NOTES ON *DERMACENTOR* TICKS (ACARI : IXODIDAE) (I) : A PROPOSAL OF NOMENCLATURE FOR THE DORSAL SCUTAL PATTERN

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DERMACENTOR
DORSAL PATTERN
NOMENCLATURE

SUMMARY : A nomenclature for the dorsal scutal pattern in the male and female of the genus *Dermacentor* (Acari : Ixodidae) is proposed, in order to unificate the systematics of these ticks and to provide a tool in studies on variability of such a taxonomic structure.

DERMACENTOR
DESSINS DORSAUX
NOMENCLATURE

RÉSUMÉ : Les auteurs proposent une nomenclature des dessins de l'écusson dorsal du mâle et de la femelle du genre *Dermacentor* (Acari : Ixodidae) pour l'unification de la systématique de ces tiques et pour fournir un outil pour les études sur la variabilité de cette structure taxonomique.

The cosmopolitan, mostly Holarctic genus *Dermacentor* comprises about 30 species and subspecies of interest in Medical and Veterinary Entomology. At the present time, an actualized morphologic and systematic revision of the genus is lacking, although several subgeneric and specific agrupations were recently proposed (SANTOS DIAS, 1963 ; CAMICAS and MOREL, 1977). Between these subgenera, the species included in *Indocentor* seem to be the more deeply characterized, as their hosts and distribution have been exhaustively recorded, as well as their synonymies and taxonomic status (WASSEF and HOOGSTRAAL, 1983, 1984a, 1984b, 1986, 1988 ; HOOGSTRAAL *et al.*, 1986). Several existing keys (COOLEY, 1938 ; FURMAN and LOOMIS, 1984 ; YUNKER *et al.*, 1986) have included species from the New World, and they may be considered as a basis for more widened studies.

In the Palearctic species, the situation is much more complex. The only recent revision of the genus (ARTHUR, 1960) is quite old and therefore neither does it include newly described species nor modern taxonomic concepts of these ticks. In addition to all this, the morphological variation, that seems to be very high in several taxa, has not been studied on a continental basis, which lead to an " accumulation " of species, and to doubtfull synonymies ; also, some species are merely nominal taxa, described from a reduced number of specimens, and awaiting posterior recording and redescription.

Besides other morphological features of *Dermacentor* ticks, the dorsal scutal pattern is a useful tool in the definition of species, and it also lacks at present an efficient denomination. The dorsal pattern has been defined as the distribution of "pattern colour " or " enamel ", and their punctuation sizes, on a " base colour ", without any denomination of each spot. This situation has lead to arbitrarily described patterns for each species, of very difficult interpretation, like the limits of the

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scutal spots or their variations which have not been either considered.

As a starting point for a full revision of the genus, we propose a denomination for the scutal pattern, primarily based on the work of DOUGLAS (1943), that recognized the main unpigmented areas of the body (" base colour ") as associated with the dorso-ventrally disposed muscles attached to them. This proposal is also similar to the one used for describing ornamentation in *Amblyomma* (see MATTHYSSE and COLBO, 1987) and it is intended as an unification in the nomenclature.

PROPOSAL OF NOMEMCLATURE

MALE (Fig. 1) :

Cervical spots : paired patchs surrounded by the cervical groove, often extending onto central scutum and expanding towards lateral edges of dorsum, by two *cervical stripes*. The cervical spots are very marked in all *Dermacentor* species.

Frontal spots : paired spots arising from postero-lateral portions of cervical stripes, when present, and oriented towards the eyes. They may be interrupted or not, and may or not reach the eyes.

Esophagic spot : unpaired spot, as an accumulation of base colour between the two cervical stripes, and extending towards the center of scutum. This spot may be a thin coat of base colour, visible only as more or less developed punctuations, or it might not even exist (as in *marginatus*) or it may be clearly developed (as in *reticulatus* or *variabilis*).

Ocular spots : paired dark-coloured spots surrounding the eyes, more or less expanded on the mesial side of the eye, reaching or not the corresponding frontal spot.

Posteromedian stripe : unpaired stripe starting posteriorly at the median festoon and running forward along the median line towards the center of scutum ; its anterior extremity may taper to a fine point or be expanded into a knoblike extremity. Although the posteromedian stripe is the only one median spot (besides the esophagic) in most species, the presence in *variabilis* of an anteromedian stripe suggests the need for the posteromedian denomination.

Paramedial spots : there are four spots of base colour (two anterior and two posterior) placed laterally to the posteromedian stripe (the posterior) or laterally to the anteromedian stripe when present (the anterior ones).

Foveal patchs : there are two minute spots of base colour which overlay the foveae. ARTHUR (1960) used this denomination for the anterior paramedial spots, which are placed laterally at both sides of the foveae. The existence of a true patch encircling each fovea implies the need of such a suitable denomination. Their presence may be obscured by the enlarging of the anterior paramedial spots, which cover in this way the foveal patchs ; a carefully examination always reveals the inclusion of each foveal patch inside the corresponding paramedial one.

Lateral spots : these four spots (two anterior and two posterior) are placed laterally to the paramedial spots, on the mesial side of the lateral grooves. These spots may be fused, either completely or by fine stripes of base colour, and, usually the lateral spots are superimposed to the lateral grooves.

Lateroaccessory spots : two series of rather dark spots (anterior, mid, and posterior) are situated in the most marginal field of the *Dermacentor* male scutum ; they are sometimes conjoined to form a lateroaccessory band. In some individuals, this pattern lacks the anterior spot.

