RABIES BULLETIN EUROPE - Vol. 8/No 2/1984

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The BULLETIN is sponsored by the WORLD HEALTH ORGANIZATION in Geneva, and the INTERNATIONAL OFFICE OF EPIZOOTICS in Paris.

The financial support of the WHO Centre by the BUNDESMINISTERIUM FÜR JUGEND, FAMILIE UND GESUNDHEIT, Bonn-Bad Godesberg, is gratefully acknowledged.

1. INTRODUCTION

This BULLETIN describes the reported rabies cases in Europe for the second quarter 1984. The situation in general appears under 2., and in individual countries under 2.1 to 2.27.

Rabies data for the first and second quarter 1984 have not yet been received for the European part of the Union of Soviet Socialist Republics (USSR) and not for the second quarter 1984 for Czechoslovakia (CZE); the rabies situation in the European part of the USSR in the fourth quarter 1983 is included in this BULLETIN.

In the miscellaneous section under 3.1 we inform on a recent WHO publication "Guidelines for Dog Rabies Control". Under 3.2 a report of a workshop reviews a model of rabies control in wild foxes.

The rabies case data are tabulated for the second quarter 1984 under four.

The last part lists the official contributors to this BULLETIN.

The geographical distribution of cases in Europe of the second quarter 1984 is shown on the maps of Europe and Turkey in the Annex.

2. RABIES IN EUROPE, 2ND QUARTER 1984

During the second quarter 1984, 4867 cases of rabies were reported in Europe. These were 3890 cases in wild animals (79.9%) and 977 cases in domestic animals (20.1%). Of the cases in wild animals 3414 (70.1% of total) were foxes, 131 badgers, 105 other mustelids, 175 deer and 65 other and unspecified species. Of the 977 cases in domestic animals 384 were dogs (of which 280 (72.9%) were reported from Turkey), 179 cats, 217 cattle, 29 horses, 152 small ruminants and 16 other domestic animals.

Compared to the previous quarter (7511 cases) we register a decrease by 35.2%. This is due to the reduced number of foxes reported rabid (1/84 = 5816 and 2/84 = 3414) and is the usual annual trend of fox rabies. Only two countries, Austria and Italy report an increase (from 401 cases to 441 and from 128 to 141 respectively). Turkey reports an increase too (from 337 to 426 cases) but this countries does not follow the fox rabies pattern.

Bulgaria, Denmark, Finland, Great Britain, Ireland, Iceland, Norway, Portugal, Sweden, and the mainland of Spain continued to remain rabies-free. There were no cases reported for this quarter from Greece and the norther part of Africa belonging to Spain.

There were no cases of rabies in man reported.

Individual country reports follow:

2.1 Rabies in Austria (AUT)
by W. Krocza and E. Scharfen

During the second quarter 1984, rabies was diagnosed in 363 (82.3%) foxes, 67 (15.2%) other wild animals and 11 (2.5%) domestic animals adding to a total of 441 cases. That is an increase of 10% compared to the first quarter 1984.

There is a high incidence of infection of the in westerly direction moving epidemic in the Bundesländer (federal provinces) Kärnten (all Bezirke (districts) except for Wolfsberg and Völkermarkt), Styria (Bezirk Murau) and Salzburg (Bezirke Tamsweg, St. Johann/Pongau, Zell am See).

Rabies was registered in the Bundesländer Tyrol (Bezirke Kitzbühel, Kufstein, Reutte) and Vorarlberg (Bezirke Bregenz, Feldkirch, Bludenz) in communities near the national border.

Upper Austria had some cases in the northern Mühlviertel (Bezirke Urfahr-Umgebung, Freistadt). Whilst Lower Austria experienced an increase of rabies cases to the north of the river Danube in the Wald- and Weinviertel (Bezirke Gmünd, Zwettl, Waidhofen/Thaya, Horn, Hollabrunn), the part of this Bundesland to the south of the river Danube was nearly rabies-free (1 case in the Bezirk Neunkirchen). The Burgenland also had only one case (Bezirk Oberwart). There were scattered cases in the south-eastern part of Styria.

The Bundesland Vienna remained rabies-free.

2.2 Rabies in Belgium (BEL)
by R. Depierreux

During the second quarter 1984, 87 rabies cases were reported in 66 communities in 52 foxes, 28 cattle, 4 sheep, 1 dog, 1 polecat and 1 badger.

Compared to the first quarter 1984, we notice a status quo with regard to the geographical distribution of cases and a decrease of registered cases (from 129 during the first quarter 1984 to 87). The decrease is observed mainly in the province of Namur (from 76 to 29 cases) and affects essentially the number of foxes (from 55 in the previous quarter to 17).

Looking at the localisation of the rabies cases it appears that the Meuse, the river of special importance, plays perfectly its role as natural barrier to resist the advance of the epidemic - as, where rabies occurs on both river banks of the Meuse one can see that the disease progresses on the right bank from east to west but on the left bank from south to north and only then in easterly direction where it, apparently, again faces stubbornly the river Meuse.

2.3 Bulgaria (BUL)

The country remained rabies-free.

2.4 Rabies in Czechoslovakia (CZE)

Data not received before going to press.

2.5 Rabies in Germany, Democratic Republic (DDR)

415 rabies cases were registered during the second quarter 1984. 361 of these (87%) were in wild animals and 54 (13%) in domestic animals. We notice the usual reduction of cases from the first quarter (570 cases) to the second-one (by 27.2%) following the fox's annual peak in the beginning of the year. Compared to the second quarter 1983 (533 cases) there is a reduction to this quarter by 22.1%.

Rabies is recorded in all departments (Bezirke) of the German Democratic Republic. The Bezirk with the highest incidence is Magdeburg (74 cases), followed by the Bezirk Karl-Marx-Stadt (52 cases). Whilst the Bezirk Magdeburg has only 4 cases reported amongst domestic animals (5.4% of 74), the Bezirk Karl-Marx-Stadt has again a rather high percentage of these animals affected by the disease (34.6% of 52 - last quarter 45.2% of 126).

2.6 Denmark (DEN)

The country remained rabies-free.

2.7 Rabies in Germany, Federal Republic (DEU)

A total of 1514 rabies cases were reported during the second quarter 1984, 578 cases less than the previous quarter and 181 cases more than the second quarter 1983. The reduction of cases is almost entirely due to the registered rabies in foxes (from 1656 to 1149 cases) manifesting the common trend of European fox rabies.

There is hardly any change with regard to the geographical coverage of the country. Larger areas with no rabies at the moment are in northern Germany only: the Bundesland (federal province) Schleswig-Holstein, the city states Hamburg and Bremen, parts of Lower Saxony and the northern part of Nordrhein-Westfalen.

2.8 Finland (FIN)

The country remained rabies-free.

2.9 Rabies in France (FRA)
by J. Blancou

During the second quarter 1984, 687 rabies cases were reported, 319 less than the previous quarter (31.7% decrease). 510 cases are registered in foxes (74.2% of total), 28 in other wildlife species and 148 in domestic animals (35 dogs, 23 cats, 13 cattle, 53 small ruminants and 12 horses). The départements (departments) Meuse and Ardennes had the highest figures with 68 and 61 registered cases respectively.

The general tendency remains a stabilisation of the front, including Seine-et-Marne, where the front had gained substantially during the first quarter 1984.

2.10 Rabies in Greece (GRE)

No case of rabies was reported during the 2nd quarter 1984.

2.11 United Kingdom (GBR)

The country remained rabies-free.

2.12 Rabies in Hungary (HUN)
by L. Koltai

During the second quarter 1984, 156 rabies cases were registered in Hungary. The second quarter 1983 (129 cases) had only 27 cases less compared to this one. The percentage of the involvement of the fox in the rabies epizootic is similar too: 137 cases the current quarter (87.8%) and 107 cases the second quarter 1983 (82.9%).

During this quarter, 19 Komitats (departments) were infected, only one Komitat, Komárom, had no rabies cases. The Komitat Veszprém in Transdanubia, a hilly and forest region, had the highest figure of cases (19). It is interesting to note that the Komitat Hajdu-Bihar, with the second highest figure (17 cases), is located in the lowland, an area with intensive agriculture.

As practiced every year throughout the country, during April gassing of fox dens was carried out with the intention to reduce the fox population and thus rabies cases.

