

THE EVOLUTION OF RABIES IN TRANSYLVANIA DURING DIFFERENT PERIODS OF TIME (1998-2000; 2001-2003; 2004-2006) WITHIN THE YEARS 1998-2006

Mudura Teodor , Mudura Lioara, Porumb Camelia

*University of Oradea, Faculty of Environmental Protection, 26 Gen. Magheru St., 410048 Oradea;
Romania, e-mail: mudurateodor@yahoo.com*

*University of Oradea, Faculty of Fine Arts, 1 Independentei, Oradea, e-mail lmudura@uoradea.ro
University of Oradea, Faculty of Fine Arts, 1 Independentei, Oradea, e-mail cporumb@uoradea.ro*

Abstract:

Rabies is a highly problematic disease as regards the measures applied to eradicate it both on national and international level. Among the animal species affected, the fox represents the dominant factor in the evolution of the disease.

Key words: rabies, Transylvania, animal species, fox.

INTRODUCTION

The evolution of rabies in the 16 counties of Transylvania from 1998 to 2006 is examined in the course of three periods of time (1998-2000, 2001-2003 and 2004-2006), each of these having its own peculiarities.

Because within a period of time the same county can appear during successive years, during one year or it can be completely inexistent, a false disparity appears between the number of counties taken into account and the existent one at a certain period of time and thus during the entire studied lapse of time which disappears by considering the average number of counties per period. Illustrating this aspect with examples for the years between 1998 and 2000 one could find out that Bihor and Caraş-Severin counties appear during three successive years; Harghita, Hunedoara, Satu-Mare and Timiş during two years; Alba, Mureş and Sălaj during one year while in Arad, Covasna, Maramureş and Sibiu the disease is absent. As a result, throughout the specified timeline, the total number of infected counties obtained by adding up all the positions taken by them by their repetition thus exceeding the studied one is nineteen compared to sixteen studied counties. The discordance disappears if we think of an average number of infected counties along a certain period of time, which is thought to be of 6.3 counties for the above mentioned period.

