RABIES BULLETIN EUROPE - Vol. 6/No 3/1982

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1. INTRODUCTION

This isssue describes the reported rabies cases in Europe for the 3rd quarter 1982. The situation in general is described under 2, and in individual countries under 2.1 to 2.26. The rabies case data are tabulated under 4.

Data for the 3rd quarter 1982 have not yet been received from the European part of the USSR; the rabies situation in the European part of the USSR in the 2nd quarter 1982 is included in this Bulletin.

In Section 3 there is an article titled 'Types of Rabies Occurrence, Rabies Occurrence and Habitat and Strategies for Wildlife Rabies Control'. The article is based on both the report of a WHO meeting in January 1982 in Geneva, and on more recent results. Using more than 30 years data from the Federal Republic of Germany, cautious statements have been made about: different types of rabies occurrence; interpretation in terms of fox populations; basic habitat features in regions with a distinct type of rabies occurrence; the application of such results in planning control operations. Recommendations for future work are also made.

The geographical distribution of rabies cases in Europe during the 3rd quarter 1982 is shown on the maps in the Annex.

2. RABIES IN EUROPE, 3RD QUARTER 1982

During the 3rd quarter 1982, 4838 cases of rabies were diagnosed in Europe. There were 3460 cases in wild animals of which 3071 were foxes (63.5% of total cases), 208 mustelids (4.3%), 140 deer (2.9%) and 41 in unspecified animals or other species. Of the 1378 cases in domestic animals, 337 were dogs (7.0% of total cases), 177 cats, 607 cattle (12.5%), 208 sheep, 22 horses, 21 donkeys and 6 others.

The number of diagnosed cases is the highest reported to the Centre for a third quarter of the year (data for 1977 and 1978 not complete). In comparison with the 2nd quarter 1982, the total of reported cases fell by 257 from 5095. Considerable decreases were reported by Austria, Czechoslovakia, France, Hungary, Switzerland, Turkey and Yugoslavia, and a smaller decrease from Belgium - in total, a reduction of 703 cases from 3225 in the 2nd quarter to 2522. In contrast, the German Democratic Republic the Federal Republic of Germany, Italy, Luxembourg and Poland reported a total increase of 446 cases from 1850 in the 2nd quarter to 2296 in the 3rd quarter.

Bulgaria, Finland, the United Kingdom, Ireland, the Netherlands, Portugal and Sweden continued rabies free and no cases were reported from Denmark, Greece and Norway.

There were no cases of rabies in man.

Individual country reports follow:

2.1 Rabies in Austria (AUT)

by W. Krocza and E. Scharfen

154 animals (147 wild animals and 7 domestic animals) were reported rabid in the 3rd quarter 1982. The total was almost 50% less than that of the 2nd quarter (289 cases).

The rabies wavefront in Lower Austria is at present confined to the Bezirks Scheibbs, Melk, St. Pölten-Land, Lilienfeld, Wiener Neustadt-Land and Neunkirchen. In the Burgenland Styria, the disease has spread primarily north and westwards from Bezirk Voitsberg into Leoben, Knittelfeld, Judenburg and Murau.

Scattered cases of rabies were reported from Carinthia while in east (Bezirk Lienz) and north Tirol (Bezirke Kufstein and Reutte) localised cases were recorded.

Except for single cases, the Vorarlberg, Burgenland and Lower Austria north of the Danube were free of rabies. The Bundesländer Vienna, Upper Austria and Salzburg registered no cases of rabies.

2.2 Rabies in Belgium (BEL)

by R. Depierreux

During the 3rd quarter 1982, 128 rabies cases were diagnosed. There were 67 cases in wild animals (65 foxes, 1 pine marten and 1 roe deer) and 61 in domestic animals (44 cattle, 2 horses, 11 sheep, 1 goat and 3 cats). There were 27 cases in Liège province and 101 in Luxembourg, 41 cases in the north and 60 in the south of the province.

The situation registered during the third quarter is on all points similar to that of the preceding quarter: the number of cases, their geographic distribution and the progression of the enzootic are almost coincident. Nevertheless, a particularly active focus of rabies in the region of Marche-en-Famenne, near the boundary to the province of Namur deserves mentioning and underlines the general tendency for the evolution of the front to move westwards in the direction of this province.

2.3 Bulgaria (BUL)

The country remained rabies-free.

2.4 Rabies in Czechoslovakia (CZE)

by J. Neumann

In the 3rd quarter 1982, 370 cases of rabies were diagnosed in Czechoslovakia. 7.3% of cases were ascertained in domestic animals and 92.7% in wildlife species. There were 322 cases in the fox (87.0% of total), 17 cases in mustelids, 4 deer, 12 dogs, 11 cats, 2 horses and 2 sheep.

Rabies occurred for the first time this year in the following districts: Praha-východ, Prachatice, Tábor, Galanta, Dolný Kubín, Prievidza, Presov, Spisská Nová Ves and Vranov. High densities of rabies cases were reported from the districts Chomutov (22 cases), Klatovy (57) and Blansko (27).

Although fewer cases of rabies were reported in the 3rd quarter 1982 than in the 1st and 2nd quarters (550 and 460 respectively) the number of cases in the first nine months of 1982 showed an increase of 84% compared with the same period of 1981 (1981 - 751 cases; 1982 - 1380 cases). During 1982, central districts of Czechoslovakia have reported a higher proportion of cases than in previous years.

No case of rabies was recorded in man.

2.5 Rabies in Denmark (DEN)

by S. Møllgaard

No case of rabies was diagnosed in July, August and September 1982.

In view of the favourable situation in the northern part of the Federal Republic of Germany, and of the last case of rabies in Denmark in a fox being reported in April 1981, it has seemed reasonable to suspend the measures implemented to fight and control the disease.

The gassing of fox dens stopped in June and the poisoning of foxes with strychnine in July. The regulations applying to the combat zone in South Jutland have also been discontinued.

2.6 Rabies in Germany, Democratic Republic (DDR)

During the 3rd quarter 1982, 417 cases of rabies were diagnosed. 316 of these (76% of total) were in wild animals and 101 in domestic animals. There were 291 cases in foxes, 11 in mustelids, 14 deer, 13 dogs, 19 cats, 40 cattle, 28 sheep and 1 horse.

Compared with the previous quarter (399 cases) there has been a small increase in reported cases whereas in comparison with the 3rd quarter 1981 there has been a reduction of 11% (from 470).

The Bezirke Halle, Leipzig, Cottbus and Dresden in the south-central and south east of the country reported only 32 cases, less than 10% of the total. The Bezirk Gera is the south reported the heaviest density of cases. In general, Bezirke in the west and south of the country reported a higher density of cases than those in the east.

2.7 Rabies in Germany, Federal Republic (DEU)

A total of 1555 rabies cases were reported during the 3rd quarter 1982. 81% (1260 cases) were in wild animals - 1066 foxes, 31 badgers, 69 other mustelids, 93 deer and 1 wild boar. In domestic animals, 3 dogs, 35 cats, 177 cattle, 69 sheep, and 11 other animals were reported rabid.

In comparison with the previous quarter (1246 cases) there has been an increase of 25%. Approximately half this increase was due to increased numbers of rabid cattle (30 cases in 2nd quarter 1982).

Significant increases were reported from the Regierungsbezirke Köln (from 65 in 2nd quarter to 118 in 3rd quarter), Kassel (from 172 to 257), Freiburg (from 88 to 128) and Schwaben (from 33 to 69). In the first two

areas 62% of the increase was due to more cases in cattle whereas in Freiburg and Schwaben, 63% of the increase was due to more cases in foxes.

Areas of the country currently heavily infected, include the northern two thirds of Hessen, the south western tip of Nordrhein-Westfalen and the Kreise Freudenstadt and Waldshut in Baden-Wuerttemberg.

2.8 Finland (FIN)

The country remained rabies-free.

2.9 Rabies in France (FRA)

by J. Blancou

770 cases of rabies were reported during the 3rd quarter 1982, 104 cases fewer than during the 2nd quarter of the year (11.9% reduction). Of the total, 518 cases were registered in foxes (67.3%), 25 in other wild animals and 227 in domestic animals (14 dogs, 34 cats, 101 cattle, 72 sheep, 5 horses and 1 unspecified).

A particularly high number of cases came from the department Doubs (109) and Jura (119).

The general tendencies described in previous Bulletins for the 1st and 2nd quarters of the year were maintained. In particular, the advance to the west has stopped and in places even retreated. Two new cases from the department Oise however, possibly indicates a new movement of the rabies front in the north. The advance southwards into the department of the Isère continued.

2.10 Rabies in Greece (GRE)

No cases of rabies were reported in the 3rd quarter 1982.

2.11 United Kingdom (GBR)

The country remained rabies-free.

2.12 Rabies in Hungary (HUN)

A total of 187 cases of rabies were diagnosed in Hungary during the third quarter 1982. There were 172 cases (92% of total) in foxes, 10 cases in cats, 1 dog, 3 cattle and 1 wild cat. Compared with the previous quarter (246 cases) there has been a reduction of 24%; the total is little different compared with the third quarter 1981 (194 cases).

The majority of Komitates reported fewer cases than in the 2nd quarter 1982 and of the 5 Komitates with an increase, only two (Tolna - increase from 4 to 8 cases; Csongrad - from 1 to 8 cases) reported an increase of more than 2 cases. The Komitates Fejer and Borsod reported the highest density of rabies, respectively 31 and 32 cases. In Borsod, 18 cases were concentrated in the town of Miskolc and its surrounding communities.

