RABIES BULLETIN EUROPE - Vol. 3/Nr. 4/1979

C O N T E N T S

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1. INTRODUCTION

1.1. Contents of the Bulletin

This issue is concerned with the rabies situation during the 3rd quarter of 1979 in Europe (see 2.) and in the individual European countries (see 2.1. to 2.24.). The respective case data are listed under 4.1.

Unfortunately, no data were available from the German Democratic Republic and Rumania.

Supplementing case data of the 2nd quarter of this year from the Czechoslovak Socialist Republic which were belatedly submitted are included under 4.4. on page 16.

Finland, Sweden, Norway, Portugal and United Kingdom continued to remain rabies free and no cases of rabies were reported from Greece and the Netherlands.

A summary of incidences registered during the 2nd quarter of 1979 in some Soviet Socialist Republics and a brief communication on two human rabies deaths in South Yugoslavia are included under "Miscellaneous".

Furthermore, we quote abstracts on "Human Rabies in United States of America", rabies in skunks in Arcansas, USA and on "The first case of rabies in moose in the United States".

"Natural Barriers in Rabies" was the basis for a WHO Consultation held in Berne in October this year. An abstract of the main discussion points and of the recommended future activities is given under 3.6.

The geographical distribution of the disease in the European countries during the 3rd quarter of 1979 is shown on the maps in the Annex.

2. RABIES SITUATION IN EUROPE, 3RD QUARTER 1979

The totals of rabies cases, specified according to animal species, registered in the individual European countries are summarized in Table 1 on page 13.

This time the reports of DDR and USSR are missing and therefore, we are, unfortunately, again not in the position to give a rather comprehensive description of the epizootical situation in Europe.

A total of 3449 rabies cases could be recorded against 3752 in the previous quarter surely indicating a slight reduction by 8.1%. However, taking into regard the fact that no data were available from DDR and USSR, it can be assumed that the general rabies situation in Europe has not essentially changed during that reporting period.

2729 (79.1%) of the total rabies cases were registered in wild animals, mainly in foxes, and 719 (20.8%) in domestic animals the prevailing animal species being cattle. In some countries (AUT, DEU, FRA and SWI) the frequency of bovine rabies has more than tribled. This increase is obviously due to enforced pasturing during summer time and enhanced exposure to the newborn fox-generation.

One human rabies case was reported from Turkey but no details on the infection, the course of the disease etc. are available.

Individual country reports are as follows:

2.1. Rabies in Austria (AUT) (case data on page 15)
by W. Krocza and E. Scharfen

The decreasing trend in the occurrence of rabies cases in animals continued during this quarter.

In Vorarlberg a few positive cases spread all over the region, in Tirol such cases occurred mainly along the Inn-valley (Landeck, Imst, Innsbruck/Land).

The district of Osttirol has been free of the disease. The same applies to the Bundesland Salzburg, with exception of one case in the district of Tamsweg.

Kärnten was showing a decrease in the number of positive cases, the main bulk of the epidemic moving south and southeast into the districts of Klagenfurt/Land and Völkermarkt.

In Steiermark, the situation in general did not change. The most infected areas appear in Upper Styria along the ranges of the Stubalpe, Gleinalpe and of the high Alps, as well as near the district of Graz/Umgebung. Excepting the districts of Gmunden, Kirchdorf/Krems and Steyr/Land, no cases occurred in Oberösterreich; the number of cases decreased by 50% compared with the 2nd quarter 1979.

In Eastern Austria the Länder Niederösterreich and Wien remained free of rabies.

In Burgenland one case was found in the district of Oberwart. The remarkable decrease of rabies cases in Austrian cattle from 55 cases during the 3rd quarter 1978 to 25 cases during this quarter is the result of prophylactic vaccination.

2.2. Rabies in Belgium (BEL) (case data on page 18)
by R. Depierreux

The favourable development of the silvatic rabies starting at the beginning of this year, continued also during the 3rd quarter.

All 4 cases - 1 fox, 1 stone marten and 2 cattle - registered since 1st July were found in the border area to Luxembourg.

The migration period during which the young foxes normally provoke an increase in the number of rabies cases seems to have passed without implications.

During the first three quarters of 1977 and 1978 rabies totals were 58 and 53 cases. During the same period of 1979 only 17 cases were registered. One therefore, can justly assume that the 2nd epizootic which started in January 1974 reaching its culmination with 465 incidences in 1976 is now fading.

2.3. Rabies in Bulgaria (BUL)

No cases were observed during the reporting period.

2.4. Rabies in Czechoslovakia (CZE) (case data on pages 16 + 17)

According to the report for the 2nd quarter of 1979 (see table on page 16) which came belated to our hands, in the whole country a total of 201 rabies cases were registered. 176 incidences (87.6%) were diagnosed in wild animals and 25 (12.4%) in domestic animals. The highest incidence rate was found in foxes (81.1%) followed by dogs (6.5%) and cats (6%); all other animal species ranged below these figures. As compared to the previous reporting period, the number of rabies cases rose by 40.6%.

The majority of incidences (166 = 82.6%) was found in the Czech Socialist Republic (CSR), of which 95.8% occurred in wild animals, whereas in the Slovac Socialist Republic (SSR) 51.4% of 35 registered cases were diagnosed in domestic animals.

In spite of an increase of the number of rabies cases by 24% as compared to the 2nd quarter of 1978, a slight decrease of the epizootic during the first half year of 1979 could be noticed.

During the 3rd quarter of 1979, a total of 193 rabies cases (see table on page 17) were diagnosed, 172 of which occurred in wild animals and 21 only in domestic animals. According to these figures, the overall epizootical situation in the Czechoslovak Socialist Republic has not essentially changed as compared to the previous quarter.

However, the disease seems to gain ground from North Bohemia towards Central Bohemia, where two districts became newly infected.

As in the past, the fox was the dominating animal species representing 82.9% of the total number of cases.

Some rather unusual rabies cases occurred during this quarter: one wild cat (Distr. of Rimavská Sobota), one bear (Distr. Martin) and one brown rat (Township of Bratislava) were diagnosed rabies-positive.

In comparison to the first three quarters (1.1. to 30.9.) of 1978, the number of incidences dropped only insignificantly by 3.2%, but this slight decrease may hint at a further downward trend of the epizootic already observed since the beginning of this year.

2.5. Rabies in Denmark (DEN) (case data on page 18)
by S. Møllgaard

The incidence of rabies during the reporting period:

July , 1979	9 foxes	1 marten			
August 1979	11 foxes	2 marten	1 cattle	1 horse	
September 1979	16 foxes	1 marten	4 cattle		

In summer months, when it is unsuitable to use gas in fox dens, the strychnine poisoning has been continued (strychnine in eggs). As mentioned in the previous report a bounty is paid for foxes killed in July, August

and September and now extended until the 1st of November. It seems, that this effort has been rather successfull. With the intention of intensifying the control measures it is planned to start gassing of fox dens again in November.

2.6. Rabies in Germany, Democratic Republic (DDR)

No data obtained for the reporting period.

2.7. Rabies in Germany, Federal Republic (DEU)

(case data on page 19)

During the 3rd quarter of 1979 the rabies situation in the country showed an obvious increasing tendency as compared to the foregoing reporting period, mainly in those areas where a marked decrease has been noticed in the past.

A total of 1210 cases of rabies were registered amounting to an increase by 16.9%. This is accurately the same percentage by which the number of incidences dropped during the 2nd quarter of this year. With regard to the development of the disease in individual Federal Countries, the highest increase was noticed in Hessen (+56.2%) and in Lower Saxonia (+43%).

Of the total of 1210 rabies cases, 914 (75.5%) occurred in foxes and 96 (7.5%) in cattle. Compared to the respective figures of the 2nd quarter of 1979, the number of rabid foxes rose by 15.9% and that of rabid cattle by more than 560%. This considerable increase of the number of cattle in this quarter is obviously due to seasonal factors as the migration of the newborn fox generation and enforced pasturing during summer time.

