



Mating aggregation in the blind snake *Amerotyphlops brongersmianus*, with comments on the evolution of mating tactics in Scolecophidia

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Table S1. Summary of the available records of aggregations in Scolecophidia *sensu stricto* (Miralles et al., 2018) in the literature. The table also provides original and revised interpretation for the aggregation. An asterisk indicates the *Amerotyphlops brongersmianus* record reported in this study.

Taxa	Information available	Original interpretation for the aggregation	Revised interpretation for the aggregation (explanation)
Leptotyphlopidae			
Epictinae			
<i>Epictia ater</i>	Small intraspecific aggregations occasionally occur, sometimes accompanied by the colubrid snake species <i>Enulius flavitorques</i> (Scott & Limerick, 1983).	Unreported	Inconclusive
<i>Epictia albipuncta</i>	Eleven adult-sized (>120 mm SVL) specimens (three males, three females, and five undetermined) were found together occupying the same refuge in late winter	Hibernation aggregation	Probably mating aggregation (adult-sized individuals; date of aggregation coincides with mating season of most scolecophidians studied thus far)

	(September) in Argentina (Cabrera et al., 2023).		
<i>Epictia albipuncta</i>	Four females (85.7–88.5 mm SVL) and four males (83.5–89.1 mm SVL) males were found together occupying the same refuge in early spring (September) in Argentina (Cabrera et al., 2023).	Hibernation aggregation	Hibernation aggregation (hatchling-sized specimens; Kretzschmar & Scrocchi 2020)
<i>Epictia albipuncta</i>	Ten specimens, of which six were males (230.4–255.2 mm SVL), one female (283.4 mm SVL), and three undetermined, were found together occupying the same refuge (Cabrera et al., 2023).	Unreported	Probably mating aggregation (adult-sized individuals)
<i>Epictia australis</i>	Four groups of three, four, and five individuals were found each under a different stone in spring (October–December) in Argentina, always after heavy rains. There were juveniles and adults. Sex was not determined (Di Pietro et al., 2020; Di Pietro, pers. comm.).	Unreported	Probably mating aggregation (at least some of the aggregations, as the data of some of them coincides with the mating season of most scolecophidians studied thus far)
<i>Epictia munoai</i>	Multiple groups of three intertwined individuals found under loose rocks on the ground in Argentina (Vega & Bellagamba, 1990).	Unreported	Probably mating aggregation (intertwined individuals)
<i>Epictia munoai</i>	Hundreds of adult and young specimens (biometric data unreported) were found aggregated within termite nests in early winter (July) in Brazil. Several specimens were ingesting or had ingested termite nymphs (Lema & Dotto, 2012).	Feeding aggregation	Feeding aggregation
<i>Rena dissecta</i>	As many as five specimens were found under the same boulder in northeastern Oklahoma, USA. One female (225 mm total length) had	Unreported	Inconclusive

	7–8 mm eggs in length, and two females (193 and 195 mm total length) had smaller eggs (2–4 mm in length). These females were collected in late spring (June) (Force, 1936). It is unclear if they were in the aggregations.		
<i>Rena dissecta</i>	Nineteen specimens were found along a 20 m length hillside during mid-spring (May) in Clark County, Kansas, USA; eleven of them were found together beneath a single rock, and eight were found singly or in pairs under rocks (Rundquist et al., 1978). Two adult-sized voucher specimens were retained (KU 174727: 205 mm SVL; KU 174728: 210 mm SVL; A. Motta, pers. comm.), but it is unclear if they were in the aggregation.	Unreported	Probably mating aggregation (date of aggregation coincides with mating season in the species and a congeneric species; Werler & Dixon, 2000; Goldberg, 2003)
<i>Rena dissecta</i>	A tangled mass (~15 cm diameter) of blind snakes was found under a sandstone slab during mid-spring (May) in Payne County, Oklahoma, USA. Some specimens dispersed, but 13 were secured (eight males and five females: 125–226 mm total length). Within one week later, additional 13 specimens were found (none of them entwined), although three pairs (sex unreported) were each found under a different rock (McCoy, 1960).	Moisture, drowned out the deeper crevices by the inundating rains, breeding behaviour	Mating aggregation (snakes were tangled; date of aggregation coincides with mating season in the species and a congeneric species; Werler & Dixon, 2000; Goldberg, 2003)
<i>Rena dissecta</i>	Three females and their clutches found within a fossil-bearing matrix in early summer (July) in Meade County, Kansas, USA. Multiple clutches (31 eggs) and empty eggshells were also discovered within the fossil-bearing matrix. Additional four gravid females found within another fossil-bearing matrix within ~91 cm of each other (Hibbard, 1964).	Communal nesting	Communal nesting

