

A Revised List of Ixodid Ticks Known to the Yemen Monitor (*Varanus yemenensis*); with a Review of the Ixodid Tick (Ixodoidea) Species Known to African and Arabian Monitor Lizards [Varanidae: *Polydaedalus*]

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Abstract: Through a literature review of the African savannah monitor lizards (*Varanus: Polydaedalus*), it has been discovered that an overlooked ixodid tick (*Amblyomma gervaisi*) parasite identified with the east African Eyed Monitor (*V. ocellatus*), is in fact a parasite of the Arabian Yemen Monitor (*V. yemenensis*). The ixodid ticks known to the African savannah monitor lizards (*Varanus: Polydaedalus*) are reviewed for clarity.

On 04 September 1986, a television nature program entitled “*Unter Gansegeiern und Hammerkopfen*”, on the Republic of Yemen; prepared by Wieland Lippoldmüller and originated from Bavarian Television (W.v. Lossow, pers. com.), aired in Germany (Greenwell, 1989; Böhme, 1990). The Yemen Monitor was first seen on this television program, and subsequently it was collected and described in 1989 as *Varanus yemenensis* (Böhme et al., 1989).

During its initial description, two parasites were reported from *V. yemenensis*; the ixodid ticks *Amblyomma sparsum* and *A.* (formerly *Aponomma*) *flavomaculatum* (Böhme et al., 1989).

While conducting a recent cross-referencing of African *Varanus* [*Polydaedalus*] and related parasite literature review, the author stumbled onto an as of yet unrecognized tick species known to *V. yemenensis*. In 1903, an ixodid tick, *A. gervaisi*, was found on an Eyed Monitor *V. ocellatus* collected from Al Khobar, Saudi Arabia (Hoogstraal and Kaiser, 1959). In 1986, this Al Khobar monitor was identified as *V. exanthematicus* by Arnold (1986). This specimen [BMNH 1903.6.26.9-10] would later be identified as a paratype of the newly-discovered and described *V. yemenensis* (Böhme et al., 1989), hence this monitor lizard once-identified as *V. ocellatus*, was in fact an example of *V. yemenensis*, and its associated tick parasite, *A. gervaisi* is a parasite to *V. yemenensis*.

Amblyomma gervaisi is known to Arabian reptiles including *V. griseus*, as well as other *Varanus* species in southeastern Asia and Asia-minor (Kaufman, 1972). To confirm that *A. gervaisi* has not been associated with *V. yemenensis* before, a review of the ixodid tick species associated with each of the African savannah monitor species: *V. exanthematicus*, *V. albigularis*, and *V. yemenensis* has been compared and depicted in Table 1.

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Table 1. Ixodid tick parasites known to African *Varanus* [*Polydaedelus*] species

Tick Species	<i>V. exanthematicus</i> <i>V. albigularis</i> <i>V. yemenensis</i>			References
<i>Amblyomma arcanum</i>	X			Dias, 1958
<i>A. exornatum</i>	X	X		Trommsdorf, 1914; Neumann, 1922; King, 1926; Schwetz, 1927; Rondelli, 1930; Wilson, 1950; Bedford, 1932, 1936; Rouselet, 1951, 1953; Heisch, 1954; Hoogstraal, 1954, 1956; Villers, 1956; Pienar, 1962; Theiler, 1962; Young, 1965; Elb & Anastos, 1966; Yeoman & Walker, 1967; Avery, 1971; Bourguin, 1971; Kaufman, 1972; Walker, 1974; Paine, 1982; Keirans, 1984; Mattysse & Colbo, 1987; Branch, 1991, 1992; Broadley (pers. comm.); Bayless & Simmons, 2000; Burridge, 2000, 2001; Flach et al., 2000; Bayless, 2006
<i>A. falsomarmoreum</i>		X		Theiler, 1962; Walker, 1974;
<i>A. flavomaculatum</i>	X	X	X	Morel & Mouchet, 1958; Morel, 1961; Kaufman, 1972; Walker, 1974; Keirans, 1984; Hesse, 1985; Mattysse & Colbo, 1987; Bohme et al., 1989; Bayless & Simmons, 2000; Burridge, 2000, 2001 Kaufman, 1972; Walker, 1974; Keirans, 1984;
<i>A. gervaisi</i>			X	Hoogstraal & Kaiser, 1959; Kaufman, 1972
<i>A. hali</i>	X			Tendeiro, 1948, 1950, 1952
<i>A. hebraeum</i>		X		Theiler, 1962
<i>A. inopinatum</i>	X			Keirans & Robins, 1999
<i>A. latum</i>	X	X		Hoogstraal, 1954; Theiler, 1962; Kaufman, 1972; Mattysse & Colbo, 1987; Bayless & Simmons, 2000; Burridge, 2000, 2001
<i>A. marmoreum</i>		X		Theiler & Salisbury, 1959; Theiler, 1962; Norval, 1975; Burridge, 2001
<i>A. neglectum</i>		X		Hirst & Hirst, 1910

Table 1. *continued*

Tick Species	<i>V. exanthematicus</i> <i>V. albigularis</i> <i>V. yemenensis</i>			References
<i>A. nuttalli</i>	X	X		Tendiero, 1952; Hoogstraal, 1956; Villiers, 1956; Dias, 1958; Theiler & Salisbury, 1959; Morel, 1961, 1963; Theiler, 1962; Yeoman & Walker, 1967; Walker, 1974; Elb, 1977; Keirans, 1984; Burridge, 2000
<i>A. paulopunctatum</i>		X		Keirans, 1984
<i>A. sparsum</i>		X	X	Theiler, 1962; Walker, 1974; Bohme et al., 1989
<i>A. variegatum</i>	X			Elb, 1977
<i>Ornithodoros erraticus</i>	X			Theiler, 1962

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***Editor's Comments:** Prior to his death in November 2006, Mark K. Bayless submitted several manuscripts resulting from extensive literature reviews for publication within *Biawak*. In addition to the current article, as intended, these submissions will be published in forthcoming issues. For a detailed obituary of Mark K. Bayless, including an annotated bibliography of his published *Varanus* works, please refer to:

Mendyk, R.W. and B. Aller. 2007. Remembering Mark K. Bayless (1960-2006). *Biawak* 1(1): 4-12.