# Two new gecko species records for the United Arab Emirates: *Pristurus carteri* (Gray, 1863) and *Hemidactylus persicus* Anderson, 1872

**by Andrew S. Gardner**

***Introduction***

*The most recent listing of the UAE reptile fauna includes 17 species of geckos recorded within the United Arab Emirates (Gardner 2008). Here I present the discovery of two further gecko species from the UAE. Both appear to have extremely limited distributions within the national borders and hence are vulnerable to local extinction.*

**Carter's Semaphore Gecko *Pristurus carteri* (Gray, 1863)**

Carter's semaphore gecko was first collected by Surgeon-Major Henry John Carter in 1846 from Masirah Island, Oman, during a survey of the southern Arabian coastline on the surveying brig Palinurus of the Honourable East India Company. The two dried specimens he collected were described by Gray (1863) as *Spatalura carteri*, and described in life by Carter himself (1864). These were the first scientific reptile specimens to be collected in Oman (Gardner 1999). The species was placed in *Pristurus Rüppell* 1835 by Boulenger (1885). Further specimens were collected by Bertram Thomas on his travels in southern Arabia between 1926 and 1931, and by several later collectors, so that by 1986, Arnold (1986) described the distribution as 'Coastal regions of central Oman from around Ra's al-Hadd westwards to North Jol, South Yemen'.

Given this purported southern distribution, I was surprised to find *Pristurus carteri* living on rocky plateau outcrops on the Sultan Qaboos University campus west of Muscat in October 1987. The known range was given a further major extension in November 2006 when Angela Manthorpe and the Dubai Natural History Group found *P. carteri* on a Cretaceous ridge 50 km south of Ibri, extending the known range 160 km to the north west. This discovery raised the possibility that the species extends further north and westwards on the gravel outwash fans and outcrops to the south of the Hajar mountains, and might approach the UAE. Then, on 18 May 2007, *Pristurus carteri* was found on wadi gravels and outwash in Wadi Agram, adjacent to the UAE border fence, during a baseline ecology survey by Brigitte Howarth, Brien Holmes and myself (Gardner, Howarth and Holmes 2007). This site is 150 km NNW of the Ibri locality. Four individuals were observed during a two day field survey; two adult males and two adult females, suggesting that *Pristurus carteri* was not uncommon in this habitat and area. The closest record was just 600 metres from the UAE border fence, and hence probably within an individual's normal lifetime range of movement. As similar habitat continued across the border fence to the north, it seemed reasonable to assume that the species must also occur on the UAE side of the border.

In September 2007, a search was made by members of the Emirates Natural History Group in the UAE border area adjacent to the Oman Wadi Agram records, but no specimens of *Pristurus carteri* were found. A further search was made on 23 February 2009 by Brigitte Howarth, Heather Mikhail, Brien Holmes and myself, at several sites within the bulge of land extending east of Jebel Hafit to the Oman border. It was noted that the stony plain habitat suitable for *Pristurus carteri* is extremely limited in extent due to gravel extraction, construction, over-grazing and farms. Most habitats retaining natural surface in this area are sandy plains, rather than stony. Two small limestone ridges centred on 24.1484°N / 55.9468°E and 24.1227°N / 55.9585°E were searched, without finding *P. carteri*. However, a search adjacent to the border fence was successful this time, and 2 sub-adult specimens of *Pristurus carteri* were observed and photographed between 1400 and 1500 hrs. One was 310 metres from the border fence and the other was 550 m from the fence. Both were apparently active, and were first seen when they ran from an approaching observer. ***Fig 1*** shows the Oman and UAE distribution as presently recorded.