The highest epizootical density (cases/100 km^2) was again noticed in the southern and south-eastern parts of Baden-Wuerttemberg ranging from 3.2 cases in the county of Waldshut to 8 cases around the Lake Constance including the county of Ravensburg. In contrast, the lowest density showed, as ever before, the northern and north-western parts of the Federal Republic, as for instance Schleswig-Holstein and Nordrhein-Westfalen and a marked retrograd tendency could be observed in Rheinland-Pfalz.

2.8. Finland (FIN)

The country continued to be rabies-free.

2.9. Rabies in France (FRA)

(case data on page 20)

by L. Andral

During the 3rd quarter of 1979, a total of 344 rabies cases were registered against 394 incidences during the previous reporting period. Although this means a decrease by 12.7%, the general rabies situation in the country has not essentially changed.

Areas of higher epizootical density were, as before, the Departments of Bas Rhin, Aisne and Haute Marne.

In the Departments of Haute Savoie, Savoie and Ain the number of incidences has considerably diminished (on average by 58.1%). Despite this decreasing tendency, already observed since the beginning of that year, the over all epizootical situation in that area continued without notable changes. However, the disease spread from there south-westward infecting the Department of Isère for the first time.

Generally seen, from 1st January to 30th September of 1979 a marked retrograd tendency of the epizootic in France can be stated.

2.10. Rabies in Greece (GRE)

No cases were observed during the reporting period.

2.11. United Kingdom (GBR)

The country remained rabies-free.

2.12. Rabies in Hungary (HUN) (case data on page 21)

Taking into regard the territorial extension of the epizootic in Hungary during the 3rd quarter of 1979, there was no noteworthy change of the general rabies situation as compared to the foregoing reporting period. However, after a slight decrease in July the number of incidences has markedly increased during August and September.

A total of 222 rabies cases were reported of which 213 (95.9%) occurred in wild animals - mainly in foxes (95.5%) - amounting to an overall rise by 39.6%. In contrast, the number of cases in domestic animals has considerably decreased (-50%).

This recrudescence of the epizootic is obviously due to the seasonal recovery increase of the fox population especially in those areas showing - as ever - the highest epizootical density, i.e. the Komitates of Borsod, Fejer, Pest and Veszprem, where the number of foxes found rabid has increased by 80% on average.

2.13. Rabies in Italy (ITA) (case data on page 22)
by S. Prosperi and A. Mantovani

The decreasing tendency of the epizootic in the country already observed since the beginning of this year has continued also during the 3rd quarter of 1979, mainly in the Provinces of Bolzano and Belluno. A total of 17 rabies cases were registered amounting to a reduction by 39.3%.

However, the disease progressed in the Province of Udine representing the main epizootical focus in the past. Thus, five communities of the Friuli Region became newly infected, whereas in 3 formerly infected communities (Malborghetta Valbruna, Pontebba and Tolmezzo) no cases were registered.

In 1978, controlled measures were taken to reduce the fox population in the epizootical areas. According to informations by the provincial veterinary offices, 1902 and 1020 foxes were killed by shooting, trapping and poisoning in the Provinces of Bolzano and Belluno respectively. The

premium per destroyed fox in these territories ranged from Lit. 30.000 to Lit. 40.000. In the Province of Udine, where the premium was Lit. 10.000, only 102 foxes were killed by shooting.

At present, an area of 3337 km^2 can be regarded as being affected by rabies, i.e. 1868 km^2 in the Province of Bolzano, 641 km^2 in the Province of Belluno and 828 km^2 in the Province of Udine.

2.14. Rabies in Luxembourg (LUX) (case data on page 18)
by A. Schiltges

During the 3rd quarter of 1979, only 4 rabies cases - all in foxes - were registered in the Grand Duchy. This means a considerable improvement of the rabies situation in the country as compared to 16 incidences during the same period of the previous year.

2.15. Netherlands (NET)

The country continued to remain free of rabies.

2.16. Norway (NOR)

The country remained rabies-free.

2.17. Rabies in Poland (POL) (case data on page 23)

During the 3rd quarter of 1979 a total of 287 rabies cases were reported against 189 during the foregoing quarter of this year. Although this means an increase of the number of incidences by 51.8%, the overall rabies situation in the country has not essentially changed. This increase was mainly observed in the western and south-western districts, which were known during the past to be special foci of the epizootic.

While in some formerly infected districts no rabies cases were registered, other districts being free of the disease in the past became newly affected, mainly in the south-eastern part of the country bordering on Czechoslovakia and USSR.

Of the 287 incidences 236 (82.2%) occurred in wild animals and 51 (17.8%) only in domestic animals the dominating species being, as ever before, the fox.

2.18. Portugal (POR)

The country remained rabies-free.

2.19. Rabies in Rumania (RUM)

No data obtained for the reporting period.

2.20. Rabies in Spain (SPA) (case data on page 18)

During the 3rd quarter of 1979, only one case of rabies (one cat) was registered in Melilla (North Africa) belonging to the Province of Malaga.

2.21. Sweden (SWE)

The country continued to remain rabies-free.

2.22. Rabies in Switzerland (SWI) (case data on page 24)
by A. Wandeler

The rabies situation has changed only little since spring 1979. Quite high case densities were observed in lower canton Grison, between the rivers Reuss, Limmat and Rhine in the cantons Argovie and Zurich, in canton Schaffhouse, in the eastern Jura region, and in the prealpine area southwest of the river Aare in canton Berne. The rabies incidence markedly decreased in the lower Rhone valley of canton Valais, in an area of experimental rabies control. Ten persons were bitten by proven rabid animals: 1 by a fox, 6 by cats, and 3 by martens.

2.23. Rabies in Turkey (TUR) (case data on pages 26 + 27)

With regard to the number of incidences, the slight downward tendency of the epizootic in Turkey, which appeared in outlines in the course of the first half-year of 1979, continued also during the 3rd quarter. A total of 316 rabies cases were officially registered and this means a decrease of 30.4% as compared to the foregoing reporting period.

However, the general epizootical situation has not markedly changed. As before, the whole country - except some few provinces - can be regarded as being infected. Concentrated foci are again located in the Provinces of Izmir in the West, around the townships of Ankara and Istanbul as well as in the northern Provinces of Zonguldak and Samsun.

Of the 316 incidences, 162 (51.3%) occurred in dogs representing the lowest percentage of this species since a long time. This favourable development may be due to enforced control measures taken by the veterinary authorities.

One human rabies case was reported from the Province of Ankara, but no details on that incidence are available.

2.24. Rabies in Yugoslavia (YUG) (case data on page 25)

During the present reporting period a total of 72 rabies cases were reported, of which the majority (88.9%) occurred in foxes and only 8 in domestic animals (3 dogs, 1 cat, 2 cattle and 1 unspecified). This means a decrease of the total number by 40.9% and a considerable reduction of foxes found rabid by even 42.8% as compared to the 2nd quarter of 1979.

Taking into regard the steady decrease of the incidences in the past, the retrograd tendency of the epizootic, already noticed since 1977, seems to continue, at least up to the end of this quarter. This favourable development of the rabies situation in the country is manifested not only by the reduction of the frequency of incidences registered in the infected communities, but also in the diminuation of the number of infected communities itself. In the Socialist Republic of Serbia, for instance, where 5 communities were affected by the disease in the past, no rabies case was registered during that reporting period.

Foci of higher epizootical density, however, were still found in Vojwodina, in the eastern communities of Kroatia and in one extremely northern community (Kranj) of Slovenia.

3. MISCELLANEOUS

3.1. Rabies in the Union of Soviet Socialist Republics (USSR)

As the Centre was provided with a summary report on the rabies cases (without animal specification and any information on territorial distribution of the incidences) confirmed in the European part of the USSR during the 2nd quarter of 1979, we are, unfortunately, again not in the position to give detailed informations on the actual rabies situation there.

