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A PHOTOGRAPHIC IDENTIFICATION GUIDE TO STAR-PATTERNED TORTOISES

Identification Guides for Wildlife Law Enforcement No. 12

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This identification guide provides a brief introduction to the star-patterned tortoises potentially encountered by wildlife law enforcement officials. The taxonomy used here follows that currently recognized by CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). The emphasis here is on providing a photographic guide to identification, rather than a detailed biological key.

The three primary species commonly referred to as star-patterned tortoises (Family Testudinidae) include the Indian Star Tortoise (*Geochelone elegans*), the Burmese Star Tortoise (*Geochelone platynota*), and the Radiated Tortoise (*Astrochelys radiata*). These three species are emphasized here. There are additional tortoises that may have star-like patterns on their shells. Some, but not all of these are also described or illustrated here.

When attempting to identify wildlife species for law enforcement purposes, consultation with an expert is always recommended. For further identification tips and an overview of basic terminology, see Charette (1999) and Ernst and Barbour (1989).

Indian Star Tortoise (*Geochelone elegans*):

The Indian Star Tortoise (Figures 1-3) is distributed in a variety of habitats in India, Pakistan, and Sri Lanka (Iverson 1992; Minton 1966). It also occurs on other small offshore islands where its only freshwater comes from monsoons. Of the three primary "starred tortoises," the Indian Star Tortoise is the least commercially valued and the most difficult to maintain in captivity.

Characters: This species is a medium-sized tortoise with a carapace length up to eight (8) inches or more, with rays on each scute of the carapace. Females can get considerably larger than 8 inches. Ten inches is not uncommon. John Grigus (personal communication, W. Holmstrom) reported a fifteen inch female that he measured in Sri Lanka.

Other morphological characters include a plastron pattern of many dark radiating lines on light background; top of head yellow and black with small scales; larger scales on forelimbs than *Astrochelys radiata* (Radiated Tortoises).

Nuchal scale absent (for contrast, see Figure 13 for the presence of a nuchal scale in *Astrochelys radiata*).

Figure 1. *Geochelone elegans* carapace.

Figure 2. *Geochelone elegans* carapacial scute.


Figure 3. *Geochelone elegans* plastron.

Burmese Star Tortoise (*Geochelone platynota*):

The Burmese Star Tortoise (Figures 4-8) is a rare tortoise distributed in the central dry zone around Mandalay, Myanmar. As previously reported (Smith 1931), this species does not occur in the lower Ayerarwady delta region. Maung and Ko (2002) describe the range of the Burmese Star Tortoise as Mandalay, Magway, and Sagaing Divisions, which are all central and north-central states in Myanmar. This is another medium-sized tortoise with a radiating pattern similar to that of the Indian Star Tortoise, *Geochelone elegans*. Adults are generally twelve (12) inches in carapace length.

Characters: Plastron pattern of dark (often triangular) blotches; top of head primarily yellow with large scales present; a terminal caudal (tail) spike (Ernst and Barbour 1989) [termed a "claw" by Pritchard 1979] is usually present in this species, but NOT in *Geochelone elegans* or *Astrochelys radiata*.

Nuchal scale absent.

See Figures 7-8 for a side-by-side comparison of *Geochelone platynota* and *Geochelone elegans*.

