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SHORT NOTE: A SIMPLE CONSISTENT TERMINOLOGY FOR THE BASIC COLOUR PATTERNS OF THE VENOMOUS CORAL SNAKES AND THEIR MIMICS

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In the course of our studies on the venomous New World coral snakes (Family Elapidae) and their less toxic or harmless mimics it has become clear that a barrier to accurate description of models and mimics is the absence of a consistent terminology for the various colour patterns exhibited by these reptiles. The lack of uniformity in terminology hampers the analysis of evolutionary trends and geographic variation within genera and species and also creates confusion in documenting concordant geographic variation between models and presumed mimics. Consequently, we present below a simple and concise set of terms that standardises description of the principal colour patterns for these snakes. It is our intention to prepare a more comprehensive description of variation within the basic types defined here and to provide a taxonomic review of their occurrence in New World species in a subsequent paper.

The system that we propose is derived from the descriptors for the dorsal colour patterns of the venomous coral snakes (*Micrurus* and *Micruroides*) developed by Schmidt (1936) and Dunn (1954) based upon the number of different colours forming individual rings and the number of black rings separating the red ones. Their system made a distinction between those patterns characterised by alternating rings of black and a lighter colour (usually red, but sometimes white or yellow) and those having black rings, red rings and rings of a light colour (usually yellow but sometimes white). The former were termed **bicolor** and the latter **tricolor** in conformance with general usage for other snakes. Schmidt (1936) pointed out that the tricolor forms could be divided into two subgroups, those in which each red ring is separated from the next by an alternating light-black-light sequence of rings and those with a more complex pattern where the red rings are separated from one another by an alternating black-light-black-light-black sequence of rings. Schmidt referred to the latter pattern as the **triad** type because there were three black rings between each red one. Dunn (1954) refined this terminology further and grouped coral snakes into three pattern categories: bicolor, tricolor and tricolor triad.

Presumed coral snake mimics of a number of genera of harmless and rear-fanged snakes have been recorded as having bicolor, tricolor or tricolor triad dorsal patterns. These patterns may be of bands or rings (a few coral snakes are also banded, not ringed). In addition, several non-elapid tricolor species exhibit a pattern not found in any coral snake. In these forms each red band or ring is separated from the next red one by a simple alternation of black-light-black rings (or bands). Unfortunately a number of authors, most notably Klauber (1943) for *Lampropeltis* and Taylor and Smith (1943) for *Scaphiodontophis*, have referred to components of this pattern as 'triads'. In *Lampropeltis* the black-red-black component was called a 'triad'. In *Scaphiodontophis* 'triad' was used in exactly the opposite sense for the black-light-black component. These usages, which have been followed in several subsequent studies of these genera, create considerable confusion since the term triad has been utilised by Schmidt (1936), Dunn (1954) and most recent students of coral snakes for the black-light-black-light-black sequence of rings in coral snakes (i.e. for three black rings).

Two other tricolor patterns also occur in non-elapid snakes (Mertens, 1956). In one geographic subdivision of the rear-fanged *Erythrolamprus aesculapii* and some *Atractus*, the red-rings are separated from one another by a black-light-black-light-black-light-black sequence of rings. One geographic unit within the harmless species *Simophis rhinostoma* has the red rings separated from one another by an alterating black-light-black-light-black-light-black-light-black sequence of rings. This same pattern is also typical of the Mexican and Guatemalan coral snake, *Micrurus elegans*.

As may be seen from the above review several different tricolor patterns are found in these snakes and two very different patterns types and two different sequences in the same pattern type have been called triads. Consequently, we propose the following revised and standardised terminology to describe the various dorsal (banded or ringed) patterns found in these snakes (Fig. 1). For tricolor species this system emphasises the number of black bands or rings separating the red rings from one another. Following the implication of the use of the term tricolor triad (i.e. three intervening black bands or rings separating the red ones from one another) as originally applied to coral snakes, it uses a newly coined set of descriptors to designate the condition of one (**monad**), two (**dyad**), four (**tetrad**) or five (**pentad**) black bands or rings separating the red ones. This eliminates the confusion caused by Klauber (1943) and Taylor and Smith (1943) and others in their usage of 'triad' for different components of the pattern of snakes having what is here called a dyad pattern.