However, we quote the table (on page 28) and cite the report submitted by Prof. Pokrovskiy, Head of the Central Institute of Epidemiology, Moscow as follows:

In the European part of the USSR, a total of 264 rabies cases in animals were registered during the 2nd quarter of 1979. This means a reduction by 22.8% against 342 incidences during the foregoing quarter, but an increase by 41.2% as compared to the same reporting period of 1978. The highest incidence rate (46.2%) was found on the territory of the Ukrainian Soviet Socialist Republic.

3.2. Human Rabies - Yugoslavia

According to the Report on Infectious Diseases in Yugoslavia, 2 human rabies deaths occurred in 1979 in the district of Kosovo, neighbouring Albania. Canine rabies is known to be prevalent in this part of the Yugoslavian Socialist Republics. Both persons experienced bites on the hands in 1978 by unknown dogs, both died in February 1979 with clinical symptoms of rabies following incubation periods of 2 and 11 months, respectively. It is not known whether antirabies treatment was administered.

3.3. Human Rabies - United States of America

California recently reported a fatal case of human rabies. As with 3 other cases of rabies in humans reported to CDC in 1979, rabies was not suspected until after the patient's death.

In mid-July 1979, the patient - a 37-year-old man who spoke only Spanish and had immigrated to Santa Paula from Parral (Chihuahua State), Mexico, 5 1/2 months earlier - had onset of paresthesias in his arms and hands. He was seen on July 18 in an hospital emergency room, but no specific diagnosis was made. The paresthesias persisted, and intermittent abdominal discomfort, restlessness, agitation, and insomnia developed. On July 23 he was admitted to a local hospital with a temperature of 39.1 C, vomiting, weakness and loss of pain sensation in the upper extremities, and intermittent delirium and combativeness. One day later he was transferred to Ventura County General Hospital where cerebrospinal fluid (CSF) showed 32 mononuclear cells and a protein level of 70 mg/dl. Over the next 2 days he became quadriplegic, developed facial weakness and respiratory depression, and required intubation and ventilatory assistance. With the rapid development of a flaccid paralysis, Guillain-Barré syndrome and poliomye-

litis were considered the most likely diagnoses. His daughter had received oral polio vaccine 7 weeks earlier, raising the possibility of vaccine-associated polio. On July 30 he became comatose; he died on August 5.

Postmortem brain, CSF, stool, serum, and intestinal-tract-tissue specimens were sent to California's Viral and Rickettsial Disease Laboratory for diagnostic tests. Fluorescent antibody (FA) staining of the brain and spinal cord (a routine procedure for cases of fatal encephalitis) was positive for rabies. The specimens of serum (drawn on July 25) and CSF (July 24) had rabies antibody titers of 1:32 and 1:8, respectively.

Additional questioning of the patient's wife revealed that he had been bitten on the hand by a stray dog just before leaving his home in Mexico. The dog escaped, and no treatment was sought for the bite. No other potential animal exposure could be identified.

About 50 members of the patient's family and 150 health staff who had been in contact with him from onset of the disease until his death were evaluated for significant exposure, i.e., bite, scratch, or saliva contact with a fresh cut or a mucous membrane as would result, for example, from kissing, sharing eating or drinking utensils, or having the patient cough in their face. Thirty-seven family members (some tracted to Texas and Mexico) and health staff are receiving postexposure antirabies prophylaxis. Editorial Note: As in the other 3 recent cases of rabies diagnosed postmortem, some of the classic symptoms associated with rabies (hydrophobia, difficulty swallowing, and hypersalivation) were not present in this case. Although extensive experience in California suggests that rabies is rarely the cause of encephalitis, in the case of progressive paralysis - especially when accompanied by signs and symptoms of encephalitis - or of a severe progressive encephalitis, rabies should be considered as a possible diagnosis. While a patient is alive, the diagnosis of rabies occasionally can be made by viral isolation, demonstration of rabies virus antigen by FA staining of tissues or secretions (corneal impressions or neck skin biopsy), or demonstration of rabies antibody in serum or CSF.

(from CDC Vet. Publ. Health Notes, September 1979 and Morbidity Mortality Weekly Report 28, 435, 1979).

3.4. Rabies in Skunks - Arkansas, USA

The Arkansas State Department of Health reports that an outbreak of rabies is occurring in skunks in Arkansas. In the first 4 months of 1979, rabies was laboratory-confirmed in 143 skunks compared with annual totals of 99 in 1977 and 144 in 1978. By the end of April 1979, 172 skunk heads had been examined, and 83.1% were positive. By the end of April 1978, 73 skunk heads had been examined, and 48 (65.7%) were positive. Although laws in Arkansas require that all dogs and cats be vaccinated for rabies annually, it is estimated that no more than 50% of dogs and 20% of cats in the state are vaccinated. Comparison of those vaccinated in the period January through March 1978 and 1979 revealed a marked increase in vaccination in 1979 (1978 = 13,158 dogs and 3,189 cats, 1979 = 20,471 dogs and 4,580 cats). Dogs and cats, important potential sources of human exposure, are usually infected with rabies as a result of exposure to wild animals.

Along with the increased incidence of animal rabies, there has been a corresponding increase in the number of human exposures that required postexposure rabies prophylaxis. In the first 4 months of 1978, 24 persons

required such treatment and in 1979 the number increased to 44.

Although the total reported number of rabid animals (incidence of animal rabies) is greater in Texas for 1979 (through June 22), when the area difference is considered, Arkansas has the highest incidence of rabies in the United States. To date, Oklahoma and Missouri have also shown considerable increases over 1978.

Wildlife management officials and biologists postulate that the increase in the incidence of rabies is due to an increase in the skunk population this year. The increase may be due to the prohibition of fox hunting and trapping in effect for the last few years. Foxes and skunks share a similar habitat, and when foxes are trapped, many skunks are inadvertently caught, thus controlling the skunk population. In subsequent years, if historic ecologic patterns hold true, the skunk population should decrease - because of diseases, food shortages, and competition for denning sites - with a proportional decrease in skunk rabies.

(cited from CDC Vet. Publ. Health Notes, July 1979, page 2).

3.5. First Case of Rabies in Moose Reported in the United States

Recently a moose in northern Utah was noted to be undernourished and acting strangely - lethargic and placid. In an attempt to find the cause, authorities killed the animal, and examined sections of the brain. The Wyoming State Veterinary Laboratory, Laramie, Wyoming, reported finding Negri bodies. The diagnosis was confirmed at CDC.

Wildlife personnel and veterinarians who removed the brain are receiving duck embryo vaccine (DEV) and have received rabies immune globulin.

Although rabies is found in many wild animal species in the United States, this is the first case of rabies in a moose recorded since nationwide rabies surveillance began in 1938.

(cited from CDC Vet. Publ. Health Notes, July 1979, page 3).

3.6. Natural Barriers in Rabies

A WHO Consultation on Natural Barriers of Wildlife Rabies in Europe was held in Berne (SWI) from 25-27 October, 1979. The scope of the meeting was

1) to accumulate present knowledge on the influence of special parameters such as landscape, human population, ground water level and hunting habits on the occurrence of rabies;

2) to recommend future activities, particularly in the field of ecology and wildlife research, possibly resulting in further informations on the mechanisms which in nature inhibit or altogether prevent the spread of the disease.

Except from seas and oceans, there do not seem to exist absolute geographical barriers against rabies. There are, however, certain geographical structures which do not favor a high abundance of foxes, such as the marsh-

lands of Schleswig-Holstein (DEU). The "hunting indicator of fox population density (HIPD)" for the marsh-lands was found to be significantly lower than that for neighbouring interior landscapes having a different geographical and ecological character. The rabies epidemics could be correlated to those structures insofar as the spread occurred only in the interior parts but stopped dead when reaching the marsh-lands. The conditions may equally apply to other costal parts in Northern Germany and the Netherlands where rabies though threatening to intrude never made its appearance in the past.

Vast forests and deserts are another type of landscape which are believed in the USSR to inhibit the spread of wildlife rabies; though also other animal species than the fox (e.g. pole cats, racoon dogs, wolves, rodents) actively participate there in the epidemics.