The habitat in the Wadi Agram site is a barren-looking alluvial outwash plain, containing cobbles and gravels mainly from the Semail nappe of the Hajar mountains. These are rocks of the upper mantle and ocean crust which were emplaced in the late Cretaceous. In the Wadi Agram area these cobbles are mainly gabbros of the lower ocean crust, which have been silicified to some extent. In higher areas above the present wadi channels, the cobbles have a desert varnish. The general vegetation of the area falls into the *Acacia tortilis – Rhazya stricta – Fagonia indica* zone typical of the foothills of the northern Oman and UAE mountains (Ghazanfar 1991a, Ghazanfar 1991b, Ghazanfar 1999). The UAE area has numerous camel farms and is severely overgrazed. This is particularly obvious when the relatively luxuriant vegetation on the Oman side of the border is compared. There are a few widely scattered trees of *Acacia tortilis*. Other typical plants observed in this habitat are *Gaillonia aucheri*, *Lycium shaw*i, *Blepharis ciliaris*, *Arnebia hispidissima*, *Crotalaria aegyptiaca*, *Indigofera intricata*, *Tribulus* sp, *Aizoon canariense*, *Euphorbia granulata*, *Glossonema varian*s, *Schweinfurthia imbricata*, *Paronychia arabic*a, *Polycarpaea repens*, *Boerhavia elegans* and *Stipagrostis plumosa*. Other lizard species seen in the area are *Mesalina adramitana*, *Uromastyx* sp. and *Bunopus tuberculatus*. On the Oman side, we also observed *Stenodactylus leptocosymbotes*, *Bunopus spatalurus hajarensis*, and *Ptyodactylus hasselquistii*, the last on outcropping limestone ridges.