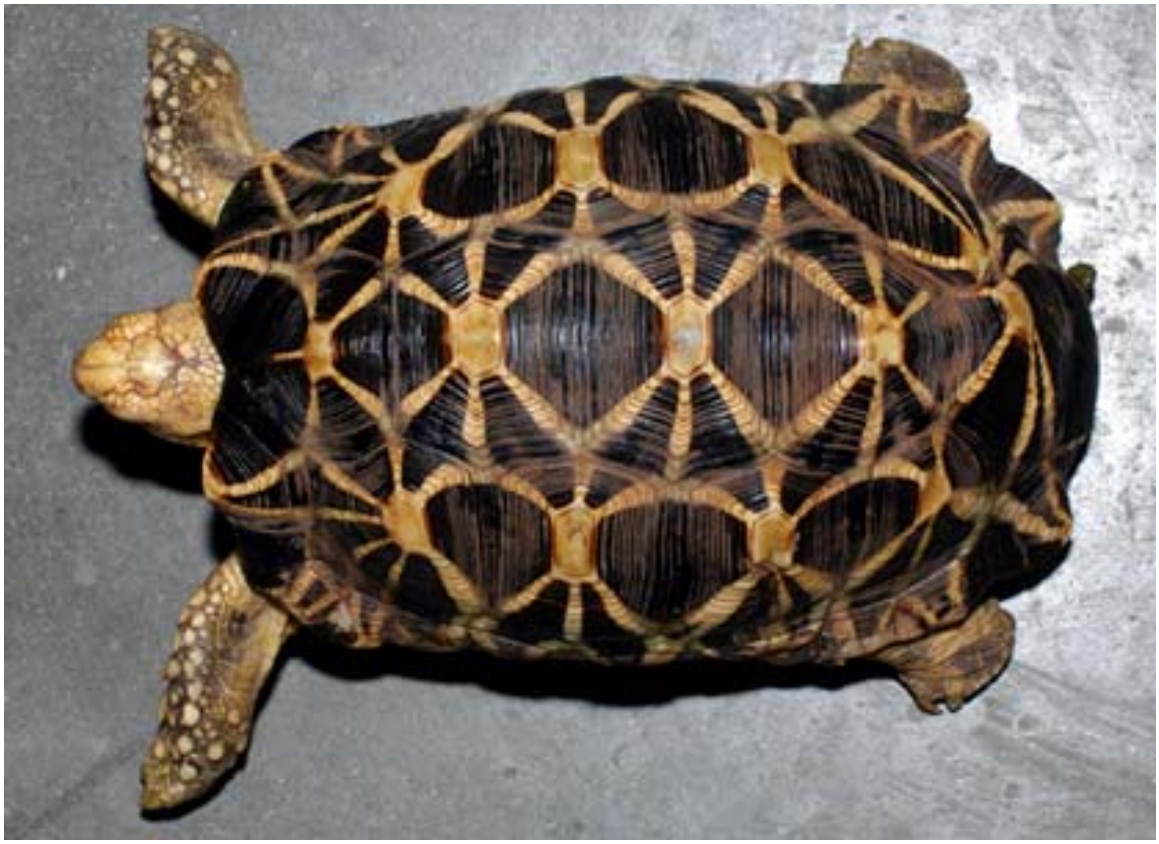

Figure 4. *Geochelone platynota* carapace.