Mountains of the Alpine region cannot be counted on as absolute barriers, since rabies has apparently crossed mountain passes at altitudes of 2600 m above sea level when moving from Austria into Italy. In general, however, high altitudes may be regarded as being restrictive to the uncontrollable spread of rabies among foxes since the population density decreases with increasing altitudes. In Switzerland, hunting figures above 1500 m altitude dropped as low as 0.01 fox/km^2.

Rivers and artificial waterways may halt a wildlife epidemic for longer periods of time, but rabies finally will manage to reach the other side. Lakes and rivers form no obstacle, of course, in countries where heavy winters regularly cover the waterways with ice.

On the other side, rivers may speed up the rabies movement alongside of the river bed as seen in the large valleys of the high Alps of Austria.

Hunting habits can strongly influence the frequency and the occurrance of rabies. Statistically significant differences between regions with big game and those with small game hunting were observed in several parts of Germany. In areas, where small game hunting is prevalent, a remarkably lower frequency of rabies cases or even completely rabies-free areas have been observed. High ground-water levels may be an additional influential factor when present as in parts of the Rhine river valley.

The recommendations of the WHO Consultation concerning future work on this subject reflect the substantial need for more and detailed knowledge on fox population ecology and on improved population density estimates being comparable for different areas.

Using this type of information together with epidemiological data and relevant bio-geographical features, future comparative studies are encouraged in representative rabies endemic and rabies-free areas on either side of natural boundaries of wildlife rabies.

3.7. Second Case of Human Rabies Following Corneal Transplant-France

During the last minute a notice has reached us that, as confirmed by the Pasteur Institute in Paris, a 36-year-old Frenchman, native from Nancy, has died from rabies. He had received a corneal transplant from a 57-year-old woman from the African continent (presumably from Egypt) who had died from unknown reasons but with the history of having experienced several dog bites in her past. After receiving the corneal transplant the man

developed paralytic symptoms, and rabies was confirmed by immunofluorescence, histopathology and electron microscopy. Rabies diagnosis was then also established by the same techniques using preserved tissues of the donor woman. Further details of this human-to-human transmission of rabies will be given in the Bulletin after the complete history has been communicated to the Centre.

Editorial note:

This is the second case of human rabies contracted after a corneal tissue transplantation which was obtained from a donor dying from unrecognized rabies. The first case had occurred in Idaho/USA in October 1978 (see this Bulletin Vol. 3, Nr. 1, page 12, 1979).

As to the present knowledge both cases show much similarity: in each case the donor died with symptoms of a presumed disorder of the central nerve system (a case of Guillain-Barrê syndrome had been suspected in the US incident); in each case classical symptoms of rabies were missing.

This again indicates the difficulties of diagnosing rabies in a human patient who develops paralysis without having stages of excitment, agitation and hydrophobic seizures, and when a history of animal bite or exposure is lacking or cannot be recalled.

The diagnosis of rabies during lifetime of the patient may be obtained by immunofluorescent staining of virus antigen 1) in corneal impressions; 2) in frozen sections of skin biopsy material; by 3) virus isolation from saliva; or by 4) demonstrating rabies antibody in serum or cerebrospinal fluid. The post-mortem diagnosis is based on 5) demonstration of Negri bodies or 6) rhabdovirus particles by electron microscopy; 7) demonstration of virus antigen by immunfluorescent staining and/or 8) virus isolation.

Despite of these diagnostic difficulties concern must be expressed in view of the present practise of accepting organ donors, especially those for corneal tissues. Regarding the 2 recent cases of human-to-human transmission of rabies by corneal transplants, the possibility of subjecting corneal tissues to immunfluorescent studies before transplantation should earnestly be evaluated.

EUR EUROPE **3 / 79** RABIES CASES 1. 7.79 - 30. 9.79

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	AUSTRIA	-	3	15	-	3	-	21	307	30	12	37	1	387		408
02	BELGIUM	-	-	2	-	-	-	2	1	-	1	-	-	2		4
03	BULGARIA *							0						0		0
04	CZECHOSLOVAKIA	8	11	1	-	1	-	21	160	2	4	3	3	172		193
05	DENMARK	-	-	5	1	-	-	6	36	-	4	-	-	40		46
06	GERMAN DEM. REPUB.**															-
07	FED.REP.OF GERMANY	9	30	96	6	22	1	164	914	18	61	34	19	1046		1210
08	FINLAND *							0						0		0
09	FRANCE	7	8	45	3	16	-	79	257	1	-	3	4	265		344
10	GREECE *							0						0		0
11	HUNGARY	1	4	3	-	-	1	9	212	-	-	-	1	213		222
12	ITALY	-	-	-	-	1	-	1	13	1	-	2	-	16		17
13	LUXEMBOURG							0	4	-	-	-	-	4		4
14	NETHERLANDS *							0						0		0
15	POLAND	15	21	12	1	1	1	51	214	4	5	8	5	236		287
16	RUMANIA **															-
17	SPAIN ***	-	1	-	-	-	-	1						0		1
18	SWITZERLAND + LIECHT.	-	22	17	1	7	-	47	220	11	21	25	1	278		325
19	TURKEY	162	26	98	3	10	11	310	-	2	-	-	3	5	1	316
20	YUGOSLAVIA	3	1	2	-	-	1	7	64	-	-	-	1	65		72
TOTAL		205	127	296	15	61	15	719	2402	69	108	112	38	2729	1	3449
PER CENT		5.9	3.7	8.6	0.4	1.8	0.4	20.8	69.6	2.0	3.1	3.2	1.1	79.1	0.0	100.0

* NO CASES, ** NO DATA, *** IN NORTH AFRICA.

EUR EUROPE **3 / 79**

RABIES CASES
'OTHER ANIMAL SPECIES'

1. 7.79 - 30. 9.79

LOCATION CODE NAME	OTHER DOMESTIC ANIMALS				OTHER WILD ANIMALS												TOTAL
	DONKEY	PIG	OTH.DOM HERBIVO	OTH.	JACKAL	WOLF	RACOON DOG	WILD CAT	BROWN BEAR	WILD BOAR	CHAMOIS	MOUNTAIN GOAT	SQUIRREL	BROWN RAT	HOUSE MOUSE	UNSP.	
01 AUT											1						1
04 CZE								1	1					1			3
07 DEU	1									1		1	1			16	20
09 FRA																4	4
11 HUN		1						1									2
15 POL		1				2	3										6
18 SWI + LIE											1						1
19 TUR	8		3		1										2		14
20 YUG				1												1	2
TOTAL	9	2	3	1	1	2	3	2	1	1	2	1	1	1	2	21	53
PER CENT	17.0	3.8	5.7	1.9	1.9	3.8	5.7	3.8	1.9	1.9	3.8	1.9	1.9	1.9	3.8	39.6	100.0

