On the Cover: *Varanus salvator bivittatus*

The hand-drawn anatomical illustrations appearing on the cover and inset of this issue originate from Grace B. Watkinson’s 1906 work entitled “The cranial nerves of *Varanus bivittatus*.” With 17 figures, this monograph represents one of the earliest investigations on the nervous system of varanid lizards, and features what may be the first published illustration of the varanid brain (*Varanus salvator bivittatus*). Figures courtesy of the American Museum of Natural History Library.

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The International Varanid Interest Group is a volunteer-based organization established to advance varanid research, conservation, and husbandry, and to promote scientific literacy among varanid enthusiasts. Membership to the IVIG is free, and open to anyone with an interest in monitor lizards and the advancement of varanid research. Membership includes subscription to BIAWAK, an international research journal of varanid biology and husbandry, and is available online through the IVIG website.
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*Varanus albigularis*. Damaraland, Namibia. Photographed by David Kirshner.
New Book on the Varanus prasinus Complex

Continuing his long tradition and dedication to advancing monitor lizard husbandry, Bernd Eidenmüller has authored a new book on monitors, this time focusing on the keeping and breeding of members of the *Varanus prasinus* complex. Entitled “Keeping & Breeding Emerald Monitors: The Varanus prasinus Group”, and published by Edition Chimaira, this 94 page book is now available in both English and German languages. A thorough review of this book will appear in a future issue of this journal.

For additional information, see [www.chimaira.de](http://www.chimaira.de)

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Rosenberg’s Monitors Caught on Camera near Canberra

A breeding pair of rare Rosenberg’s monitors (*Varanus rosenbergi*) has been photographed near the city center of Canberra. The sighting includes documentation of egg laying in a termite mound. Amateur photographer Matthew Higgins staked out the pair and later identified what he claimed to be at least 14 hatchlings, counted on the basis of distinguishing facial marks. It was noted that the major factor in the decline of this species is predation and nest destruction from feral animals. The species is being considered for introduction to Mulligan’s Flat Woodland Sanctuary which is free of feral species.

*Source: www.abc.net.au; 4 November 2016*

Butaan Now on Exhibit at San Diego Zoo

A Butaan (*Varanus olivaceus*) is now on public display at the San Diego Zoo. The young animal was hatched at the Los Angeles Zoo the previous year from parents that had been illegally imported and confiscated by the United States Fish & Wildlife Service. The San Diego Zoo is one of only a few accredited zoos in the USA to maintain this species, and one of the only facilities to receive captive-bred offspring from the Los Angeles Zoo.

*Source: www.zoonooz.sandiegozoo.org; 26 July 2016*

Sightings of Nile Monitors on the Rise in Cape Coral

Sightings of the invasive Nile monitor (*Varanus niloticus*) have been increasing in the Cape Coral area of southwestern Florida. More than thirty reports of the species have been received by authorities this year (though specific numbers for previous years were not provided) with seven in October alone. The city has begun placing traps for the animals and has reiterated its warning that, if seen, they should not be approached.

*Source: www.nbc-2.com; 16 November 2016*
Oldest Captive Komodo Dragon Dies at Calgary Zoo

Loka, a 30 year-old female Komodo dragon (*Varanus komodoensis*) and the oldest dragon kept in captivity, has died at the Calgary Zoo, having been moved there from Toronto Zoo two years earlier. She had been under care as a geriatric animal for some time with her health deteriorating over the past two weeks. She was considerably older than the now-oldest dragon, an unnamed specimen from an unnamed facility, at twenty-two years of age.

Source: www.upi.com; 27 July 2016

Komodo Dragon Euthanized

Jude, a nine-year old female Komodo dragon (*Varanus komodoensis*) on loan to the Virginia Aquarium & Marine Science Center from the San Antonio Zoo, was euthanized following complications from surgery. She suffered from egg-yolk coelomitis, a condition that necessitated the removal of her reproductive tract earlier this year (see news notes, Biawak Vol. 10 No. 1). Her condition declined following the procedure and the decision was made to euthanize her. She arrived at the facility in 2012 as a genetic match for a male, Teman, originally from Denver Zoo.