<i>Rena dissecta</i>	One specimen was found under flat stones in late spring (June) in association with one specimen of <i>Diadophis punctatus</i> (Colubridae) and two specimens of <i>Hypsiglena ochrorhynchus</i> (Colubridae) (Hibbard, 1937).	Unreported	Interspecific aggregation
<i>Rena humilis</i>	A large aggregation of several dozen blind snakes uncovered beneath the board planking ~122 cm below the surface of the ground in early spring (April) in Death Valley area, California, USA (Turner & Wauer, 1963).	Unreported	Probably mating aggregation (date of aggregation coincides with mating season in the species and a congeneric species; Werler & Dixon, 2000; Goldberg, 2003)
<i>Rena humilis</i>	Five specimens, along with several "cast skins", found in a 77 cm deep depression in the soil in early spring (April) in Death Valley, California, USA (Kay, 1970).	Unreported	Probably mating aggregation (date of aggregation coincides with mating season in the species and a congeneric species; Werler & Dixon, 2000; Goldberg, 2003)
Leptotyphlopinae			
<i>Leptotyphlops conjunctus</i>	Intraspecific aggregations comprising a female and multiple males tangled in balls under rocks during early spring in South Africa (W. Conradie, pers. comm.).	Mating aggregation	Mating aggregation (snakes were tangled)
<i>Leptotyphlops nigricans</i>	Sixty-four individuals sheltered under a slate section in early winter in South Africa. Most individuals reported as adults or subadults, but no biometric data was provided (Dyer, 1990).	Behavioural selection, communal hibernation sites, lack of other suitable winter retreats.	Probably hibernation aggregation
<i>Myriopholis algeriensis</i>	Four adult individuals tangled under a single stone in spring (May) in Morocco. A picture provided therein clearly shows individuals with their cloacae tightly opposed (Bouazza et al., 2018).	Mating aggregation	Mating aggregation
<i>Myriopholis macrorhyncha</i>	A picture of multiple adult individuals tangled in spring (April) in Turkey (Göçmen, 2007).	Unreported	Probably mating aggregation (date of aggregation coincides with mating season in the species, a congeneric

			species (Bouazza et al., 2018), and most scolecophidians studied thus far (Braz & Almeida-Santos, 2022)
<i>Myriopholis macrorhyncha</i>	A picture of four adult individuals tangled in spring (April) in Turkey (Yildiz, 2007).	Unreported	Probably mating aggregation (date of aggregation coincides with mating season in the species, a congeneric species (Bouazza et al., 2018), and most scolecophidians studied thus far (Braz & Almeida-Santos, 2022)
<i>Myriopholis macrorhyncha</i>	Two or three individuals were found together under small flattish stones in mid-spring (May) in Turkey (Clark and Clark 1973). These individuals (CAS 105926-31) measured 140–196 mm SVL. At least two of them were early vitellogenic females (CAS 105926, 190 mm SVL; CAS 105930, 196 mm SVL) and one was a male CAS 105928, 167 mm SVL (Broadley & Wallach, 2007; L. Scheinberg, pers. comm.).	Unreported	Probably mating aggregation; adult-sized individuals, date of aggregation coincides with mating season in the species, a congeneric species (Bouazza et al., 2018), and most scolecophidians studied thus far (Braz & Almeida-Santos, 2022)
<i>Myriopholis macrorhyncha</i>	Four specimens (sex unreported) were found together under the same stone in mid-spring (May) in Turkey. Specimens were found only when soil was damp (Mulder, 1995; Mulder, pers. comm.).	Unreported	Mating aggregation (a picture of the aggregation provided to us by John Mulder clearly shows four individuals tangled with their tail (cloacal) region tightly opposed
<i>Namibiana gracilior</i>	An adult female (166 mm total length; PEM R8548) and an adult male (165 mm total length; PEM R8549) found together with a <i>Rhinotyphlops lalandei</i> (PEM R8550) under a shale slab on soil in karroid broken veld vegetation during early spring (September) in South Africa (Branch & Bauer, 1995; W. Conradie, pers. obs.).	Unreported	Interspecific aggregation; a potential mating pair, date of aggregation coincides with mating season in other South African scolecophidians (Webb et al., 2001) and most scolecophidians studied thus far (Braz & Almeida-Santos, 2022)

