

Communal behaviour by *Basiliscus plumifrons* in a *Manicaria* swamp forest, northeast Costa Rica

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RESUMEN: Se describe un comportamiento comunal en *Basiliscus plumifrons* en una localidad costera del nordeste de Costa Rica. Dos ejemplares de esta especie, macho y hembra, fueron observados juntos sobre una rama a 1.6 m de altura a las 21.30 h de la noche. Se discute el posible significado de este comportamiento.

Basiliscus plumifrons (Plumed or Green Basilisk) is a medium to large sized lizard of the Corytophanidae. It has double crests on the head, a high crest on the back and a separate crest on the tail. It is bright green with black and white cross bands on its back and nape of neck. Female specimens have a reduced crest and are generally smaller. The species is oviparous, laying eggs in terrestrial digs on land (Ortleb, 1965; Savage, 2002). It tends to prefer secondary scrub along water courses but will also be found in gallery and riparian tropical wet forest (Savage, 2002; Vaughan *et al.*, 2007). When disturbed this spe-

cies runs on hind legs and even over water (Glasheen & McMahon, 1997).

Caño Palma Biological Station is 8 km north of the coastal town of Tortuguero, northeast Costa Rica. The Biological Station is situated on the edge of a blackwater canal that runs parallel with the ocean. It contains mostly *Manicaria* swamp and lowland wet rainforest (Myers, 1990). Less than 200 m separates the Biological Station from the Caribbean Sea.

In October 2001, during a nocturnal visual encounter transect survey for amphibians (see Heyer *et al.*, 1994) at Caño Palma Biological Station we found a male and female *B. plumifrons* sleeping next to one another on understory vegetation at 21:30. The pair of lizards was resting at 1.6 m perch height. Conditions were 24° C and 78% RH. The lizards were left undisturbed but proof photos were taken of the specimens (Figure 1). Upon diurnal survey the following day at 09:00 both basilisks had left the overnight rest spot.

The following hypotheses are considered in explaining this behaviour: mate guarding (Bull, 1990), pair-bonding (Barash & Lipton, 2001),



Figure 1. *Basiliscus plumifrons* adult male (with crests) and female.
Figura 1. Macho adulto de *Basiliscus plumifrons* (con cresta) y hembra.

resource competition (Nieuwoudt *et al.*, 2003) and thermoregulatory benefit (Shah *et al.*, 2003).

Mate guarding is a behavioural strategy deployed by many animals and is usually exhibited when a male increases the time spent in close proximity to a female (Cunningham & Birkhead, 1998). It is usually explained as an attempt by the male of a species to actively prevent his female from copulating with other males (Olsson *et al.*, 1996; Slater & Halliday, 2008). That the male *B. plumifrons* observed was engaged in mate guarding is possible, although would only concisely be proven if another male was observed competitively interacting with the pair of communal *B. plumifrons*.

Pair-bonding is a behavioural activity that involves communal occupancy of habitat or breeding resource, often by reproducing organisms (Barash & Lipton, 2001). Pair-bonding is generally short-term, long-term or social (Barash & Lipton, 2001). In reptiles pair-bonding can also be physiologically strategic and reduce energy costs by reducing effort spent searching for a mate (Vitt & Pianka, 1994). Mating systems involving long-term pair-bonding in Squamata (like that of some mammals) are unusual and limited to observations of species that frequently exhibit the behaviour (Pough *et al.*, 2001). Examples of documented cases include the scincids *Egernia major*, *Eumeces laticeps*, *Niveoscincus microlepidotus*, *Tiliqua rugosa* and *Trachydosaurus rugosus*, the anoles *Anolis cuvieri* and *Anolis occultus*, and

chameleons *Chamaeleo jacksonii* and *Chamaeleo hoehnelii* (Bull, 1988; Toxopeus *et al.*, 1988; Bull, 1990; Pough *et al.*, 2001; Osterwalder *et al.*, 2004; Rios-López & Puente-Colón, 2007). The behaviour has also been occasionally seen in large *Varanus* sp. including *Varanus komodoensis* (Auffenberg, 1981). Our observation of *B. plumifrons* was a single observation and too short in duration to adequately prove whether pair-bonding is a feature of this lizard species' breeding activity. However, it remains a possibility should further replicated observations of communal behaviour occur.

Any thermoregulatory benefit of this communal behaviour is unknown due to the short and unmeasured duration of observation. Any resource competition derived from the observation of this brief communal behaviour is also unknown but unlikely to have had significant influence on the lizards due to the short duration of pairing observed.

B. plumifrons is described as a solitary species that mates opportunistically (Savage, 2002). To the best of our knowledge this is the first published case of such communal behaviour by *B. plumifrons*.

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Infestación múltiple de *Mauremys leprosa* por nematodos

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Los reptiles silvestres, lo mismo que otros grupos zoológicos, son a menudo objeto de parasitismo por parte de otras especies animales, dentro de las que se suelen citar los nematodos (Murray 2004). Los galápagos no son una excepción (Roca *et al.*, 2005; Asakawa, 2006; Hidalgo-Vila, 2006) y esta relación parásito-hospedador puede afectar a su condición física. Recientemente se ha investigado en España la posible influencia de galápagos exóticos en la transmisión de enfermedades infecciosas a las especies autóctonas y los riesgos sanitarios que conlleva la introducción de estas especies (Hidalgo-Vila *et al.*, 2004).

Desde el año 2002 se realiza el seguimiento de una población de *Mauremys lepro-*

sa, en la localidad de Periana (Málaga; 30S393042/ 4085840, 250 msnm). La zona de estudio corresponde a un tramo del río Guaro que aún conserva restos del bosque galería, aunque la tala y la plantación de especies arbóreas alóctonas, principalmente *Eucalyptus* spp., ha alterado la vegetación original. La vega está sembrada de olivos (*Olea europea*) y cítricos (*Citrus sinensis* y *Citrus limonium*) y toda la zona es utilizada para el pastoreo de cabras, que abrevan en el arroyo y consumen la vegetación cercana.

El 14 de julio de 2007 se capturó una hembra adulta de *Mauremys leprosa*, de 196 mm de longitud de espaldar y 841 g de peso, que en el momento de la captura liberó dos