Source: www.pilotonline.com; 19 July 2016

Unexpected Reproduction of Komodo Dragons at Virginia Aquarium

Two Komodo dragons (*Varanus komodoensis*) have hatched at the Virginia Aquarium & Science Center from a previously undiscovered nest. They had been laid by Jude, the facility’s female who had her reproductive tract removed earlier this year due to complication and later died during recovery from surgery. Prior to the female’s health issues, she apparently nested a clutch on exhibit that contained eighteen eggs which escaped the notice

Arrests Made over Viral Video of Monitor Killing

Forest Department officials in Chennai, Tamil Nadu, India, recently arrested two men identified from a viral video posted online which depicted people drinking blood collected from the slit throat of a live Bengal monitor (Varanus bengalensis). The men, who were selling the lizard’s meat and blood, were arrested on various violations of the Wildlife Protection Act, which under Schedule II protects V. bengalensis from being hunted. Despite such protections, the species is regularly killed for its meat, blood and oil, as it is claimed to have aphrodisiac properties and the ability to cure various ailments.

Source: www.pilotonline.com; 19 August 2016

Officials Remove Water Monitors from Bangkok’s Lumpini Park

In an effort to reduce the number of Asian water monitors (Varanus salvator) living in the famed Lumpini Park of inner Bangkok, Wildlife Conservation Office officials with the Department of National Parks launched efforts to capture up to 40 V. salvator from the park in September. The lizards, which occur in large numbers in the urban park that is frequently visited and utilized by locals and tourists, have been deemed a nuisance, and captured individuals are slated to be transferred to a wildlife breeding facility in Ratchaburi. Critics of the effort argue that the level of care given at this facility is not adequate for the species.

Source: www.news.trust.org; 20 September 2016

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Source: www.pilotonline.com; 19 August 2016

Komodo Dragon Treated for Reproductive Complications

A six-year-old female Komodo dragon (Varanus komodoensis) at the Denver Zoo (USA) was treated for dystocia and egg yolk peritonitis after several eggs it had retained ruptured within its reproductive tract. At first, zoo staff noticed abdominal swelling and weight loss even though the dragon’s appetite had increased. Ultrasonography and endoscopy revealed the presence of blood within the abdominal cavity along with eggs. The dragon was operated on the following day to retrieve the eggs and potential sources for infection, with the veterinarians performing an ovariectomy to prevent future complications. It is reported to be recovering well from the surgery.

Source: www.livescience.com; 29 June 2016
Proceedings of the 2015 Interdisciplinary World Conference on Monitor Lizards

Proceedings of the 2015 Interdisciplinary World Conference on Monitor Lizards will be available after 28 December 2016. The price will be $35.00 USD plus shipping from Thailand. There are only a limited number of copies that will be available.

Please contact Michael Cota at Herpetologe@gmail.com to order and for further information.

Female *Varanus exanthematicus* in Dawa, Ghana on 1 December 2016 displaying possible scent-marking behavior. This individual was observed copulating with a male two days later. Camera trap photographs by Daniel Bennett and Baturi Ali.
Forensic Significance of Monitor Lizard Scavenging Activity on Human Corpses

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Abstract - In Sri Lanka, monitor lizards, especially the water monitor (Varanus salvator), locally referred to as the ‘kabaragoya’, are known to be a common scavenger on human corpses. Possibly during the process of gripping the corpse during scavenging, the sharp claws of the monitor lizard cause linear wounds on the skin which mimic incised wounds from sharp weapons. This is a unique phenomenon particularly seen in putrefied or macerated bodies which have been lying in aquatic environments. In this regard, scavenging activity by monitor lizards on human bodies has a significant impact in forensic practice since these artefactual incised injuries can mislead forensic investigators in their interpretation of the cause and circumstances of death. Further study and observations on the scavenging activity of monitor lizards, especially on large animal carcasses, will be useful for forensic investigators to better understand this phenomenon.

The scavenging behavior of animals on human corpses has an interesting association with forensic practice. There are many reports of animals feeding on dead bodies and causing artefactual postmortem injuries which can mislead investigators in their interpretation of the cause and circumstances of death (Byard et al., 2002; Byard, 2011). In Sri Lanka, the water monitor, Varanus salvator is known for feeding on human corpses, especially when situated in or around water.