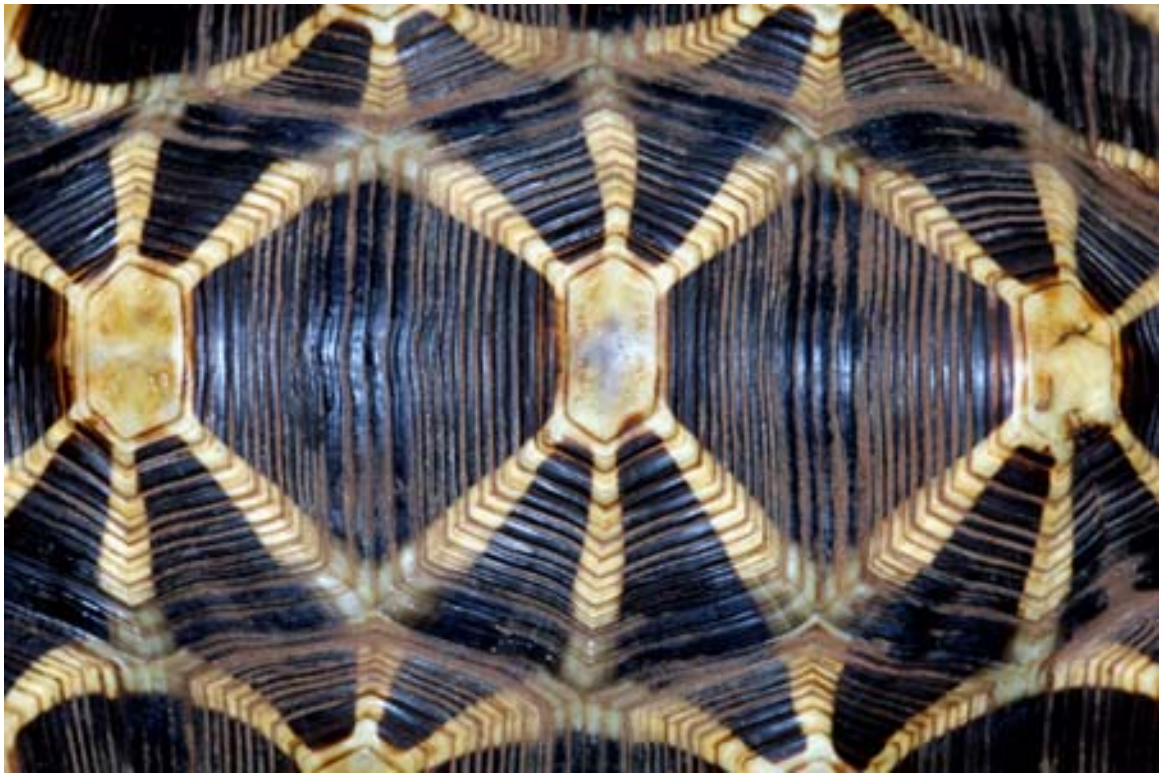

Figure 5. *Geochelone platynota* carapacial scute.

Figure 6. *Geochelone platynota* plastron.