AUT AUSTRIA — RABIES CASES — 1. 7.79 - 30. 9.79

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		
B7	OBERWART							0	1	-	-	-	-	1		1
K1	HERMAGOR							0	2	-	-	-	-	2		2
K2	KLAGENFURT-LAND	-	-	-	-	2	-	2	21	1	1	2	-	25		27
K3	ST. VEIT	-	1	1	-	-	-	2	3	3	-	-	-	6		8
K5	VILLACH-LAND							0	2	-	-	1	-	3		3
K6	VOELKERMARKT	-	-	5	-	-	-	5	23	1	2	7	-	33		38
K7	WOLFSBERG							0	3	1	-	-	-	4		4
K8	KLAGENFURT-STADT							0	2	-	1	-	-	3		3
K9	VILLACH-STADT	-	-	-	-	1	-	1						0		1
O4	GMUNDEN							0	8	-	-	-	-	8		8
O6	KIRCHDORF							0	2	2	-	-	-	4		4
O12	STEYR-LAND							0	3	7	2	1	-	13		13
S4	TAMSWEG							0	1	-	-	-	-	1		1
ST1	BRUCK/MUR	-	1	-	-	-	-	1	44	3	-	13	-	60		61
ST5	GRAZ-LAND							0	20	1	1	-	-	22		22
ST7	JUDENBURG							0	3	-	-	-	-	3		3
ST8	KNITTELFELD							0	32	2	-	1	-	35		35
ST10	LEOBEN	-	1	6	-	-	-	7	53	5	-	10	-	68		75
ST11	LIEZEN	-	-	2	-	-	-	2	22	1	1	2	-	26		28
ST13	MURAU	-	-	1	-	-	-	1	4	1	-	-	-	5		6
ST15	VOITSBERG							0	1	-	-	-	-	1		1
ST17	GRAZ-STADT							0	2	-	-	-	-	2		2
T1	IMST							0	16	-	3	-	-	19		19
T2	INNSBRUCK-LAND							0	7	-	-	-	-	7		7
T3	KITZBUEHEL							0	2	1	-	-	-	3		3
T5	LANDECK							0	10	1	1	-	-	12		12
T7	REUTTE							0	1	-	-	-	-	1		1
V1	BLUDENZ							0	9	-	-	-	1	10		10
V2	BREGENZ							0	4	-	-	-	-	4		4
V3	FELDKIRCH							0	3	-	-	-	-	3		3
V4	DORNBIRN							0	3	-	-	-	-	3		3
TOTAL		0	3	15	0	3	0	21	307	30	12	37	1	387	0	408
PER CENT		0.0	0.7	3.7	0.0	0.7	0.0	5.1	75.2	7.4	2.9	9.1	0.2	94.9	0.0	100.0

CZE CZECHOSLOVAK SOCIALIST REPUBLIC — R A B I E S C A S E S — 1. 4.79 - 30. 6.79

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						0		0
02	SOUTH BOHEMIA	1	-	-	-	-	-	1	11	-	-	1	-	12		13
03	WEST BOHEMIA	-	1	-	-	-	-	1	25	-	-	3	-	28		29
04	NORTH BOHEMIA	2	2	-	-	-	-	4	66	2	-	1	-	69		73
05	EAST BOHEMIA	-	1	-	-	-	-	1	31	-	1	2	-	34		35
06	SOUTH MORAVIA							0	2	-	-	-	-	2		2
07	NORTH MORAVIA							0	12	1	1	-	-	14		14
0	CSR	3	4	0	0	0	0	7	147	3	2	7	0	159	0	166
10	DISTRICT OF BRATISLAV							0						0		0
11	WEST SLOVAKIA	2	4	-	-	-	-	6	2	-	-	1	-	3		9
12	CENTRAL SLOVAKIA	6	4	-	-	-	-	10	11	-	-	-	-	11		21
13	EAST SLOVAKIA	2	-	-	-	-	-	2	3	-	-	-	-	3		5
1	SSR	10	8	0	0	0	0	18	16	0	0	1	0	17	0	35
TOTAL		13	12	0	0	0	0	25	163	3	2	8	0	176	0	201
PER CENT		6.5	6.0	0.0	0.0	0.0	0.0	12.4	81.1	1.5	1.0	4.0	0.0	87.6	0.0	100.0

CZE CZECHOSLOVAK SOCIALIST REPUBLIC — R A B I E S C A S E S — 1. 7.79 - 30. 9.79

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	3	-	-	-	-	3		3
02	SOUTH BOHEMIA							0	11	-	-	1	-	12		12
03	WEST BOHEMIA							0	27	-	-	-	-	27		27
04	NORTH BOHEMIA	-	1	1	-	-	-	2	67	-	4	-	-	71		73
05	EAST BOHEMIA	1	-	-	-	-	-	1	19	-	-	-	-	19		20
06	SOUTH MORAVIA	-	1	-	-	1	-	2	4	-	-	-	-	4		6
07	NORTH MORAVIA							0	13	2	-	-	-	15		15
0	CSR	1	2	1	0	1	0	5	144	2	4	1	0	151	0	156
10	DISTRICT OF BRATISLAV							0	-	-	-	-	1	1		1
11	WEST SLOVAKIA	1	3	-	-	-	-	4	-	-	-	1	-	1		5
12	CENTRAL SLOVAKIA	5	4	-	-	-	-	9	16	-	-	1	2	19		28
13	EAST SLOVAKIA	1	2	-	-	-	-	3						0		3
1	SSR	7	9	0	0	0	0	16	16	0	0	2	3	21	0	37
TOTAL		8	11	1	0	1	0	21	160	2	4	3	3	172	0	193
PER CENT		4.1	5.7	0.5	0.0	0.5	0.0	10.9	82.9	1.0	2.1	1.6	1.6	89.1	0.0	100.0

RABIES CASES 1. 7.79 - 30. 9.79

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															
LX	LUXEMBOURG	-	-	2	-	-	-	2	1	-	1	-	-	2		4
DEN	DENMARK															
050505	BREDEBRO							0	3	-	-	-	-	3		3
050511	GRAM	-	-	1	-	-	-	1	3	-	-	-	-	3		4
050515	HADERSLEV	-	-	-	1	-	-	1						0		1
050521	LOGUMKLOSTER							0	3	-	1	-	-	4		4
050525	NR.RANGSTRUP							0	3	-	2	-	-	5		5
050527	RODDING							0	1	-	-	-	-	1		1
050531	SKAERBAEK	-	-	3	-	-	-	3	8	-	-	-	-	8		11
050543	VOJENS	-	-	1	-	-	-	1	3	-	1	-	-	4		5
055571	RIBE							0	12	-	-	-	-	12		12
TOTAL		0	0	5	1	0	0	6	36	0	4	0	0	40	0	46
PER CENT		0.0	0.0	10.9	2.2	0.0	0.0	13.0	78.3	0.0	8.7	0.0	0.0	87.0	0.0	100.0
LUX	LUXEMBOURG															
0401	BERTRANGE							0	1	-	-	-	-	1		1
0609	BASBELLAIN							0	1	-	-	-	-	1		1
0808	MARTELANGE-ROMBACH							0	1	-	-	-	-	1		1
0901	SURRE							0	1	-	-	-	-	1		1
TOTAL		0	0	0	0	0	0	0	4	0	0	0	0	4	0	4
SPA	SPAIN															
	MELILLA *	-	1	-	-	-	-	1						0		1

* IN NORTH AFRICA

DEU FEDERAL REPUBLIC OF GERMANY — RABIES CASES — 1. 7.79 - 30. 9.79

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	-	-	7	1	1	-	9	28	1	2	-	-	31		40
020	HAMBURG							0						0		0
031	BRAUNSCHWEIG	2	3	23	-	-	-	28	33	-	-	1	2	36		64
032	HANNOVER	-	-	3	2	-	-	5	6	-	1	1	6	14		19
033	LUENEBURG	-	2	7	-	-	-	9	28	-	5	1	3	37		46
034	WESER-EMS	1	-	1	-	-	-	2	2	-	-	-	-	2		4
040	BREMEN							0						0		0
051	DUESSELDORF							0						0		0
053	KOELN							0	1	-	-	-	-	1		1
055	MUENSTER							0						0		0
057	DETMOLD							0	4	-	-	-	-	4		4
059	ARNSBERG	-	1	-	-	-	-	1	3	-	-	1	1	5		6
061	DARMSTADT	-	1	5	-	2	-	8	82	1	7	4	-	94		102
062	KASSEL	1	1	4	-	1	-	7	82	-	5	1	-	88		95
071	KOBLENZ	-	2	1	-	3	-	6	32	2	-	2	-	36		42
072	TRIER	-	-	8	-	-	-	8						0		8
073	RHEINHESSEN-PFALZ	1	5	3	-	2	-	11	64	-	8	-	-	72		83
081	STUTTGART	-	1	5	-	-	-	6	43	3	1	3	-	50		56
082	KARLSRUHE	1	4	2	-	-	-	7	46	1	1	4	1	53		60
083	FREIBURG	1	1	6	1	2	-	11	85	2	7	1	-	95		106
084	TUEBINGEN	1	4	16	2	1	1	25	142	7	9	8	-	166		191
091	OBERBAYERN	-	3	1	-	1	-	5	59	-	5	2	-	66		71
092	NIEDERBAYERN							0	12	-	-	-	-	12		12
093	OBERPFALZ	1	1	-	-	1	-	3	37	-	2	-	-	39		42
094	OBERFRANKEN							0	16	-	-	-	-	16		16
095	MITTELFRANKEN							0	16	-	1	-	-	17		17
096	UNTERFRANKEN	-	-	-	-	7	-	7	41	1	1	2	3	48		55
097	SCHWABEN	-	1	4	-	1	-	6	40	-	3	2	3	48		54
100	SAARLAND							0	12	-	3	1	-	16		16
110	BERLIN							0						0		0
TOTAL		9	30	96	6	22	1	164	914	18	61	34	19	1046	0	1210
PER CENT		0.7	2.5	7.9	0.5	1.8	0.1	13.6	75.5	1.5	5.0	2.8	1.6	86.4	0.0	100.0