2.13 Ireland (IRE)

The country remained rabies-free.

2.14 Rabies in Italy (ITA)
by S. Prosperi

During the 3rd quarter 1982, 88 cases of rabies were confirmed in 4 regions of the Alps - Lombardy, Alto Adige, Veneto, Friuli. In comparison with the 2nd quarter 1982 (82 cases) a slight increase was observed. The following wild animals were diagnosed as infected: 67 foxes (76% of total) 8 badgers, 5 pine martens, 1 beech marten and 2 roe deer. Among domestic animals, rabies was ascertained in 3 cats and 2 dogs. For the first time since urban rabies was eradicated and sylvatic rabies entered Italy, rabies was reported in dogs.

34 municipalities were found to be infected during the 3rd quarter and rabies was reported for the first time in 10 of these (new outbreaks). The front progressed in the provinces of Belluno (2 municipalities) and Trieste and Udine (8 municipalities) whereas no new outbreaks were observed in Bolzano and Lombardy.

2.15 Rabies in Luxembourg (LUX)
by R. Frisch

The occurrence of rabies in the Grand Duchy of Luxembourg increased sharply in the 3rd quarter 1982. A total of 41 rabies cases were reported, 9 of which were domestic animals and 32 wild animals. Surprisingly, the east of the country was unaffected by rabies. The District of Diekirch in the northern half of the country reported 31 cases.

In the first 9 months of 1982, 98 rabies cases have been reported. In comparison, only 23 and 86 cases were reported during the whole of 1980 and 1981 respectively.

2.16 Netherlands (NET)

The country remained rabies-free.

2.17 Rabies in Norway (NOR)

No case of rabies was reported from the Island of Svalbard in the 3rd quarter 1982.

2.18 Rabies in Poland (POL)

A total of 195 rabies cases were reported during the 3rd quarter 1982. There were 144 cases in wild animals of which 127 (65.1% of total) were foxes, and 51 in domestic animals. The number of cases was almost double that of the 2nd quarter of this year (99 cases) whereas compared with the 3rd quarter of 1981 (80 cases) the increase is 144%.

As in the previous quarter, the highest density of cases was reported from the department Walbrzych in the south west. A total of 57 cases were diagnosed from this department and although the number of cases in foxes was little changed (31 in 2nd quarter; 35 in 3rd quarter), there were 18 cases in cattle (no cases in the 2nd quarter).

Rabies infections were concentrated in the western third of the country (153 cases or 78%). The departments Elblag, Olsztyn and Suwalki in the north reported a total of 24 cases. All other infected departments reported 1 to 4 cases.

2.19 Portugal (POR)

The country remained rabies-free.

2.20 Rabies in Rumania (RUM)

During the 3rd quarter 1982, 20 rabies cases were diagnosed in Rumania. There were 18 cases in domestic animals, predominantly cattle (14 cases or 70% of all cases), and 2 in foxes. 20 cases were also reported during the 2nd quarter 1982 but although there were 15 cases in domestic animals only 2 were in cattle. In the 3rd quarter 1981, with 50 reported cases, there was a similarly high proportion of cases in cattle (32 cases, 64% of total) but also relatively more foxes (12 cases, 24%).

11 of the 20 cases in the 3rd quarter 1982 came from the regions Satu-Mare and Maramures in the north. 3 cases were reported from Caras-Severin region and the others were single cases in each of the regions, Iasi, Alba, Arad, Brasov, Dimbovita, Giurgui.

2.21 Rabies in Spain (SPA)

2nd and 3rd quarters 1982

No cases were registered during the reporting periods.

2.22 Sweden (SWE)

The country remained rabies-free.

2.23 Rabies in Switzerland (SWI)
by A. Wandeler

During the 3rd quarter 1982, the Swiss rabies diagnostic centre received 925 animals for examination. 222 of these (24%) were positive for rabies, compared with 242 (23% of 1054) in the 2nd quarter 1982 and with 287 (25%) in the 3rd quarter 1981. 67.6% were in foxes and 15.8% in domestic animals. An additional 36 animals (25 foxes, 10 martens and 1 badger) were diagnosed histologically in canton Vaud, bring the total of proven rabies cases to 258 (306 in 2nd quarter 1982).

It might be of interest to note that two marmots were also positive for rabies in FA and mouse inoculation tests. They originate from two different areas (in canton Berne and Graubünden) having a high incidence of fox rabies. Despite a considerable number of rodents being examined every year,

the only rabies cases diagnosed in rodents have been in marmots; a total of 4 in Switzerland since 1967.

During the period of observation, rabies penetrated from adjacent parts of cantons Vaud and Fribourg into the Bernese Simmental. Very little movement was seen in other parts of Switzerland. The overall incidence was lower than in the previous quarter.

Eight people were bitten by proven rabid animals, 7 by cats and 1 by a marten.

2.24 Rabies in Turkey (TUR)

During the 3rd quarter 1982, a total of 529 cases of rabies were diagnosed in Turkey. There were 522 cases in domestic animals: 281 dogs, 29 cats, 165 cattle, 47 other domestic animals; and 7 in non-domesticated animals (all house mice).

In comparison with the previous quarter (645 cases) there has been a reduction of 18%. Although the number of cases in dogs and sheep fell (by 141 cases from 442 and by 14 cases from 32, respectively), the number in cattle and donkeys increased (from respectively 135 to 165 and from 2 to 21).

Concentrations of rabies case were reported from Istanbul, Ankara and Izmir. The overall geographical distribution of cases has not changed; the south and east of the country reporting mainly scattered cases. The regions in the north and west reported about 90% of all cases in the 3rd quarter.

2.25 Rabies in Yugoslavia (YUG)

During the 3rd quarter 1982, a total of 126 cases of rabies were diagnosed in Yugoslavia. There were 120 cases in wildlife, of which 113 were foxes, and 6 in domestic animals (1 dog, 3 cats and 2 cattle).

The reported number of cases in the 3rd quarter is less than half that of the 2nd quarter 1982 (266 cases) and less than one sixth the total in the 1st quarter (674). Indeed from a peak during the 1st half of 1981, rabies occurrence has dropped substantially; during the 1st nine months of 1981 a total of 1794 cases of rabies were reported, compared with 1066 in the 1st nine months of 1982 (a 40.5% reduction).

Rabies infection continues to affect the northern strip of Yugoslavia. Throughout Wojwodina, central and eastern Croatia, reported cases were scattered and affected districts reported one to three cases. In east and west Slovenia and western Croatia, incidence was slightly higher; 10 districts reported between 4 and 13 cases, 17 districts reported between 1 and 3 cases.

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

by V. Pokrovskiy and B. Cherkasskiy

2nd Quarter 1982

During the 2nd quarter of 1982, 138 cases of rabies in animals were registered in the European part of USSR territory.

This is fewer than in the first quarter of 1982 (216 cases) though more than during the 2nd quarter 1981 (98 cases). The greatest number of rabies cases (61 or 44%) was registered on the territory of the Ukrainian Soviet Socialist Republics.

3. MISCELLANEOUS

Types of Rabies Occurrence, Rabies Occurrence and Habitat, and Strategies for Wildlife Rabies Control x)

At a WHO meeting in Geneva, January 1982, discussions centred on different types of rabies occurrence, the relationship between rabies occurrence and habitat and on the applicability of rabies control measures in different situations.

The basis for the discussions on rabies occurrence were rabies data from the Federal Republic of Germany. More recent information about land use and rabies occurrence is also included in this article. Discussions on rabies control measures were based on experience from a number of European countries.

A. Epidemiological Patterns of Rabies

The variation over time of reported cases/100 km^2 was plotted for 257 Kreis units in the Federal Republic of Germany. From these plots four distinct types of rabies occurrence were identified: insignificant, low undulations, intermittent, high oscillations. The geographic distribution of these types is localised - Figure 1.

It must be stressed that:

1) the patterns refer only to the Federal Republic of Germany;
2) for simplicity, only four types of rabies occurrence are named. mixed types and sub groups are not uncommon;
3) the effects of factors such as hunting habits and rabies control programmes are not taken into account;
4) the habitat description is extremely basic.

1. Insignificant

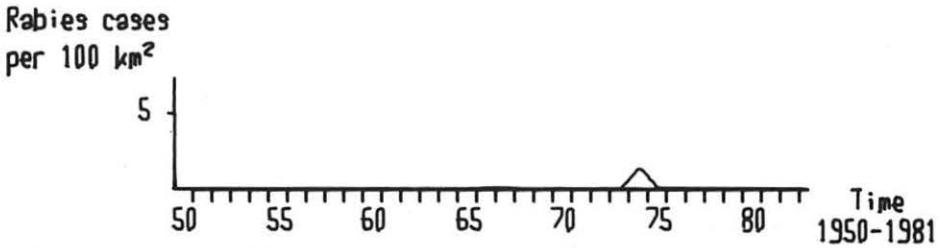

Figure 2. Representative example of insignificant pattern.

Rabies is either absent, sporadic at very low densities (not more than 3 reported cases/100 km^2/yr) or one peak (not more than 5 reported cases/100 km^2/yr) is recorded over a 20-year-period.

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x) Taken from: WHO document 'Development of Strategies for Wildlife Rabies Control in Europe'; and from Jackson, H. (in prep.): 'Rabies in the Federal Republic of Germany'.

This pattern is found in the western half of Niedersachsen, in north and west Nordrhein-Westfalen and also in South East Bayern.