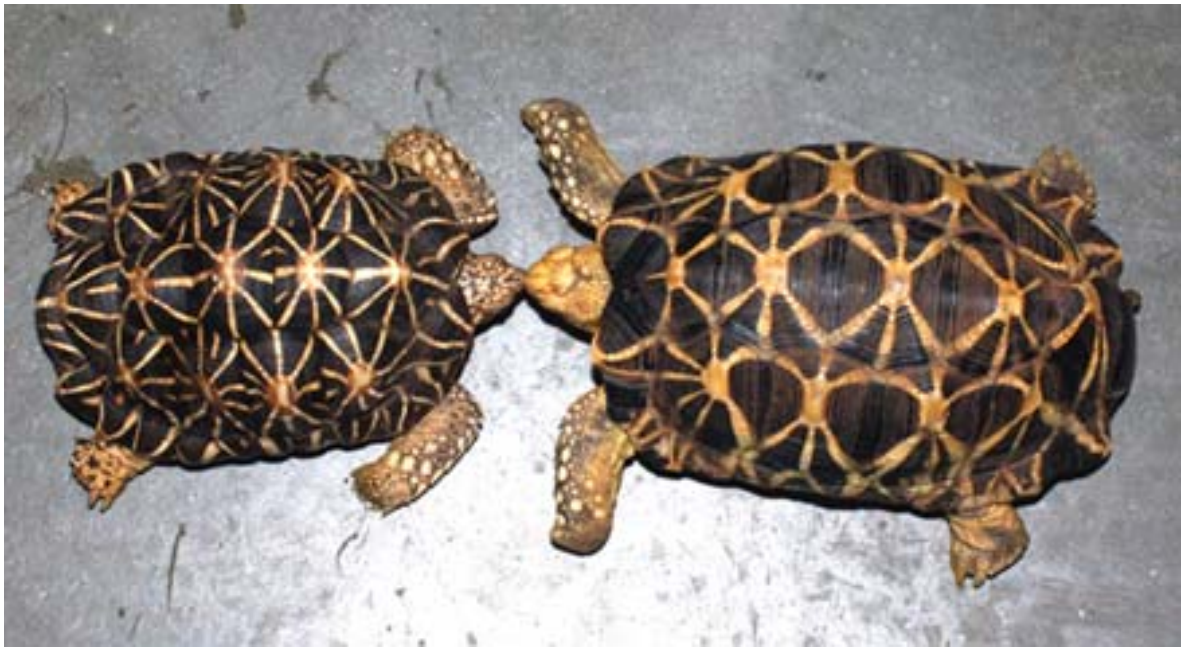

Figure 7. *Geochelone elegans* (left) / *Geochelone platynota* (right) carapace comparison.

Figure 8. *Geochelone platynota* (left) / *Geochelone elegans* (right) plastron comparison.

Radiated Tortoise (*Astrochelys radiata* = *Geochelone radiata*):

The Radiated Tortoise (Figures 9-17) is a large species reaching a carapace length of seventeen (17) inches, and a weight of up to thirty (30) pounds. The species is native to Madagascar and has been introduced to Mauritius and Reunion in the islands of the Indian Ocean.

Characters: Carapace is black with an attractive pattern of yellow lines radiating from the center of each scute. Top of head is predominately black in color, particularly in babies and juveniles, although the head and face color varies considerably among individuals with just about any mixture possible (including varying degrees of yellow, orange-ish brown, dark brown and black).

The carapace is highly domed, almost like a bowling ball in appearance in a normal adult (see especially Figures 14 and 16), and the head is relatively small for its overall size.

A nuchal scale is present (Figure 13).

Figure 9. *Astrochelys radiata* carapace.

Figure 10. *Astrochelys radiata* carapacial scute.

Figure 11. *Astrochelys radiata* plastron.

Figure 12. *Astrochelys radiata* carapace (side view).