In a recent publication by Gunawardena (2016), four cases were presented where monitor lizard scavenging activity created postmortem injuries to the body which mimicked cut wounds from sharp weapons (Figs. 1 & 2). The author believes these injuries are caused by the sharp claws of V. salvator (Fig. 3), as it grips the carcass during feeding (Stanner, 2010) or when crawling over the body. Most often, bodies scavenged by monitor lizards are found in a state of advanced putrefaction and in aquatic locations such as canals or rivers. However, the author has noted one instance of monitor lizard scavenging on a dead body lying upstairs inside a house. It is possible that the softening of the skin after putrefaction or immersion in water facilitates the tearing effect from the sharp pointed claws.

Unlike other large animal scavengers in Sri Lanka such as jackals, foxes or crocodiles, V. salvator, or ‘kabaragoya’ as it is locally known, has adapted to living close to human-populated areas just as it has in other Southeast Asian cities, towns and villages (e.g., Bennett et al., 2010; Uyeda, 2009). The species is also known to have a strong sense of smell that enables it to locate carrion with ease (Traeholt, 1994). Varanus salvator shows both daytime and occasional nocturnal scavenging activity (De Lisle, 2007; Uyeda et al., 2013) and has a wide home range (Wickramasinghe et al., 2010). For these reasons, V. salvator is perhaps the most
common, and often the first vertebrate scavenger to arrive to feed on human corpses in Sri Lanka.

Monitor lizards exhibit a high degree of species diversity, with many new species and subspecies described in recent years (Koch et al., 2010). It is unclear whether the occurrence of these artefactual injuries is exclusive to *V. salvator*, as this phenomenon has not been reported on before. Losos & Greene (1988) quoted Stirling’s observation of an Australian monitor lizard, *V. giganteus* feeding on an immature kangaroo which reads “... then placing its forefeet on the body, it tore out its flesh like a dog.” It is clear how this manner of feeding can result in the claw marks mentioned above and it is possible that any large species of monitor lizard feeding on a human corpse could cause these types of injuries. The only other species of monitor lizard in Sri Lanka, the ‘thalagoya’ (*V. bengalensis*) is believed to feed predominantly on much smaller prey such as insects, other invertebrates, and small mammals, but larger individuals have shown carrion seeking behavior (Losos & Greene, 1988; Pianka, 2004) and perhaps may also opportunistically feed on human corpses.

Controversies have arisen in the past, such as in the famous Azaria Chamberlain (“Dingo baby”) case, where injuries caused by animals have resulted in erroneous murder convictions. In one case documented by Gunawardena (2016), the dead body of a frequent alcohol consumer was found near a riverbank and two persons were arrested on suspicion of homicide because there had been apparent cut injuries to his face. The autopsy revealed that he had died of natural causes and that the facial injuries were attributed to claw marks from a *V. salvator*. From a forensic perspective, further collaborative research on animal scavenging artefacts

**Fig. 1.** Apparent cut injuries on the arm of a female body recovered from a canal (black arrows). These resemble injuries caused when defending a blow from a sharp weapon, and are referred to in forensic practice as ‘defense injuries’.

**Fig. 2.** Postmortem cuts and stab wounds (red arrows) caused by the claws of *Varanus salvator*. 
can minimize such pitfalls during death investigations. Since experimental studies are limited by modern ethical regulations, the author would like to invite researchers who study these species in their natural habitat, to share their comments and observations on such artefactual injuries caused by the monitor lizards when feeding on animal carrion.

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Received: 8 June 2016; Accepted: 24 October 2016
Feeding Behavior of an Asian Water Monitor

Varanus salvator macromaculatus on a Bornean Bearded Pig

Sus barbatus barbatus Carcass

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Abstract – The Southeast Asian water monitor Varanus salvator is considered to be a generalist carnivore. Here, we describe an observation of a V. s. macromaculatus feeding on a dead adult Bornean bearded pig Sus barbatus barbatus in Borneo, and review other cases of V. salvator feeding on Sus species elsewhere in southeast Asia.