Such a pattern can only occur in areas where inputs of rabies virus do not easily persist, suggesting either a low fox population density, a low fox to fox contact rate, or both.

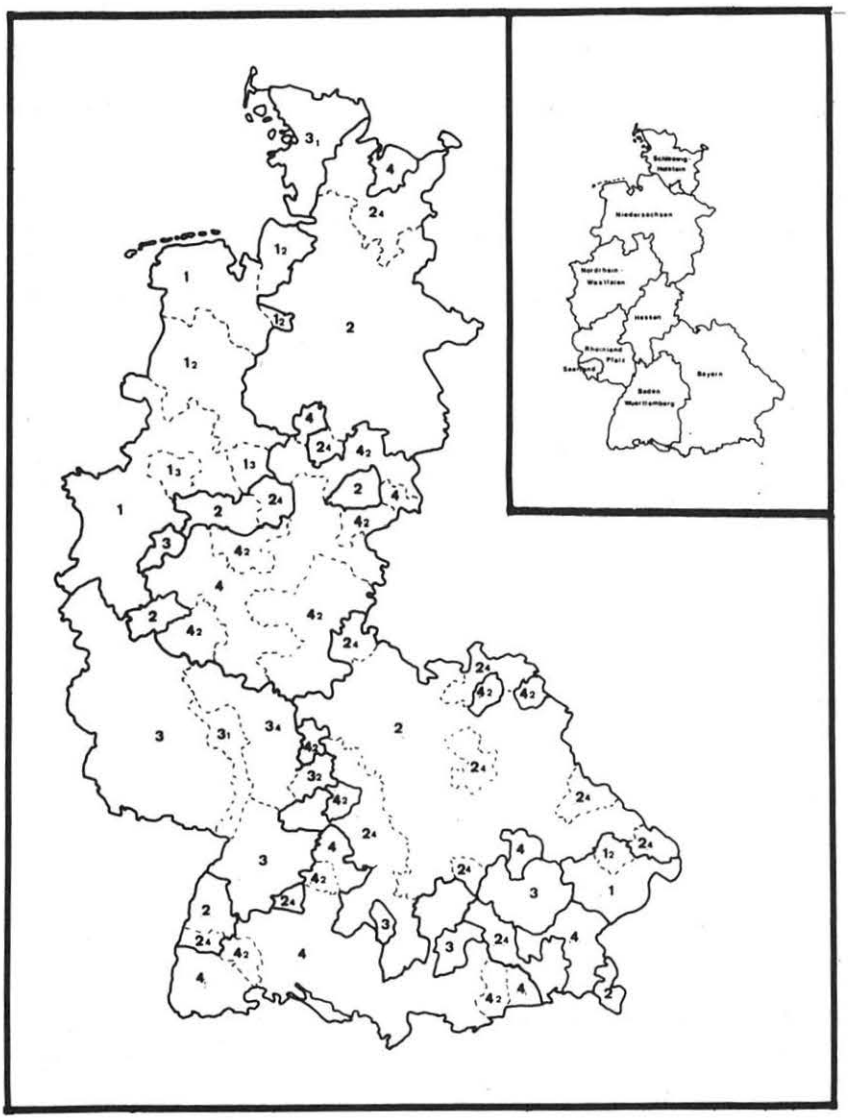

Figure 1. Geographic distribution of four types of rabies occurrence in the Federal Republic of Germany (without Berlin West).
1. Insignificant; 2. Low Undulations; 3. Intermittent;
4. High Oscillations. Large number indicates predominating pattern, small number indicates secondary pattern.
Inset: regions referred to in the text.

2. Low Undulations

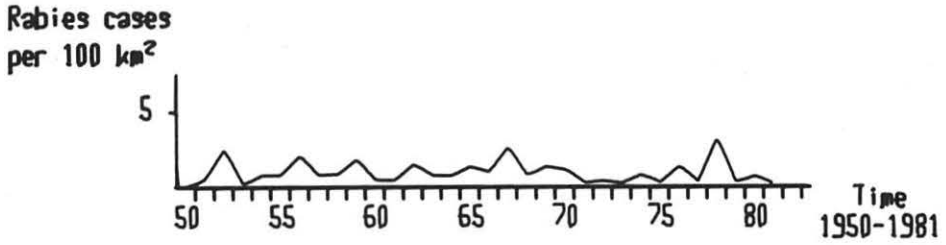

Figure 3. Representative example of low undulations pattern.

Rabies is usually continuously present at levels below 5 reported cases/100 km^2/yr. In the most representative members a background rabies occurrence is repeatedly interrupted by small ill-defined peaks.

The most typical examples of this class are found in the eastern half of Niedersachsen and the northern half of Bayern. In Schleswig-Holstein a trend to a 3-5 year periodicity with clearly defined peaks and troughs is seen. Well defined peaking in rabies occurrence, at irregular intervals, is seen in a number of small areas in the centre of the country.

Such a pattern suggests an area of intermediate fox population density and fox to fox contact rate where the population is not decimated by rabies or reduced below the threshold for continued rabies transmission. Alternatively, it could be a continuously circling pocket of rabies infection which averaged out, results at Kreis level, in an undulating graph.

3. Intermittent

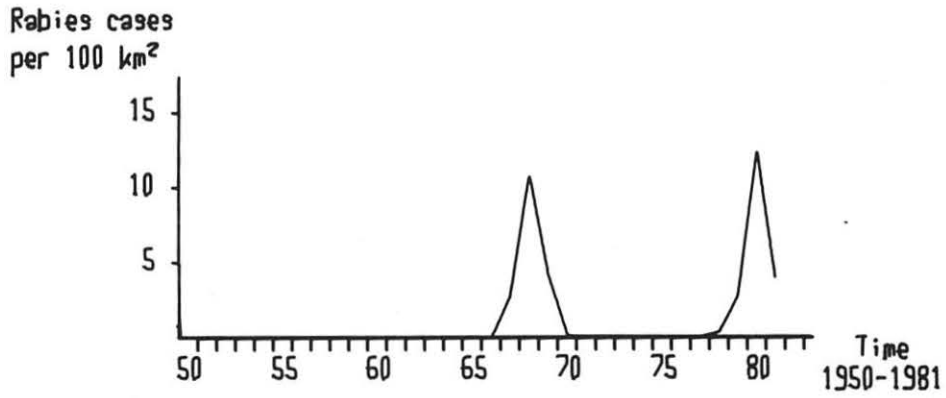

Figure 4. Representative example of intermittent pattern.

Peaks in rabies occurrence are interrupted by complete absence of rabies for 3-10 years. In many Kreise, the peaks are considerably more than 5 reported cases per 100 km^2.

This type of pattern is found in west Schleswig-Holstein, Rheinland-Pfalz and Nordrhein-Westfalen west of the river Rhine, Saarland, north west Baden-Württemberg, and a small part of central Bayern. In south Hessen, two consecutive peaks are followed by a period of rabies absence and then a further two peaks.

This pattern appears to be the result of waves of rabies infection moving across an area. In Rheinland-Pfalz, the first wave moved from east to west, a second less marked wave from west to east, and a third wave from the south east to the north west. The rabies absence following a rabies episode suggests that a large proportion of the fox population has been killed by rabies and reduced to below the threshold level for continued transmission. A barrier to fox movement e.g. the river Rhine could also explain the intermittent nature in the occurrence of rabies.

4. High Oscillations

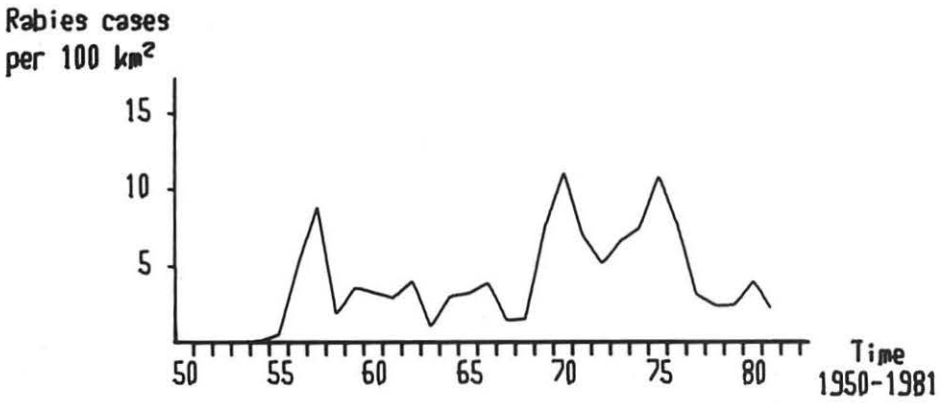

Figure 5. Representative example of high oscillations pattern.

Rabies is usually continuously present and peaks in occurrence are often more than 10 reported cases per 100 km^2 per year. A small number of Kreise show a fairly clear periodicity, though most, as in the figure show disturbances in the regularity. Intervals between peaks in rabies occurrence are usually 3-7 years.

This type of pattern is found in the central Federal Republic in eastern Nordrhein-Westfalen, south east Niedersachsen and Hessen excluding the southern tip. It is also found in a broad band across southern Baden-Württemberg and Bayern.

This pattern, suggests high fox to fox contact rates, and high population densities with a rapid turnover. Since rabies is usually continuously present, either inputs of rabies virus must be frequent or foci of rabies virus must always be present.

B. Landscape Characteristics and Rabies Occurrence

Eight regions were examined (2 regions for each rabies pattern) for altitude, forest, arable land, permanent grassland, special uses (vineyards and market gardening), and non agricultural land. The results are summarised in the Table and selectively discussed.