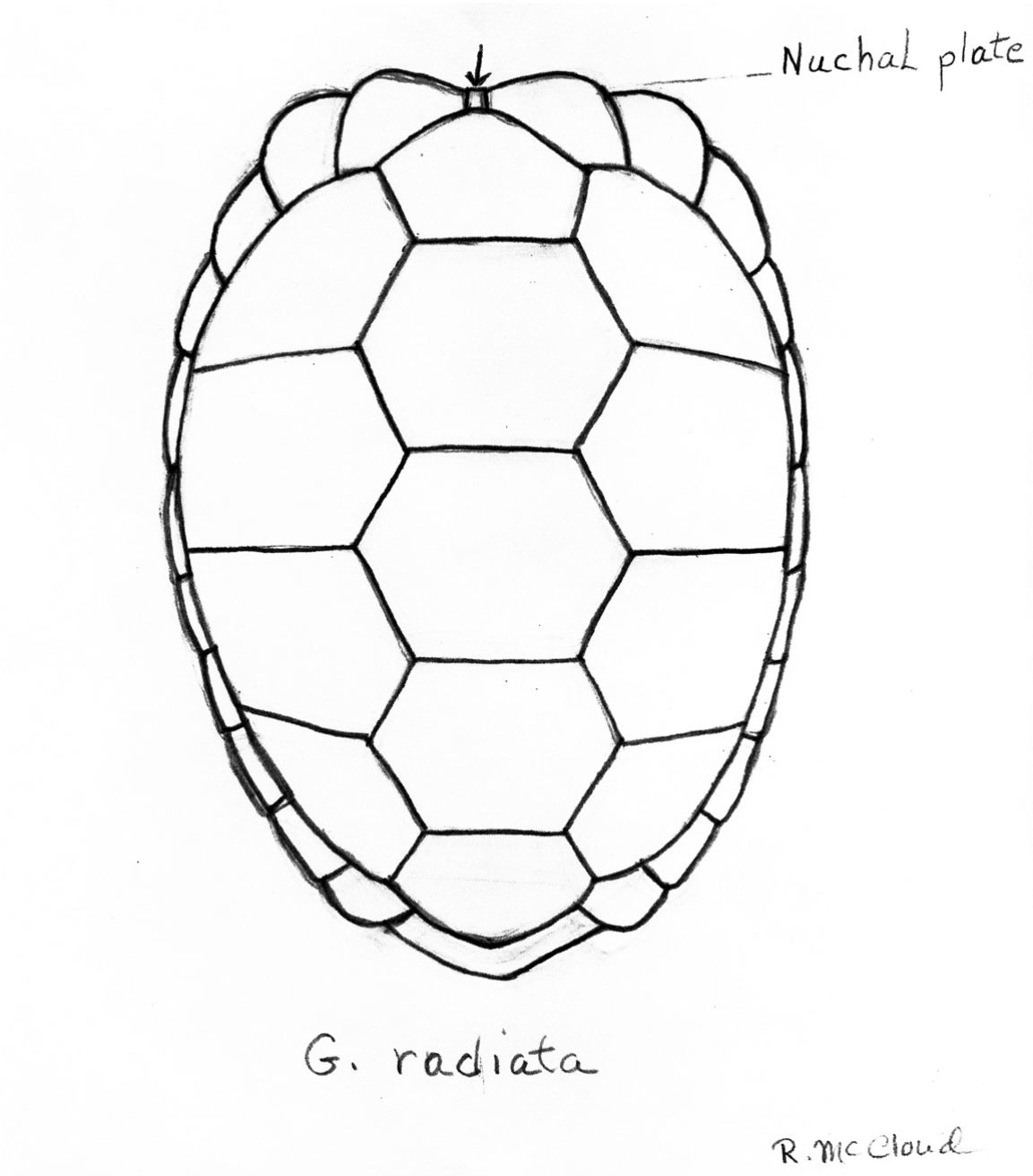

Figure 13. Location of the nuchal scute in *Astrochelys radiata* = *Geochelone radiata* (on the shell just behind the head).

Figure 14. *Astrochelys radiata*.

Figure 15. *Astrochelys radiata*.

Figure 16. *Astrochelys radiata*.

Figure 17. *Astrochelys radiata* juvenile (photo copyright A. Abate 2003).

Spider Tortoise (*Pyxis arachnoids*):

The Spider Tortoise (Figures 18-21) is a small species attaining a typical carapace length of 6 inches. Occasional specimens may be slightly over seven (7) inches (Glaw and Vences 1994). The Spider Tortoise, an endemic Malagasy species, is the only species of tortoise with an anterior hinge on the plastron. The intricate webbed pattern of yellow lines gives this species its common and scientific names. This species has fewer rays than other "starred" tortoises and is more elongated as adults.

There are three (3) subspecies currently described, one of which does NOT have a consistent anterior plastral hinge (*Pyxis arachnoids brygooi*).

Nuchal scale present.

Figure 18. *Pyxis arachnoids* showing variability.

Figure 19. *Pyxis arachnoids* carapacial scutes.