RESULTS AND DISCUSSION

1. The years 1998-2000

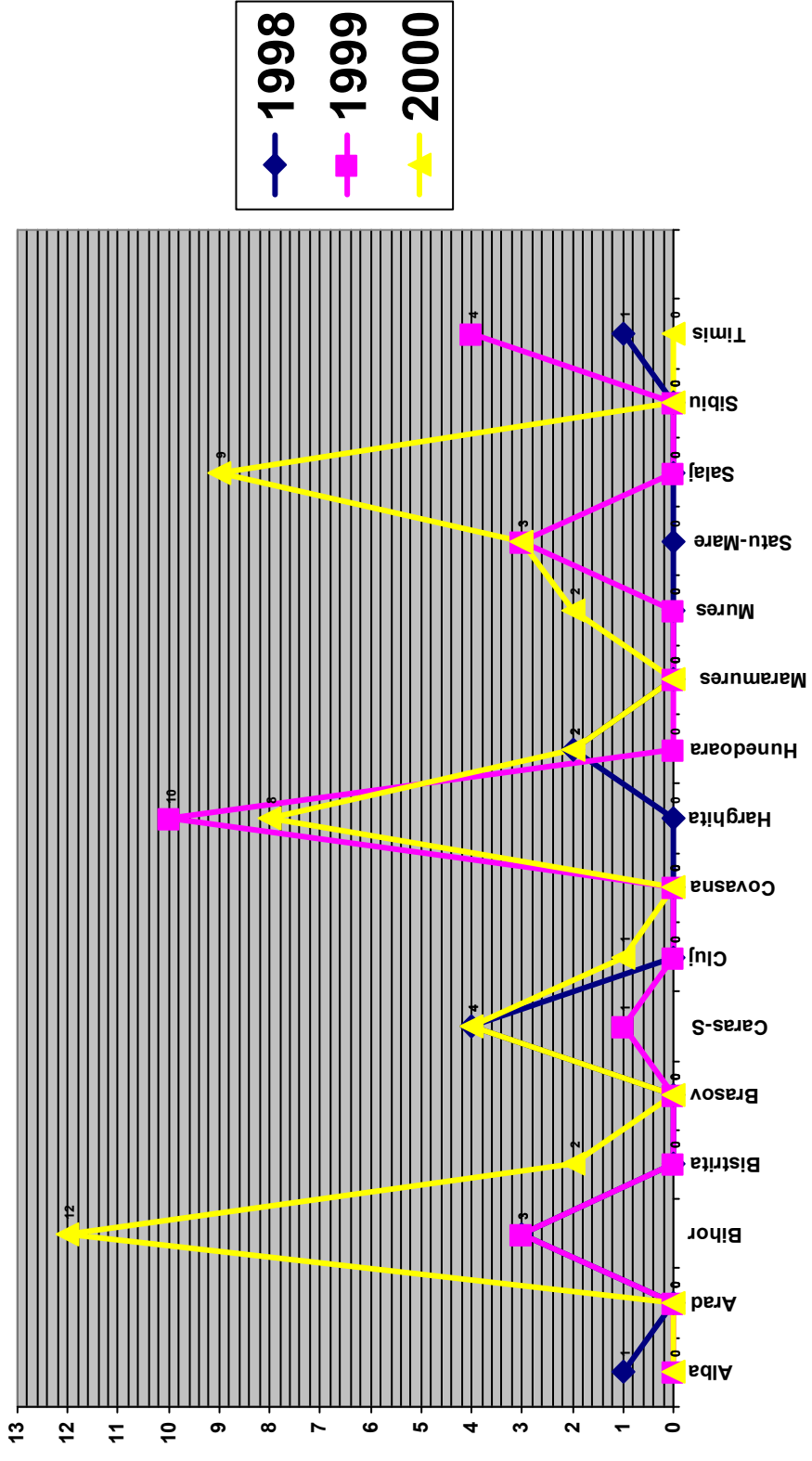
Collected data included in graphics reveal that rabies continually spread during this period, so that, in 2000, the disease existed in 9 (56%) out of the 16 counties, in comparison to 5 counties (31%) where it was detected in 1998 and 1999; the average number of infected counties per period of time was 6.3.

As for the number of cases one could notice that this doubled by the year 1999 as compared to 1998 (21 to 11). Nevertheless, there is a balance between the number of cases found in infected animals and wildebeests throughout the first two years. During the third year (2000) the multiplication process of the total case number is maintained, this time due to wildebeests, and more precisely due to foxes that raise up to 29 cases (96,6%). During the entire period, the dynamics of the incidence leads to a total number of 75 cases that is an average value of 25 cases per period.