Insignificant patterns of rabies are found in two distinct areas. In region (i), this pattern is very clearly restricted to land under 100 m above sea level with very little forest (less than 10%). Region (ii) is very small (not much more than 250 km^2). The whole area lies more than 200 m above sea level with 26% forest, 32% permanent grassland and 35% arable land.

Region		Insignificant (i)	Insignificant (ii)	Low Undulations (iii)	Low Undulations (iv)	Intermittent (v)	Intermittent (vi)	High Oscillations (vii)	High Oscillations (viii)
Altitude									
0-100m	%	95	-	92	-	8	5	3	-
101-200m	%	5	-	6	2	22	30	21	-
201-300m	%	-	77	2	77	62	50	68	22
500m +	%	-	23	-	21	8	15	8	78
Land Use									
Forest	%	9	26	21	33	34	38	41	35
Permanent Grassland	%	39	32	28	21	16	14	17	38
Arable Land	%	35	35	39	39	33	34	30	18
Special Uses	%	5	1	4	2	8	7	3	2
Non Agricult.	%	12	6	8	5	9	7	9	7

Table. Percentage map cover of altitude and land use classes of rabies patterns 1-4 in the corresponding areas of: (i) Niedersachsen/Nordrhein-Westfalen; (ii) Bayern; (iii) Niedersachsen; (iv) Bayern; (v) Rheinland-Pfalz; (vi) Hessen/Baden-Württemberg; (vii) Hessen/Nordrhein-Westfalen; (viii) Baden-Württemberg/Bayern.

Regions (vii) and (viii) with a high oscillations rabies pattern are both topographically varied. Region (vii) lies predominantly between 200 and 500 m above sea level and forest covers 41% of the whole region. Region (viii) is characterised by a high percentage (35%) of forest and also of permanent grassland (38%). The whole area lies above 200 m above sea level with more than three quarters above 500 m.

There is a general tendency for the higher frequency types of rabies patterns (intermittent and high oscillations) to be found on higher lying ground with a greater than average forest cover. The lower frequency types of rabies patterns (insignificant and low undulations) have less forest cover and are found both on low and relatively high ground. Topographic variability is in general less than in the high frequency pattern areas.

C. Control Measures

It has become apparent that control operations are only effective if well planned and implemented in relation to the epidemiological situation.

Gassing of Fox Dens

Gassing has proved useful only in the first wave of rabies, and has led to large reductions of the fox population. A prerequisite for a successful gassing operation is an exact knowledge of den location. In landscapes where a high proportion of foxes do not live in earths gassing has no value. In areas where rabies appears repeatedly, e.g. Hessen, continuing gassing over years does not appear to be successful. One reason for this is the probable reduction in human motivation in the later campaigns.

Hunting

In certain terrains hunting can reduce the incidence of rabies, especially when young foxes are killed before becoming independent. Even with good conditions for foxes, in areas where small game hunting predominates, rabies may occur at low frequency, or be absent, even when bordering rabies-infected areas.

Intensive hunting, in particular in the spring and early summer can firstly prevent the spread of rabies from infected into rabies-free areas and secondly contribute to conditions leading to the elimination of rabies within a reasonable period of time (2-3 years). For this reason, intensive hunting from April to July should be encouraged and ensured by all the financial and organizational means available in infected and threatened areas.

From past experience, it must be assumed that the measures described above will be difficult to implement in some areas in Europe, especially in deer hunting regions.

Vaccination - Immunization of Foxes in Nature

The feasibility and potency/effectiveness of the vaccination of foxes, particularly by oral vaccine application (see Rabies Bulletin Europe, No. 1, 1982) has been confirmed in field trials carried out during the last few years. The advantage of this method is the large number of foxes which can be reached through appropriate baiting within a short period of time. The method can be applied over large areas. It recommends itself particularly where measures which aim at reducing fox population density do not lead to the desired result or are not applicable.

Moreover, oral immunization seems to be promising in situations where vaccination belts can be established to protect rabies free areas or where individual outbreaks of the disease can be neutralized by ring vaccination. Vaccination in the form of protective belts can in principle be applied to all four epidemiological patterns described above.

Large scale application taking advantage of epidemiological barriers can be considered in a heavily infected area, although this requires considerable effort including the repetition of vaccination over several years. In order to counteract an increase or a recovery of fox populations, specific hunting measures should be continued at least at normal rate.

All the above considerations are also theoretically valid for individual vaccination of captured foxes where the applicability of this method appears senseful. A final conclusion about the effectiveness of such a procedure has not yet been possible.

In general, there are still a number of methodological and organizational problems to be solved before oral immunization can be applied effectively. These concern firstly, the potency and safety tests for the vaccines already in use or being developed, and secondly, other technical matters such as the automatic filling of capsules and ampoules, stabilization and storage of the vaccine and its introduction into the bait.

With reference to the patterns of rabies occurrence described above, the following conclusions can be drawn with regard to the control of fox rabies:

Hunting and gassing

Type 1. - control measures are unnecessary.
Type 2. - gassing is not recommended. The elimination of rabies can possibly be achieved with intensive hunting.
Type 3. - Intensive hunting is required when a peak appears.
Type 4. - Control measures are required. In areas of suitable topography and high human motivation it is possible that a gassing campaign can achieve success. It should not be carried out for more than three consecutive years, and should begin when a rabies peak appears. Intensive hunting will complement the gassing.

Vaccination

According to present knowledge the oral vaccination of foxes could be used to establish protective belts in cases of outbreaks in all four epidemiological patterns described above.

There is a lack of experience concerning the feasibility and effectiveness of fox vaccination over very large areas without visible epidemiological barriers as boundaries.

D. Recommendations of the Report

1. Further areas (districts/counties) in Europe should be analyzed with respect to the prevailing epidemiological pattern.

2. Different landscapes belonging to each epidemiological pattern should be investigated more deeply for their characterizing features, e.g. land-use, human population, hunting habits and their spatial distribution.

3. Following the analyses under (1) and (2), a group of experts should specify further information required on characteristic areas belonging to the various epidemiological patterns. In particular, data should be collected retrospectively regarding the possible influence of control measures on the course of rabies observed. Hunting records may facilitate the interpretation of results.

4. International technical cooperation should ensure the collection of relevant data required for the classification of landscapes in relation to rabies and the possible effect of control measures on the epidemiological patterns observed.

5. The ultimate objective is the improvement of control strategies and their adaptation to ecological conditions.

TABLE 1

EUR EUROPE **3/82** RABIES CASES 1. 7.82 - 30. 9.82

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	1	4	-	1	-	7	128	11	4	4	-	147		154
BEL	BELGIUM	-	3	44	2	12	-	61	65	-	1	1	-	67		128
BUL	BULGARIA *							0						0		0
CZE	CZECHOSLOVAKIA	12	11	2	-	2	-	27	322	6	11	4	-	343		370
DEN	DENMARK *							0						0		0
DDR	GERMAN DEM. REPUBLIC	13	19	40	1	28	-	101	291	1	10	14	-	316		417
DEU	FED.REP. GERMANY 1)	3	35	177	8	69	3	295	1066	31	69	93	1	1260		1555
FIN	FINLAND *							0						0		0
FRA	FRANCE	14	34	101	5	72	1	227	518	8	-	2	15	543		770
GBR	UNITED KINGDOM *							0						0		0
GRE	GREECE *							0						0		0
HUN	HUNGARY	1	10	3	-	-	-	14	172	-	-	-	1	173		187
IRE	IRELAND *							0						0		0
ITA	ITALY	2	3	-	-	-	-	5	67	8	6	2	-	83		88
LUX	LUXEMBOURG	-	1	7	-	1	-	9	25	2	2	3	-	32		41
NET	NETHERLANDS *							0						0		0
NOR	NORWAY *							0						0		0
POL	POLAND	8	10	32	-	1	-	51	127	1	5	4	7	144		195
POR	PORTUGAL *							0						0		0
RUM	RUMANIA	1	3	14	-	-	-	18	2	-	-	-	-	2		20
SPA	SPAIN *							0						0		0
SWE	SWEDEN *							0						0		0
SWI	SWITZERLAND + LIECHT	-	15	16	-	4	-	35	175	11	21	13	3	223		258
TUR	TURKEY	281	29	165	6	18	23	522	-	-	-	-	7	7		529
YUG	YUGOSLAVIA	1	3	2	-	-	-	6	113	-	-	-	7	120		126
TOTAL		337	177	607	22	208	27	1378	3071	79	129	140	41	3460	0	4838
PER CENT		7.0	3.7	12.5	0.5	4.3	0.6	28.5	63.5	1.6	2.7	2.9	0.8	71.5	0.0	100.0

* NO CASES, 1) 1 CAT IMPORTED FROM NIGERIA.