FRA F R A N C E — R A B I E S C A S E S — 1. 7.79 - 30. 9.79

LOCATION CODE	NAME	DOMESTIC ANIMALS							WILD ANIMALS						HUMAN CASES	TOTAL
		DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
01	AIN							0	4	-	-	-	-	4		4
02	AISNE	-	1	-	-	3	-	4	46	-	-	-	-	46		50
08	ARDENNES	1	1	15	-	-	-	17	3	-	-	-	-	3		20
10	AUBE							0	13	-	-	-	1	14		14
21	COTE D'OR	2	-	-	-	1	-	3	13	-	-	-	-	13		16
25	DOUBS	-	-	-	-	2	-	2	3	-	-	-	-	3		5
38	ISERE							0	3	-	-	-	-	3		3
39	JURA							0	2	-	-	-	-	2		2
51	MARNE	-	1	-	1	-	-	2	5	-	-	-	-	5		7
52	MARNE (HAUTE)	-	-	4	-	2	-	6	28	-	-	-	-	28		34
54	MEURTHE-ET-MOSELLE	-	1	9	-	1	-	11	13	-	-	-	1	14		25
55	MEUSE	-	-	5	1	1	-	7	2	-	-	-	-	2		9
57	MOSELLE	1	1	10	-	1	-	13	9	-	-	-	-	9		22
60	OISE	-	-	-	1	-	-	1	21	-	-	-	1	22		23
67	RHIN (BAS)	1	-	2	-	2	-	5	49	-	-	1	-	50		55
68	RHIN (HAUT)	-	2	-	-	1	-	3	16	-	-	-	-	16		19
70	SAONE (HAUTE)	1	-	-	-	1	-	2	2	-	-	-	-	2		4
73	SAVOIE	1	-	-	-	-	-	1	1	-	-	-	-	1		2
74	SAVOIE (HAUTE)	-	-	-	-	1	-	1	14	1	-	2	-	17		18
77	SEINE-ET-MARNE							0	1	-	-	-	-	1		1
88	VOSGES	-	1	-	-	-	-	1	8	-	-	-	1	9		10
89	YONNE							0	1	-	-	-	-	1		1
TOTAL		7	8	45	3	16	0	79	257	1	0	3	4	265	0	344
PER CENT		2.0	2.3	13.1	0.9	4.7	0.0	23.0	74.7	0.3	0.0	0.9	1.2	77.0	0.0	100.0

HUN HUNGARY — RABIES CASES — 1. 7.79 - 30. 9.79

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							0	3	-	-	-	-	3		3
03	BACS-KISKUN	-	-	1	-	-	-	1	16	-	-	-	-	16		17
04	BEKES							0	3	-	-	-	-	3		3
05	BORSOD-ABAU-ZEMPLEN	-	1	-	-	-	-	1	32	-	-	-	-	32		33
06	CSONGRAD	-	1	-	-	-	-	1	10	-	-	-	-	10		11
07	FEJER							0	18	-	-	-	-	18		18
08	GYOER-SOPRON							0	5	-	-	-	-	5		5
09	HAJDU-BIHAR							0	9	-	-	-	-	9		9
10	HEVES	-	1	-	-	-	-	1	9	-	-	-	-	9		10
11	KOMAROM							0	4	-	-	-	-	4		4
12	NOGRAD							0	7	-	-	-	1	8		8
13	PEST	-	-	-	-	-	1	1	29	-	-	-	-	29		30
14	SOMOGY							0	3	-	-	-	-	3		3
15	SZABOLCS-SZATMAR	1	-	1	-	-	-	2	8	-	-	-	-	8		10
16	SZOLNOK	-	1	1	-	-	-	2	5	-	-	-	-	5		7
17	TOLNA							0	3	-	-	-	-	3		3
18	VAS							0	11	-	-	-	-	11		11
19	VESZPREM							0	22	-	-	-	-	22		22
20	ZALA							0	12	-	-	-	-	12		12
TOTAL		1	4	3	0	0	1	9	212	0	0	0	1	213	0	222
PER CENT		0.5	1.8	1.4	0.0	0.0	0.5	4.1	95.5	0.0	0.0	0.0	0.5	95.9	0.0	100.0

ITA I T A L Y — R A B I E S C A S E S — 1. 7.79 - 30. 9.79

LOCATION CODE	NAME	D O M E S T I C A N I M A L S							W I L D A N I M A L S						HUMAN CASES	TOTAL
		DOG	CAT	CATTLE	HORSE	SHEEP GOAT	OTHERS	TOTAL	FOX	BADGER	OTHER MUSTEL	DEER	OTHERS	TOTAL		
32043	CORTINA							0	1	-	-	-	-	1		1
32046	S.VITO CADORE							0	1	-	-	-	-	1		1
33018	TARVISIO							0	-	-	-	1	-	1		1
33020	CERCIVENTO							0	1	-	-	-	-	1		1
33020	LIGOSULLO							0	1	-	-	-	-	1		1
33020	TREPPO CARNICO							0	1	-	-	-	-	1		1
33022	ARTA TERME	-	-	-	-	1	-	1	4	-	-	-	-	4		5
33026	PALUZZA							0	1	-	-	-	-	1		1
33027	PAULARO							0	1	-	-	1	-	2		2
33028	TOLMEZZO							0	1	-	-	-	-	1		1
39030	RASUN							0	1	-	-	-	-	1		1
39031	BRUNICO							0	-	1	-	-	-	1		1
TOTAL		0	0	0	0	1	0	1	13	1	0	2	0	16	0	17
PER CENT		0.0	0.0	0.0	0.0	5.9	0.0	5.9	76.5	5.9	0.0	11.8	0.0	94.1	0.0	100.0