Typhlopidae

Afrotyphlopinae

<i>Afrotyphlops bibronii</i>	Three hatchling-sized individuals (109, 113, and 114 mm total length) were found together under a stone in moist bushveld close to a peat marsh in late autumn (June) in South Africa. No empty eggshells were observed (Kirchhof et al., 2010; Kirchhof, pers. comm.).	Unreported	Post-hatchling aggregation (hatchling-sized individuals; date of aggregation coincides with timing of hatching in the species (Webb et al., 2001)
Asiatyphlopinae			
<i>Anilius nigrescens</i>	Intraspecific aggregations of one adult female to three adult males between early spring and early summer in Australia (Shine & Webb, 1990).	Mating aggregation	Mating aggregation
<i>Anilius nigrescens</i>	A knotted mass of at least 35 juvenile to large adult individuals (no biometric data) was found under a rock during early summer (January) in Australia. The weather was calm, mild, and sunny, with air temperature averaging around 25 °C (Hoser, 1980).	Unreported	Inconclusive
<i>Anilius nigrescens</i>	Six juveniles and one adult specimen (not measured) were found in a single cluster under a sandstone rock slab during early summer (January) in Australia. The weather was hot, windy, and sunny, with air temperature averaging of 30 °C (Hoser, 1980).	Newly hatched snakes that failed to disperse from their hatching site.	Inconclusive
<i>Anilius nigrescens</i>	A single coiled mass of three specimens (no biometric data) found under a sandstone rock during mid-autumn (mid-May) in Australia. The weather was calm, cool, and sunny, with air temperature averaging 18 °C (Hoser, 1980).	Unreported	Inconclusive
<i>Anilius nigrescens</i>	A single coiled mass of three subadult specimens (no biometric data) was found	Unreported	Probably mating aggregation (date of aggregation coincides with mating

	under a log during mid-spring (November) in Australia. The weather was relatively hot and sunny, with the air temperature around 30 °C (Hoser, 1980).		season in the species; Shine & Webb, 1990)
<i>Anilius nigrescens</i>	One large female (~330 mm total length) found together with three adult males (~280 mm total length each) and one juvenile (~110 mm total length) found under two adjacent rocks during early spring (mid-October) in Australia. Copulation was inferred to be occurring because the cloacae of the female and one of the adult males were tightly opposed and joined together (Scanlon & Davidson, 1999).	Mating aggregation	Mating aggregation
<i>Anilius nigrescens</i>	Five males and two females found together during early spring (September) in Australia (Ehmann & Bamford, 1993).	Mating aggregation	Mating aggregation
<i>Anilius wiedii</i>	Intraspecific aggregations of one adult female to three adult males during spring (October) in Australia (Shine & Webb, 1990).	Mating aggregation	Mating aggregation
<i>Anilius wiedii</i>	Seven juvenile specimens (not measured) found in a single tightly knotted bundle under a basalt rock during mid-winter (30 August) in Australia. The weather was cold (average air temperature < 17 °C), windy and cloudy. There had been light to moderate rain in the area the day before (Hoser, 1980).	Newly hatched snakes that failed to disperse from their hatching site.	Hibernation aggregation (probably not post-hatching aggregation because other congeners hatch in autumn rather than mid-winter; Shine & Webb, 1990)
<i>Indotyphlops braminus</i>	Large colonies inhabiting rotten wood after heavy rains from spring to early winter (April–July) in Sri Lanka. Six gravid females (152–162 mm total length) suggested as part of a colony (Wall, 1921).	Unreported	Rain-induced aggregation; aggregation for communal egg-laying

