	0	38	0	0	0	0	38	0	38
ROM	**ROMANIA**															
01	ALBA	1	-	-	-	-	-	1	1	-	-	-	-	1		2
07	BOTOSANI	-	1	-	-	-	-	1	-	-	-	-	1	1		2
15	COVASNA	-	-	-	-	1	-	1						0		1
27	MURES	-	-	2	-	-	-	2	-	-	-	-	1	1		3
34	SUCEAVA							0	-	-	-	-	1	1		1
TOTAL		1	1	2	0	1	0	5	1	0	0	0	3	4	0	9
PER CENT		11.1	11.1	22.2	0.0	11.1	0.0	55.6	11.1	0.0	0.0	0.0	33.3	44.4	0.0	100.0
SWI	**SWITZERLAND AND LIECHTENSTEIN**															
06	BERN							0	1	-	-	-	-	1		1
17	SOLOTHURN							0	3	-	-	-	-	3		3
22	VAUD							0	-	2	-	-	-	2		2
23	VALAIS							0	1	-	-	-	-	1		1
26	JURA							0	6	-	-	-	-	6		6
TOTAL		0	0	0	0	0	0	0	11	2	0	0	0	13	0	13
PER CENT		0.0	0.0	0.0	0.0	0.0	0.0	0.0	84.6	15.4	0.0	0.0	0.0	100.0	0.0	100.0
YUG	**YUGOSLAVIA**															
10	SR BOSNA I HERCEGOVIN	1	-	-	-	-	-	1	18	-	1	-	-	19		20
30	SR HRVATSKA	1	3	-	2	-	-	6	147	2	1	1	-	151		157
50	SR SLOVENIJA	3	7	4	1	-	-	15	321	10	3	6	1	341		356
60	SR SRBIJA	-	-	1	-	-	-	1						0		1
61	SAP VOJVODINA	-	5	-	-	1	-	6	20	-	-	-	-	20		26
TOTAL		5	15	5	3	1	0	29	506	12	5	7	1	531	0	560
PER CENT		0.9	2.7	0.9	0.5	0.2	0.0	5.2	90.4	2.1	0.9	1.3	0.2	94.8	0.0	100.0

POL POLAND

RABIES CASES

1. 1.89 - 31. 3.89

LOCATION CODE	NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
		DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
01	WARSZAWA	1	2	-	-	-	-	3	22	-	1	-	-	23		26
05	BIALYSTOK							0	4	-	-	-	-	4		4
07	BIELSKO-BIALA							0	2	-	-	1	-	3		3
09	BYDGOSZCZ	4	-	-	-	-	-	4	17	2	-	-	6	25		29
11	CHELM							0	1	-	-	-	2	3		3
13	CIECHANOW							0	2	-	-	-	1	3		3
15	CZESTOCHOWA	1	-	-	-	-	-	1	7	-	1	-	-	8		9
17	ELBLAG	1	-	-	-	-	-	1	1	-	-	-	-	1		2
19	GDANSK							0	14	1	-	-	7	22		22
21	GORZOW	-	2	-	-	-	-	2	11	-	-	2	2	15		17
23	JELENIA GORA	-	2	-	-	-	-	2	16	-	-	-	-	16		18
25	KALISZ							0	10	-	-	1	-	11		11
27	KATOWICE	1	-	-	-	1	1	3	10	-	2	1	2	15		18
29	KIELCE	-	1	-	-	-	-	1						0		1
31	KONIN	3	1	-	-	-	-	4	11	-	-	3	-	14		18
33	KOSZALIN	2	1	-	-	-	-	3	22	1	1	3	2	29		32
35	KRAKOW							0	-	-	-	1	-	1		1
39	LEGNICA							0	9	-	-	-	-	9		9
41	LESZNO	1	1	-	-	-	-	2	2	-	-	2	-	4		6
43	LUBLIN							0	-	1	-	-	-	1		1
45	LOMZA	-	2	-	-	-	-	2						0		2
49	NOWY SACZ							0	4	-	-	-	-	4		4
51	OLSZTYN	-	1	1	-	-	-	2	9	-	-	-	7	16		18
53	OPOLE							0	20	-	-	-	-	20		20
55	OSTROLEKA							0	2	-	-	-	-	2		2
57	PILA	2	-	-	-	-	-	2	5	-	-	-	1	6		8
61	PLOCK	4	1	-	-	-	-	5	6	1	-	-	-	7		12
63	POZNAN	1	5	-	-	-	-	6	20	-	2	3	-	25		31
65	PRZEMYSL	1	-	-	-	-	-	1	3	-	-	-	-	3		4
67	RADOM							0	1	-	-	-	-	1		1
71	SIEDLCE							0	2	-	-	-	-	2		2
75	SKIERNIEWICE	-	-	1	-	-	-	1						0		1
77	SLUPSK	2	-	-	1	-	-	3	12	-	-	1	5	18		21
79	SUWALKI	1	-	-	-	-	-	1	1	-	-	-	9	10		11
81	SZCZECIN	1	-	-	-	-	-	1	18	-	1	1	1	21		22
83	TARNOBRZEG							0	3	-	1	-	-	4		4
87	TORUN							0	5	-	-	1	-	6		6
89	WALBRZYCH	-	3	-	-	-	-	3	22	-	-	2	-	24		27
91	WLOCLAWEK							0	1	-	-	-	-	1		1
93	WROCLAW							0	8	-	-	-	-	8		8
95	ZAMOSC	1	-	-	-	-	-	1	5	-	-	-	-	5		6
97	ZIELONA GORA	1	2	-	-	-	-	3	6	1	2	1	-	10		13
TOTAL		28	24	2	1	1	1	57	314	7	11	23	45	400	0	457
PER CENT		6.1	5.3	0.4	0.2	0.2	0.2	12.5	68.7	1.5	2.4	5.0	9.8	87.5	0.0	100.0

