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Long lifespan in a population of *Microtus (Pitymys) duodecimcostatus*

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Rodents of the family Arvicolidae (voles and lemmings) have a short lifespan in natural conditions. It is not clear whether this feature is related to cyclic fluctuations of population densities as has been observed in some populations; Heske and Bondrup-Nielsen (1990) state that « Microtine rodents have a lifespan of less than a year, and average survivorship may be on the order of a few weeks to a few months ». Individuals surviving through two winters are occasionally recorded in cyclic populations (Viitala 1977, Innes and Millar 1990). We report herein the existence of long-lived individuals in a population of *Microtus (Pitymys) duodecimcostatus* and we compare our results to the data on arvicolid lifespans available in the literature.

A population of *M. duodecimcostatus* has been live-trapped since 1989 (Guédon *et al.* 1992). In February 1989, 429 voles were marked and released; the individuals with the maximum recorded lifespan were 2 males recaptured in November 1991 (33 months). The maximum lifespan recorded among females was 27 months (one female marked in August 1990 and recaptured in November 1992). Several individuals more than two years old were regularly trapped between February 1989 and November 1992 during all seasons.

Maximum lifespan is seldom mentioned in publications on arvicolid population ecology, so few comparisons are available in spite of the abundant literature relative to capture-recapture studies of vole and lemming populations. Nevertheless, two observations can be made from Table 1. First, maximum lifespan does not exceed 2 years in natural conditions for voles, except for *Microtus duodecimcostatus*. Second, when data are available for both sexes, females have a higher lifespan than males, with the exception of *M. duodecimcostatus*. This species did not show female-biased philopatry as observed in *Microtus* spp. (Boonstra *et al.* 1987).

Microtus duodecimcostatus has particular features among the Arvicolidae: a long lifespan in natural conditions, a shorter lifespan for females than for males, a small litter size (Guédon *et al.* 1991), and a small body size (Guédon *et al.* 1992). These unusual life-history traits and the fact that vole population fluctuations are almost unknown under the Mediterranean climate in Europe, underline the contribution of our current investigations on the population dynamics of this vole to a general explanation of cyclic fluctuations in arvicolid populations.

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TABLE 1. - Maximum lifespan of several arvicolid species in natural conditions.

species	reported lifespan	references
<i>Microtus agrestis</i>	20 months	Myllymäki 1977
<i>Microtus arvalis</i>	< 2 years ^a	Frank 1957
	12 months	Dassonville 1978
<i>Microtus pennsylvanicus</i>	12 months (fem.), 7.9 months (mal.)	Sheridan and Tamarin 1988
<i>Microtus townsendii</i>	20.5 months (fem.), 17.7 months (mal.)	Beacham 1980
<i>Microtus californicus</i>	14 months (fem.), 9 months (mal.)	Cockburn and Lidicker 1983
<i>Microtus montanus</i>	18 months (fem.)	Negus <i>et al.</i> 1986
<i>Microtus nivalis</i>	13 months	LeLouarn and Janeau 1975
<i>Microtus guentheri</i>	5 months	Cohen-Shlagman <i>et al.</i> 1984
<i>Microtus xanthognathus</i>	18 months	Wolff and Lidicker 1980
<i>Pitymys multiplex</i>	21 months ^b	Dassonville 1978
	16 months ^b	Salvioni 1986
<i>Pitymys savii</i>	20 months ^b	Salvioni 1986
<i>Pitymys subterraneus</i>	13 months ^b	Salvioni 1986
<i>Clethrionomys glareolus</i>	< 2 years ^a	Wiger 1979
<i>Clethrionomys gapperi</i>	12 months	Miller and Getz 1977
<i>Arvicola terrestris</i>	24 months	Saucy 1988

^a : No individual surviving more than one winter was observed by the author.

^b : Dassonville's and Salvioni's studies were too short to estimate the maximum lifespan of these *Pitymys* species.