The extent of this habitat on the UAE side of the

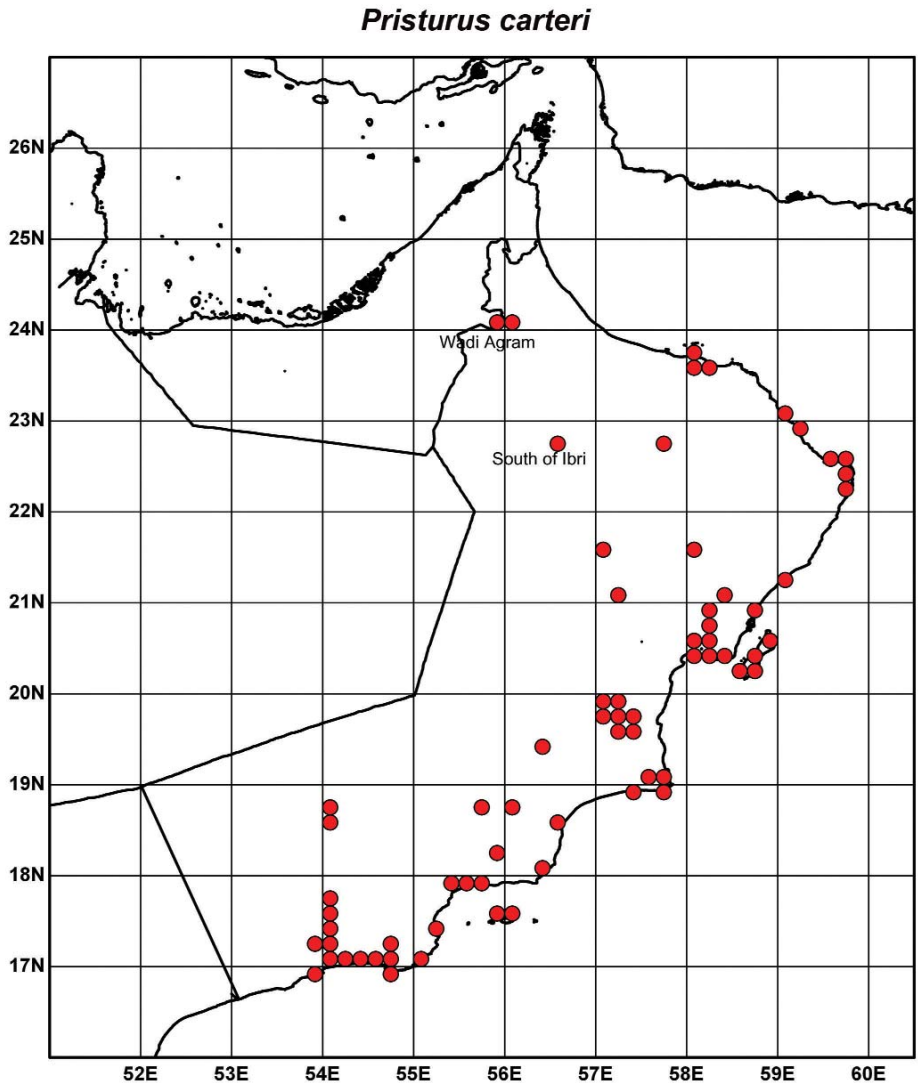


**Fig 1. The distribution of *Pristurus carteri* in Oman and the UAE. The new records from Wadi Agram and the Cretaceous ridge south of Ibri represent a major extension of the known range for the species.**

border is very limited as much of the area has been degraded by gravel extraction. Indeed on the Oman side of the border, the land will also be quarried in the next few years. The exact limits to the *P. carteri* distribution in the UAE are not known but the area suitable is unlikely to exceed 10 sq. km, and is most likely to be less than 4 sq. km. Given the sparse surviving vegetation and apparent low gecko population density, the total population may well be less than a thousand individuals. Any further gravel extraction or expansion of the farms is likely to result in the extinction of this species in the UAE.

**Persian Gecko *Hemidactylus persicus* Anderson, 1872**

*Hemidactylus* Gray, 1845 is one of the most species–rich genera of the family Gekkonidae with at least 80 species. These are generally recognised as being difficult taxonomically due to intraspecific variation and the plasticity of their external feature. *Hemidactylus persicus* is a widespread species, which falls within the 'arid clade' of species from north eastern Africa, south western Asia and Socotra (Carranza and Arnold 2006). According to Arnold (1986), the distribution of *H. persicus* is 'North-eastern Arabia south to Hofuf and Bahrain, northern Oman (Jabal Akhdar), Iraq, southern Iran, Pakistan'. The population on the Jebel Akhdar massif is characterised by large body size, growing to nearly 90 mm in snout to vent length (SVL) compared to about 67 mm elsewhere (Arnold 1977,Arnold 1986). Arnold (1977) noted that 'No *Hemidactylus persicus* has been taken between Hofuf and Jebel Akhdar, in spite of considerable collecting in the United Arab Emirates'. This remained true until Bob Reimer of the Al Ain chapter of the Emirates Natural History Group sent me a photograph of a gecko in an underground falaj (water channel) near Al Dhahr village in the Buraimi district of Oman. The photograph clearly showed an *Hemidactylus* different from the widespread *H. robustus*, in that it had a long tail with 27 dark bands. Further observations at this location in May 2008 confirmed the species as *H. persicus*. At this time a gravid female was seen, and the falaj walls and roof have numerous traces of gecko eggs. The falaj also contains fan-footed geckos *Ptyodactylus hasselquistii*. This represents a range extension of some 150 km to the NW of Jebel Akhdar.

On 29 August 2008 Tommy Pedersen and I visited Qarn Nazwa, a limestone outcrop in the sand sea 45 km south east of Dubai and 90 km NWN of Al Dhahr. Surprisingly, *H. persicus* were abundant on the outcrop, with 13 individuals being located in an hour between

**Plate 1: Female sub-adult *Pristurus carteri* on the UAE side of the border fence in the Wadi Agram area.**

**Plate 2: Male adult *Pristurus carteri* in the Wadi Agram area on the Oman side of the border.**

**Plate 3. *Hemidactylus persicus* at Qarn Nazwa.**

**Plate 4: Gravid female *Hemidactylus persicus* in an underground *falaj* at Al Dhahr, Oman. She has extensive scarring on the upper body and a partially regenerated tail.**

