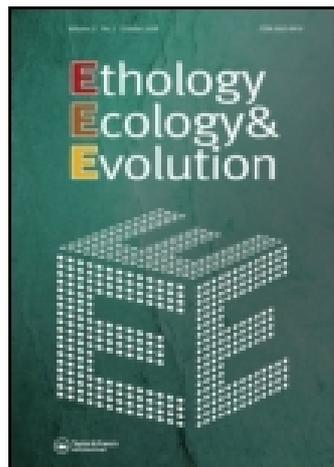


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Investigations on the role of the pineal, the retinae, and melatonin in the circadian system of the lacertid *Podarcis sicula*

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the social structure. The presence of sexual promiscuity, not seen in other populations, did not impede the sexes from initiating a sort of social segregation and maintaining the specific characteristics of the species.

Investigations on the role of the pineal, the retinae, and melatonin in the circadian system of the lacertid *Podarcis sicula*

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In *Podarcis sicula* kept in constant darkness (DD) and temperature (28 °C) pinealectomy as well as bilateral removal of the retinae have been shown to produce marked changes (both lengthening and shortening) in the free-running period of locomotor rhythms (FOÀ 1990). A new experiment was performed to test the effect of the combination of both pinealectomy and bilateral removal of the retinae in the same individual animals on circadian locomotor rhythms. In most lizards both these surgeries produced significant period changes, but circadian rhythms were not abolished. The data specifically suggest that both the pineal and the retinae play a modulating role on a primary pacemaker located elsewhere in the system, with the final effect of stabilizing the overt rhythms. In a further investigation plasma melatonin (MEL) levels were measured at six different times of day over a 24 hr period by radioimmunoassay. In DD a clear circadian rhythms of MEL was detected in intact lizards, with levels peaking at 200 pg/ml late in the subjective night. After pinealectomy such rhythm became heavily dampened, indicating that the pineal contributes significantly to the night-time peak of the plasma MEL. These endocrinological results support the hypothesis that the period changes observed after pinealectomy are due to the concomitant withdrawal of the MEL from the blood. The data leave open the possibility of a modest contribution from the retinae to plasma MEL levels.

Intra- and interspecific interactions between workers of *Formica rufa* and *F. lugubris* coming from sympatric and allopatric colonies (Hymenoptera Formicidae) *

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Ant-workers of *F. rufa* and *F. lugubris* coming from sympatric and allopatric polygynous colonies were tested in pairs using a laboratory aggression test. Our aim was to verify whether the sharing a common habitat influences the relationships among heterocolonials between and within the species of the *Formica rufa* group.

The results suggest that a similar degree of agonistic behaviour (ritualized aggression) was shown in sympatric and allopatric homospecific pairs of both *F. rufa* and *F. lugubris*. Nevertheless, in 6 (30%) pairs of *F. rufa* coming from different environments, combats with seizing, dragging, and carrying occurred. These results suggest that workers of *F. rufa* and *F. lugubris* are quite ready to accept foreign conspecifics, as frequently observed in polygynous ant species.