TABLE 2

EUR EUROPE **1-3/82** RABIES CASES 1. 1.82 - 30. 9.82

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	3	13	9	-	3	-	28	579	56	10	31	-	676		704
BEL	BELGIUM	1	18	96	3	38	-	156	232	3	7	4	-	246		402
BUL	BULGARIA *							0						0		0
CZE	CZECHOSLOVAKIA	29	29	2	-	4	-	64	1256	21	23	13	3	1316		1380
DDR	GERMAN DEM. REPUBLIC	45	59	48	2	52	2	208	1028	6	24	50	4	1112		1320
DEN	DENMARK	-	-	1	-	-	-	1						0		1
DEU	FED.REP. GERMANY 1)	33	123	249	23	170	7	605	3358	103	180	287	6	3934		4539
FIN	FINLAND *							0						0		0
FRA	FRANCE	60	92	238	27	244	3	664	1902	34	-	13	54	2003		2667
GBR	UNITED KINGDOM *							0						0		0
GRE	GREECE	1	-	-	-	-	-	1						0		1
HUN	HUNGARY	18	39	16	-	3	-	76	949	4	-	2	3	958		1034
IRE	IRELAND *							0						0		0
ITA	ITALY	4	3	-	-	1	-	8	232	29	8	5	-	274		282
LUX	LUXEMBOURG	-	2	9	-	10	-	21	67	3	3	4	-	77		98
NET	NETHERLANDS *							0						0		0
NOR	NORWAY *							0						0		0
POL	POLAND	15	23	35	1	1	-	75	292	6	8	40	16	362		437
POR	PORTUGAL *							0						0		0
RUM	RUMANIA	6	6	16	3	12	-	43	26	1	-	-	2	29		72
SPA	SPAIN 2)	1	-	-	-	-	-	1						0		1
SWE	SWEDEN *							0						0		0
SWI	SWITZERLAND + LIECHT	8	67	26	-	33	-	134	655	49	56	47	5	812		946
TUR	TURKEY	1045	78	411	14	73	30	1651	-	-	-	-	26	26		1677
YUG	YUGOSLAVIA	8	15	7	-	1	1	32	1003	-	-	-	31	1034		1066
TOTAL		1277	567	1163	73	645	43	3768	11579	315	319	496	150	12859	0	16627
PER CENT		7.7	3.4	7.0	0.4	3.9	0.3	22.7	69.6	1.9	1.9	3.0	0.9	77.3	0.0	100.0

* NO CASES, 1) 1 CAT IMPORTED FROM NIGERIA, 2) IN NORTH AFRICA.

TABLE 3

EUR EUROPE **3/82** RABIES CASES 'OTHER ANIMAL SPECIES' 1. 7.82 - 30. 9.82

LOCATION CODE	NAME	OTHER DOMESTIC ANIMALS					OTHER WILD ANIMALS											TOTAL
		DONKEY	MULE	PIG	OTH.DOM HERBIVO	DOMEST RABBIT	RACOON DOG	WILD CAT	WILD BOAR	CHAMOIS	SQUIRREL	MARMOT	HAMSTER	BLACK RAT	HOUSE MOUSE	MUSKRAT	OTHER	
DEU	F.R.GERMANY	-	-	2	-	1	-	-	1	-	-	-	-	-	-	-	-	4
FRA	FRANCE	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	15	16
HUN	HUNGARY	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
POL	POLAND	-	-	-	-	-	3	-	-	-	1	-	1	1	-	1	-	7
SWI	SWITZERLAND	-	-	-	-	-	-	-	-	1	-	2	-	-	-	-	-	3
TUR	TURKEY	21	1	-	1	-	-	-	-	-	-	-	-	-	7	-	-	30
YUG	YUGOSLAVIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	7
TOTAL		21	1	3	1	1	3	1	1	1	1	2	1	1	7	1	22	68
PER CENT		30.9	1.5	4.4	1.5	1.5	4.4	1.5	1.5	1.5	1.5	2.9	1.5	1.5	10.3	1.5	32.4	100.0

AUT AUSTRIA — RABIES CASES — 1. 7.82 - 30. 9.82

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		
B5	NEUSIEDL AM SEE							0	1	-	-	-	-	1		1
K1	HERMAGOR							0	1	-	-	-	-	1		1
K2	KLAGENFURT-LAND							0	1	-	-	-	-	1		1
K4	SPITTAL/DRAU	-	1	1	-	-	-	2	9	-	-	-	-	9		11
K5	VILLACH-LAND							0	3	-	-	-	-	3		3
N5	GMUEND							0	1	-	-	-	-	1		1
N10	LILIENFELD							0	4	1	-	-	-	5		5
N11	MELK							0	2	-	-	-	-	2		2
N14	NEUNKIRCHEN	1	-	1	-	-	-	2	17	-	2	-	-	19		21
N15	ST. POELTEN-LAND							0	3	3	-	-	-	6		6
N16	SCHEIBBS	-	-	1	-	-	-	1	14	1	-	-	-	15		16
N19	WIENER NEUSTADT-LAN							0	2	-	-	-	-	2		2
ST5	GRAZ-LAND							0	-	3	-	-	-	3		3
ST7	JUDENBURG							0	1	-	-	1	-	2		2
ST8	KNITTELFELD							0	10	2	-	2	-	14		14
ST9	LEIBNITZ							0	1	-	-	-	-	1		1
ST10	LEOBEN							0	4	-	-	-	-	4		4
ST12	MUERZZUSCHLAG							0	1	-	-	-	-	1		1
ST13	MURAU	-	-	-	-	1	-	1	21	-	-	-	-	21		22
ST15	VOITSBERG							0	6	-	-	-	-	6		6
T1	IMST							0	1	-	-	-	-	1		1
T4	KUFSTEIN							0	8	1	1	1	-	11		11
T6	LIENZ	-	-	1	-	-	-	1	6	-	1	-	-	7		8
T7	REUTTE							0	10	-	-	-	-	10		10
V2	BREGENZ							0	1	-	-	-	-	1		1
TOTAL		1	1	4	0	1	0	7	128	11	4	4	0	147	0	154
PER CENT		0.6	0.6	2.6	0.0	0.6	0.0	4.5	83.1	7.1	2.6	2.6	0.0	95.5	0.0	100.0

RABIES CASES 1. 7.82 - 30. 9.82

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															
LG LIEGE	-	-	15	1	-	-	16	11	-	-	-	-	11		27
LX LUXEMBOURG	-	3	29	1	12	-	45	54	-	1	1	-	56		101
TOTAL	0	3	44	2	12	0	61	65	0	1	1	0	67	0	128
PER CENT	0.0	2.3	34.4	1.6	9.4	0.0	47.7	50.8	0.0	0.8	0.8	0.0	52.3	0.0	100.0
LUX LUXEMBOURG															
02 CAPELLEN	-	-	2	-	-	-	2	2	2	-	-	-	4		6
03 ESCH	-	-	1	-	-	-	1	1	-	-	-	-	1		2
04 LUXEMBOURG-CAMPAGNE							0	1	-	-	-	-	1		1
05 MERSCH							0	-	-	1	-	-	1		1
06 CLERVAUX	-	-	1	-	-	-	1	3	-	1	-	-	4		5
07 DIEKIRCH	-	-	-	-	1	-	1	6	-	-	2	-	8		9
08 REDANGE							0	5	-	-	-	-	5		5
09 WILTZ	-	1	3	-	-	-	4	6	-	-	-	-	6		10
10 VIANDEN							0	1	-	-	1	-	2		2
TOTAL	0	1	7	0	1	0	9	25	2	2	3	0	32	0	41
PER CENT	0.0	2.4	17.1	0.0	2.4	0.0	22.0	61.0	4.9	4.9	7.3	0.0	78.0	0.0	100.0
RUM RUMANIA															
01 ALBA	-	-	1	-	-	-	1						0		1
02 ARAD	-	-	1	-	-	-	1						0		1
08 BRASOV	-	-	1	-	-	-	1						0		1
11 CARAS-SEVERIN	1	-	1	-	-	-	2	1	-	-	-	-	1		3
16 DIMBOVITA	-	-	1	-	-	-	1						0		1
19 GIURGIU							0	1	-	-	-	-	1		1
24 IASI	-	1	-	-	-	-	1						0		1
25 MARAMURES	-	2	3	-	-	-	5						0		5
31 SATU-MARE	-	-	6	-	-	-	6						0		6
TOTAL	1	3	14	0	0	0	18	2	0	0	0	0	2	0	20
PER CENT	5.0	15.0	70.0	0.0	0.0	0.0	90.0	10.0	0.0	0.0	0.0	0.0	10.0	0.0	100.0

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. 7.82 - 30. 9.82

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		0
01	CENTRAL BOHEMIA							0	16	-	2	-	-	18		18
02	SOUTH BOHEMIA	1	-	-	-	-	-	1	18	-	-	-	-	18		19
03	WEST BOHEMIA	1	-	1	-	1	-	3	106	1	1	2	-	110		113
04	NORTH BOHEMIA	1	-	-	-	-	-	1	49	1	1	-	-	51		52
05	EAST BOHEMIA	-	2	-	-	-	-	2	37	1	1	1	-	40		42
06	SOUTH MORAVIA							0	55	1	3	1	-	60		60
07	NORTH MORAVIA	2	1	-	-	-	-	3	15	2	1	-	-	18		21
0	CSR	5	3	1	-	1	-	10	296	6	9	4	-	315		325
10	DISTRICT OF BRATISLAV							0						0		0
11	WEST SLOVAKIA	1	2	-	-	-	-	3	3	-	-	-	-	3		6
12	CENTRAL SLOVAKIA	5	3	1	-	1	-	10	18	-	1	-	-	19		29
13	EAST SLOVAKIA	1	3	-	-	-	-	4	5	-	1	-	-	6		10
1	SSR	7	8	1	-	1	-	17	26	-	2	-	-	28		45
TOTAL		12	11	2	0	2	0	27	322	6	11	4	0	343	0	370
PER CENT		3.2	3.0	0.5	0.0	0.5	0.0	7.3	87.0	1.6	3.0	1.1	0.0	92.7	0.0	100.0