**Table 1. Length and meristic data for three specimens of *Hemidactylus persicus* from Qarn Nazwa**

| Sex | Snout to vent lenght (mm) | Original tail length (mm) | Divided and undivided scansors on 1st and 4th toe | Pre-anal pores |
|---|---|---|---|---|
| Male | 57 | 70.5 | 9 13 | 8 |
| Male | 58 | 65 | 9 13 | 8 |
| Female | 57 | 68 | 9 13 | none |

2200 and 2300. The geckos were seen on cliffs, boulders and in *Acacia tortilis* shrubs. They were very active, jumping and running at speed when pursued. On this and on a subsequent night visit in September 2009, no fan-footed geckos (*Ptyodactylus hasselquistii*) were seen. Other geckos species observed were *Stenodactylus leptocosymbotes* on the stony plain at the base of the outcrop and *Bunopus tuberculatus*, also at the base of the outcrop. Two juvenile Sind saw-scaled vipers *Echis carinatus sochureki* were also seen on the rock.

The Persian leaf-toed geckos of Qarn Nazwa were relatively small. Three individuals (2 males , 1 female) were collected and preserved. Table 1 gives some length and meristic data. Other than a slightly lower number of pre-anal pores (8 rather than 9-11), they fit well with other *H. persicus* populations (Arnold 1986). There are 16 longitudinal rows of moderately sized and striated dorsal tubercles, some of which have conspicuous white pigmentation, the adhesive pads are strongly expanded and much broader than the toes, and 23 to 27 dark bands on the tail. The skin appears to be fragile in these geckos. It breaks very easily on handling animals and several individuals were seen with extensive scarring.

A further record of *Hemidactylus persicus* comes from Dalma Island, where, during an ecological survey on 4 April 2008, a single individual was found active on the ground amongst rocks in the central hills. Although not caught and examined in detail, a photograph shows that it has the *persicus*-like features of small tubercles arranged in regular longitudinal rows, more expanded adhesive pads and colouration unlike *H. robustus*. On 23 September 2009, during an ecological survey on Sir Bani Yas, a single male individual of *H. persicus* was observed and photographed on rocky ground in the mountainous centre. It had 7 pre-anal pores and similar colour and tuberculation to the Dalma individual.

I have also recorded *H. persicus* in three coastal localities to the east of Jebel Akhdar in Oman, at Sifah, Dibab and on a rocky escarpment between Ad Daffah and Khubah, and at an inland locality at Mukhtari village near Sanaw (***Fig. 2***). All these populations are composed of individuals markedly smaller than those in Jebel Akhdar.

Arnold (1977, 1977) suggested that the population of *H. persicus* in Jebel Akhdar might be isolated due to competition with *Ptyodactylus hasselquistii* in the intervening lowland areas. *H. persicus* is widespread even at sea level on Bahrain which does not have *P. hasselquistii*. The subsequent records of *H. persicus* in lowland areas of the UAE and northern Oman provide further evidence for this, albeit equivocally. In the northern UAE, Qarn Nazwa is an isolated rocky outcrop which apparently does not have *P. hasselquistii*. The nearby and ecologically very similar outcrop known as 'Pink Rock' sited 7.5 km to the north east was searched at night on 8 March 2009. *P. hasselquistii* is abundant here, but no *H. persicus* were seen. On Jebel Faiyah, a higher and more extensive limestone ridge 20 km NE of Qarn Nazwa, there have been several records of *P. hasselquistii* but no *H. persicus*. The same is true of the well recorded limestone massif of Jebel Hafit (Gardner 2004). Dalma Island also has no *Ptyodactylus*. However, both species have been recorded in the underground falaj at Al Dhahr. Relict populations of *H. persicus* apparently also survive on at least the two rocky offshore islands of Dalma and Sir Bani Yas, also in the absence of *Ptyodactylus*.