Introduction

The Southeast Asian water monitor Varanus salvator is considered to be a generalist carnivore. Its diet includes large invertebrates and small vertebrates such as insects, fish, crabs, freshwater turtles, sea turtles, lizards, crocodiles and their eggs, birds and their eggs, and rats, in addition to carrion (Das, 2010; Gaulke, 1991, 1992; Gaulke & Horn, 2004; Shine et al., 1998; Traeholt, 1994a,b). Opinions on the relative importance of carrion vary between authors. Although documented species-specific data on its diet and feeding techniques are scarce (Bundhitwongrut et al. 2008), it is increasingly reported (e.g., Bundhitwongrut et al., 2008; Cota & Sommerlad, 2013; Karunarathna et al., 2008; Losos & Greene, 1988; Stanner, 2010).

Observations

At 1628 h on 9 October 2015, we observed a V. salvator macromaculatus feeding on a dead adult Bornean bearded pig Sus barbatus barbatus on the muddy banks of the Kinabatangan River, near Sukau, Sabah, Borneo (5° 32’ N; 118° 17’ E) (Figs. 1 & 2). The pig showed no obvious signs of decomposition or injury, was largely intact, and the cause of death was not obvious. A saltwater crocodile Crocodylus porosus was also watching the feeding event from the water, approximately 10 m from the bank. During the 10 minutes of observation, the water monitor fed on the pig’s soft internal tissues which were obtained by the monitor’s head entering a cavity in the pig’s abdomen (Fig. 2). The monitor was cautious throughout the feeding event. On returning to the site approximately 50
Importance as a food source with high nutritional value and low energy cost when compared to hunting.

Like the observations of Boogaarts (1938) and Gaulke (1992), our observations in Sabah of a *V. salvator macromaculatus* feeding on the carcass of a *S. b. barbatus* were almost certainly a case of carrion consumption.

Acknowledgments – We thank two anonymous reviewers for comments on the manuscript.

References


Discussion

Besides considerable human hunting pressure, few predators of *S. b. barbatus* are recorded (Meijaard et al., 2011), although clouded leopards and reticulated pythons have been known to take piglets (Curran, in Meijaard, 2000; Phillipps & Phillipps, 2016). Our observation appears to be the first of a *V. salvator macromaculatus* feeding on a dead *S. b. barbatus*. However, in North Sumatra, Boogaarts (1938, in Meijaard, 2016), recorded Asian water monitors feeding on dead banded pigs *S. scrofa vittatus*: “We found three specimens which had been taken by tigers, and from which these had only removed the most desirable bits of meat. Monitor lizards and bears had removed the remainder of the carcasses”.

In the Philippines, Gaulke (1992) reported water monitors in feeding aggregation on two ‘*Sus barbatus*’ carcasses on Calaut Island, Palawan Province. However, recent taxonomic treatment recognizes this pig taxon as a separate species, the Palawan bearded pig *S. ahoenobarbus*. Nonetheless, Gaulke (1992) suggests the ability of water monitors to detect large carcasses (such as pigs) in places like the Philippines to be low considering such potential prey are widely exploited by humans, but where detected, have an occasional importance as a food source with high nutritional value and low energy cost when compared to hunting.

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Remarks on a Case of Deformities in a Female Varanus pilbarensis

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Abstract: Deformities in a captive adult female Varanus pilbarensis are described, along with potential diagnoses of these conditions.

Introduction

Health problems in captive reptiles and amphibians often stem from failed attempts to recreate in captivity the range of conditions that would naturally be encountered and utilized by species in the wild. Veterinarians often encounter medical challenges resulting from inadequate or inappropriate diets and nutrition, environmental conditions (i.e., temperature, humidity), and lighting (i.e., UVB exposure) as well as many other husbandry-related factors. These can often be avoided with a better understanding of the biological parameters and specific husbandry needs of a species. In the following case report, we report on severe deformities in a captive Varanus pilbarensis that are most likely the result of inadequate supportive husbandry. This information can be of value and interest to veterinary clinicians, herpetologists, and reptile keepers working with monitor lizards in captivity.