TUR TURKEY

RABIES CASES

1. 1.89 - 31. 3.89

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		
001	ADANA	6	-	-	-	-	-	6						0		6
006	ANKARA	-	-	1	-	-	-	1						0		1
009	AYDIN	1	-	-	-	-	-	1						0		1
010	BALIKESIR	1	-	-	3	2	-	6						0		6
011	BILECIK	2	-	-	-	-	-	2						0		2
013	BITLIS	1	-	-	-	-	-	1						0		1
015	BURDUR	1	-	-	-	-	-	1						0		1
016	BURSA	3	-	-	-	-	-	3						0		3
020	DENIZLI	1	-	-	-	-	-	1						0		1
021	DIYARBAKIR	2	1	1	-	-	1	5						0		5
022	EDIRNE	1	-	2	-	-	-	3						0		3
023	ELAZIG	2	-	-	-	-	-	2						0		2
024	ERZINCAN	1	-	-	-	-	-	1						0		1
025	ERZURUM	1	1	-	-	-	-	2						0		2
026	ESKISEHIR	1	-	-	-	-	-	1						0		1
027	GAZIANTEP	6	-	-	-	1	-	7						0		7
033	ICEL	2	-	-	-	-	-	2						0		2
034	ISTANBUL	10	1	-	-	-	-	11	-	-	-	-	1	1		12
035	IZMIR	13	2	1	-	-	-	16						0		16
037	KASTAMONU	1	-	1	-	-	-	2						0		2
038	KAYSERI	5	-	1	1	1	-	8						0		8
039	KIRKLARELI	3	-	-	-	-	-	3						0		3
041	KOCAELI	7	-	-	-	-	-	7						0		7
042	KONYA	1	1	-	-	-	-	2						0		2
043	KUETAHYA	4	-	-	-	-	-	4						0		4
045	MANISA	3	-	2	-	-	-	5						0		5
046	KAHRAMAN MARAS	1	-	-	-	-	-	1						0		1
051	NIGDE	3	-	-	-	-	-	3						0		3
052	ORDU	9	-	-	-	-	-	9						0		9
054	SAKARYA	16	-	-	-	-	-	16						0		16
055	SAMSUN	9	-	-	-	-	-	9						0		9
057	SINOP	4	1	-	-	1	-	6						0		6
058	SIVAS	1	-	-	-	-	-	1						0		1
059	TEKIRDAG	2	-	-	-	-	-	2						0		2
060	TOKAT	4	-	-	-	-	-	4						0		4
063	URFA	2	-	-	-	-	-	2						0		2
066	YOZGAT	-	-	1	-	-	-	1						0		1
067	ZONGULDAK	4	-	-	-	-	-	4						0		4
TOTAL		134	7	10	4	5	1	161	0	0	0	0	1	1	0	162
PER CENT		82.7	4.3	6.2	2.5	3.1	0.6	99.4	0.0	0.0	0.0	0.0	0.6	0.6	0.0	100.0