DDR GERMAN DEMOCRATIC REPUBLIC — R A B I E S C A S E S — 1. 7.82 - 30. 9.82

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	-	1	-	-	-	-	1	4	-	-	1	-	5		6
03	DRESDEN	-	-	-	-	4	-	4	7	-	-	-	-	7		11
04	ERFURT	1	-	4	-	1	-	6	30	-	-	2	-	32		38
05	FRANKFURT/ODER	1	1	-	-	-	-	2	19	-	-	1	-	20		22
06	GERA	2	3	1	-	4	-	10	31	-	2	2	-	35		45
07	HALLE	-	-	1	-	-	-	1	11	-	2	-	-	13		14
08	KARL-MARX-STADT	3	5	3	-	16	-	27	12	-	1	-	-	13		40
09	LEIPZIG							0	-	-	-	1	-	1		1
10	MAGDEBURG	1	3	6	-	-	-	10	57	1	1	2	-	61		71
11	NEUBRANDENBURG	3	-	6	-	-	-	9	32	-	-	-	-	32		41
12	POTSDAM	-	4	3	-	-	-	7	32	-	2	-	-	34		41
13	ROSTOCK	2	-	3	1	-	-	6	11	-	1	3	-	15		21
14	SCHWERIN	-	2	10	-	-	-	12	36	-	1	2	-	39		51
15	SUHL	-	-	3	-	3	-	6	9	-	-	-	-	9		15
TOTAL		13	19	40	1	28	0	101	291	1	10	14	0	316	0	417
PER CENT		3.1	4.6	9.6	0.2	6.7	0.0	24.2	69.8	0.2	2.4	3.4	0.0	75.8	0.0	100.0

DEU FEDERAL REPUBLIC OF GERMANY — R A B I E S C A S E S — 1. 7.82 - 30. 9.82

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	-	-	1	-	-	-	1	2	-	1	-	-	3		4
020	HAMBURG							0						0		0
031	BRAUNSCHWEIG	-	1	1	-	-	-	2	20	-	-	-	-	20		22
032	HANNOVER	-	2	2	-	2	-	6	15	-	3	-	-	18		24
033	LUENEBURG	-	-	4	-	-	-	4	26	-	2	4	-	32		36
034	WESER-EMS							0	4	-	-	-	-	4		4
040	BREMEN							0						0		0
051	DUESSELDORF							0						0		0
053	KOELN	1	-	42	2	5	2	52	58	1	-	6	1	66		118
055	MUENSTER							0						0		0
057	DETMOLD	1	3	13	-	11	-	28	41	5	7	5	-	58		86
059	ARNSBERG	-	1	1	-	2	-	4	11	-	-	2	-	13		17
061	DARMSTADT	-	2	6	1	-	-	9	99	-	2	7	-	108		117
062	KASSEL 1)	-	9	53	2	14	-	78	138	3	14	24	-	179		257
071	KOBLENZ	1	6	15	-	12	-	34	75	3	3	9	-	90		124
072	TRIER	-	3	12	-	14	-	29	28	1	3	1	-	33		62
073	RHEINHESSEN-PFALZ	-	1	-	-	-	-	1	21	-	1	2	-	24		25
081	STUTTGART							0	47	2	1	2	-	52		52
082	KARLSRUHE	-	-	2	1	1	-	4	74	1	3	5	-	83		87
083	FREIBURG	-	2	3	2	5	-	12	94	6	9	7	-	116		128
084	TUEBINGEN	-	3	5	-	3	-	11	113	7	4	6	-	130		141
091	OBERBAYERN	-	1	12	-	-	-	13	75	2	7	2	-	86		99
092	NIEDERBAYERN							0	6	-	-	-	-	6		6
093	OBERPFALZ							0	19	-	1	1	-	21		21
094	OBERFRANKEN	-	1	-	-	-	1	2	11	-	3	1	-	15		17
095	MITTELFRANKEN							0	6	-	-	1	-	7		7
096	UNTERFRANKEN							0	12	-	-	2	-	14		14
097	SCHWABEN	-	-	3	-	-	-	3	56	-	5	5	-	66		69
100	SAARLAND	-	-	2	-	-	-	2	15	-	-	1	-	16		18
110	BERLIN (WEST)							0						0		0
TOTAL		3	35	177	8	69	3	295	1066	31	69	93	1	1260	0	1555
PER CENT		0.2	2.3	11.4	0.5	4.4	0.2	19.0	68.6	2.0	4.4	6.0	0.1	81.0	0.0	100.0

1) 1 CAT IMPORTED FROM NIGERIA.

FRA F R A N C E — R A B I E S C A S E S — 1. 7.82 - 30. 9.82

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	7	-	-	-	-	7		7
02	AISNE	-	1	-	-	1	-	2	21	-	-	-	1	22		24
08	ARDENNES	3	2	28	-	15	-	48	12	1	-	-	1	14		62
10	AUBE	-	1	-	-	-	-	1	22	-	-	-	1	23		24
21	COTE D'OR	-	1	5	-	7	-	13	31	-	-	-	1	32		45
25	DOUBS	-	10	6	-	9	-	25	82	-	-	1	1	84		109
38	ISERE							0	3	-	-	-	-	3		3
39	JURA	1	1	1	1	3	-	7	111	-	-	-	1	112		119
51	MARNE	-	2	-	-	-	-	2	7	-	-	-	-	7		9
52	MARNE (HAUTE)	-	-	4	-	6	-	10	32	-	-	-	1	33		43
54	MEURTHE-ET-MOSELLE	2	4	6	1	6	-	19	25	-	-	-	3	28		47
55	MEUSE	1	2	12	-	11	1	27	15	-	-	-	1	16		43
57	MOSELLE	-	3	23	-	7	-	33	23	-	-	-	-	23		56
58	NIEVRE							0	2	-	-	-	-	2		2
60	OISE	1	1	-	-	-	-	2						0		2
67	RHIN (BAS)	2	-	8	-	1	-	11	6	-	-	1	-	7		18
68	RHIN (HAUT)	1	2	-	-	-	-	3	1	-	-	-	-	1		4
70	SAONE (HAUTE)	-	-	2	-	3	-	5	35	-	-	-	-	35		40
73	SAVOIE	-	3	-	1	-	-	4	13	1	-	-	-	14		18
74	SAVOIE (HAUTE)	-	1	1	2	-	-	4	31	6	-	-	3	40		44
88	VOSGES	3	-	5	-	1	-	9	33	-	-	-	1	34		43
89	YONNE	-	-	-	-	2	-	2	6	-	-	-	-	6		8
TOTAL		14	34	101	5	72	1	227	518	8	0	2	15	543	0	770
PER CENT		1.8	4.4	13.1	0.6	9.4	0.1	29.5	67.3	1.0	0.0	0.3	1.9	70.5	0.0	100.0

HUN HUNGARY — RABIES CASES — 1. 7.82 - 30. 9.82

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	1	-	-	-	-	1		1
02	BARANYA	-	3	-	-	-	-	3	5	-	-	-	-	5		8
03	BACS-KISKUN	-	1	1	-	-	-	2	6	-	-	-	-	6		8
04	BEKES							0	6	-	-	-	-	6		6
05	BORSOD-ABAU-ZEMPLEN	-	1	1	-	-	-	2	29	-	-	-	-	29		31
06	CSONGRAD							0	8	-	-	-	-	8		8
07	FEJER							0	32	-	-	-	-	32		32
08	GYOER-SOPRON							0	6	-	-	-	-	6		6
09	HAJDU-BIHAR	-	3	-	-	-	-	3	6	-	-	-	-	6		9
10	HEVES							0	5	-	-	-	-	5		5
11	KOMAROM	-	1	-	-	-	-	1	6	-	-	-	-	6		7
12	NOGRAD							0	2	-	-	-	1	3		3
13	PEST							0	11	-	-	-	-	11		11
14	SOMOGY							0	6	-	-	-	-	6		6
15	SZABOLCS-SZATMAR	-	1	-	-	-	-	1	8	-	-	-	-	8		9
16	SZOLNOK							0	2	-	-	-	-	2		2
17	TOLNA	-	-	1	-	-	-	1	7	-	-	-	-	7		8
18	VAS							0	11	-	-	-	-	11		11
19	VESZPREM	1	-	-	-	-	-	1	13	-	-	-	-	13		14
20	ZALA							0	2	-	-	-	-	2		2
TOTAL		1	10	3	0	0	0	14	172	0	0	0	1	173	0	187
PER CENT		0.5	5.3	1.6	0.0	0.0	0.0	7.5	92.0	0.0	0.0	0.0	0.5	92.5	0.0	100.0