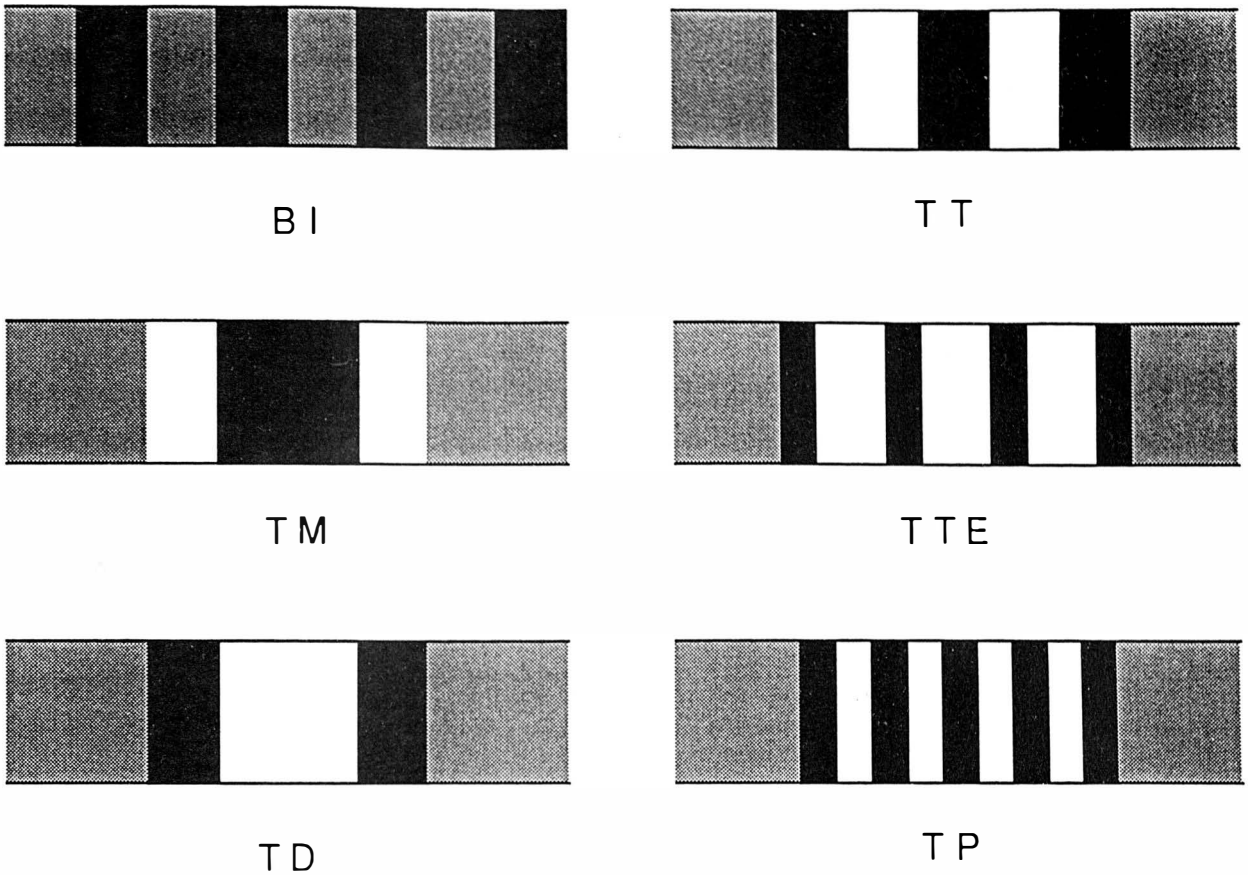

Fig. 1 A schematic representation of the major pattern types occurring in the venomous coral snakes and their mimics. The stippled areas represent red; the white areas represent yellow or white; the black areas are black. BI = bicolored, TM = tricolor monad, TD = tricolor dyad, TT = tricolor triad, TTE = tricolor tetrad, TP = tricolor pentad.

A. **Unicolor** — essentially a uniform red dorsum (e.g. some Yucatan Peninsula *Micrurus diastema*).

B. **Bicolor** — alternating bands or rings of black and light (red, yellow or white), frequently red in the venomous coral snakes (e.g. *Micrurus mipartitus*, *Urotheca euryzona*).

C. **Tricolor** — alternating bands or rings of black, red and light (usually yellow, sometimes white).

1. **Tricolor monads** — red bands or rings separated from one another by a sequence of alternating bands or rings of light-black-light; one black ring between red rings (e.g. *Micrurus fulvis*, *Rhinobothryum*).

2. **Tricolor dyads** — red bands or rings separated from one another by a sequence of alternating bands or rings of black-light-black; two black rings between red rings (e.g. some *Scaphiodontophis*, *Lampropeltis pyromelana*, most *Lampropeltis zonata*).

3. **Tricolor triads** — red bands or rings separated from one another by a sequence of alternating bands or rings of black-light-black-light-black; three black rings between red rings (e.g. *Micrurus isozonus*, some *Atractus elaps*).