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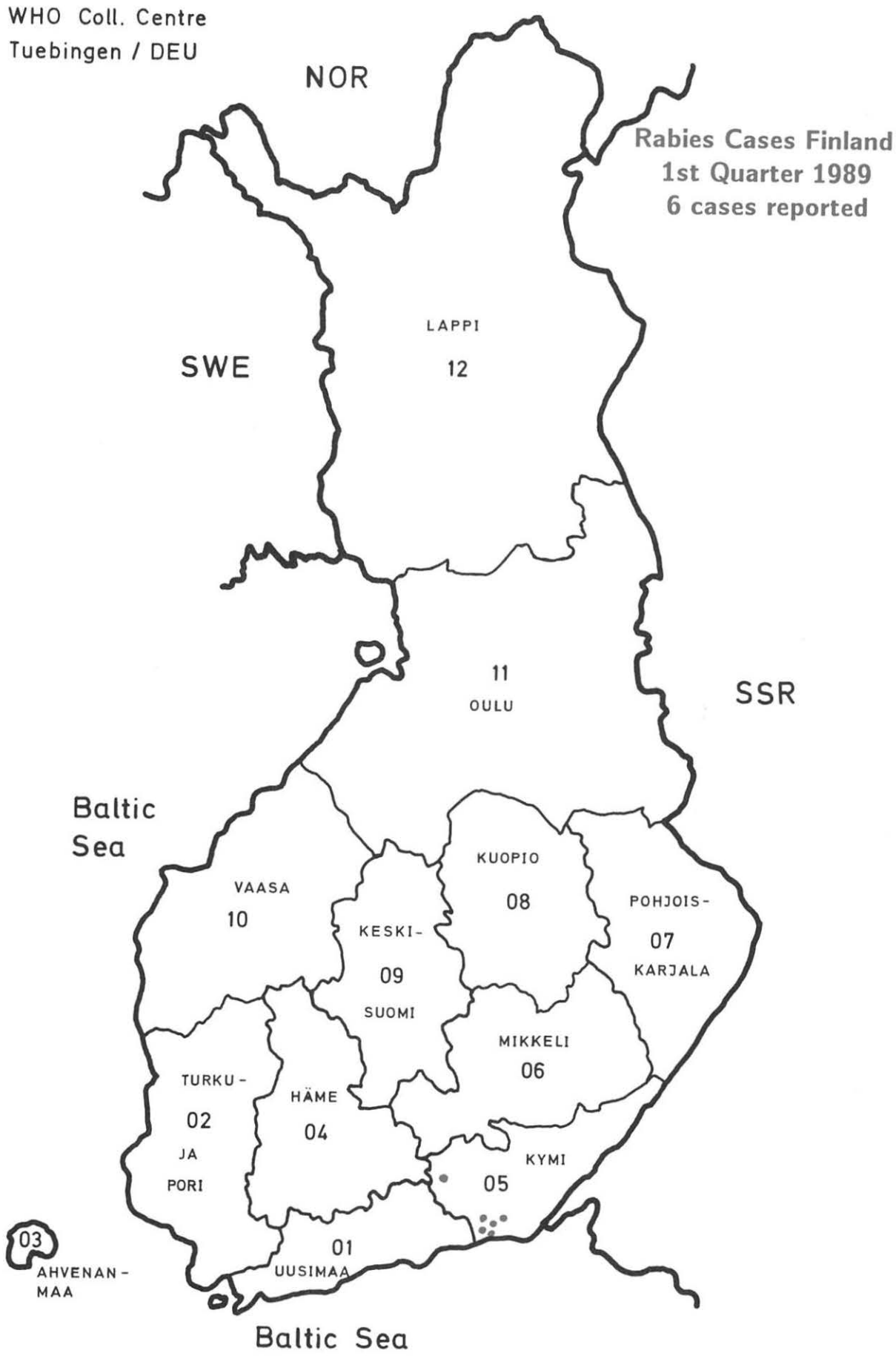
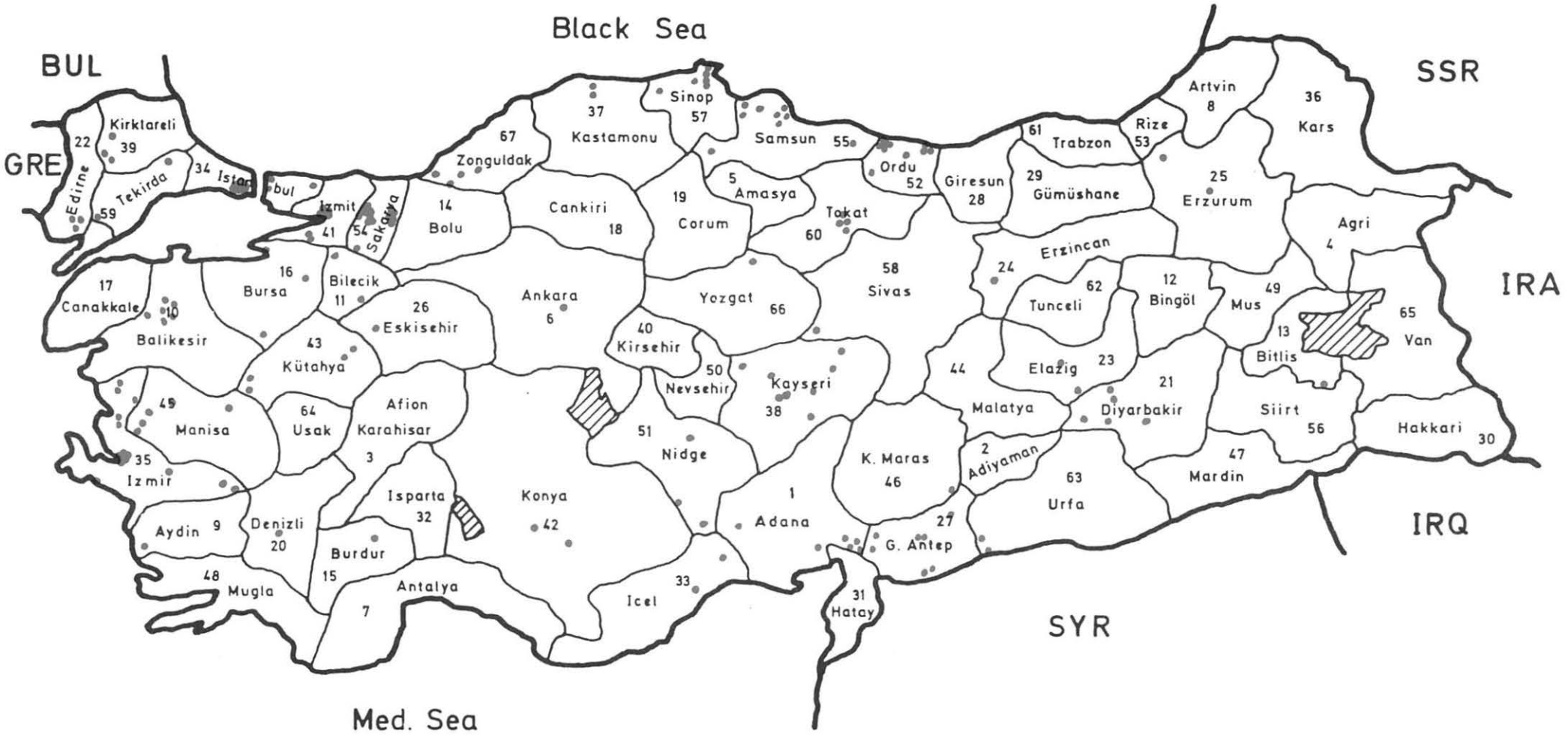