ITA ITALY — RABIES CASES — 1. 7.82 - 30. 9.82

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		
23030	CASTELLO DELL'ACQU							0	2	-	1	-	-	3		3
23036	TEGLIO							0	2	1	-	-	-	3		3
23037	TIRANO	1	-	-	-	-	-	1						0		1
25040	CORTENO GOLGI							0	6	-	1	-	-	7		7
25040	MONNO	-	1	-	-	-	-	1						0		1
32040	LORENZAGO DI CADOR							0	1	-	-	-	-	1		1
32040	SAN PIETRO DI CADO							0	-	2	-	1	-	3		3
32040	VIGO DI CADORE							0	3	-	-	-	-	3		3
32045	SANTO STEFANO DI C							0	-	1	-	-	-	1		1
33020	FORNI AVOLTRI							0	1	-	-	-	-	1		1
33020	CAVAZZO CARNICO							0	1	-	-	-	-	1		1
33020	ENEMONZO							0	2	-	-	-	-	2		2
33025	OVARO							0	1	-	-	-	-	1		1
33028	TOLMEZZO							0	1	-	-	-	-	1		1
33029	VILLA SANTINA							0	2	-	-	-	-	2		2
33040	FAEDIS							0	1	-	-	-	-	1		1
33040	GRIMACCO							0	2	-	-	-	-	2		2
33040	SAN LEONARDO DEL F							0	1	-	-	-	-	1		1
33040	SAVOGNA							0	-	1	-	-	-	1		1
33040	STREGNA	1	-	-	-	-	-	1						0		1
33040	TORREANO DI CIVIDA							0	1	-	-	-	-	1		1
33043	CIVIDALE DEL FRIUL							0	1	-	-	-	-	1		1
34010	SGONICO							0	1	-	-	-	-	1		1
34013	DUINO							0	1	-	-	-	-	1		1
34016	MONRUPINO							0	1	-	-	-	-	1		1
34018	SAN DORLIGO DELLA							0	3	-	-	1	-	4		4
34100	TRIESTE							0	6	-	-	-	-	6		6
39020	CASTELBELLO CIARDE							0	1	1	3	-	-	5		5
39020	MARTELLO	-	1	-	-	-	-	1	15	-	-	-	-	15		16
39020	PARCINES							0	2	-	-	-	-	2		2
39020	SENALES							0	3	1	-	-	-	4		4
39021	LACES							0	2	-	-	-	-	2		2
39025	NATURNO	-	1	-	-	-	-	1	-	-	1	-	-	1		2
39028	SILANDRO							0	4	1	-	-	-	5		5
TOTAL		2	3	0	0	0	0	5	67	8	6	2	0	83	0	88
PER CENT		2.3	3.4	0.0	0.0	0.0	0.0	5.7	76.1	9.1	6.8	2.3	0.0	94.3	0.0	100.0

POL POLAND — RABIES CASES — 1. 7.82 - 30. 9.82

LOCATION CODE	NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
		DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
01	WARSZAWA	-	1	-	-	-	-	1	-	-	-	-	1	1		2
11	CHELM							0	2	-	-	-	-	2		2
17	ELBLAG	-	1	4	-	-	-	5	5	1	-	-	3	9		14
21	GORZOW							0	2	-	-	-	-	2		2
23	JELENIA GORA	-	-	3	-	-	-	3	11	-	-	-	-	11		14
25	KALISZ							0	1	-	-	-	-	1		1
27	KATOWICE							0	4	-	-	-	-	4		4
29	KIELCE	-	1	-	-	-	-	1	1	-	-	-	-	1		2
33	KOSZALIN	4	2	1	-	-	-	7	9	-	1	-	1	11		18
37	KROSNO							0	1	-	-	-	-	1		1
39	LEGNICA	-	1	-	-	-	-	1	7	-	-	-	-	7		8
41	LESZNO							0	2	-	-	-	-	2		2
49	NOWY SACZ							0	1	-	-	-	-	1		1
51	OLSZTYN	1	-	1	-	-	-	2	2	-	-	1	-	3		5
53	OPOLE							0	2	-	-	-	-	2		2
63	POZNAN							0	2	-	-	-	-	2		2
77	SLUPSK							0	1	-	-	1	-	2		2
79	SUWALKI	1	-	2	-	-	-	3	-	-	-	-	2	2		5
81	SZCZECIN	1	2	-	-	-	-	3	7	-	1	1	-	9		12
85	TARNOW							0	1	-	-	-	-	1		1
89	WALBRZYCH	-	-	18	-	1	-	19	35	-	2	1	-	38		57
93	WROCLAW	-	-	2	-	-	-	2	17	-	1	-	-	18		20
95	ZAMOSC	-	1	-	-	-	-	1	1	-	-	-	-	1		2
97	ZIELONA GORA	1	1	1	-	-	-	3	13	-	-	-	-	13		16
TOTAL		8	10	32	0	1	0	51	127	1	5	4	7	144	0	195
PER CENT		4.1	5.1	16.4	0.0	0.5	0.0	26.2	65.1	0.5	2.6	2.1	3.6	73.8	0.0	100.0

SWI SWITZERLAND AND LIECHTENSTEIN — R A B I E S C A S E S — 1. 7.82 - 30. 9.82

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							0	2	-	-	-	-	2		2
02	APPENZELL A.RH.	-	1	-	-	-	-	1	1	-	-	-	-	1		2
03	APPENZELL I.RH.							0	4	-	-	-	-	4		4
05	BASEL-LAND	-	1	-	-	-	-	1						0		1
06	BERN	-	4	1	-	-	-	5	35	2	3	-	1	41		46
07	FRIBOURG	-	1	5	-	2	-	8	13	-	-	-	-	13		21
08	GENEVE							0	5	-	-	-	-	5		5
10	GRAUBUENDEN	-	1	3	-	-	-	4	24	1	2	3	1	31		35
12	NEUCHATEL							0	1	-	-	-	-	1		1
15	SCHAFFHAUSEN	-	1	-	-	-	-	1	5	-	-	1	-	6		7
16	SCHWYZ							0	4	-	-	-	-	4		4
18	ST.GALLEN	-	3	-	-	2	-	5	13	1	1	-	-	15		20
20	THURGAU	-	-	1	-	-	-	1	12	-	-	3	-	15		16
21	URI							0	7	6	1	2	1	17		17
22	VAUD	-	-	4	-	-	-	4	28	1	11	-	-	40		44
24	ZUG	-	1	-	-	-	-	1						0		1
25	ZUERICH	-	2	1	-	-	-	3	17	-	3	4	-	24		27
26	JURA	-	-	1	-	-	-	1	4	-	-	-	-	4		5
TOTAL		0	15	16	0	4	0	35	175	11	21	13	3	223	0	258
PER CENT		0.0	5.8	6.2	0.0	1.6	0.0	13.6	67.8	4.3	8.1	5.0	1.2	86.4	0.0	100.0

TUR TURKEY — RABIES CASES — 1. 7.82 - 30. 9.82

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	3	-	-	-	-	-	3						0		3
003	AFYON	4	1	-	-	-	-	5						0		5
005	AMASYA	3	-	3	-	2	-	8						0		8
006	ANKARA	25	-	1	-	-	-	26	-	-	-	-	1	1		27
007	ANTALYA	1	2	2	-	-	1	6						0		6
009	AYDIN	7	-	5	-	-	-	12						0		12
010	BALIKESIR	5	-	7	1	1	1	15						0		15
011	BILECIK	9	1	4	-	1	-	15						0		15
013	BITLIS	-	1	-	-	-	-	1						0		1
014	BOLU	7	-	8	-	1	-	16						0		16
016	BURSA	13	2	4	1	3	1	24						0		24
017	CANAKKALE	5	1	6	1	1	4	18						0		18
018	CANKIRI	2	-	5	1	-	-	8						0		8
019	CORUM	7	-	2	-	2	-	11						0		11
020	DENIZLI	5	-	1	-	-	-	6						0		6
021	DIYARBAKIR	3	-	3	-	-	1	7						0		7
022	EDIRNE	1	-	-	-	-	2	3						0		3
023	ELAZIG	1	-	-	-	-	-	1						0		1
024	ERZINCAN	-	-	-	-	1	-	1						0		1
025	ERZURUM	2	1	-	-	-	-	3						0		3
026	ESKISEHIR	1	-	2	1	-	1	5						0		5
027	GAZIANTEP	-	-	4	-	-	-	4						0		4
028	GIRESUN	4	2	2	-	-	-	8						0		8
033	ICEL	3	-	1	-	-	-	4						0		4
034	ISTANBUL	30	4	5	-	-	-	39						0		39
035	IZMIR	27	7	2	1	-	2	39	-	-	-	-	5	5		44
036	KARS	3	-	3	-	-	-	6						0		6
037	KASTAMONU	6	-	7	-	-	1	14						0		14

TUR CONTINUED

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		
038	KAYSERI	4	-	3	-	-	-	7						0		7
039	KIRKLARELI	5	1	6	-	-	1	13						0		13
040	KIRSEHIR	4	-	-	-	-	-	4						0		4
041	KOCAELI	5	-	4	-	-	-	9						0		9
042	KONYA	7	-	5	-	1	2	15	-	-	-	-	1	1		16
043	KUETAHYA	1	1	-	-	-	1	3						0		3
045	MANISA	7	1	2	-	-	1	11						0		11
047	MARDIN	1	-	1	-	-	1	3						0		3
048	MUGLA	6	-	2	-	-	-	8						0		8
050	NEVSEHIR	-	-	-	-	-	1	1						0		1
051	NIGDE	1	-	-	-	-	-	1						0		1
052	ORDU	11	-	3	-	1	-	15						0		15
054	SAKARYA	14	-	13	-	-	-	27						0		27
055	SAMSUN	15	1	11	-	1	1	29						0		29
057	SINOP	6	-	8	-	1	-	15						0		15
058	SIVAS	-	-	3	-	-	-	3						0		3
059	TEKIRDAG	4	2	1	-	-	-	7						0		7
060	TOKAT	1	-	3	-	-	-	4						0		4
061	TRABZON	2	-	-	-	-	-	2						0		2
062	TUNCELI	1	-	1	-	-	-	2						0		2
063	URFA	1	-	1	-	-	-	2						0		2
064	USAK	-	-	1	-	-	-	1						0		1
066	YOZGAT	5	-	12	-	2	1	20						0		20
067	ZONGULDAK	3	1	8	-	-	-	12						0		12
TOTAL		281	29	165	6	18	23	522	0	0	0	0	7	7	0	529
PER CENT		53.1	5.5	31.2	1.1	3.4	4.3	98.7	0.0	0.0	0.0	0.0	1.3	1.3	0.0	100.0