2.13 Iceland (ISL)

The country remained rabies-free.

2.14 Ireland (IRE)

The country remained rabies-free.

2.15 Rabies in Italy (ITA)
by S. Prosperi

During the second quarter 1984, 141 cases of rabies were reported from 60 municipalities. Of these, 138 involved wild animals (123 foxes, 10 badgers, 3 stone martens and 2 pine martens) and 3 domestic animals (2 dogs and 1 bovine).

Twenty-nine communities, comprising a total of 825 km^2, were affected for the first time: 10 in the province of Trento (153 km^2), 3 in the

province of Sondrio (239 km^2), 4 in the province of Bergamo (121 km^2), 9 in the province of Como (119 km^2), 3 in Valle d'Aosta region (193 km^2).

In April, rabies appeared for the first time in Valle d'Aosta in wild animals. The disease was probably introduced by an infected fox over the Piccolo St. Bernardo Pass (2,200 m altitude) from Savoy (France) where outbreaks have been reported. Due to the closeness of the newly infected area to the Gran Paradiso National Park there is the danger of spread to the latter since, any means of fox population control, like hunting for example, would be prohibited.

2.16 Rabies in Luxembourg (LUX)
by R. Frisch

There were only 9 rabies cases recorded during the second quarter 1984. Of these 5 were in foxes. Representatives of the Veterinary Department in Luxembourg assume that during the grazing season rabies amongst cattle is again going to increase, especially in autumn.

2.17 Rabies in the Netherlands (NET)
by C.J. Vermeulen

During the second quarter of 1984, 16 animals were diagnosed rabies positive in the Netherlands.

15 cases were registered in wild animals (10 foxes and 5 badgers) and 1 in a domestic animal (1 bovine).

All these cases were again located in the south-east part of the province of Limburg, very close to the Belgian and German border.

2.18 Norway (NOR)

The country remained rabies-free.

2.19 Rabies in Poland (POL)

A total of 284 rabies cases were reported for Poland during the second quarter 1984, nearly 100 less than the previous quarter (382), but nearly three times as many as during the second quarter 1983 (96). There are 215 cases registered in wild animals (152 foxes, 16 racoon dogs, 5 badger, 9 pine martens, 4 polecats, 26 roe deer, 1 wild boar, 1 hedgehog and 1 squirrel) and 69 cases in domestic animals (28 dogs, 34 cats, 1 other domesticated carnivore, 5 cattle and 1 rabbit).

The incidence of the disease is much higher in the western half of the country; in the eastern half cases are scattered and some departements are free of rabies.

2.20 Portugal (POR)

The country remained rabies-free.

2.21 Rabies in Romania (ROM)

Only 16 rabies cases were reported from Romania during the second quarter 1984: 7 foxes, 1 badger, 2 other wild animals, 2 cats, 2 sheep and 2 other domestic animals.

Whilst during the last quarter 11 provinces reported rabies (with 90 cases altogether), there were only 6 provinces during this quarter. The incidence of the disease is usually higher in the western half of the country with Salaj being the province where most of the cases are registered.

2.22 Rabies in Spain (SPA)

There were no further reports from Melilla (North Africa).

The mainland of Spain remained rabies-free.

2.23 Sweden (SWE)

The country remained rabies-free.

2.24 Rabies in Switzerland and Liechtenstein (SWI and LIE)
by A.I. Wandeler

During the second quarter of 1984, the Swiss Rabies Diagnostic Center received 1184 animals for examination. 210 (18%) of these were positive for rabies compared to 274 (18% of 1506) in the previous quarter and 188 (20% of 951) in the second quarter of 1983. 68% were seen in foxes, 9% in badgers and 6% in other mustelids. 29 (14% of all positive cases) were diagnosed in domestic animals. An additional 55 foxes, 2 badgers, 1 marten and 1 chamois were diagnosed histologically in canton Vaud. They bring the total of proven rabies cases to 269 (370 in the previous quarter).

Again, no significant movement of rabies into new areas was noted during the period of observation. This is in part due to the effectiveness of barriers of orally immunized fox populations impeding the spread of the disease into uninfected areas.

Six persons were bitten by proven rabid animals, 5 by cats and 1 by a fox. An unrecorded number of people received post-exposure treatments because of nonbite exposures.

2.25 Rabies in Turkey (TUR)

With 426 rabies cases during the second quarter 1984, Turkey reports 89 cases more than the previous quarter (337) and 85 cases less than during the same period last year (2/1983 = 511).

Only one badger and 4 house mice were diagnosed rabies positive in wild animals (1.2% of total). The dog (65.7% of all cases) maintaines the disease and infects above all the other domestic animals (for this quarter:

30 cats, 82 cattle, 11 sheep, 4 goats, 4 other domestic herbivores, 5 horses, 5 donkeys).

The country is fairly evenly covered by rabies though there is more case reporting from the central and western parts; the eastern part reports single cases and some provinces (usually 5 to 6) have no cases at all. There is a high incidence of the disease in the provinces Izmir (38), Samsun (27) and Konya (26).

2.26 Rabies in Yugoslavia (YUG)

With 406 cases of rabies during the second quarter 1984, Yugoslavia shows the seasonal change of fox rabies compared to the first quarter of the year (661 cases). Of the total, 372 cases are in foxes (91.6%), 16 in other wild animals and only 18 (4.4%) in domestic animals.

There are 3 cases registered in Serbia most likely representing two types of rabies. The one dog and one fox near Beograd are in an area which seems newly infected from SAP Wojwodina connected to the fox rabies in the north of the country whilst the dog case in Svrljig in the center of Serbia is in an area where the urban or dog type rabies is expected.

The distribution of cases in general resembles that of the first quarter 1984.

2.27 Rabies in the Union of the Soviet Socialist Republics (USSR)

by V. Pokrovskiy and B. Cherkasskiy

4th QUARTER 1983

During the fourth quarter 1983, 228 rabies cases were recorded in animals in the European part of the USSR. These were 128 cases more than the last quarter and 8 more as compared to the fourth quarter 1982.

As in previous periods, the majority of cases was recorded in the Ukraine (49.1%), Povoljye and the Ural regions (15.8%), the Central regions (12.3%) and the North Caucasus regions (9.6%).

There were single cases in the Moldavian, Lithuanian, Latvian, Estonian and Byelorussian SSR's and no case in the north-western part of the country.

The increase of rabies cases in the European part of the USSR is chiefly due to an increase of 66 cases in the Ukraine, 31 cases in Povoljye and Ural regions and 15 cases in Central and North Caucasus regions whilst in other territories the level of infection remained fairly much the same as in the previous quarter.

3. MISCELLANEOUS

3.1 WHO-Information - Guidelines for Dog Rabies Control - WHO Document VPH/83.43

The Guidelines for Dog Rabies Control resulted from the amalgamation of numerous comprehensive submissions from a large number of experts from all over the world and was coordinated by Dr. K. Bögel, Veterinary Public Health Unit, Division of Communicable Diseases, at WHO-Headquarters, Geneva, Switzerland. The Guidelines are intended for use in countries where plans and services for rabies control are being developed, as well as in countries with established rabies programmes requiring assessment with regard to management, overall policies and orientation. The annexes show many detailed examples to copy or to adapt for national use. A selected choice of references helps further to deepen the knowledge to prepare such dog rabies programmes.

The document lists seven sections:

The canine rabies situation.

The dog population in urban and rural areas.

Planning and management of control programmes.

Legislation.

Techniques in local programme execution.

Measures for protection of rabies-free countries.

International cooperation.

Though our European rabies surveillance includes at the moment only one country, Turkey, with a canine reservoir, and only occasionally cases in countries formerly with canine reservoirs (f.e. Spain, Yugoslavia, Greece), we are going to select items from this specific guide for our readers as the elimination of the infection in dogs is also important where reservoirs are in wildlife since dogs remain the most important transmitter to man.

The canine rabies situation.

The chapter describes the epidemiology of canine rabies, the occurrence of rabies in dogs and in people, canine rabies control measures and trends in their application and the prevention of spread of canine rabies into rabies-free areas.

Nevertheless, not only canine rabies is refered to. To give a review the three tables are repeated from the annex to sum up human rabies data-worldwide.

Summary of Human Rabies Data, Worldwide.