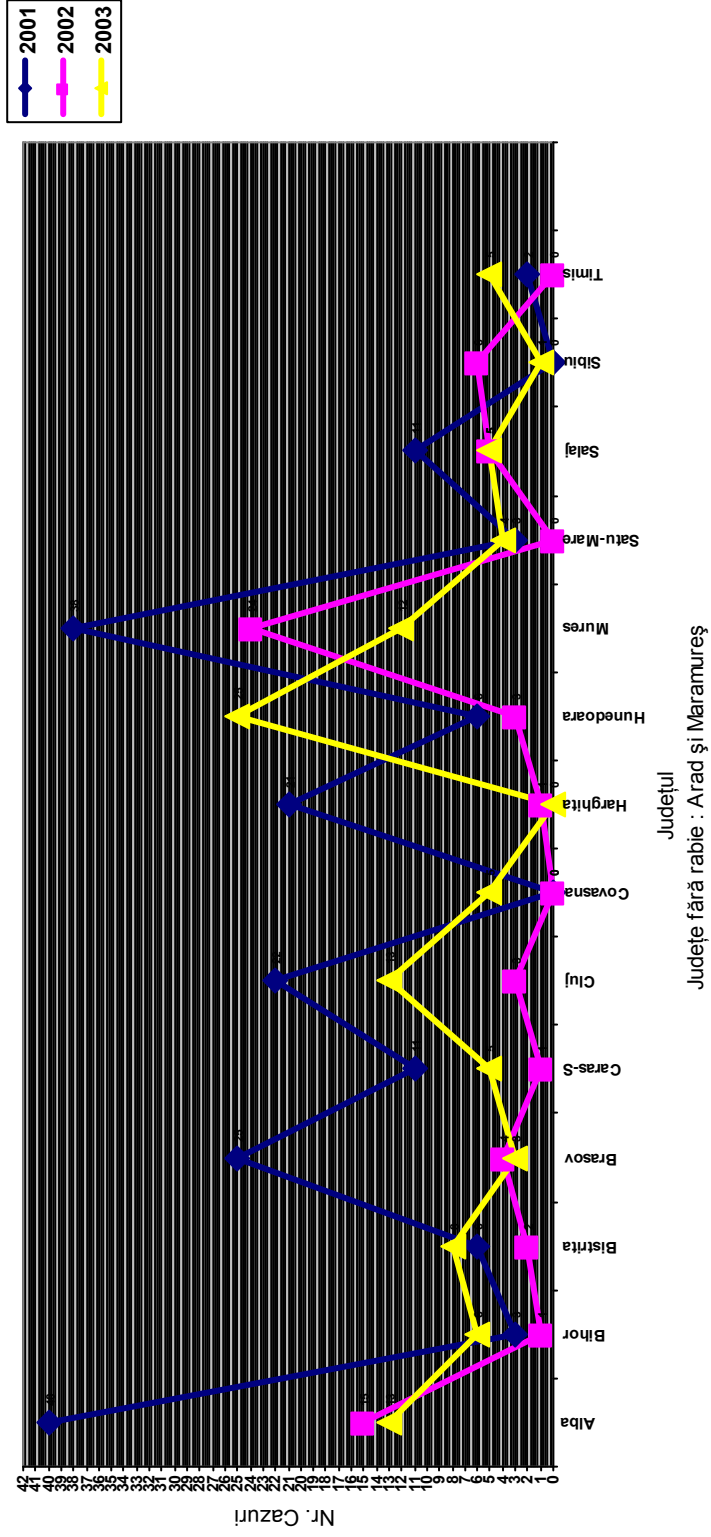
The increase of case numbers for fox in 2000 makes this year to be regarded as a signal for the outburst of the disease in this species.

The case dissemination on counties (graphic 1) reveals a uniform distribution comprised between 1 and 4 cases in 1998. The highest number of cases occurred in Caraş-Severin (4 cases), Bihor (3 cases), the latter being closely followed by Hunedoara (2 cases), and, at the lower limit, by Arad and Timiș, both of them dealing with only one case.