FEMALE :

The scutal pattern in the female of *Dermacentor* species follows a similar distribution as it has been described for the male. Usually, only the cervical stripes are visible, although the complete fusion of the female scutal pattern (the absence of the enamel) may appear.

From the eyes, and reaching the posterodorsal margin of the scutum in the female, a dark stripe can be seen. MATTHYSSE and COLBO (1987) have proposed the denomination of " limiting spot " for a similar patch in the *Amblyomma* female scutum.

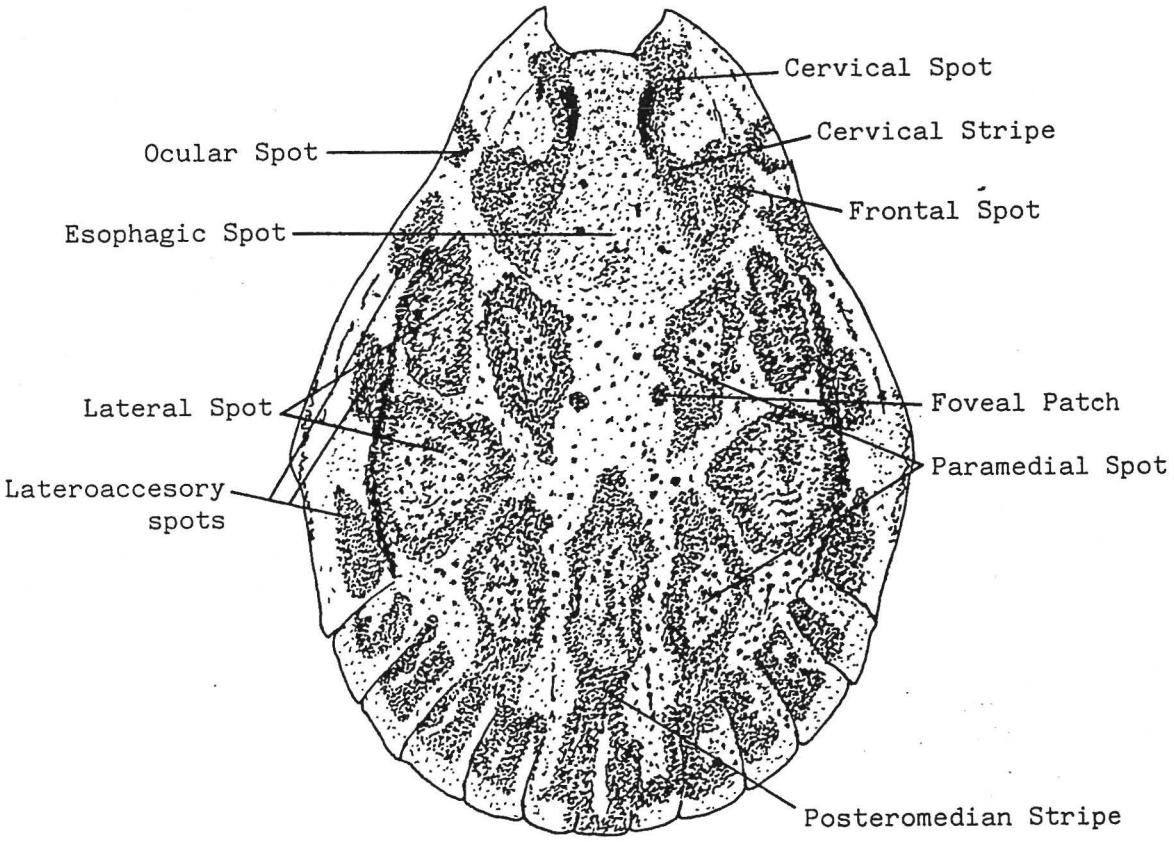

FIG. 1 : The dorsal scutal pattern of the male of *Dermacentor marginatus*, used here to describe the denominations proposed in this paper.

In order to unificate the nomenclature, we suggest the name " limiting stripe " for this band of base colour in *Dermacentor*.

IMPLICATIONS OF THE NOMENCLATURE

With the use of these denominations, the scutal pattern in *Dermacentor* may be fully described. But the main thing is that the adult scutum may be partitioned in several areas, regarding intra- or interspecific variability studies in the genus. Transversely, and from the capitulum to the festoons, there are an anterior region which includes cervical, esophagic, ocular spots, frontal, and cervical stripes; a mid region, with anteromedial, anterior paramedial, anterolateral, anterior lateroaccessory, and mid lateroaccessory spots; and a posterior region, which will include the remaining spots already described. Longitudinally, there are three areas : medial (cervical, esophagic, antero- and posteromedian); paramedial (frontal, and the set paramedial ones); and lateral (ocular, the set of lateral, and the set of lateroaccessory). In this way, the different degrees of joining in these spots, may be described by scutal fields, and their taxonomic relevance as well as the variability, evaluated.

This nomenclature is not applied to the species with an " inverse " scutal pattern, as *circumguttatus* and *rhinocerinus*. In these species, the dorsal ornamentation follows a well defined disposition on enamel colour in the sites at which base colour is present in other species (male of *rhinocerinus*) or with a series of four pairs of patchs found in the

paramedial field of the scutum (male of *circumguttatus*). We think these ornamentations should be properly described by classic denominations in spite the fact of variability which has been observed in these two species.

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