A. Human Rabies Case Mortality; Annual Averages (based on Tables 1.1-1.5)*

Continent	Cases Annual Average	Range of Cases/Country + Year
Latin America	251.4	0 - 105
North America	2.1 x)	0.09 - 2
Europe	2.8 x)	0 - 0.8
Africa	9.8	0.3 - 44
Asia	86.4 (263) xx)	0 - 336

x) without Turkey and imported cases
xx) data in brackets for Philippines, Sri Lanka + Thailand

B. Human Rabies Case Mortality by Reported Animal Cases and Species (based on Tables 1.1-1.5)*

Continent or Country	Human Mortality/ 1000 animal cases	% involvement of main vector species
Europe	0.3/1000	78.8 % wildlife
Turkey (30-50 human cases/year)	20-30 /1000	60.5 % dogs
North America	0.5/1000	76.5 % wildlife
Latin America	10.7/1000	76.5 % dogs
Africa	82.7/1000	68.6 % dogs
Asia	35.8/1000	92.6 % dogs

* Tables 1.1-1.5 refer to reported rabies cases in animals and man in countries of the four continents affected (the editors).

C. Estimated Annual Human Rabies Mortality Rates per 100 000 Inhabitants

Europe			
Austria	0.003	Switzerland	0.009
GDR	0.001	Turkey	0.07 - 0.17
Romania	0.003	Yugoslavia	0.004
America			
Brazil	0.10	Honduras	0.13
Ecuador	0.27	Mexico	0.10
El Salvador	0.24	USA	0.001
Asia			
India	1.7 - 3.3	Philippines	0.5 - 0.6
Indonesia	0.05	Sri Lanka	1.62
Nepal	0.12	Thailand	0.71
Africa			
Algeria	0.10	Mali	0.11
Botswana	0.36	Morocco	0.25
Cameroon	0.04	Sudan	0.08
Congo (Brazzaville)	0.14	Tanzania	0.06
Egypt	0.04	Tunisia	0.16
Ethiopia	0.07	Uganda	0.10
Ghana	0.38	Zambia	0.12
Malawi	0.11	Zimbabwe	0.14

The above figures speak a clear language: countries with canine rabies reservoirs have the highest human rabies case mortality rates, Central Europe, the United States of America and Canada, with a predominant wildlife rabies, the lowest.

But we learn too, under the subject canine rabies control, that Europe had to fight canine rabies up to the mid-century. Scandinavian countries had already successfully brought the disease under control in the 19th century by destroying stray dogs and placing domesticated dogs in quarantine. The veterinary services of Hungary showed, by first field trials in 1937 and a nationwide campaign from 1939 to 1944, that canine rabies can be eliminated in a well planned programme based on the mass vaccination of dogs in addition to the classical measures of movement and contact restriction and of stray dog control.

Mass vaccination is no doubt an important tool for dog rabies control and following the example given by Hungary several countries became free of rabies: Malaysia, Japan and Hong Kong in 1956, Province of Taiwan (China) and Portugal in 1961, southern Italy 1971, to give some examples.

To remain rabies-free is, of course, just as important an effort. The chapter on prevention of spread of canine rabies to rabies-free areas

elaborates on ban of import, quarantine, vaccination requirements, inforcement of health regulations, etc.

The dog population in urban and rural areas.

The knowledge of the numbers of owned dogs and of the abundance of unowned dogs is a prerequisite for the planning of animal control and vaccination campaigns and for epidemiological and ecological studies.

And, as any decision made by responsible authorities concerning dog rabies control should be based on cost-benefit analysis the first step should always be: collection of information on dog populations. The three most important items here are

a) abundance
b) ratio of owned versus unowned dogs
c) dog population turnover.

Obviously, in countries where dog census and licensing is practiced the planning of vaccination campaigns is made easier, if information has to be collected with elaborate estimates, the work is hampered.

In fact, a genuine information on dog population and population turnover is more complex and only in more recent times have zoologists studied domestic animals for the acquisition of knowledge concerning the abundance, habitat requirements, movement, dynamics and behaviour of dogs, along with sociological data regarding dog-human relationships, etc.

The chapter shows with many examples in the annexes and helpful references how to aquire information on dog populations and how to initiate vital epidemiological and ecological studies with the view of dog rabies control.

Planning and Management of Control Programmes:

There is a frame for the execution of control programmes in every country. The chapter appeals for an approach to be as effective as possible.

An important point is the coordination of the different offices and interacting factors involved. Governments should officially appoint, with the agreement of the ministers concerned (Health, Agriculture, Finance, etc.), a national programme director, who could also serve as secretary of an interministerial executive committee.

The national programme director should prepare a comprehensive national plan aiming at the elimination of human and canine rabies.

If required, legal provisions should be modified to permit smooth and effective programme implementation.

The effectiveness of various inputs in a complex programme may be forecast or assessed in terms of funds required and health or services obtained. The comparison of costs of different strategies, for example, is most useful for policy decision-making:

Policy A: satisfactory coverage of the whole country by human post-exposure treatment, using modern, safe and highly potent human vaccines and immunoglobulins.

Policy B: total vaccine and vaccine delivery costs could be calculated for countrywide mass vaccination of dogs and for stray dog control.

Besides organisatorical, technical and policy-making points, one needs special attention: the evaluation during execution and on completion of the programme. During the programme shortcomings can be corrected and on completion the maintainance of a rabies-free state needs to be considered.

In the annexes is amongst others an excerpt of a work plan for human and canine rabies elimination in Tanzania.

Legislation

This section sets out draft model legislation for use by countries when drawing up or updating a national law, act or ordinance for the control of rabies in dogs. It is based on the legislation used in countries that have conducted successful campaigns to control rabies in dogs and by these means have eliminated the disease in the canine and human populations.

Techniques in local programme execution

This section reviews the factors that must be considered before the decision is made to embark on a programme for rabies control in dogs. There are very practical technical suggestions and numerous examples are given in the annexes ranging from posters for publicity work, dog catching equipment design, preparation of reagents in the laboratory, suggested vaccine certificates, a method for preparation of vaccines and methods of vaccine quality control.

As methods of dog vaccination campaigns the following is offered:

a) Continual dog vaccination at private or government veterinary clinics to which dog owners take their dogs.
b) Dog vaccination campaigns through neighbourhood vaccination centres.
c) One-day campaigns covering whole municipalities or states.
d) House to house dog vaccination campaigns with complete coverage of residential areas and selected dog removal.
e) House to house dog vaccination campaigns with entire community coverage and no dog removal.

For countries where tissue culture equipment and specific pathogen free or large scale animal breedings are not available a method for the preparation of an inactivated-virus rabies vaccine from lamb or kidbrain is recommended and with all details for its production described.

Measures for protection of rabies-free countries

The evaluation of presently applied regulations shows a wide divergency of measures, partly determined by local conditions, historical developments and regionally influenced rules.

Some of these measures cause quite a bit of hardship on the dog and its owner when crossing country borders whilst travelling. To ease these conditions, to initiate uniform import procedures, to modernize requirements, taking into consideration immunological conditions and tests, measures for the protection of rabies-free countries have been reviewed and suggestions have been formulated in the following table.

TABLE: Proposed policies for transfer of dogs between countries and territories of different epidemiological status.

	Policies applying to importing countries or territories			
Exporting countries or territories	Specified rabies-free	Rabies-free	Widely rabies-free or elimination programme in progress	Widely rabies infected
Specified rabies-free *	1	2	2	2
Rabies-free	4 **	2	2	2
Rabies-infected	4 **	4 or 3	3 or 4	2

* countries which specify other countries or are specified by other countries for acceptance of animals under Policy No. 1.

** without the alternative to at least 4 months' quarantine. Some countries may not require vaccination prior to, but on entry into quarantine.

Policies

No. 1: individual licence of import, trans-shipment or vaccination at 30 days prior to embarkation.

No. 2: valid International Certificate of Vaccination against Rabies and certificate of health and origin.

No. 3: valid International Certificate of Vaccination against Rabies, house and leash confinement and veterinary/health surveillance for at least 4 months.

No. 4: valid International Certificate of Vaccination against Rabies, quarantine of at least 4 months. Upon demonstration of seroconversion the animal can be released subject to application of measures specified for Policy No. 3. Blood sample is taken at entry into quarantine when also an obligatory dose of vaccine is given. Further booster doses can be given if indicated by lack of seroconversion.