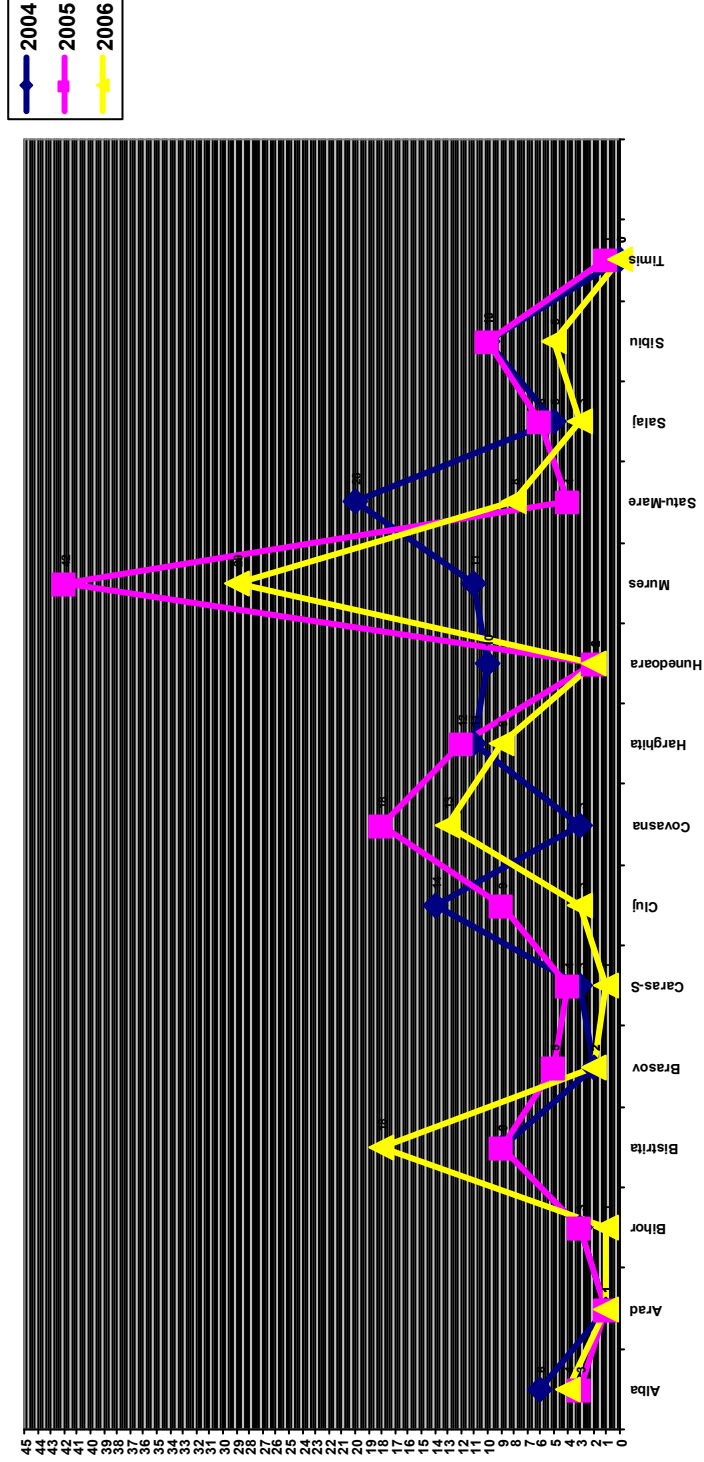
In 2000, the number of cases increased reaching the maximum of 12 (graphic 1). This aspect is due to the relative high number for this period which can be found in the following counties: Bihor (12 cases), Sălaj (9 cases) and Harghita (8 cases), Caraş-Severin (4 cases) and Satu-Mare (3 cases), the other counties having only 1-2 cases, that is Mureș, Hunedoara and Bistrița each of them dealing with two cases while Cluj had one case only.



Countries without rabies: Arad, Brasov, Covasna, Maramures and Sibiu
 Graphic 1. The dynamic of rabies infections per years on county level from 1998-2000.



Graphic 2. The dynamic of rabies infections per years on county level from 2001-2003.



Counties without rabies infections: Maramures
 Graphic 3. The dynamic of rabies infections per years on county level from 2004-2006

2. The years 2001-2003.

The evolution of rabies affected areas fluctuated throughout these period as follows: in the first year a number of 12 counties (75%) were infected, in the second year 11 counties (68%), while in the third year 13 counties (81%) out of 16 counties, 12 counties being the average number per period.

The total number of cases follows the same unsteady trajectory. Thus, after a staggering increase that reached the total of 188 in 2001, the prevalent number was 153 in wildebeests 153 (81.31%), of which 149 were foxes (97.3%), as opposed to a considerable regress of the disease in 2002 with a total of 65 cases out of which 43 (66.1%) were found in wildebeests and 38 (88.3%) were found in foxes. The last year (2003) represents the second stage when the number of cases increased and it reached 105, but it did not reach the number obtained at the beginning of the period.

