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# Keeping and Breeding of the Algerian Whipsnake *Hemorrhois algirus* (Jan, 1863) in Captivity

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**Abstract.—**I describe the first instance of successful captive propagation of Algerian Whipsnakes (*Hemorrhois algirus*) in 2012–2013. In 2010–2012, a juvenile male and an adult pair were maintained separately. After two months of hibernation (October–December 2012) at 10–16 °C, the adults were introduced and subsequently housed together. The female laid six eggs on 23 March. They were incubated at 27–29 °C and one young hatched on 25 May, but died after 11 days during the first shed. The remaining eggs were dissected and found to contain dead embryos. On 1 June 2013, the female laid a second clutch of five eggs. They were incubated at 25–27 °C at night and 26–30 °C during the day. The young hatched between 3 and 15 August (exact dates unknown). After the first shed, they started to feed on small lizards, and later began to accept newborn mice.

The genus *Hemorrhois* includes four species previously referred to the genus *Coluber*. These species inhabit dry open landscapes in southern Europe, northern Africa, and the Mideast (Kudryavtsev et al. 1991, Schleich et al. 1996, Kwet 2010). These Whipsnakes are rarely kept in zoos or private collections and are even more rarely bred in captivity. Kudryavtsev et al. (1991) described breeding the Spotted Whipsnake (*H. ravergieri*); A.V. Ognev (pers. comm.) also bred that species in 1987. Unpublished information (V.N. Tkachov, pers. comm.) described breeding Horseshoe Whipsnakes (*H. hippocrepis*), but no previous data address husbandry and propagation of Algerian Whipsnakes (*H. algirus*), and the reproductive biology of these snakes in nature is poorly known.

Algerian Whipsnakes (Fig. 1) occur in northern Africa (Algeria, Tunisia, Libya, Egypt, Morocco, Mauritania, and the western Sahara; Schleich et al. 1996) and southern Europe (Malta), where they presumably were introduced (Venchi and Sindaco 2006, Kwet 2010). The species is listed as of Least Concern in the IUCN Red List (Wagner and Wilms 2013) in view of its wide distribution and because no threats have been identified. This diurnally active snake inhabits dry open habitats and feeds on rodents and lizards.

## Materials and Methods

We obtained our first Algerian Whipsnake (juvenile male, about 30 cm total length; Fig. 2) in September 2010. In August 2011, we acquired a female about 55 cm length and in November 2012 an 85-cm male. Snakes were held separately in well ventilated plastic or glass cages measuring 40 x 20 x 20 cm (juvenile male) and 60 x 40 x 30 cm (adults). We placed incandescent lamps to create a hotspot with a temperature reaching 37 °C. The opposite end of the cage was below 27 °C. Lamps were on for 14 h per day except for the hottest time of year, when heating was turned off for 3–5 h between 1100 and 1700 h to avoid overheating. The lamp was controlled by a timer.

We used moss or paper as substrates and equipped cages with a small water-bowl and hiding places made of bark or cartons. If snakes were kept on moss, we sprayed the substrate under one of the hiding places in the warm part of the cage

**Fig. 1.** Young female Algerian Whipsnake (*Hemorrhois algirus*). This species occurs in northern Africa (Algeria, Tunisia, Libya, Egypt, Morocco, Mauritania, and the western Sahara) and southern Europe (Malta), where it presumably was introduced.

**Fig. 2.** Juvenile male Algerian Whipsnake (*Hemorrhois algirus*), about 30 cm total length).

to keep it constantly wet. If paper was used as a substrate, we placed a humid hide box in the cage. The humid hide box is a plastic box measuring 15 x 10 x 5 cm with an entrance in the cover and filled with wet moss. This box was also used by the female for ovipositioning. We fed snakes weekly (lizards in the genus *Lacerta* or laboratory mice), except the female, which was fed twice per week while gravid.

To induce mating behavior, we cooled snakes for two months. Preparation for hibernation (September to early October 2012) included fasting for 1.5 months, a gradual temperature decrease, and shortening of the photoperiod. For the next two months (13 October–10 December 2012), we maintained snakes in dark, dry conditions at 10–16 °C. At the end of the hibernation period, we warmed snakes for two days at 17–20 °C, then moved them from hibernation boxes to cages. We kept cages at 20–22 °C during the day and 16–19 °C at night for two days before turning on the heating lamps and resuming regular maintenance. We fed snakes after one week in cages with basking spots.

The adults were placed together. For additional stimulation, we separated the snakes when we noticed the first signs of the female shedding. The female's slough was placed in the male's cage, and both were maintained together again after they had shed.