The document is available free of charge on request from:

The Chief, Veterinary Public Health Unit, Division of Communicable Diseases, World Health Organization
CH-1211 Geneva 27 /Switzerland.

3.2 Report on a workshop -
REVIEW OF A MODEL OF RABIES CONTROL IN WILD FOXES:
The 'ONTARIO' model.
by P.J. Bacon*, F.G. Ball, and D. Mollison

A group of Canadian workers have developed a sophisticated simulation model of rabies spread in a natural population of the red fox (Vulpes vulpes) which allows simulation of attempted control by vaccination. The model is based on data from a most comprehensive study of the ecology of the red fox in Ontario, these data being quite independent of data on case incidences of rabid foxes in Ontario. The model is specifically designed to meet the requirements of the authorities locally responsible for rabies control policies. As such the model explicitly uses many paramaters (over thirty) so that the managers can easily see the relevance of the input parameters to the model. The model is a spatial stochastic Monte-Carlo simulation, based on a 14x14 grid of fox home ranges. The simulated year is split into four seasons, winter, spring, summer and autumn, reflecting respectively the breeding, denning, pup-rearing and dispersal phases of a fox's year. The incubation and spread of foxes is modelled on a monthly time-scale within this coarser framework. Age and sex differences in fecundity, mortality and dispersal are accounted for, according to data derived from the ecological study of foxes in Ontario. The controlling parameters are held in a data file so that, within reason, the model can be parametrised to represent foxes in other regions/countries if suitable data are available.

The Canadian workers responsible for the model's development (DRS. VOIGT, TINLINE, BROEKHOVEN and POND) attended a workshop meeting organised by the Royal Statistical College (R.S.S.), London on July 9-11 1984. The aim of the meeting, which was attended by biologists, mathematicians and veterinary officials, was to allow a discussion of the Ontario model in relation to the findings of a number of simpler models that have recently been investigated by British workers in the R.S.S. group.

The members of the British working party were impressed by the attention to biological detail and user-friendly output facilities of the Ontario model: even those who favour simple models felt that their understanding of rabies epizootics had been enhanced by a detailed consideration of the processes as encapsulated in the Ontario model.
During the course of the workshop the Ontario model was run with two additonal sets of data provided by the British group: data for Bristol (Dr. S. Harris) and for rural Wales (Dr. H.G.Lloyd), U.K. It produced sensible results with these differing data sets. The researchers concerned are presently considering the implications of those results and hope to investigate them further in the near future.

A number of possible limitations of the present Ontario model were discussed at the meeting, and suitable improvements suggested. The main reservation expressed by members of the British group was that the large number of parameters in the Ontario model presently made it difficult to assess which ones had what (if any) important effects on the model's outcomes; this difficulty was accentuated by limitations of computer storage space and the long times required for the stochastic simulations. The further sensitivity analyses already planned by the Canadian group should assist with this interpretation, but investigation of some changes to the

model's structure and simplification of its parameters were recommended as additional exercises.

The details of, and results from, the Ontario model, together with the findings from a number of simpler models will shortly by published as a book by Academic Press (Bacon, P.J. (editor) 1985, Population dynamics of rabies in wildlife) and will not be described here. Further brief details of this meeting will appear as an occasional publication of the Institute of Terrestrial Ecology (R. and D. paper 99, Merlewood Research Station, Grange over Sands, Cumbria LA11 6JU, England) and a comprehensive 'User Guide' to the model has been produced by the Canadian group (DR. D. VOIGT, Ontario Ministry of Natural Resources, Wildlife Branch, P.O. Box 50, Maple, Ontario, Canada LOJ 1EO).

* The Institute of Terrestrial Ecology, Merlewood Research Station, Grange-over Sands Cumbria LA11 6J4, United Kingdom.

TABLE 1

EUR EUROPE **2/84** RABIES CASES 1. 4.84 - 30. 6.84

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	1	7	-	-	3	-	11	363	25	10	31	1	430		441
BEL	BELGIUM	1	-	28	-	4	-	33	52	1	1	-	-	54		87
BUL	BULGARIA *							0						0		0
CZE	CZECHOSLOVAKIA **															-
DDR	GERMAN DEM. REPUBLIC	14	23	4	1	12	-	54	337	1	9	13	1	361		415
DEN	DENMARK *							0						0		0
DEU	FED.REP. OF GERMANY	11	37	56	10	46	2	162	1149	52	52	92	7	1352		1514
FIN	FINLAND *							0						0		0
FRA	FRANCE	35	23	26	12	53	-	149	510	10	-	5	13	538		687
GBR	UNITED KINGDOM *							0						0		0
GRE	GREECE *							0						0		0
HUN	HUNGARY	4	7	2	-	3	-	16	137	-	1	1	1	140		156
IRE	IRELAND *							0						0		0
ISL	ICELAND *							0						0		0
ITA	ITALY	2	-	1	-	-	-	3	123	10	5	-	-	138		141
LUX	LUXEMBOURG	-	1	-	-	3	-	4	5	-	-	-	-	5		9
NET	NETHERLANDS	-	-	1	-	-	-	1	10	5	-	-	-	15		16
NOR	NORWAY *							0						0		0
POL	POLAND	28	34	5	-	-	2	69	152	5	13	26	19	215		284
POR	PORTUGAL *							0						0		0
ROM	ROMANIA	-	2	-	-	2	2	6	7	1	-	-	2	10		16
SPA	SPAIN *							0						0		0
SWE	SWEDEN *							0						0		0
SWI	SWITZERLAND + LIECHT	3	11	5	1	10	-	30	197	20	14	7	1	239		269
TUR	TURKEY	280	30	82	5	15	9	421	-	1	-	-	4	5		426
YUG	YUGOSLAVIA	5	4	7	-	1	1	18	372	-	-	-	16	388		406
TOTAL		384	179	217	29	152	16	977	3414	131	105	175	65	3890	0	4867
PER CENT		7.9	3.7	4.5	0.6	3.1	0.3	20.1	70.1	2.7	2.2	3.6	1.3	79.9	0.0	100.0

* NO CASES, ** NO DATA.

TABLE 2: ACCUMULATED TOTALS OF RABIES CASES FOR THE PERIOD 1. JANUARY - 30. JUNE 1984.

EUR EUROPE **1-2/84** RABIES CASES 1. 1.84 - 30. 6.84

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	4	14	2	-	5	-	25	711	45	16	44	1	817		842
BEL BELGIUM	2	7	42	1	13	-	65	148	1	2	-	-	151		216
BUL BULGARIA *							0						0		0
CZE CZECHOSLOVAKIA **	7	19	-	-	1	-	27	754	1	4	16	-	775		802
DDR GERMAN DEM. REPUBLIC	39	61	18	5	49	-	172	737	1	25	48	2	813		985
DEN DENMARK *							0						0		0
DEU FED.REP. OF GERMANY	43	93	110	25	97	5	373	2805	77	129	208	14	3233		3606
FIN FINLAND *							0						0		0
FRA FRANCE	71	66	60	26	116	2	341	1311	10	-	9	22	1352		1693
GBR UNITED KINGDOM *							0						0		0
GRE GREECE *							0						0		0
HUN HUNGARY	15	23	11	1	3	-	53	562	-	1	3	2	568		621
IRE IRELAND *							0						0		0
ISL ICELAND *							0						0		0
ITA ITALY	2	2	1	-	-	-	5	243	14	7	-	-	264		269
LUX LUXEMBOURG	-	2	8	1	12	1	24	19	-	1	1	-	21		45
NET NETHERLANDS	-	-	6	-	10	-	16	32	9	-	1	-	42		58
NOR NORWAY *							0						0		0
POL POLAND	51	65	26	-	-	3	145	408	9	18	52	34	521		666
POR PORTUGAL *							0						0		0
ROM ROMANIA	3	8	1	-	68	2	82	19	3	-	-	2	24		106
SPA SPAIN *							0						0		0
SWE SWEDEN *							0						0		0
SWI SWITZERLAND + LIECHT	10	31	9	2	28	-	80	493	27	24	14	1	559		639
TUR TURKEY	524	55	125	5	28	18	755	-	1	-	-	7	8		763
YUG YUGOSLAVIA	11	15	14	1	3	3	47	988	-	-	-	32	1020		1067
TOTAL	782	461	433	67	433	34	2210	9230	198	227	396	117	10168	0	12378
PER CENT	6.3	3.7	3.5	0.5	3.5	0.3	17.9	74.6	1.6	1.8	3.2	0.9	82.1	0.0	100.0

* NO CASES, ** NO DATA FOR 2ND QUARTER.