Case Report

In December 2015, we were contacted by a private reptile keeper that was experiencing health problems with a captive female V. pilbarensis in their collection. This individual acquired the specimen from an unknown keeper; therefore, many important details about its previous husbandry, exact age, and other relevant biological information were unknown. Since it was difficult to make an accurate diagnosis about its pathology without this historical information, it was decided to approach this unusual case using radiographic evaluation, biopsy, and cytology. Upon its arrival in our care, the V. pilbarensis, which measured 36 cm in total length and 27 g, was lethargic and had difficulties moving, with significant deformities affecting its motor and nervous systems (Fig 1.). Because of this, it had problems hunting live food; therefore, it was easier for the specimen to capture prey (legless crickets and locusts) in small containers or when offered with tweezers. On several occasions warm water baths were provided, during which the monitor lizard drank greedily. It defecated only once in three weeks of maintenance and excreted large quantities of very dense urates. A few days after being introduced to its

Fig. 1. Deviation of the spine (scoliosis). Paravertebral lumps are also present.
new terrarium, it stopped eating altogether and refused to move.

Physically, the animal’s condition was quite deteriorated. It was almost impossible for the lizard to walk on four legs, to the extent where it dragged the anterior part of its body on the ground, propelled by the hind legs. The four limbs lacked uniformity and several hard masses were detectable in the radio-ulnar, tarsal and carpal, femoral, tibial and humeral regions. The appearance of the digits was quite variable, with most showing deformities including amputations and pathological swellings (Fig. 2). In addition, there was a noticeable deformity of the spine, and the tail showed pathological deviations and a loss of muscle mass. On the ventral side of the body and in the ventral regions of the limbs, a bulging area of an off-white solid material was observed (Fig. 3). Dorsal and paravertebral masses distributed along almost the entire spinal column from the last cervical vertebrae to the lumbar area were also observed (Fig. 4). The eyes were a bit sunken and opaque, suggesting a moderate degree of dehydration.

In the mouth there were white masses attached to the mucosa of the maxillary and mandibular branches (Fig. 5), and in the pharynx at the level of the parotid region there were some lumps that protruded toward the cavity which were very dense and had a firm adherence to the soft tissue.

A differential diagnosis in this case could be gout, metastatic calcifications, primary or secondary hyperparathyroidism, metabolic bone disease,
deposits of calcium hydroxyapatite, renal disease, or a combination of several of these pathologies. In this case, it was impossible to take a blood sample because blood vessels were probably quite collapsed and dehydration resulted in a state of hypotension in the animal. For this reason, we were unable to determine calcium and phosphorus levels in the blood and other chemical parameters to get an accurate diagnosis of renal failure. General radiography was performed to assess the state of the skeleton and the density of the material in the muscles and joints (see Figs 1 & 3). Scoliosis, a loss of bone density in some vertebrae, and fractures in the left tibia and some phalanges were revealed. Pathological tissue densities at various points of the joints and muscle areas of the limbs were also detected.

Despite making all efforts to save the life of this animal with supportive care, it died three weeks after its arrival. Several tissue samples were taken for histopathological analysis, which revealed metastatic calcification of the kidneys, heart and large blood vessels, and other organs. At postmortem examination, the articular and periarticular tissues of the limbs and dorsal muscles contained well-demarcated accumulations of a soft, white, and pasty to chalky material. The absence of uric acid crystals and tophi in tissues suggests that this case is not related to gout, which can be common in captive monitor lizards (Garner, 2008; Hartdegen, 2002; Köhler, 1992; Mendyk et al., 2013). It is presumed that excessive dietary calcium supplementation, chronic dehydration and possibly the excessive use of vitamin D3 supplements were the main cause for death in this specimen.

Acknowledgments – We would like to thank André Koch, Lino Pérez de Quadros, Gabriel Alcántara, Verónica Márquez, Jairo Cuevas and Ignacio García-Delgado Flores.