<i>Indotyphlops braminus</i>	Three specimens (91, 92, and 126 mm total length) were found under the same small piece of debris during early spring (27 March) in USA (Ernst & Brown, 2000).	Unreported	Inconclusive
<i>Indotyphlops braminus</i>	Two specimens (the largest measuring 145 mm total length) were found together beneath bundles of rotting grass stacked in native town during spring (May) in India (Loveridge, 1942).	Unreported	Inconclusive
<i>Indotyphlops braminus</i>	Four specimens (size not reported) were found at an active construction site in India. Three out of four regurgitated hymenopteran eggs and an orthopteran (Jani, 2019).	Unreported	Feeding aggregation
<i>Indotyphlops braminus</i>	Three specimens (MCZ 182613-5) were swimming together, all three entwined, during the day in a kitchen flooded by heavy rains during rainy season (November) in Thailand (Pauwels et al., 2003; O. S. G. Pauwels; pers. comm.).	Unreported	Flooding
<i>Ramphotyphlops adocetus</i>	Small aggregations often occur within rotten coconut logs and sometimes beneath decaying plant detritus (Zug, 2013).	Unreported	Inconclusive
<i>Xerotyphlops vermicularis</i>	Twenty-three specimens (152.6 ± 29.4 mm total length) were found under a stone in the garden of a house in late winter (March) in Jordan (Amr et al., 1997).	Mating aggregation; moisture conservation behaviour	Probably mating aggregation [adult-sized individuals; date of aggregation coincides with mating season (May-July) in the species (Dyugmedzhiev et al., 2023)]
<i>Xerotyphlops vermicularis</i>	Five adult-sized individuals (200–250 mm total length; sex unreported) were found tangled under a flat stone during mid-spring (May) in Bulgaria; no copulation was detected (Koynova et al., 2021).	Unreported	Mating aggregation [adult-sized individuals; snakes were tangled; date of aggregation coincides with mating season (May-July) in the species (Dyugmedzhiev et al., 2023)]

<i>Xerotyphlops vermicularis</i>	Two adult-sized specimens (sex and size not recorded) were found tangled under a stone in a rainy day during early spring (April) in Greece M. Berroneau, pers. comm.).	Unreported	Inconclusive [it may be a courting/mating pair, as individuals are adult-sized, the encounter coincides with the mating season (May-July) in the species (Dyugmedzhiev et al., 2023)]; however, their close association might also be a response to the rain and consequent flooding of underground tunnels)
Typhlopinae			
<i>Amerotyphlops brongersmianus</i> *	Two adult females (205 and 240 mm SVL) and five adult males (150–213 mm SVL) tangled in the space between the leaf sheath and the stem (~10 cm above the ground) of a decaying palm tree (Arecaceae) in mid-spring in Brazil (this study).	Mating aggregation	Mating aggregation
<i>Amerotyphlops brongersmianus</i>	They were frequently found together with the amphisbaenid <i>Amphisbaena darwini</i> sheltered under fallen logs (Álvarez et al., 2003).	Unreported	Inconclusive (interspecific aggregation)
<i>Antillotyphlops platycephalus</i>	A writhing mass of 19 juvenile and adult specimens (143–247 mm total length) congregated in a small space on the underside of a rotting log (<i>Cocos</i> sp.) in late winter (March) in Puerto Rico. An approximately equal number of specimens also found after digging to ~7.6 cm below the surface (Thomas, 1965).	Not a breeding aggregation; aggregation for conservation of moisture.	Probably mating aggregation [adult-sized individuals; date of aggregation coincides with mating season of most subtropical scolecophidians studied thus far (Braz and Almeida-Santos, 2022)]
<i>Typhlops rostellatus</i>	Photos and a report on four individuals found in a mating ball in Puerto Rico (Vicens, 2015)	Mating aggregation	Mating aggregation

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