TABLE 3

EUR EUROPE **2/84** RABIES CASES 'OTHER ANIMAL SPECIES' 1. 4.84 - 30. 6.84

LOCATION CODE	NAME	OTHER DOMESTIC ANIMALS						OTHER WILD ANIMALS										TOTAL
		OTH.DO CARNIV	DONKEY	PIG	OTH.DO HERBIV	DOMEST RABBIT	OTHER	RACOON DOG	WILD CAT	WILD BOAR	CHAMOIS	HEDGE HOG	SQUIRREL	HOUSE MOUSE	MUSKRAT	WILD RABBIT	OTHER	
AUT	AUSTRIA	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
DDR	GERMAN DEM.REP	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
DEU	F.REP. GERMANY	-	-	2	-	-	-	-	1	3	-	-	-	-	1	1	1	9
FRA	FRANCE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	13
HUN	HUNGARY	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
POL	POLAND	1	-	-	-	1	-	16	-	1	-	1	1	-	-	-	-	21
ROM	ROMANIA	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2	4
SWI	SWITZERLAND	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
TUR	TURKEY	-	5	-	4	-	-	-	-	-	-	-	-	4	-	-	-	13
YUG	YUGOSLAVIA	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	16	17
TOTAL		1	5	2	4	1	3	16	2	5	2	1	1	4	1	1	32	81
PER CENT		1.2	6.2	2.5	4.9	1.2	3.7	19.8	2.5	6.2	2.5	1.2	1.2	4.9	1.2	1.2	39.5	100.0

AUT AUSTRIA — RABIES CASES — 1. 4.84 - 30. 6.84

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		
109	OBERWART							0	1	-	-	-	-	1		1
202	VILLACH-STADT							0	-	-	-	1	-	1		1
203	HERMAGOR	-	1	-	-	-	-	1	1	-	-	-	-	1		2
204	KLAGENFURT-LAND							0	6	-	-	1	-	7		7
205	SANKT VEIT AN DER GL	-	2	-	-	3	-	5	73	9	2	13	-	97		102
206	SPITTAL AN DER DRAU							0	8	-	-	-	-	8		8
207	VILLACH-LAND	1	-	-	-	-	-	1	3	-	1	2	-	6		7
209	WOLFSBERG	-	1	-	-	-	-	1						0		1
210	FELDKIRCHEN							0	6	-	-	2	-	8		8
309	GMUEND							0	1	-	-	-	-	1		1
310	HOLLABRUNN							0	5	1	-	-	-	6		6
311	HORN	-	1	-	-	-	-	1	21	1	2	2	-	26		27
318	NEUNKIRCHEN							0	1	-	-	-	-	1		1
322	WAIDHOFEN AN DER THA							0	1	-	1	-	-	2		2
325	ZWETTL	-	1	-	-	-	-	1	20	1	-	-	-	21		22
406	FREISTADT							0	5	-	-	-	-	5		5
416	URFAHR-LAND							0	1	-	-	-	-	1		1
504	SANKT JOHANN IM PONG							0	32	1	-	-	-	33		33
505	TAMSWEG							0	63	1	-	6	-	70		70
506	ZELL AM SEE							0	38	2	-	-	-	40		40
606	GRAZ-LAND							0	7	1	-	-	-	8		8
607	HARTBERG							0	6	-	-	1	-	7		7
609	KNITTELFELD							0	1	-	-	-	-	1		1
614	MURAU							0	30	3	1	2	-	36		36
616	VOITSBERG							0	6	2	-	-	-	8		8
617	WEIZ							0	3	-	-	-	-	3		3
704	KITZBUEHEL							0	3	2	-	-	-	5		5
705	KUFSTEIN							0	2	-	-	-	-	2		2
708	REUTTE	-	1	-	-	-	-	1	8	-	1	-	-	9		10
801	BLUDENZ							0	4	-	-	-	-	4		4
802	BREGENZ							0	3	1	1	1	-	6		6
804	FELDKIRCH							0	4	-	1	-	1	6		6
TOTAL		1	7	0	0	3	0	11	363	25	10	31	1	430	0	441
PER CENT		0.2	1.6	0.0	0.0	0.7	0.0	2.5	82.3	5.7	2.3	7.0	0.2	97.5	0.0	100.0

RABIES CASES 1. 4.84 - 30. 6.84

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															
HH	HAINHAUT	-	-	5	-	-	-	5	8	-	-	-	-	8		13
LG	LIEGE	-	-	10	-	2	-	12	17	-	1	-	-	18		30
LI	LIMBURG							0	1	-	-	-	-	1		1
LX	LUXEMBOURG	-	-	5	-	-	-	5	9	-	-	-	-	9		14
NA	NAMUR	1	-	8	-	2	-	11	17	1	-	-	-	18		29
TOTAL		1	0	28	0	4	0	33	52	1	1	0	0	54	0	87
PER CENT		1.1	0.0	32.2	0.0	4.6	0.0	37.9	59.8	1.1	1.1	0.0	0.0	62.1	0.0	100.0
LUX	LUXEMBOURG															
00	LUXEMBOURG-VILLE							0	1	-	-	-	-	1		1
02	CAPELLEN							0	1	-	-	-	-	1		1
04	LUXEMBOURG-CAMPAGNE							0	1	-	-	-	-	1		1
06	CLERVAUX	-	-	-	-	2	-	2	1	-	-	-	-	1		3
08	REDANGE	-	1	-	-	-	-	1						0		1
13	REMICH	-	-	-	-	1	-	1	1	-	-	-	-	1		2
TOTAL		0	1	0	0	3	0	4	5	0	0	0	0	5	0	9
PER CENT		0.0	11.1	0.0	0.0	33.3	0.0	44.4	55.6	0.0	0.0	0.0	0.0	55.6	0.0	100.0
NET	NETHERLANDS															
05	LIMBURG	-	-	1	-	-	-	1	10	5	-	-	-	15		16
PER CENT		0.0	0.0	6.2	0.0	0.0	0.0	6.2	62.5	31.2	0.0	0.0	0.0	93.7	0.0	100.0

DDR GERMAN DEMOCRATIC REPUBLIC — R A B I E S C A S E S — 1. 4.84 - 30. 6.84

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	2	-	-	-	-	2		2
02 COTTBUS	-	1	-	-	-	-	1	9	-	-	-	-	9		10
03 DRESDEN	-	2	-	-	1	-	3	19	-	2	-	-	21		24
04 ERFURT	-	2	1	-	1	-	4	24	-	1	-	-	25		29
05 FRANKFURT/ODER	2	1	-	-	-	-	3	11	-	1	1	-	13		16
06 GERA	1	1	-	-	-	-	2	31	-	1	1	-	33		35
07 HALLE	2	3	-	-	-	-	5	28	-	-	3	-	31		36
08 KARL-MARX-STADT	1	6	2	-	9	-	18	30	1	-	3	-	34		52
09 LEIPZIG	1	1	-	-	-	-	2	10	-	1	1	-	12		14
10 MAGDEBURG	1	1	1	1	-	-	4	67	-	2	-	1	70		74
11 NEUBRANDENBURG	1	-	-	-	-	-	1	20	-	-	-	-	20		21
12 POTSDAM	2	3	-	-	-	-	5	34	-	-	2	-	36		41
13 ROSTOCK	1	-	-	-	1	-	2	11	-	1	1	-	13		15
14 SCHWERIN	2	1	-	-	-	-	3	21	-	-	-	-	21		24
15 SUHL	-	1	-	-	-	-	1	20	-	-	1	-	21		22
TOTAL	14	23	4	1	12	0	54	337	1	9	13	1	361	0	415
PER CENT	3.4	5.5	1.0	0.2	2.9	0.0	13.0	81.2	0.2	2.2	3.1	0.2	87.0	0.0	100.0