References
Introduction

Monitor lizards have a long and fascinating history of being maintained in captivity that dates back to at least the early 19th Century. Some of the earliest published accounts of monitor lizards in captive collections reference animals held in European menageries and zoological gardens (Cox, 1831; Knight, 1867; Mitchell, 1852; Sclater, 1877), although private keepers also maintained representatives of this group during this period (Bateman, 1897; Lachman, 1899; von Fischer, 1884). Alfred “Gogga” Brown was probably the first individual to genuinely attempt to reproduce monitor lizards in captivity in the late 1800s (Branch, 1991). Although he received hundreds of eggs (from 33 clutches) from a large group of more than 40 captive Varanus albigularis he maintained outdoors in South Africa, he was unsuccessful in hatching any live offspring, Brown (Branch, 1991). Eggs had also been received but not hatched by other keepers during the around this time (e.g., Thilenius, 1898); these eggs were usually scattered by the females who clearly did not have appropriate conditions available for nesting (Branch, 1992; Thilenius, 1898). A poor understanding of monitor lizard biology and husbandry and reptile egg incubation undoubtedly prohibited successful captive breeding from taking place for many decades. This was especially apparent in a 1967 report by Osman (1967), who while discussing a clutch of V. komodoensis eggs that scattered across the ground of its enclosure rather than buried, suspected that the eggs were to be later buried in the sand by the female after they had been left out in the sun for the shells to harden.

The first documented record of successful captive breeding of a monitor lizard occurred with V. komodoensis in 1941 (de Jong, 1944). Unknown to their caretakers, a pair of adults maintained at the Batavia Zoo since 1938 secretly nested a clutch of eggs in their exhibit which
unexpectedly hatched several months later, much to the zoo’s surprise. The next documented case of successful captive reproduction in monitor lizards did not occur until 1962, when a wild-caught gravid *V. albicularis* produced a clutch of eggs shortly after arriving at the San Diego Zoo, which resulted in a single hatching. Several additional species were successfully bred for the first time in the 1970s (Horn, 1978; Horn & Visser, 1989), with more species hatched in the 1980s (e.g., Bredl & Horn, 1987; Bröer & Horn, 1985; Eidenmüller, 1986; Eidenmüller & Horn, 1985; Horn & Petters, 1982; Horn & Visser, 1989; Irwin, 1996; Stimberg & Horn, 1981). From the 1990s onward, monitor lizard husbandry continued to advance rapidly, to the point where at least 53 species have now been successfully reproduced in captivity (Eidenmüller, 2007; Horn & Visser, 1997; Husband & Bonnett, 2009; Brown, 2012).

One of the most popular groups of monitor lizard maintained in zoos and private collections today is the *Varanus* subgenus *Odatria*, which includes the most diminutively-sized species of monitor lizard, ranging from ca. 23-100 cm in total length. Often referred to as “dwarf” monitors, representatives of this group have been maintained in captivity since at least the late 19th century (Saville-Kent, 1897) and successfully bred since the 1970s (Horn, 1978; Horn & Visser, 1989). Although new species continue to be described from this group (e.g., Aplin et al., 2016; Doughty et al., 2014; Maryan et al., 2014) that may not yet represented in captive collections, most species of *Odatria* are commonly kept and bred in captivity in Australia, Europe and North America, with at least 20 reproduced to date. For some species such as *V. acanthurus*, it is likely that over 20 captive-bred generations have been produced since the 1980s.

Given the overall keeping and reproductive success of this group in captivity, numerous accounts outlining aspects of their captive care and breeding have been published over the last several decades. The following bibliography, which represents the first of what will be several installments on the captive breeding of monitor lizards, focuses chiefly on the subgenus *Odatria*. Similar works that address other subgenera are planned.

**Using this bibliography**

This bibliography covers all aspects of captive reproduction including both successful and unsuccessful attempts. It is largely intended to serve as a resource for zoo professionals and private herpetoculturists working with these species in captivity, but may also prove valuable to conservation biologists, ecologists, veterinarians and general enthusiasts seeking to familiarize themselves with existing literature on the reproductive biology of monitor lizards. Species covered in this bibliography are organized alphabetically, with annotations describing the nature and content of each work appearing inside brackets after each reference.

Due to taxonomic uncertainty in numerous publications between the closely-related *V. scalaris* and *V. similis*, references documenting these species have been combined into a single bibliographic account.

While best efforts were made to document all known publications relevant to the reproduction of these species in captivity, I recognize the possibility and likelihood that some publications may have been missed. Given that bibliographies are perpetual works in progress, I welcome and encourage feedback on publications missing from this bibliography and new accounts as they are published that can be added to an updated version of this document in the future.