YUG YUGOSLAVIA RABIES CASES 1. 7.82 - 30. 9.82

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		
III/	1 ZAGREB							0	1	-	-	-	-	1		1
III/	3 ZAPRESIC							0	1	-	-	-	-	1		1
III/	16 IVANICGRAD							0	2	-	-	-	-	2		2
III/	20 DONJA STUBICA							0	1	-	-	-	-	1		1
III/	21 ZABOK							0	6	-	-	-	-	6		6
III/	23 KRAPINA PREGRADA							0	1	-	-	-	-	1		1
III/	24 ZLATAR BISTRICA							0	1	-	-	-	-	1		1
III/	25 IVANEC							0	2	-	-	-	-	2		2
III/	26 VARAZDIN							0	5	-	-	-	-	5		5
III/	31 KOPRIVNICA							0	1	-	-	-	-	1		1
III/	36 GARESNICA							0	2	-	-	-	-	2		2
III/	38 PAKRAC							0	1	-	-	-	-	1		1
III/	39 DARUVAR							0	1	-	-	-	-	1		1
III/	41 VIROVITICA							0	2	-	-	-	-	2		2
III/	42 PODR.SLATINA							0	2	-	-	-	-	2		2
III/	43 SLAV.POZEGA							0	2	-	-	-	-	2		2
III/	54 VINKOVCI							0	2	-	-	-	-	2		2
V /	2 VRHNIKA	-	1	-	-	-	-	1	2	-	-	-	-	2		3
V /	3 CERKNICA							0	5	-	-	-	-	5		5
V /	5 POSTOJNA							0	7	-	-	-	-	7		7
V /	6 IL.BISTRICA							0	11	-	-	-	-	11		11
V /	7 SEZANA							0	12	-	-	-	1	13		13
V /	11 AJDOVSCINA							0	1	-	-	-	-	1		1
V /	12 NOVA GORICA							0	1	-	-	-	-	1		1
V /	13 IDRIJA							0	5	-	-	-	2	7		7
V /	14 TOLMIN							0	4	-	-	-	1	5		5
V /	17 SKOFJA LOKA							0	2	-	-	-	-	2		2

YUG 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		
V /	19 KRANJ							0	1	-	-	-	1	2		2
V /	23 RIBNICA							0	2	-	-	-	-	2		2
V /	29 BREZICE							0	-	-	-	-	1	1		1
V /	32 LITIJA							0	1	-	-	-	-	1		1
V /	42 MARIBOR							0	1	-	-	-	-	1		1
V /	48 SMARJE PRI JELSA	-	-	1	-	-	-	1						0		1
V /	50 PTUJ							0	4	-	-	-	-	4		4
V /	54 LENART	-	-	1	-	-	-	1	9	-	-	-	-	9		10
VI /	1 BEOGRAD							0	1	-	-	-	-	1		1
VI1/	3 TITEL							0	1	-	-	-	-	1		1
VI1/	4 ZABALJ							0	1	-	-	-	-	1		1
VI1/	11 IRIG							0	1	-	-	-	-	1		1
VI1/	12 RUMA							0	1	-	-	-	-	1		1
VI1/	16 ZRENJANIN	-	1	-	-	-	-	1						0		1
VI1/	19 PANCEVO							0	1	-	-	-	-	1		1
VI1/	22 VRSAC							0	1	-	-	-	-	1		1
VI1/	29 NOVI BECEJ	-	1	-	-	-	-	1						0		1
VI1/	33 COKA							0	1	-	-	-	-	1		1
VI1/	34 SENTA	1	-	-	-	-	-	1						0		1
VI1/	35 BAC.TOPOLA							0	1	-	-	-	-	1		1
VI1/	40 SOMBOR							0	2	-	-	-	1	3		3
VI1/	42 ODACI							0	1	-	-	-	-	1		1
TOTAL		1	3	2	0	0	0	6	113	0	0	0	7	120	0	126
PER CENT		0.8	2.4	1.6	0.0	0.0	0.0	4.8	89.7	0.0	0.0	0.0	5.6	95.2	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. 4.82 - 30. 6.82

LOCATION CODE	NAME	D A T E S 1. 4. - 30. 4.	1. 5. - 31. 5.	1. 6. - 30. 6.	T O T A L
01	RSFSR				
011	REGIONS OF THE NORTH AND THE NORTH-WEST	-	-	-	-
012	REGIONS OF THE CENTRE	6	5	4	15
013	REGIONS OF THE NORTH CAUCASUS	7	2	3	12
014	REGIONS OF THE POVOLJE AND THE URALS	6	4	7	17
02	THE MOLDAVIAN SSR	1	-	1	2
03	THE UKRAINIAN SSR	28	14	19	61
04	THE BYELORUSSIAN SSR	4	6	8	18
05	THE LITHUANIAN SSR	1	2	2	5
06	THE LATVIAN SSR	2	3	1	6
07	THE ESTONIAN SSR	1	1	-	2
TOTAL		56	37	45	138

LIST OF CONTRIBUTORS

AUT AUSTRIA
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Director
Dr. E. S c h a r f e n
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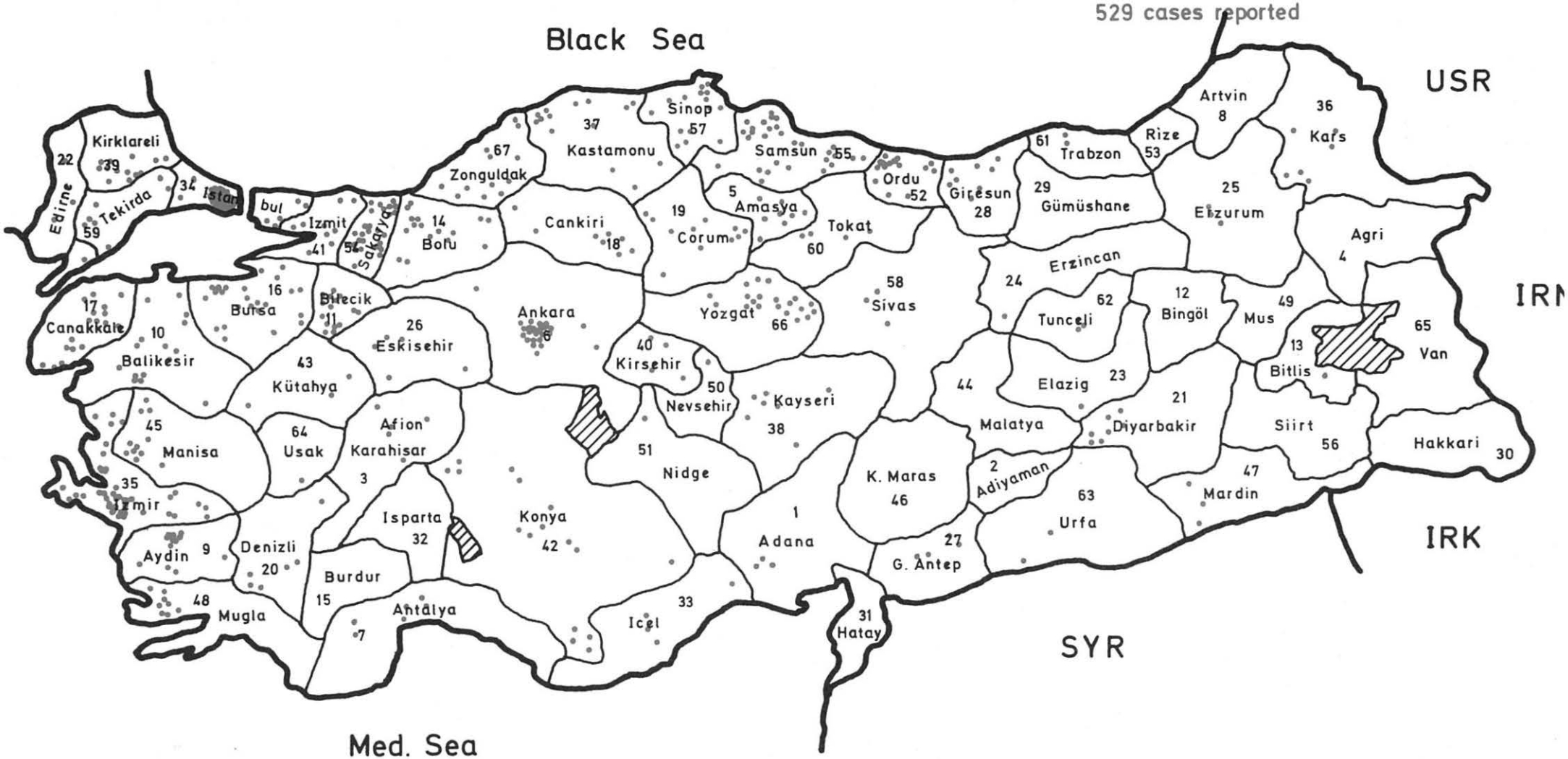
WHO Coll. Centre
Tuebingen / DEU

Rabies Cases Turkey
3rd Quarter 1982
529 cases reported



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Rabies Cases Europe
3rd Quarter 1982

4838 cases reported