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A HYBRID SWARM OF IXODES DAMMINI AND IXODES SCAPULARIS (ACARI: IXODIDAE)

South along the Atlantic coast, *Ixodes scapularis* had a one generation, one year cycle with a summer adult diapause and a fall and winter breeding period (Rogers A. J., 1953: A study of the *Ixodid* ticks of northern Florida. PhD thesis University of Maryland). In the north *I. dammini* has a two generation, three year cycle with fall and spring breeding periods (Mc Enroe W. D., 1984: Acarologia 25: 223 to 229). Adaptations to these life cycles were postulated to serve as isolating mechanism between these ticks (Mc Enroe W. D., 1989: Folia parasitol. 36: in press). The limited range of *I. dammini* in coastal Massachusetts was associated with a minor climatic difference, in the fall and winter, inland from the coast into the interior (Mc Enroe W. D., 1977: Acarologia 18: 618—625; 1978 Acarologia 20: 214—216).

On the islands of Massachusetts, the location of the *I. dammini* type, the late fall temperature favors the late fall nymphal molt and the winter temperature represses activity of these adults until spring (Fig. 1, line 3). This area is traditional for high adult infestation in the fall and the spring. The infestation in April and May is about

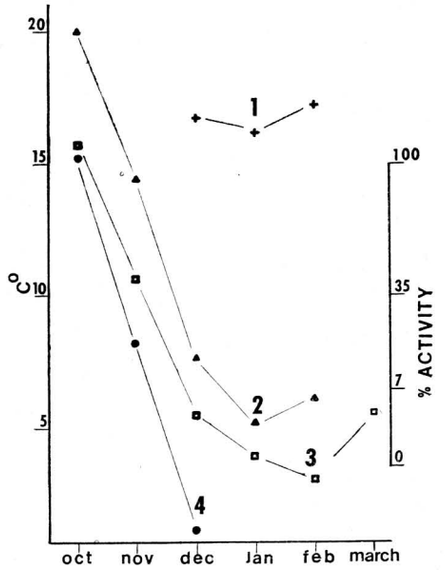

Fig. 1. Normal mean monthly maximum temperatures. Line 1, Savannah, Georgia. Line 2, Cape May, New Jersey. Line 3, Nantucket Island, Massachusetts. Line 4, Worcester, Massachusetts. Adult *Ixodes dammini* adult activity versus temperature from McEnroe W. D. 1984, Acarology 25: 223—229, Fig. 1.

1/3 of that present in the fall. This temperature regime appears to be optional for the two cohort cycle (McEnroe W. D., 1985: Exp. Appl. Acarol. 1: 179—184).

In the fall of 1987, female ticks from Cape May, New Jersey showed internal spurs of Coxa I diagnostic for both female *I. scapularis* and *I. dammini* (Spielman A. et aly 1979: J. Med. Entomol. 15: 218—234) as well as intermediate forms. The ratio found for N = 188 was ca 27% *I. scapularis* and 49% *I. dammini*. In the spring of 1988 only two *I. dammini* and one *I. scapularis* were collected prior to mid-March. The dominant spring tick was *Amblyomma americaneum*, a species not present in Massachusetts. Here the temperature regime will advance the late nymphal molting period (Fig. 1, line 2) and adults can remain active throughout the winter. The resulting fall and winter adult activity will exhaust these adults (Lees A. D., 1964: Acarologia 6: 315—325) essentially eliminating the spring adult cohort and resulting in a hybrid zone.

In interior Massachusetts, outside the coastal area of infestation, the early fall temperature would result in adult activity which would exhaust the fall cohort and the decline in late fall temperature (Fig. 1, line 4) would prevent the late fall nymphal molt and eliminate the required spring adult cohort. In Georgia, the source of the *I. scapularis* paratypes, the winter temperature (Fig. 1, line 1) allows for continuous activity for a one year life cycle.

W. D. MCENROE
Suburban Experiment Station,
University of Massachusetts
240 Beaver Street, Waltham, MA 02154, USA
S. RACE
Entomology and Economic Zoology,
Rutgers University,
P. O. Box 231, New Brunswick, NJ 08903, USA