

THE ECOLOGICAL BEHAVIOUR OF ONE APODEMUS SPP.  
POPULATION IN THE AREA OF VILLIAGO, TRIVA, PASA  
(BELLUNO, ITALY).

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In this research the ecological behavior of a population of *Apodemus* spp. living in the East North of Italy (Veneto, Italy) is analyzed. In this specific instance, we tried to evaluate the activity of the animals as regards meteorological variabilities and the exact hour of capture of three congenerous *Apodemus agrarius* (Pallas, 1771), *Apodemus flavicollis* (Melchior, 1834) and *Apodemus sylvaticus* (Linneus, 1758), with special reference to the component given by the wild Striped Field Mouse, in a purely agricultural area, situated in the commune of Sedico (Belluno, Veneto) and inserted in the phytoclimatic Esalpico district. Following the preliminary study which was intended to define the check-list of the microteriofauna living in the area of study in connection to the present environmental typologies, it has been decided to examine in the period March - December 2004 the fauna component given by the three kinds of *Apodemus* spp. in defined a sub-area of 1 ha surface, composed by particles with different soil and various vegetation coverage where the three species are coexistent. We performed two separate sessions of sampling once a month, using modified-handicraft produced traps as to capture mice still alive. During the first session we utilized of 121 multiple-capture traps, in metal on the model type Uggland<sup>®</sup> (Uggland<sup>®</sup> Special Live Trap II, GRAHNAB<sup>®</sup>, Svezia), progressively numbered and arranged as a grate, far 10 metres from each other, so as to constitute a network of 10.000 m<sup>2</sup> squared surface, and, during the second session, 24 single capture traps, in plastic on the Longworth<sup>®</sup> model type, equipped with clock, progressively numbered and arranged as a grate, far 10 meters from each other, so as to constitute a rectangular network of 60 m per 40 m side, inside the preceding grid. Both the typologies of traps, not selective towards the three kinds of wild mice, have been equipped with various typologies of bait (vegetables, seeds, stale bread and croquettes for animals in various proportion) and material suitable for the construction of a temporary shelter inside them, with the purpose of reducing the mortality; the materials have been renewed or replaced to every positive control. In the two separate monthly sessions at sampling the consecutive days of activation have been 5 for the traps in metal, 3 for those in PVC, both with 1-2 days not baited, and the daily controls have been performed in two timeframes (7,30-8,30 and 15-17,30). The methodology of recognition of the samples has been deduced by the literature, exclusively considering all of the informations assumed through recognition in alive. With the purpose of identifying in an efficient way the *A. agrarius* population living in the area analysed, we went on using the capture-mark-capture again method (CMR) in the sessions of capture with traps in metal, through subcutaneous installation of a glass microchip to be plotted by reader. Besides the classical biometrical data, we went on classifying the captured individuals on the basis of age, sex and reproductive state, defining seven classes: "Adulti", "Subadulti", "Giovani", "Maschi adulti", "Femmine adulte", "Subadulti maschi" and "Subadulti

femmine." During the sessions with PVC traps the punctual information given by the CMR has been neglected, possible new samples of *A. agrarius* weren't marked and was noticed only the kind and the class of affiliation of the captured sample and the schedule of capture. During every control all the animals have been identified and immediately released on the same place. The characteristics of the noticed data brought to the choice of non parametric statistic methodologies for their treatment. The degree of significativity was fixed to  $P < 0.05$ . Session of capture is considered as finished the whole five or three nights trap consecutive. Moreover, the whole sampling period was fixed as to contain at least one breeding season.