POL POLAND — RABIES CASES — 1. 7.79 - 30. 9.79

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							0	2	-	-	-	-	2		2
05	BIALYSTOK							0	2	-	-	-	-	2		2
07	BIELSKO-BIALA	-	1	-	-	-	-	1						0		1
09	BYDGOSZCZ	1	-	1	-	-	-	2	6	-	-	1	-	7		9
11	CHELM	1	1	-	-	-	-	2						0		2
13	CIECHANOW	-	1	-	-	-	-	1	3	-	-	-	-	3		4
17	ELBLAG							0	1	-	-	-	-	1		1
19	GDANSK							0	1	-	-	-	-	1		1
21	GORZOW	1	-	-	-	-	-	1	13	-	1	-	-	14		15
23	JELENIA GORA	1	2	-	-	-	-	3	19	-	1	-	-	20		23
25	KALISZ							0	12	-	-	-	-	12		12
27	KATOWICE							0	1	-	-	-	-	1		1
33	KOSZALIN							0	20	-	-	1	-	21		21
37	KROSNO	1	-	-	-	-	-	1	-	-	-	-	1	1		2
39	LEGNICA	-	1	-	-	-	-	1	4	-	-	1	-	5		6
41	LESZNO	1	-	-	-	-	-	1	5	-	-	-	-	5		6
43	LUBLIN	-	2	-	-	-	-	2	4	-	-	-	-	4		6
45	LOMZA	-	1	1	-	-	-	2	1	-	-	-	-	1		3
49	NOWY SACZ	3	-	2	-	-	-	5	9	-	-	-	1	10		15
51	OLSZTYN	2	3	3	-	-	-	8	1	1	1	3	1	7		15
53	OPOLE							0	5	-	-	-	-	5		5
55	OSTROLEKA	-	1	-	-	-	-	1	4	-	-	-	-	4		5
57	PILA	-	1	1	-	-	1	3	9	-	1	-	-	10		13
61	PLOCK							0	1	-	-	-	-	1		1
63	POZNAN	1	2	-	-	-	-	3	12	-	-	-	-	12		15
65	PRZEMYSL	1	-	-	-	-	-	1	-	-	1	-	-	1		2
71	SIEDLCE	-	2	-	-	-	-	2	4	2	-	1	-	7		9
77	SLUPSK	-	-	-	1	-	-	1	4	-	-	-	-	4		5
79	SUWALKI	-	-	1	-	-	-	1	2	-	-	-	2	4		5
81	SZCZECIN	2	1	-	-	-	-	3	16	-	-	1	-	17		20
83	TARNOBRZEG							0	3	-	-	-	-	3		3
87	TORUN	-	-	1	-	-	-	1	3	-	-	-	-	3		4
89	WALBRZYCH	-	-	-	-	1	-	1	10	-	-	-	-	10		11
93	WROCLAW	-	1	2	-	-	-	3	20	1	-	-	-	21		24
95	ZAMOSC	-	1	-	-	-	-	1	1	-	-	-	-	1		2
97	ZIELONA GORA							0	16	-	-	-	-	16		16
TOTAL		15	21	12	1	1	1	51	214	4	5	8	5	236	0	287
PER CENT		5.2	7.3	4.2	0.3	0.3	0.3	17.8	74.6	1.4	1.7	2.8	1.7	82.2	0.0	100.0

SWI SWITZERLAND — RABIES CASES — 1. 7.79 - 30. 9.79

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	-	5	5	-	-	-	10	25	1	2	2	-	30		40
02	APPENZELL AR							0	1	-	-	-	-	1		1
03	APPENZELL AI							0	3	-	-	-	-	3		3
05	BASEL-LAND	-	1	1	-	-	-	2	14	1	1	-	-	16		18
06	BERN	-	4	3	-	3	-	10	32	3	5	2	1	43		53
07	FREIBURG	-	1	-	-	2	-	3	11	-	-	-	-	11		14
08	GENF	-	1	-	-	-	-	1						0		1
10	GRAUBUENDEN	-	-	1	-	-	-	1	19	-	1	2	-	22		23
11	LUZERN	-	2	1	-	-	-	3	13	-	-	4	-	17		20
15	SCHAFFHAUSEN							0	18	2	1	3	-	24		24
16	SCHWYZ							0	2	-	-	-	-	2		2
17	SOLOTHURN							0	9	-	-	-	-	9		9
18	ST. GALLEN	-	1	6	-	1	-	8	14	-	-	3	-	17		25
20	THURGAU	-	1	-	1	-	-	2	6	-	2	1	-	9		11
22	WAADT	-	2	-	-	-	-	2	4	-	1	-	-	5		7
23	WALLIS							0	3	2	-	-	-	5		5
24	ZUG							0	7	-	-	-	-	7		7
25	ZUERICH	-	4	-	-	1	-	5	36	2	8	7	-	53		58
LIE	LIECHTENSTEIN							0	3	-	-	1	-	4		4
TOTAL		0	22	17	1	7	0	47	220	11	21	25	1	278	0	325
PER CENT		0.0	6.8	5.2	0.3	2.2	0.0	14.5	67.7	3.4	6.5	7.7	0.3	85.5	0.0	100.0

YUG YUGOSLAVIA — RABIES CASES — 1. 7.79 - 30. 9.79

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/ 18	VRBOVEC	1	-	-	-	-	-	1						0		1
III/ 30	KRIZEVCI							0	4	-	-	-	-	4		4
III/ 31	KOPRIVNICA							0	4	-	-	-	-	4		4
III/ 33	BJELOVAR							0	2	-	-	-	-	2		2
III/ 34	CAZMA							0	2	-	-	-	-	2		2
III/ 40	GRUBISNO POLJE							0	2	-	-	-	-	2		2
III/ 41	VIROVITICA							0	9	-	-	-	-	9		9
III/ 42	PODR. SLATINA							0	1	-	-	-	-	1		1
III/ 52	BELI MANASTIR							0	2	-	-	-	-	2		2
III/ 53	VUKOVAR	1	-	-	-	-	-	1						0		1
V / 39	RAVNE NA KOROSKE	-	-	2	-	-	-	2	9	-	-	-	1	10		12
V / 55	MURSKA SOBOTA							0	1	-	-	-	-	1		1
V / 56	LENDAVA							0	1	-	-	-	-	1		1
VI1/ 2	BEOCIN							0	1	-	-	-	-	1		1
VI1/ 5	TEMERIN							0	1	-	-	-	-	1		1
VI1/ 8	BAC. PALANKA							0	2	-	-	-	-	2		2
VI1/ 16	ZRENJANIN							0	4	-	-	-	-	4		4
VI1/ 30	BECEJ	-	1	-	-	-	-	1	5	-	-	-	-	5		6
VI1/ 31	SRBOBRAN							0	1	-	-	-	-	1		1
VI1/ 32	ADA							0	3	-	-	-	-	3		3
VI1/ 34	SENTA							0	2	-	-	-	-	2		2
VI1/ 36	MALI IDJOS	1	-	-	-	-	-	1						0		1
VI1/ 37	KANJIZA							0	1	-	-	-	-	1		1
VI1/ 39	SUBOTICA							0	2	-	-	-	-	2		2
VI1/ 40	SOMBOR							0	2	-	-	-	-	2		2
VI1/ 42	ODZACI	-	-	-	-	-	1	1	2	-	-	-	-	2		3
VI1/ 43	BAC							0	1	-	-	-	-	1		1
TOTAL		3	1	2	0	0	1	7	64	0	0	0	1	65	0	72
PER CENT		4.2	1.4	2.8	0.0	0.0	1.4	9.7	88.9	0.0	0.0	0.0	1.4	90.3	0.0	100.0

TUR TURKEY — RABIES CASES — 1. 7.79 - 30. 9.79

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	1	-	3	-	-	-	4						0		4
005	AMASYA	4	-	1	-	-	-	5						0		5
006	ANKARA	21	-	5	-	-	1	27						0	1	28
007	ANTALYA	-	-	1	-	-	-	1						0		1
009	AYDIN	1	-	2	1	-	-	4						0		4
010	BALIKESIR	-	-	1	-	1	-	2						0		2
011	BILECIK	-	-	-	-	1	-	1						0		1
012	BINGOEL	-	-	3	-	-	-	3						0		3
014	BOLU	-	1	2	-	-	-	3						0		3
015	BURDUR	1	-	-	-	-	-	1						0		1
016	BURSA	3	-	1	-	-	-	4						0		4
017	CANAKKALE	-	-	1	-	1	-	2						0		2
018	CANKIRI	2	-	2	-	2	-	6						0		6
019	CORUM	4	-	2	-	-	-	6						0		6
020	DENIZLI	3	1	1	-	-	1	6						0		6
021	DIYARBAKIR	4	-	1	-	-	1	6						0		6
022	EDIRNE	-	-	1	1	-	-	2						0		2
023	ELAZIG	1	-	1	-	-	1	3						0		3
024	ERZINCAN	1	-	-	-	-	-	1						0		1
025	ERZURUM	1	1	-	-	-	-	2						0		2
026	ESKISEHIR	3	-	-	-	-	-	3						0		3
028	GIRESUN	10	1	2	-	-	-	13						0		13
029	GUEMUESHANE	-	-	1	-	-	-	1						0		1
031	HATAY	1	-	-	-	-	-	1						0		1
033	ICEL	3	-	-	-	-	-	3	-	2	-	-	-	2		5
034	ISTANBUL	12	-	3	-	-	1	16						0		16
035	IZMIR	21	3	1	-	2	-	27	-	-	-	-	2	2		29
036	KARS	1	-	5	1	-	-	7						0		7