Further east In Oman, the sites at Sifah, Dibab and Mukhtari have both *P. hasselquistii* and *H. persicus*. However at the most easterly record on the coastal escarpment, between Ad Daffah and Khubah, *H. persicus* is common, but *P hasselquistii* appears to be absent. Within the Jebel Akhdar massif, lower crags and caves below 800 m tend to have both species (such as in Wadi Halfayn, Bimmah in Wadi Bani Auf, Al Hijir in Wadi Bani Kharus) while higher sites up to 2000 m have only *H. persicus* (such as the Saiq plateau, Qayut, Jebel Shams). Whether the very large Jebel Akhdar form of *H. persicus* should be recognised as a separate taxon requires further study.

The UAE population of *Hemidactylus persicus* on Qarn Nazwa occupies a series of limestone outcrops totaling about 20 ha. The outcrops rise almost 50 metres above the sand sea which itself is approximately 150 metres above sea level. Much of this area is fenced and protected as part of the Dubai Desert Conservation Reserve. The unfenced site is close to the settlement at Qarn Nazwa and a major highway, and is a popular spot for picnics. It is already quite disturbed and littered with broken glass, plastic and cans. The crevices in the rocks are important roosts for naked-bellied tomb bats (*Taphozous nudiventris*), and the site is a well-known nesting site for the Pharaoh Eagle Owl (*Bubo ascalaphus*) and a haven for other wildlife, As such, it would be an ideal site for also receiving protection as a small nature reserve.

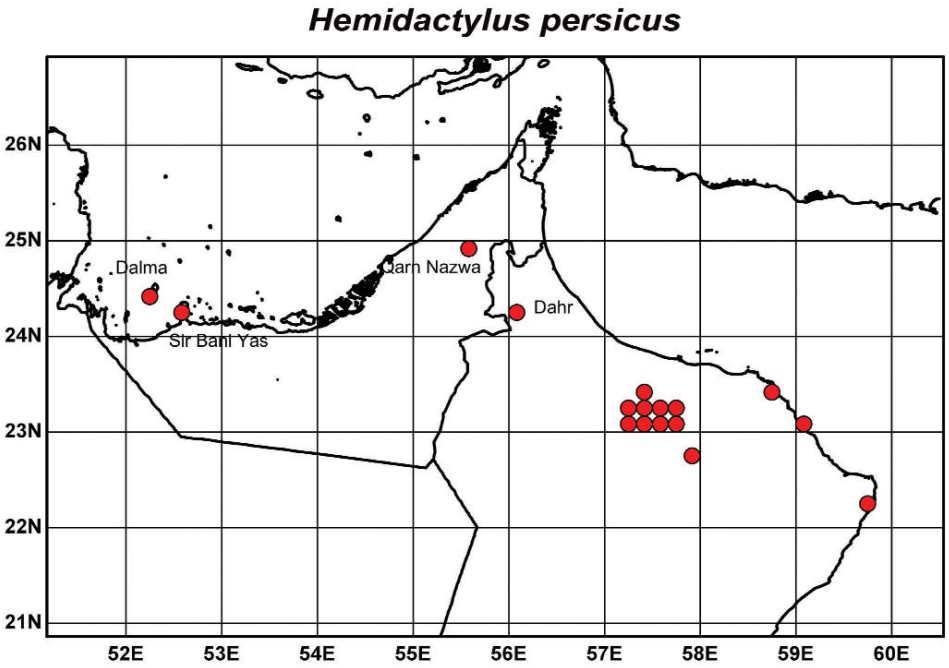


Fig 2. The distribution of *Hemidactylus persicus* in Oman and the UAE.

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***Andrew S. Gardner***
*Department of Natural Science and Public Health*
*College of Arts and Sciences*
*Zayed University*
*PO Box 4783, Abu Dhabi, UAE.*
*email: asgardner@gmail.com*