From March to December 2004 10 capture sessions have been taken place with traps in metal, for a total of 6050 nights/trap. In particular we recognized and marked 120 individuals. But, considering every session of capture finished, the totality of the individuals contacted in the whole period is 170. From the statistic tests it results that the treated data belong to the same statistical population. We notice a trend among the number of individuals "Adulti" and "Subadulti", which seems correlated and inversely proportional: from March (first session of capture) to December (last session of capture) were progressively observed a total reduction of the number of "Adulti" individuals and a corresponding increase of the "Subadulti" individuals' number. In this particular case the individual male number seems to follow this tendency, while the females number doesn't seem to follow linearly the same course. The greatest number of "Adulti" is found in the sessions of April, May and June, with the addition of November only for the females. The remarkable number of males and females in the three considered months, together to a peak of the captures of young in June, suggest as that the first reproductive event is the months in object. The young totally differ from the found trend, making up a group to themselves. Young are not captured neither in March nor in December, while the peaks of captures are many in the months of June and September. With the purpose of underlining these courses, the absolute data of capture were treated as relative data, turning into percentage the monthly data of capture of every category. In this way we tried to determine the ponder value of the categories captured in a session. Also in this case, comparing the graphs of reference, the trend is recognized but it moves away from the values of May and June, in which the percentage of captures of "Adulti" increases as weight ponder, on the contrary of September. Males and the females usually follow the proposed trend. The percentage values of the captures of young people are identical and have the same course. Subsequently, the absolute data have been analysed through the non parametric rank correlation of Spearman, underlining as such values are statistically united by three meaningful negative correlations: "Adulti maschi"–"Subadulti maschi" (-0.91), "Adulti maschi"–"Subadulti totali" (-0.90) e "Adulti totali"–"Subadulti totali" (-0.90). Subsequently, these data were analysed in connection with the meteorological variables found during the survey period (middle temperatures, higher and lower daily temperatures two meters away from the ground and raininess), collected in two meteorological stations of the A.R.P.A.Veneto. Through Spearman's rank correlation among the meteorological variables noticed and the total number of contacts, it can be observed how the variable "Temperature" is negatively correlated with the "Subadulti totali" and particularly with the "Subadulti femmine". The reported variables to the raininess underline, in the case of the "Adulti", a negative correlation with the mm of rain (-0.79). The rainy days, however, are not correlated with "Adulti", while the correlations with the "Subadulti" introduce a contradictory result: the samples are positively correlated with the mm of rain (0.77) and negatively with the days of rain (-0.68). The "Giovani" are not correlated with any of the variables analysed, showing them as a group to itself. In the same way, in the same period

of sampling 10 sessions of capture have been effected using single capture PVC traps, for a total of 720 nights / trap. The data picked (captured contact-individual number, kind and schedule of capture), pertinent in this case to all of the three kinds of wild mice, were analyzed in relations to the capture schedule inferred by the clock connected to the trap. In this case the total contacts are of a similar percentage as regards the kinds *A. agrarius* and *A. sylvaticus* while the contacts are lower than in *A. flavicollis*. The only specie not always be contacted (captured) was *A. flavicollis*, which results absent in the month of October. From the graphs of captures, it can be noticed how the distribution of hourly captures is significantly different between the Striped Field Mouse and the other two kinds, which show a similar but not identical distribution. Beginning from the capture data (number of monthly contacts and schedule of capture) the hourly frequency of capture has been calculated, dividing 24 hours in timeframes of 60 minutes and calculating the number of captures per timeframe for kind. It must be observed that the Striped Field Mouse has an activity frequency moved toward the crepuscular hours and to the morning, in this case it occupies ecological niches not exploited by the similar kinds purely more nocturnal. However, though similar, *A. sylvaticus* and *A. flavicollis* show some differences: the first one tends to plan the activity from midnight to three o'clock around, while the second one potentially prefers the timeframe between the two and the five around. To verify the hypothesis of the difference we made use of the Kruskal-Wallis' ANOVA, among the hourly frequencies of the capture numbers, considering these three kinds, throwing back the statistically meaningful hypothesis  $H_0$  with  $P = 0.0437$ . Finally, to verify if the captures number (contacts), realized with the PVC traps having a clock, was somehow correlated with the number of contacts (captures) obtained with the modified metal traps, we appealed to the Spearman's not parametric rank correlation. A strong meaningful correlation (0.93) highly strengthened by an analysis of meaningful ( $P < 0.001$ ) regression was statistically underlined. In such way it can be shown that, if none of the two typologies of traps is selective, the behaviour of the animals in the territory is nearly identical towards the one or the other traps and the capture data are comparable.