DEU FEDERAL REPUBLIC OF GERMANY — R A B I E S C A S E S — 1. 4.84 - 30. 6.84

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	2	1	-	-	1	-	2		4
032	HANNOVER	-	-	5	-	-	-	5	32	2	-	8	1	43		48
033	LUENEBURG	1	3	2	2	-	-	8	31	1	2	1	1	36		44
034	WESER-EMS	-	1	-	-	-	-	1	2	-	-	-	-	2		3
040	BREMEN							0						0		0
051	DUESSELDORF							0	4	-	-	-	-	4		4
053	KOELN	-	1	3	-	2	-	6	54	1	-	4	-	59		65
055	MUENSTER							0						0		0
057	DETMOLD	-	-	1	-	-	-	1	3	1	-	1	-	5		6
059	ARNSBERG	-	1	1	1	4	-	7	50	-	1	5	-	56		63
061	DARMSTADT	-	1	8	2	7	-	18	79	1	4	6	-	90		108
062	KASSEL	-	7	7	-	2	-	16	43	4	2	14	-	63		79
071	KOBLENZ	1	3	1	2	4	-	11	56	-	-	1	3	60		71
072	TRIER	-	3	4	-	5	-	12	16	-	-	-	-	16		28
073	RHEINHESSEN-PFALZ	2	5	2	1	7	-	17	48	-	5	4	1	58		75
081	STUTTGART	1	2	-	-	4	-	7	92	14	3	9	1	119		126
082	KARLSRUHE	-	-	1	-	-	-	1	29	1	2	6	-	38		39
083	FREIBURG	-	-	9	-	2	-	11	101	7	4	8	-	120		131
084	TUEBINGEN	-	2	-	-	2	-	4	92	8	5	6	-	111		115
091	OBERBAYERN	1	2	4	1	3	-	11	134	3	5	4	-	146		157
092	NIEDERBAYERN	3	-	1	-	-	-	4	44	1	1	1	-	47		51
093	OBERPFALZ	-	1	-	-	-	-	1	68	1	3	1	-	73		74
094	OBERFRANKEN	1	1	-	-	1	-	3	32	2	4	-	-	38		41
095	MITTELFRANKEN	-	1	-	-	-	-	1	17	1	1	2	-	21		22
096	UNTERFRANKEN	-	1	5	-	2	-	8	49	2	3	9	-	63		71
097	SCHWABEN	-	1	2	-	-	-	3	62	2	6	1	-	71		74
100	SAARLAND	1	1	-	1	1	-	4	9	-	-	-	-	9		13
110	BERLIN (WEST)							0	1	-	1	-	-	2		2
TOTAL		11	37	56	10	46	2	162	1149	52	52	92	7	1352	0	1514
PER CENT		0.7	2.4	3.7	0.7	3.0	0.1	10.7	75.9	3.4	3.4	6.1	0.5	89.3	0.0	100.0

FRA F R A N C E — R A B I E S C A S E S — 1. 4.84 - 30. 6.84

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	5	-	-	-	4	-	9	41	2	-	-	2	45		54
02	AISNE	1	3	1	1	1	-	7	31	-	-	1	2	34		41
08	ARDENNES	5	3	8	1	14	-	31	27	-	-	1	2	30		61
10	AUBE	-	-	-	-	4	-	4	21	-	-	-	1	22		26
21	COTE D'OR	-	1	2	2	4	-	9	25	-	-	-	2	27		36
25	DOUBS	3	-	1	-	2	-	6	47	-	-	-	1	48		54
39	JURA	1	-	-	1	2	-	4	41	4	-	-	-	45		49
51	MARNE	-	1	-	-	-	-	1	7	-	-	-	1	8		9
52	MARNE (HAUTE)	2	1	-	1	4	-	8	13	-	-	-	-	13		21
54	MEURTHE-ET-MOSELLE	2	1	1	-	2	-	6	19	1	-	-	-	20		26
55	MEUSE	4	3	7	-	10	-	24	43	-	-	1	-	44		68
57	MOSELLE							0	2	-	-	-	-	2		2
58	NIEVRE							0	2	-	-	-	-	2		2
60	OISE	1	-	-	-	-	-	1	5	-	-	-	-	5		6
67	RHIN (BAS)	-	-	1	1	3	-	5	10	-	-	1	-	11		16
68	RHIN (HAUT)	2	1	-	-	-	-	3	27	2	-	-	-	29		32
70	SAONE (HAUTE)	2	1	4	2	2	-	11	49	1	-	-	-	50		61
71	SAONE-ET-LOIRE							0	1	-	-	-	-	1		1
73	SAVOIE	-	1	-	-	-	-	1	8	-	-	-	-	8		9
74	SAVOIE (HAUTE)	-	1	-	1	1	-	3	18	-	-	1	1	20		23
77	SEINE-ET-MARNE	1	-	-	1	-	-	2	29	-	-	-	1	30		32
88	VOSGES	4	6	-	1	-	-	11	21	-	-	-	-	21		32
89	YONNE							0	5	-	-	-	-	5		5
90	TERR.DE BELFORT	2	-	-	-	-	-	2	15	-	-	-	-	15		17
95	VAL D'OISE							0	3	-	-	-	-	3		3
99	NO LOCATION	-	-	1	-	-	-	1						0		1
TOTAL		35	23	26	12	53	0	149	510	10	0	5	13	538	0	687
PER CENT		5.1	3.3	3.8	1.7	7.7	0.0	21.7	74.2	1.5	0.0	0.7	1.9	78.3	0.0	100.0

HUN HUNGARY — RABIES CASES — 1. 4.84 – 30. 6.84

LOCATION CODE	NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
		DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
01	BUDAPEST							0	3	–	–	–	–	3		3
02	BARANYA	–	2	–	–	–	–	2	6	–	–	–	–	6		8
03	BACS-KISKUN	1	1	–	–	–	–	2	5	–	–	–	–	5		7
04	BEKES							0	1	–	–	–	–	1		1
05	BORSOD-ABAUJ-ZEMPLEN							0	14	–	–	–	–	14		14
06	CSONGRAD							0	7	–	–	–	–	7		7
07	FEJER	1	–	–	–	–	–	1	10	–	–	–	–	10		11
08	GYOER-SOPRON							0	2	–	–	–	–	2		2
09	HAJDU-BIHAR	–	1	1	–	2	–	4	12	–	–	–	1	13		17
10	HEVES	–	1	–	–	–	–	1	5	–	–	–	–	5		6
12	NOGRAD	–	–	–	–	1	–	1	6	–	–	–	–	6		7
13	PEST							0	6	–	–	–	–	6		6
14	SOMOGY	1	–	–	–	–	–	1	5	–	–	–	–	5		6
15	SZABOLCS-SZATMAR	1	–	–	–	–	–	1	5	–	–	–	–	5		6
16	SZOLNOK							0	4	–	–	–	–	4		4
17	TOLNA	–	1	1	–	–	–	2	5	–	–	1	–	6		8
18	VAS							0	11	–	–	–	–	11		11
19	VESZPREM	–	1	–	–	–	–	1	17	–	1	–	–	18		19
20	ZALA							0	13	–	–	–	–	13		13
TOTAL		4	7	2	0	3	0	16	137	0	1	1	1	140	0	156
PER CENT		2.6	4.5	1.3	0.0	1.9	0.0	10.3	87.8	0.0	0.6	0.6	0.6	89.7	0.0	100.0