**Acknowledgments** – This bibliographic series is dedicated to the late Mark K. Bayless, whose many contributions to the study of monitor lizards have helped advance the fields of monitor lizard biology and captive husbandry, inspire a new generation of enthusiasts, and stimulate new research on this group, including the present bibliography. I am indebted to Kristen Bullard, Richard Green, Michael Hardy, and Polly Lasker of the Smithsonian Institution Libraries for their assistance with sourcing obscure literature, and would also like to thank Ben Aller for allowing access to Mark Bayless’s former library of monitor literature.

**References**


Subgenus: Odatria

Varanus acanthurus


captive-bred generation produced]


Krebs, U. 1999. Experimental variation of breeding season and incubation time in the spiny-tailed monitor (Varanus acanthurus). Reptiles 7(6): 48-65. [describes successful breeding]


breeding at Wilhelma, Stuttgart from 1984-1986]


**Varanus auffenbergi**


**Varanus baritji**


Austrailian Lizards. Mike Swan Herp Books, Lilydale. [provides reproductive data]


Varanus brevicauda


Martin, T. 2009. Great things come in small packages... keeping and breeding short-tailed pygmy monitors. Scales and Tails Australia 3: 46-49. [describes successful breeding]


Thompson, G. 1996. Breeding *Varanus brevicauda*. Western Australia Naturalist 21(2): 119-121. [successful hatching of eggs from wild-caught adults]

**Varanus bushi**


**Varanus caudolineatus**


Smith, L.A. 1988. Notes on a clutch of monitor (Varanus caudolineatus) eggs. Western Australia Naturalist 17(4):96. [documents eggs received from a wild-caught female; failed incubation attempt]

**Varanus eremius**


**Varanus gilleni**


Bennett, D. 1998. Monitor Lizards: Natural History,
Biology and Husbandry. Edition Chimaira, Frankfurt am Main. 352 pp. [presents reproductive data]


Husband, G. & M. Vincent. 1999. The pygmy mulga monitor Varanus gilleni- take a look at one of Australia’s fascinating diminutive monitor species. Reptiles 7(5): 10-18. [provides breeding information and describes successful reproduction]


reproduction]


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**Varanus glauerti**


Hörenberg, T. & A. Koch. 2013. Report from the fifth annual meeting of the “AG Warane und Krustenechsen”. Biawak 7(1): 6. [brief mention of eggs received by the Reptilium Zoo (Landau)]


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**Varanus glebopalma**


Varanus kingorum


Bennett, D. 1998. Monitor Lizards: Natural History, Biology and Husbandry. Edition Chimaira, Frankfurt am Main. 352 pp. [briefly mentions successful breeding but no further details are offered]


Eidenmüller, B. 2001. Between the rocks: pick up tips on breeding and keeping King’s rock monitors (Varanus kingorum). Reptiles 9(5): 78-81. [describes successful reproduction]


Varanus mitchelli


**Varanus pilbarensis**


**Varanus primordius**


583. *In*: Swan, M. (ed.), *Keeping and Breeding Australian Lizards*. Mike Swan Herp Books, Lilydale. [provides breeding information and presents reproductive data]


**Varanus scalaris** and *V. similis*


Berghof, H.-P. 2009. *Der getüpfelte Baumwaran Varanus (Odatria) similis*. Natur und Tier Verlag, Münster. 64 pp. [provides breeding information and presents reproductive data]


**Varanus semiremex**


**Varanus storri**


Herpetological Society 16(3): 65-66. [describes successful reproduction]


**Varanus timorensis**


Varanus tristis

14-16. [describes successful reproduction]

Hörenberg, T. 2009. *Varanus (Odatria) tristis orientalis*: Keeping and breeding the gray-back monitor. Reptilia (GB) 64: 26-34. [describes successful reproduction]


RECENT PUBLICATIONS


Han, D. & B.A. Young. 2016. Anatomical basis of dynamic modulation of tympanic tension in the water monitor lizard, Varanus salvator. The Anatomical Record 299(9): 1270-1280.


Contents of the Proceedings of the 2015 Interdisciplinary World Conference on Monitor Lizards


Varanus niloticus and water thick-knees (*Burhinus vermiculatus*). Chobe River National Park, Botswana. Photographed by Jeffrey Ives.