THE SEX RATIO IN THE COMMON TICK IXODES RICINUS (L.)

The study of the problem of the ratio between females and males of the common tick is important not only from the aspect of adding new details to the general knowledge of the biology of this tick species, but also with regard to the fact that only fecundated females are able to lay viable eggs and that one male can impregnate several females (Balashov Yu. S., Blood-sucking ticks (Ixodoidea)—vectors of diseases of man and animals, Publ. House Nauka, Leningrad, 319 pp., 1967, in Russian). One of the methods used for determining the sex ratio may be the collecting of ticks in nature from vegetation. This method, however, involves the possibility of some distortion of the actual situation in case of different behaviour of females and males at the onset of their activity on vegetation and the resulting disproportional attachment to host. Despite this fact particularly collections made in several years may provide suitable materials. A better indicator yet are the results of tick colonization in nature, during which reliable data on the real ratio of moulted females and males are obtained, particularly if sufficient numbers of ticks are available.

Table 1. The sex ratio of *Ixodes ricinus* adults collected by flagging during 16 seasons of activity in Central Bohemia

Year	Collected ♂	♀	Year	Collected ♂	♀
1957	36	34	1965	150	253
1958	32	14	1966	33	40
1959	38	32	1967	24	32
1960	147	113	1968	33	31
1961	113	111	1969	41	59
1962	265	461	1970	61	46
1963	175	241	1971	126	122
1964	52	73	1972	53	42

During our studies of seasonal dynamics of *I. ricinus* in six sites of a locality in Central Bohemia (Potepli) during 1957–1972 a total of 1,379 ♂♂ and 1,704 ♀♀ (ratio 1: 1.24) was collected. In particular years some differences could be observed. During the first five years males were slightly predominant (366: 304), in the next six years females distinctly prevailed (699: 1100), while in the last five years the tick population was almost balanced, with a slight predominance of males (314: 300) (Table 1). The male predominance occurred primarily in the years characterized by low numbers of adults, while the predominance of females was observed mainly in the years with high numbers of adults. In six years, when the numbers of each sex during the season exceeded 100 specimens, the sex ratio was 976 ♂♂ and 1,301 ♀♀ (1: 1.33), in the remaining ten years it was 403 ♂♂ and 403 ♀♀. The greatest ever predominance of females was observed in 1962 and 1965 characterized by highest tick numbers (1: 1.74 and 1: 1.69). Results given in the table indicate a considerable fluctuation in the occurrence of adults in individual years.

While studying the tick numbers in two line transects in the district of Valtice (South Moravia) 324 ♂♂ and 477 ♀♀ (1: 1.38) were collected in the first and 177 ♂♂ and 177 ♀♀ in the second line transect during the years 1961 – 1963.

In the main variant of the field experiment concerning the development of *I. ricinus* in the last mentioned locality 51 ♂♂ and 74 ♀♀ (1: 1.45) were obtained in the meadow biotope, 327 ♂♂ and 361 ♀♀ (1: 1.10) in the forest margin, and 376 ♂♂ and 391 ♀♀ (1: 1.04) in the forest, the total being 754 ♂♂ and 826 ♀♀ (1: 1.09) (Daniel M. et al., Folia parasit. (Praha) 24: 149–160, 1977). In the second variant the total number was 485 ♂♂ and 517 ♀♀ (1: 1.07). In experiments with the common tick reared under natural conditions females slightly prevailed over males among moulted adults.

Our results obtained in Czechoslovak territory differ from the finds in the USSR (Babenko L. V. et al., Tez. dokl. na III. vsesoyuz. soveshch. po teoret. i priklad. akarologii, Tashkent: 263–264, 1976). During 10 years of studies on seasonal activity of *I. ricinus* in the Moscow region it became evident that males distinctly predominated over females, and this sex also prevailed during two years of studies carried out in Latvia. In the related tick species *I. persulcatus* P. Sch. the same authors, however, demonstrated the predominance of either females (districts near Moscow) or males (Western Sayan Mts.), or the balanced sex ratio (Latvia). This signifies that the sex ratio may differ in various parts of the species range. The results obtained in Czechoslovakia and in the Soviet Union support this fact.

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