WHO Coll. Centre
Tuebingen / DEU
NOR
Rabies Cases Finland
1st Quarter 1989
6 cases reported
LAPPI
12
SWE
11
OULU
SSR
Baltic
Sea
KUOPIO
08
VAASA
10
KESKI-
09
SUOMI
POHJOIS-
07
KARJALA
MIKKELI
06
TURKU-
02
JA
PORI
HÄME
04
KYMI
05
03
AHVENAN-
MAA
01
UUSIMAA
Baltic Sea

WHO Coll. Centre
Tuebingen / DEU

Rabies Cases Turkey
1st Quarter 1989
162 cases reported



WHO Coll. Centre
Tuebingen / DEU

ICE
(rabies free)

NOR
(mainland rabies free)

FIN
(6)

SWE
(rabies free)

DEN
(0)

IRE
(rabies free)

UNK
(rabies free)

NET
(1)

BEL
(244)

DEU
(1068)

DDR
(941)

POL
(457)

SSR
(no data)

CZE
(569)

AUT
(594)

HUN
(350)

FRA
(1252)

SWI
(13)

ROM
(9)

ITA
(38)

YUG
(560)

BUL
(rabies free)

POR
(rabies free)

SPA
(0)

ALB
(no data)

GRE
(0)

TUR
(162)

0 50 100 km

Rabies Cases Europe
1st Quarter 1989
6269 cases reported
1 bat rabies case included