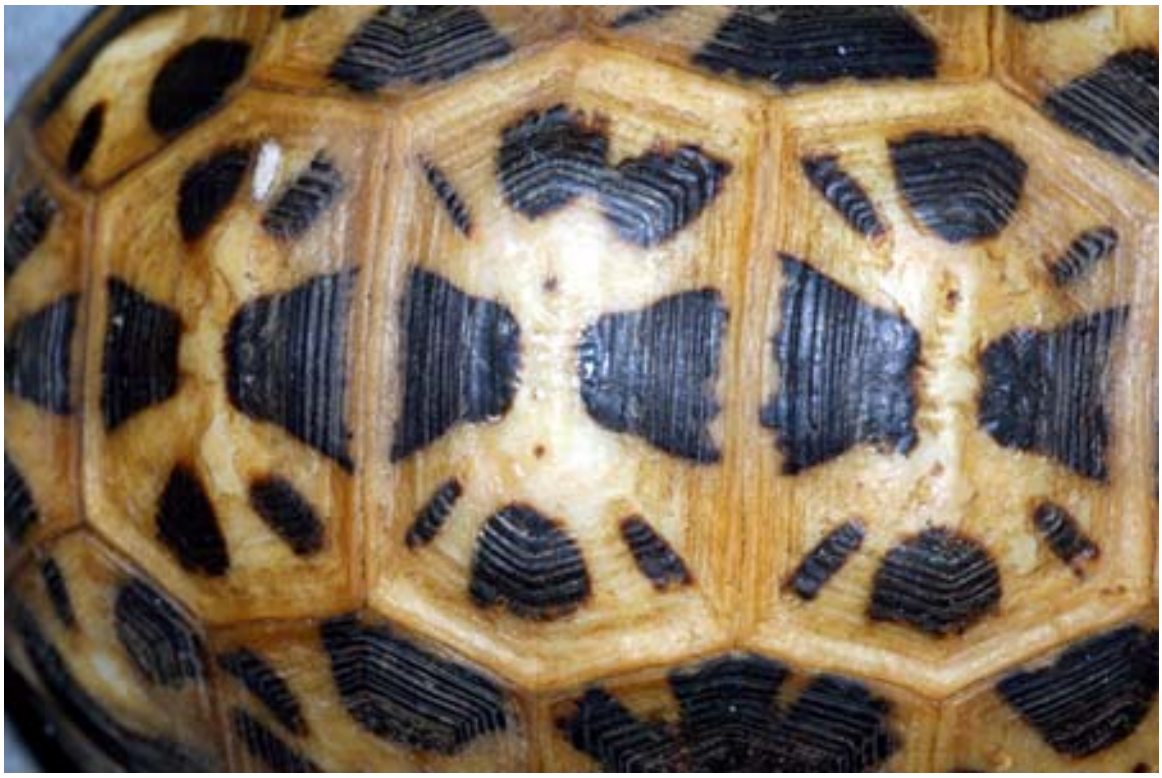

Figure 20. *Pyxis arachnoids* carapacial scutes.


Figure 21. *Pyxis arachnoids* plastra.

Flat-shelled Tortoise (*Pyxis planicauda*):

The Flat-shelled Tortoise (Figure 22) is a Malagasy species that is very similar to the Spider Tortoise and might be easily confused; however the Flat-shelled Tortoise has no anterior plastral hinge. The cervical scute of the Flat-shelled Tortoise is short and broad and the Spider Tortoise's cervical scute, when present, is long and narrow. The cervical scute is sometimes referred to as the nuchal and pre-central scale. Nuchal scale present.

Figure 22. *Pyxis planicauda* (photo copyright A. Abate 2003).

<u>Ploughshare Tortoise (*Astrochelys yniphora* = *Geochelone yniphora*)</u>:

The Ploughshare Tortoise (Figures 23-24) is a large Malagasy species reaching a carapace length of 18 inches and 15 pounds. It can be described as having a light-brown carapace with darker wedges on the scutes. The gular scute on plastron is fused into one elongated projectile that is upwardly directed.

Nuchal scale <u>present</u>.

Figure 23. *Astrochelys yniphora* carapace.

Figure 24. *Astrochelys yniphora* plastron.

Geometric Tortoise (*Psammobates geometricus*):

There are three species in the Southern African genus *Psammobates* (not illustrated here). See Charette (1999) for methods distinguishing *Psammobates* species from each other, and from other star-patterned tortoises. All *Psammobates* species are small and highly domed. Some of the species have forelimbs covered with in the front with a few large scales. *Psammobates oculifer* and *Psammobates tentorius* both have conical spurs on each thigh. There appears to be great variation in pattern within each species. Nuchal scales in all three species are present.

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Lastly, and most importantly, I wish the extend my sincere gratitude to my wife, Rose McCloud, for her never ending support and the endless hours she gave to me and the husbandry of hundreds of confiscated tortoises over the past 30 years. Any and all errors or omissions are my full and total responsibility.

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