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		
037	KASTAMONU	2	1	3	-	-	1	7						0		7
038	KAYSERI	-	-	1	-	-	-	1						0		1
039	KIRKLARELI	2	-	-	-	-	-	2						0		2
040	KIRSEHIR	2	-	-	-	-	-	2						0		2
041	KOCAELI	3	1	3	-	-	-	7						0		7
042	KONYA	3	1	2	-	-	1	7						0		7
045	MANISA	4	3	-	-	-	-	7						0		7
047	MARDIN	2	-	-	-	-	-	2						0		2
048	MUGLA	1	1	1	-	-	1	4						0		4
052	ORDU	10	1	4	-	-	-	15						0		15
054	SAKARYA	8	1	4	-	1	-	14						0		14
055	SAMSUN	13	9	16	-	1	3	42	-	-	-	-	1	1		43
057	SINOP	2	-	5	-	-	-	7						0		7
058	SIVAS	1	-	2	-	-	-	3						0		3
059	TEKIRDAG	2	-	-	-	-	-	2						0		2
060	TOKAT	-	-	1	-	-	-	1						0		1
061	TRABZON	1	-	1	-	-	-	2						0		2
063	URFA	-	-	1	-	-	-	1						0		1
064	USAK	-	-	1	-	-	-	1						0		1
066	YOZGAT	1	-	1	-	1	-	3						0		3
067	ZONGULDAK	7	1	12	-	-	-	20						0		20
TOTAL		162	26	98	3	10	11	310	0	2	0	0	3	5	1	316
PER CENT		51.3	8.2	31.0	0.9	3.2	3.5	98.1	0.0	0.6	0.0	0.0	0.9	1.6	0.3	100.0

USR UNION OF SOVIET SOCIALIST REPUBLICS (EUROPEAN PART)

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

1. 4.79 - 30. 6.79

LOCATION CODE	NAME	DATES 1. 4. - 30. 4.	DATES 1. 5. - 31. 5.	DATES 1. 6. - 30. 6.	TOTAL
01	RSFSR				
011	REGIONS OF THE NORTH AND THE NORTH-WEST	-	-	-	0
012	REGIONS OF THE CENTRE	28	5	15	48
013	REGIONS OF THE NORTH CAUCASUS	13	3	6	22
014	REGIONS OF THE POVOLJE AND THE URALS	17	5	8	30
02	THE MOLDAVIAN SSR	2	2	1	5
03	THE UKRAINIAN SSR	53	35	35	123
04	THE BYELORUSSIAN SSR	2	11	14	27
05	THE LITHUANIAN SSR	2	-	-	2
06	THE LATVIAN SSR	1	3	1	5
07	THE ESTONIAN SSR	-	-	2	2
TOTAL		118	64	82	264

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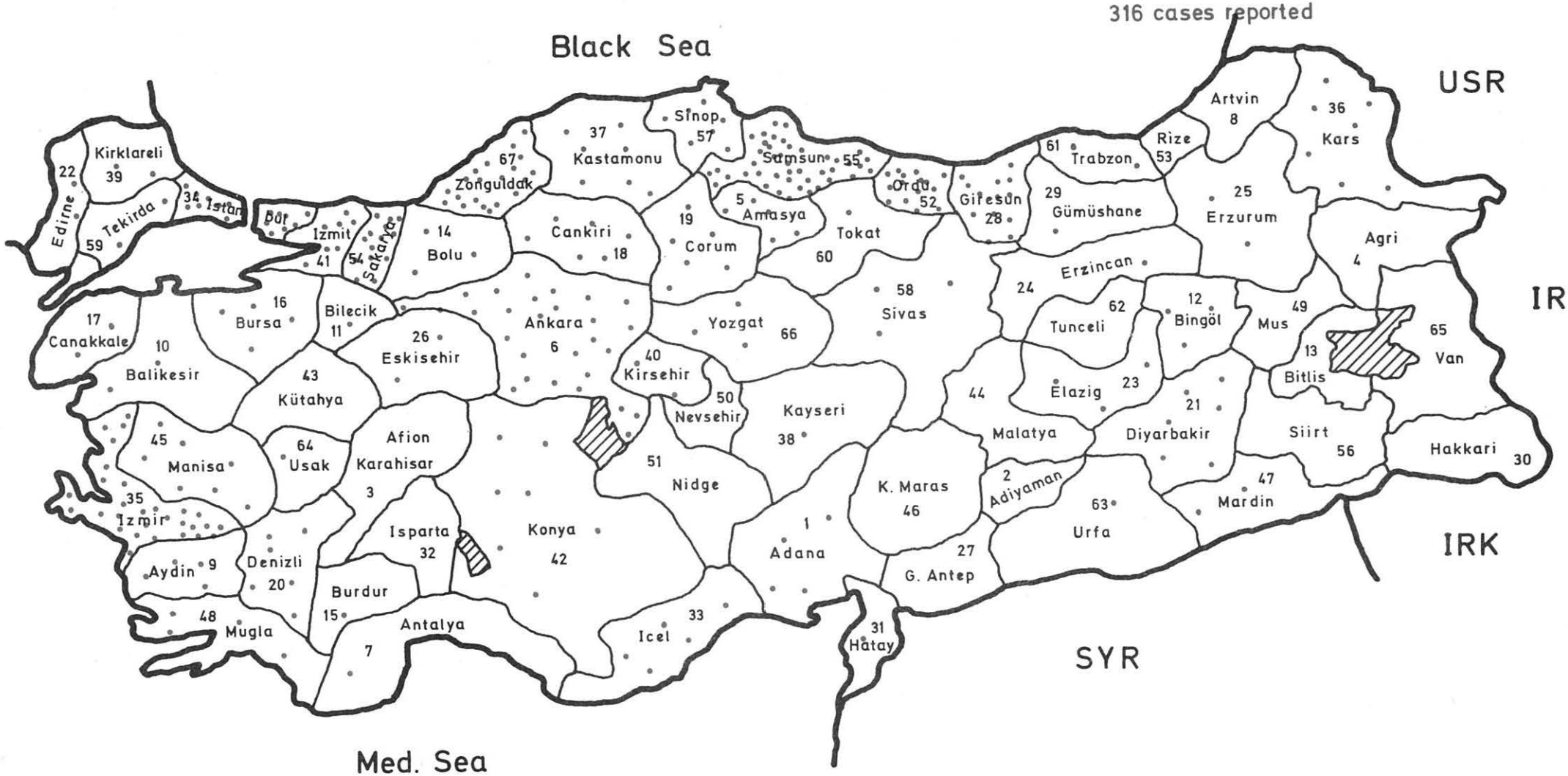
WHO Coll. Centre
Tuebingen / DEU

Rabies Cases Turkey
3rd Quarter 1979
316 cases reported



WHO Coll. Centre
Tuebingen / DEU

Rabies Cases Europe
3rd Quarter 1979

3449 cases reported

NOR
(rabies free)

FIN
(rabies free)

SWE
(rabies free)

DEN
(46)

IRE
(rabies free)

GBR
(rabies free)

NET
(0)

BEL
(4)

(1210)
DEU

DDR
(no data)

POL
(287)

CZE
(193)

FRA
(344)

AUT (408)

HUN
(222)

SWI (325)

RUM
(no data)

ITA
(17)

YUG
(72)

BUL
(0)

POR
(rabies free)

SPA
(1)
(in North Africa)

ALB
(no data)

GRE
(0)

TUR
(316)

0 50 100 km