4. **Tricolor tetrads** — red bands or rings separated from one another by a sequence of alternating bands or rings of black-light-black-light-black-light-black; four black rings between red rings (e.g. some *Atractus elaps*, some *Atractus latifrons*).

5. **Tricolor pentads** — red bands or rings separated from one another by a sequence of alternating bands or rings of black-light-black-light-black-light-black-light-black (e.g. *Micrurus elegans*, some *Simophis rhinostoma*).

Snakes having bicolor, tricolor dyad, tricolor triad, tricolor tetrad or tricolor pentad patterns have the red bands or rings bordering black ones. In the tricolor monad pattern the red bands or rings are separated from the black bands or rings by a yellow or white band or ring.

Most species of coral snakes and members of the coral snake mimic guild possess only a single pattern type. However, as indicated above, some taxa exhibit geographic variation in pattern while a few species may have different patterns present on different parts of the body (e.g. some *Scaphiodontophis*). These and other variants will be more fully discussed in our forthcoming review of variation and the taxonomic occurrence of coral snake patterns.

REFERENCES

Dunn, E. R. (1954). The coral snake 'mimic' problem in Panama. *Evolution*. **8**, 97-102.

Klauber, L. M. (1943). The coral king snakes of the Pacific coast. *Transactions of the San Diego Society of Natural History*. **10**, 75-82.

Mertens, R. (1956). Das Problem der Mimikry bei Korallenschlangen. *Zoologische Jahrbucher (Systematik).* **84,** 541-576.

Schmidt, K. P. (1936). Preliminary account of coral snakes of South America. *Zoological Series of the Field Museum of Natural History.* **20,** 189-203.

Taylor, E. H. and H. M. Smith (1943). A review of American sibynophine snakes, with a proposal of a new genus. *University of Kansas Science Bulletin.* **29,** 301-327.

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SHORT NOTE: A NOTE ON THE FEEDING HABITS OF *AMEIVA FUSCATA* FROM DOMINICA, LESSER ANTILLES

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INTRODUCTION

All but one of the Lesser Antillean islands or island groups, has (or once had) its own species of macroteiid 'ground lizard' (*Cnemidophorous* or *Ameiva*) (Baskins and Williams, 1966; Schwartz and Henderson, 1985). Ground lizards favour dry coastal habitats which, in the Lesser Antilles, have been subject to much development for housing, tourism and cultivation. Probably as a result of such habitat destruction, and possibly also due to predation by introduced mongoose (*Herpestes herpestes*), ground lizards are now rare or extinct on several islands (Underwood, 1962; Corke, 1987; Johnson, 1988).

Dominica (15° 25′ N, 61° 25′ W) is unusual in the Lesser Antilles in having retained between 60 per cent and 75 percent of its original forest cover, including its coastal woodlands (Evans, 1986). The latter support populations of *Ameiva fuscata*, confined to Dominica. There have been few published reports of the diets of *Ameiva*, and none for *A. fuscata* or other Lesser Antillean species. Hirth (1963), Hillman (1969) and Echternacht (1983) described the diet and feeding behaviour of several Costa Rican species and more recently Vega *et al.* (1988) described the diet of *A. ameiva* in Argentina.

As part of a long term study of Dominica's forests, including the reptile and amphibian communities, data were collected on the diet and feeding behaviour of *A. fuscata* in one of the two types of coastal woodland, Dry Scrub Woodland.

STUDY AREA AND METHODS

Fieldwork in the Cabrits Peninsula, north-east Dominica, was conducted in March-April 1988 and December-January 1989; these dates corresponded approximately to dry and wet seasons respectively. More trees were in fruit or flower in the dry season than in the wet season, and the mean litter layer was significantly deeper at that time ($\overline{X}$ = 2.76cm, N = 5 composite samples, dry season; $\overline{X}$ = 0.98cm, N = 5 composite samples, wet season ($t_{4.4}$ = 3.98, $p<0.02$).

Prey availability at ground level was estimated using pitfall (can) traps (78mm deep, 73mm diameter filled to c.30mm depth with water plus detergent). During both the dry and wet season visits five lines of 10 pitfall traps were set for 48h on two dates separated by at least 14 days. The catch was sorted to order/family and prey length. Pitfall traps do not necessarily provide representative samples of species composition and species diversity (Southwood, 1978). Thus comparison between invertebrate availability and prey taken must be viewed with caution, and only large differences are described here.

A. fuscata, whilst not threatened, is a protected species in Dominica, and large scale destructive sampling principally for stomach contents was undesirable. Non-destructive live capture and stomach flushing (Pietruszka, 1987) proved very difficult with this species and all but seven out of a total of 19 specimens were killed. Thus the sample size for diet analysis was small. Nevertheless, specimens from most