RABIES CASES 1. 4.84 - 30. 6.84

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															
11	AOSTA							0	12	-	1	-	-	13		13
22	COMO							0	22	-	-	-	-	22		22
23	SONDRIO	2	-	-	-	-	-	2	56	10	2	-	-	68		70
24	BERGAMO							0	6	-	1	-	-	7		7
25	BRESCIA							0	5	-	-	-	-	5		5
33	UDINE							0	4	-	-	-	-	4		4
38	TRENTO	-	-	1	-	-	-	1	18	-	1	-	-	19		20
TOTAL		2	0	1	0	0	0	3	123	10	5	0	0	138	0	141
PER CENT		1.4	0.0	0.7	0.0	0.0	0.0	2.1	87.2	7.1	3.5	0.0	0.0	97.9	0.0	100.0
RUM	ROMANIA															
01	ALBA							0	2	-	-	-	1	3		3
21	HARGHITA	-	-	-	-	2	-	2						0		2
22	HUNEDOARA							0	1	1	-	-	1	3		3
25	MARAMURES	-	1	-	-	-	-	1						0		1
32	SALAJ	-	1	-	-	-	1	2	4	-	-	-	-	4		6
36	TIMIS	-	-	-	-	-	1	1						0		1
TOTAL		0	2	0	0	2	2	6	7	1	0	0	2	10	0	16
PER CENT		0.0	12.5	0.0	0.0	12.5	12.5	37.5	43.7	6.2	0.0	0.0	12.5	62.5	0.0	100.0
YUG	YUGOSLAVIA															
I	SR BOSNA I HERCEGOVI	-	-	1	-	-	-	1	6	-	-	-	-	6		7
III	SR HRVATSKA	2	-	5	-	1	1	9	173	-	-	-	8	181		190
V	SR SLOVENIJA	-	2	-	-	-	-	2	170	-	-	-	7	177		179
VI	SR SRBIJA	2	-	-	-	-	-	2	1	-	-	-	-	1		3
VI1	SAP VOJVODINA	1	2	1	-	-	-	4	22	-	-	-	1	23		27
TOTAL		5	4	7	0	1	1	18	372	0	0	0	16	388	0	406
PER CENT		1.2	1.0	1.7	0.0	0.2	0.2	4.4	91.6	0.0	0.0	0.0	3.9	95.6	0.0	100.0

POL POLAND — RABIES CASES — 1. 4.84 - 30. 6.84

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		
03 BIALA PODLASKA	1	1	-	-	-	-	2	-	1	-	-	-	1		3
05 BIALYSTOK	1	-	-	-	-	-	1	4	-	-	-	2	6		7
07 BIELSKO-BIALA							0	1	-	-	-	-	1		1
09 BYDGOSZCZ	1	-	-	-	-	1	2	13	1	-	-	1	15		17
11 CHELM							0	1	-	-	-	-	1		1
13 CIECHANOW							0	1	-	-	-	-	1		1
17 ELBLAG	1	-	-	-	-	-	1	3	-	-	-	3	6		7
19 GDANSK	1	1	-	-	-	-	2	-	-	-	2	-	2		4
21 GORZOW	1	-	2	-	-	-	3	14	-	1	1	-	16		19
23 JELENIA GORA	1	-	-	-	-	-	1	9	-	-	-	-	9		10
25 KALISZ							0	2	-	-	-	-	2		2
31 KONIN							0	1	-	-	-	-	1		1
33 KOSZALIN	3	7	-	-	-	-	10	4	-	1	5	-	10		20
35 KRAKOW	-	1	-	-	-	-	1						0		1
37 KROSNO							0	1	-	-	-	-	1		1
39 LEGNICA							0	2	-	-	-	-	2		2
41 LESZNO	-	1	-	-	-	-	1	1	-	-	-	-	1		2
43 LUBLIN	1	1	-	-	-	-	2	3	-	-	2	1	6		8
51 OLSZTYN	1	-	-	-	-	-	1	3	-	-	-	4	7		8
53 OPOLE	-	1	-	-	-	-	1	9	1	-	-	-	10		11
57 PILA	-	3	-	-	-	-	3	1	-	1	-	-	2		5
61 PLOCK	2	-	2	-	-	-	4	1	-	-	-	-	1		5
63 POZNAN	2	8	-	-	-	1	11	28	-	2	6	1	37		48
67 RADOM							0	-	-	1	-	-	1		1
71 SIEDLCE							0	2	2	-	-	-	4		4
75 SKIERNIEWICE							0	-	-	-	1	-	1		1
77 SLUPSK	4	-	-	-	-	-	4	13	-	2	-	2	17		21
79 SUWALKI	2	1	-	-	-	-	3	1	-	-	1	5	7		10
81 SZCZECIN	4	2	-	-	-	-	6	7	-	-	4	-	11		17
83 TARNOBRZEG							0	-	-	-	1	-	1		1
87 TORUN	2	1	-	-	-	-	3	3	-	1	-	-	4		7
89 WALBRZYCH							0	4	-	-	-	-	4		4
93 WROCLAW	-	-	1	-	-	-	1	11	-	-	-	-	11		12
95 ZAMOSC							0	2	-	-	-	-	2		2
97 ZIELONA GORA	-	6	-	-	-	-	6	7	-	4	3	-	14		20
TOTAL	28	34	5	0	0	2	69	152	5	13	26	19	215	0	284
PER CENT	9.9	12.0	1.8	0.0	0.0	0.7	24.3	53.5	1.8	4.6	9.2	6.7	75.7	0.0	100.0

SWI SWITZERLAND AND LIECHTENSTEIN — RABIES CASES — 1. 4.84 - 30. 6.84

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	AARGAU	-	1	-	-	-	-	1	21	1	-	-	-	22		23
03	APPENZELL I.RH.							0	-	-	1	-	-	1		1
04	BASEL-STADT							0	-	-	1	-	-	1		1
05	BASEL-LAND	-	-	-	-	2	-	2	11	4	2	-	-	17		19
06	BERN	1	-	-	-	-	-	1	15	6	3	-	-	24		25
07	FRIBOURG							0	5	2	-	-	-	7		7
08	GENEVE							0	5	-	-	-	-	5		5
09	GLARUS							0	11	2	-	-	-	13		13
10	GRAUBUENDEN	-	-	2	-	-	-	2	1	-	-	-	-	1		3
12	NEUCHATEL	-	-	-	1	-	-	1						0		1
15	SCHAFFHAUSEN							0	8	-	-	-	-	8		8
17	SOLOTHURN	1	-	-	-	2	-	3	13	2	2	2	-	19		22
18	ST.GALLEN	-	6	1	-	1	-	8	10	-	-	-	-	10		18
20	THURGAU	-	1	-	-	-	-	1	8	-	1	1	-	10		11
22	VAUD	1	1	-	-	-	-	2	55	2	1	1	1	60		62
25	ZUERICH	-	2	1	-	2	-	5	26	-	2	3	-	31		36
26	JURA	-	-	1	-	2	-	3	6	1	1	-	-	8		11
LI	LIECHTENSTEIN	-	-	-	-	1	-	1	2	-	-	-	-	2		3
TOTAL		3	11	5	1	10	0	30	197	20	14	7	1	239	0	269
PER CENT		1.1	4.1	1.9	0.4	3.7	0.0	11.2	73.2	7.4	5.2	2.6	0.4	88.8	0.0	100.0

TUR TURKEY — RABIES CASES — 1. 4.84 - 30. 6.84

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	10	-	4	-	-	1	15						0		15
002	ADIYAMAN	1	-	-	-	-	-	1						0		1
003	AFYON	13	1	4	-	-	-	18						0		18
005	AMASYA	1	-	-	-	-	-	1						0		1
006	ANKARA	8	2	-	1	2	1	14						0		14
007	ANTALYA	3	4	2	1	-	-	10						0		10
009	AYDIN	5	-	3	-	-	-	8						0		8
010	BALIKESIR	2	1	-	-	1	-	4						0		4
011	BILECIK	7	-	-	-	-	-	7						0		7
012	BINGOEL	1	-	-	-	-	-	1						0		1
014	BOLU	8	-	1	-	-	-	9						0		9
015	BURDUR	3	1	1	-	-	1	6						0		6
016	BURSA	13	-	-	-	2	-	15						0		15
017	CANAKKALE	3	-	-	1	-	-	4						0		4
018	CANKIRI	-	-	1	-	-	-	1						0		1
019	CORUM	5	-	-	-	-	-	5						0		5
020	DENIZLI	14	-	-	-	1	-	15	-	-	-	-	1	1		16
021	DIYARBAKIR	1	-	1	1	-	-	3						0		3
022	EDIRNE	1	-	-	-	-	-	1						0		1
023	ELAZIG	-	-	-	-	-	1	1						0		1
024	ERZINCAN	1	1	-	-	-	-	2						0		2
025	ERZURUM	2	-	1	-	-	-	3						0		3
026	ESKISEHIR	4	-	1	-	-	-	5						0		5
027	GAZIANTEP	6	-	6	-	3	-	15						0		15
028	GIRESUN	-	-	-	-	1	-	1						0		1
029	GUEMUESHANE	-	-	-	-	-	1	1	-	-	-	-	2	2		3
031	HATAY	7	-	2	-	2	-	11						0		11
032	ISPARTA	1	-	-	-	-	-	1						0		1
033	ICEL	4	-	1	-	-	1	6						0		6
034	ISTANBUL	11	1	1	-	-	-	13						0		13