## Results and Discussion

All three of our snakes were active almost entirely during the daytime. They moved frequently, explored their cages, and showed explicit interest in any motion outside it. When an observer approached the transparent wall of the cage they did not attempt to hide, instead often approaching the front wall. However, when the cage was opened, they usually moved under cover.

Our snakes reacted most readily to prey in the afternoon and evening. They apparently rely primarily on vision during hunting as they rapidly catch moving animals. If they miss, they hesitate before taking prey that is no longer moving. They consistently refuse dead prey. Lizards and pinky mice were swallowed alive, weaned mice were killed by pressing the mouse against the floor or side of the cage with a loop of its body. They never constricted prey in the coils of the body. We never observed our whipsnakes drinking, but they did soak in the water dishes for short periods. They spent considerable time basking, apparently maintaining body temperatures over 29 °C, avoiding the hotspot only at midday during the hottest time of year (June–August) when room temperatures reached 31 °C.

The juvenile male reached 60 cm in length by 2013. The female grew to 80 cm in length in the same period.

We are unsure if the successful breeding in 2012–2013 was correlated with the first shed after hibernation or not. We observed neither courtship or mating; however, on 8 January, the female's appetite increased dramatically. We noticed the first visible signs of pregnancy (body thickening posteriorly, scales separated and exposing the underlying skin) on 26 February, at which time she refused to feed and began spending considerable time in the humid hide box (temperature inside the box was 27–30 °C during the day and 20–23 °C at night). She shed on 9 March 2013, and two weeks later (23 March) she laid six eggs measuring 37–42 x 14–15 mm in the hide box. Eggs adhered to each other and to the bottom of the box. They were incubated in the box at 27–29 °C. A month later, the clutch separated from the substrate and we placed a layer of moss beneath it (it was covered previously only on top).

One egg pipped after 61 days (24 May); the next day the hatchling (Fig. 3), with yolk sac hatched, measured 19 cm SVL with a 6-cm tail. Coloration consisted of black transverse lines and spots in sharp contrast with a light gray ground color (not the beige or brown ground color seen in adults). Unfortunately, the hatchling died at the onset of the first shed.

The remaining eggs were soon covered by fungal growth; careful incisions 12 hours after the first one pipped revealed

**Fig. 3.** First clutch of eggs and hatchling. Photograph by D.V. Akhramenko.

dead embryos; four of them fully development and one that had died earlier. This was likely the first clutch for this female, which might explain the death of most of the clutch. We know from personal experience and communication with other hobbyists that first clutches often are less successful than subsequent clutches even under the same incubation conditions.

On 10–11 May 2013, the female once again showed signs of being gravid. She had been kept with the male since the first clutch, but we once again failed to observe copulation. On 21 May, the female shed and on 1 June she laid a second clutch of five eggs. These were incubated on wet vermiculite with a thin layer of sphagnum moss covering the eggs. The temperature was 26–30 °C during the day and 25–27 °C at night. Two males and two females (the fifth hatchling was eaten by one of its siblings and its sex was unknown) hatched between 3 and 15 August (the precise date is unknown because the author was away at this time). After the first shed (Fig. 4), they accepted small lizards but refused pinky mice. At this time (April 2014), all feed on pinky mice and small lizards once or twice per week and are growing well.

Because snakes were kept separately before hibernation, mating must have occurred in captivity after resumption of the normal temperature regime. Sperm retention has not been documented in any species of *Hemorrhois*, and the female obviously had not retained sperm from an earlier copulation, since no pregnancy occurred after hibernation in 2011–2012.

## Conclusion

These results suggest that the reproductive biology of *H. algirus* is similar to that of other snakes in the genus *Hemorrhois* and closely related species in the genus *Platiceps* (Kudryavtsev et al. 1991), although multiple clutches have not been reported for any of the other species. Like other species in the genera *Hemorrhois* and *Platiceps*, Algerian Whipsnakes mate after hibernation, pregnancy lasts about 60 days, and hatching takes place after approximately 60 days of incubation at 27–29 °C. Our female laid five and six eggs per clutch. The hatching success was low for the first clutch (only one young snake hatched and it died at first shedding) and 100% for the second clutch. Due to bright coloration, diurnal activity, small size, and high mobility, *H. algirus* can be a very interesting terrarium animal. Propagation can be problematic because hatchlings feed exclusively on lizards for their first meals.

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**Fig. 4.** After the first shed, hatchlings from the second clutch initially accepted small lizards but refused pinky mice.