In 2002 the case dissemination is more limited, being comprised between 1-24 cases (graphic 2). The counties with higher incidence of the disease are Mureş (24 cases) and Alba (15 cases), followed by Sibiu (6 cases) and Sălaj (5 cases), Braşov (4 cases), Cluj and Hunedoara with 3 cases each, the least present being in Bistriţa (2 cases), Bihor, Caraş-Severin and Harghita with one case each.

In 2003, the dissemination degree is maintained within the limits of 1-25 cases (graphic 2): Hunedoara (25 cases), Alba, Cluj with 13 cases each, Mureş (12 cases). The average value can be found in Bistriţa (8 cases), while those around the average value can be found in Bihor (6 cases), Caraş-Severin, Covasna, Sălaj and Timiş with 5 cases each; those below the average value were found in Sibiu (1 case) and Braşov (3 cases).

The serious situation regarding the rabies evolution triggered mass oral vaccination of foxes all around the country in 2001, using *Lysvulpen*. The result was only seen in 2002 when the prevalence of rabies decreased visibly, especially in wildebeests. This proved to be a short term effect, most “probably” because of the lack of perseverance in the application of immunoprophylaxis measures in foxes. Furthermore, the number increased once again, though without reaching the one in 2001. It was extremely important to comply with the immunoprophylaxis measures because it was known that the duration of immunity as a result of the fox vaccination was of one year. The recrudescence of rabies in 2001 was also signalled in the entire Romania and Europe.

The efficiency of foxes' oral vaccination using baits was emphasized in other European countries as well, thus demonstrating its role in keeping rabies under control.

To minimize the incidence of rabies within forests, geographic division of Romania and the progressive eradication of the disease on different areas by reducing the number of foxes and their vaccination is recommended.

3. The years 2004-2006

During this period, the disease includes a number of 14 counties (87 %) in 2004, 15 (93%) in 2005 and 14 (87%) in 2006 out of 16 counties, the average number of the infected counties being 14.3.

At the beginning of the period 2004-2006 the total number of cases (108) was almost similar to the one in 2003, but it was followed by a slight increase, recording 129 cases; the year 2006 witnessed a decrease with only 99 cases. A total number of 336 cases and an average value of 112 cases were recorded during the entire period of time.

The year 2004 presented a limitation of the cases reaching the number of 1-20 cases (graphic 3).

In 2005 the number of cases increased up to 42 cases (graphic 3), the maximum level of their number being reached in Mureș county (42 cases). A significant number could be found in Covasna (18 cases), Harghita (12 cases), Sibiu (10 cases), Bistrița and Cluj with 9 cases each and a bit smaller number in Sălaj (6 cases) and Brașov (5 cases), Caraș-Severin (4 cases). The counties with 3-1 disease cases are Alba and Bihor with 3 cases each, Hunedoara (2 cases), while Arad and Timiș had only one case each.

The year 2006 witnessed a decrease in the disease incidence, with the limitation of its variation to up to maximum 29 cases (graphic 8). Except for Mureș (29 cases), Bistrița (18 cases), Covasna (13 cases), Harghita (9 cases), Satu-Mare (8 cases), in the other counties the number of the cases decreased from 5 to 1. Among these counties we mention Sibiu (5 cases), Alba (4 cases), Cluj (3 cases), Sălaj (3 cases), Brașov (2 cases), Hunedoara (2 cases), Arad (1 case), Bihor (1 case), Caraș-Severin (1 case).

CONCLUSIONS

The study of the rabies evolution during this period led to obtaining data regarding its gradual development and the areas infected with the disease; these areas were subdivided into territories, respectively into counties (graphics 1, 2, 3).

As for the first mentioned aspect we could notice that rabies has an evolution in leaps, which unless they are observed at that very moment they can get out of control. That is why, the observation of the disease can provide general information concerning its evolution in order to coordinate an action preventing plan, thus making necessary its continuous and annual monitoring.

As regards the areas infected with the disease, the researches pointed out its role in the outburst of the disease and/or its preservation in comparison to the number of cases.

These features regarding the evolution of the disease in time and space require its prevention step-by-step regardless of its spreading degree or the number of cases recorded.

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