TUR 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		
035	IZMIR	27	5	5	-	-	1	38						0		38
036	KARS	1	-	-	-	-	-	1						0		1
037	KASTAMONU	9	1	8	-	-	-	18						0		18
038	KAYSERI	3	-	1	-	-	-	4						0		4
039	KIRKLARELI	1	-	1	-	-	-	2						0		2
040	KIRSEHIR	4	-	-	-	-	-	4						0		4
041	KOCAELI	13	-	4	-	-	-	17						0		17
042	KONYA	19	6	-	-	1	-	26						0		26
044	MALATYA	1	-	-	-	-	-	1						0		1
045	MANISA	6	-	1	-	-	1	8						0		8
046	KAHRAMAN MARAS	1	-	-	-	-	-	1						0		1
047	MARDIN	-	-	-	-	1	-	1						0		1
048	MUGLA	2	-	-	-	-	-	2						0		2
050	NEVSEHIR	3	1	-	-	-	-	4						0		4
051	NIGDE	-	-	1	-	-	-	1						0		1
052	ORDU	10	-	1	-	-	-	11						0		11
054	SAKARYA	12	-	6	-	-	-	18						0		18
055	SAMSUN	15	5	6	-	-	-	26	-	-	-	-	1	1		27
057	SINOP	3	-	2	-	-	-	5						0		5
058	SIVAS	1	-	-	1	-	-	2						0		2
060	TOKAT	2	-	1	-	-	-	3						0		3
061	TRABZON	1	-	-	-	-	-	1	-	1	-	-	-	1		2
063	URFA	2	-	-	-	-	-	2						0		2
064	USAK	-	1	-	-	-	-	1						0		1
066	YOZGAT	4	-	3	-	1	-	8						0		8
067	ZONGULDAK	5	-	13	-	-	1	19						0		19
TOTAL		280	30	82	5	15	9	421	0	1	0	0	4	5	0	426
PER CENT		65.7	7.0	19.2	1.2	3.5	2.1	98.8	0.0	0.2	0.0	0.0	0.9	1.2	0.0	100.0

USR UNION OF SOVIET SOCIALIST REPUBLICS (EUROPEAN PART)

R A B I E S C A S E S IN ANIMALS

1.10.83 - 31.12.83

LOCATION CODE	NAME	DATES 1.10. - 31.10.	DATES 1.11. - 30.11.	DATES 1.12. - 31.12.	TOTAL
01	RSFSR				
011	REGIONS OF THE NORTH AND THE NORTH-WEST	-	-	-	-
012	REGIONS OF THE CENTRE	8	7	13	28
013	REGIONS OF THE NORTH CAUCASUS	3	8	11	22
014	REGIONS OF THE POVOLJE AND THE URALS	10	12	14	36
02	THE MOLDAVIAN SSR	1	1	-	2
03	THE UKRAINIAN SSR	34	37	41	112
04	THE BYELORUSSIAN SSR	3	3	4	10
05	THE LITHUANIAN SSR	1	2	2	5
06	THE LATVIAN SSR	2	5	2	9
07	THE ESTONIAN SSR	2	1	1	4
TOTAL		64	76	88	228

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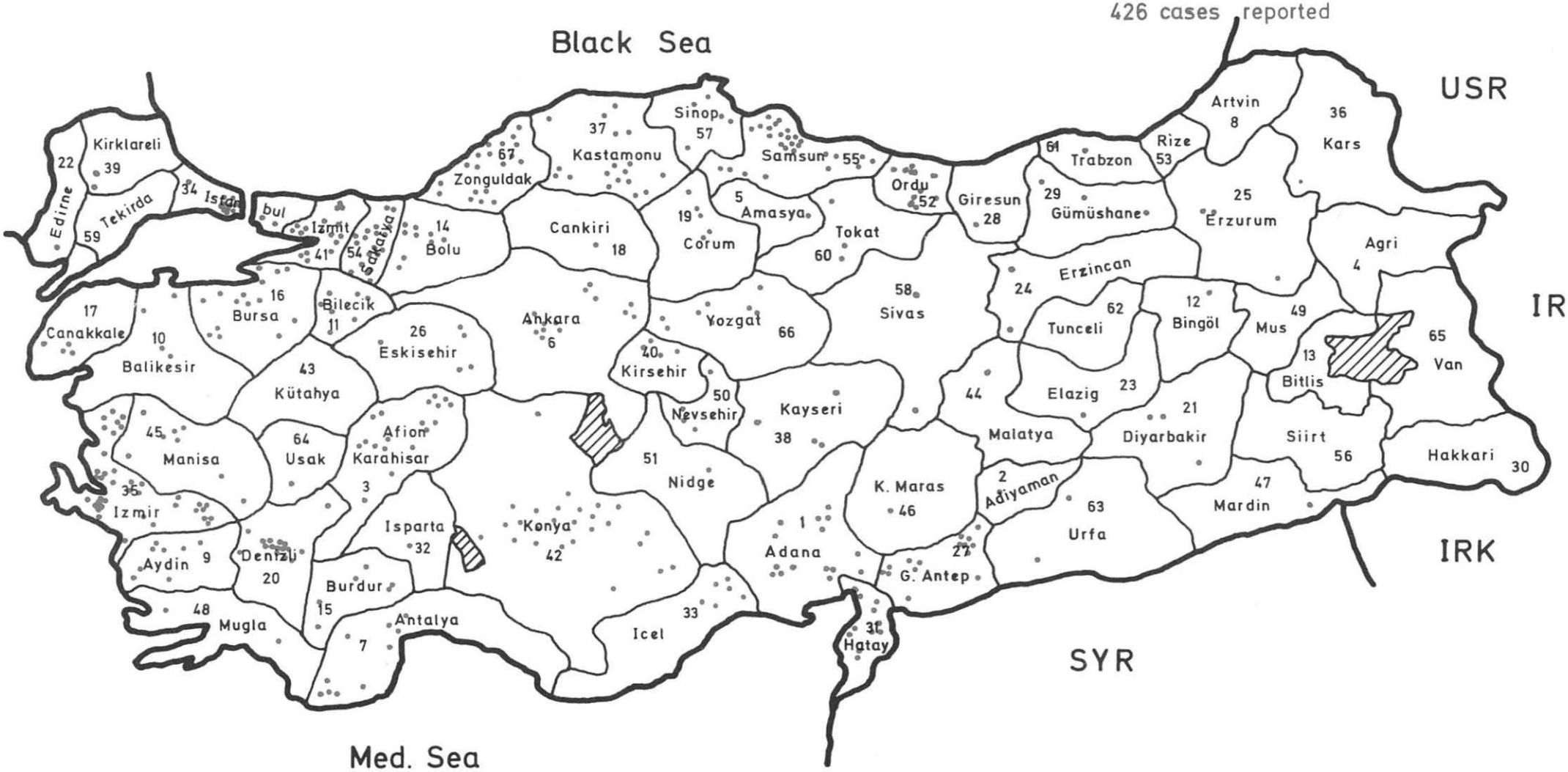
WHO Coll. Centre
Tuebingen / DEU

Rabies Cases Turkey
2nd Quarter 1984
426 cases reported



WHO Coll. Centre
Tuebingen / DEU

Rabies Cases Europe
2nd Quarter 1984

4867 cases reported

ISL
(rabies free)

NOR
(rabies free)

FIN
(rabies free)

SWE
(rabies free)

DEN
(rabies free)

IRE
(rabies free)

GBR
(rabies free)

NET
(16)

BEL
(87)

DEU
(1514)

DDR
(415)

POL
(284)

CZE
(no data)

FRA
(687)

AUT
(441)

HUN
(156)

SWI
(269)

ROM
(16)

ITA
(141)

YUG
(406)

BUL
(rabies free)

POR
(rabies free)

SPA
(mainland rabies free)

ALB
(no data)

GRE
(0)

TUR
(426)

0 50 100 km