

Records of freshwater turtles on Guam, Mariana Islands

TRINA LEBERER

*Division of Aquatic & Wildlife Resources
192 Dairy Road
Mangilao, Guam 96923*

Abstract—Seven species of freshwater turtles have been introduced into Guam in the past 30 years. While most have likely been the result of accidental pet releases, at least one was brought in for aquaculture. At least three species have established breeding populations, but the status of other species is uncertain. Studies to address the impacts of these introductions on native species are needed.

Introduction

Guam, a relatively isolated island of 541 km², is the southernmost island of the Mariana Islands. It contains a variety of freshwater habitats, including rivers, marshes, and ponds, which support a diverse native fauna. However, there are no freshwater or terrestrial turtles native to Guam. The nearest landmasses with native freshwater or terrestrial turtles include the Philippines, Papua New Guinea, and mainland Asia, but prevailing currents and long distances make natural colonization unlikely.

In the past 30 years, at least seven freshwater turtle species have been introduced into Guam. Some of these introductions have been intentional, such as the soft-shell turtle *Pelodiscus sinensis* (Wiegmann, 1835) (Charfauros & Tucker 1979). While others are more likely the result of accidental or intentional pet release (e.g. red-eared sliders *Trachemys scripta elegans* (Wied, 1838), (McCoid 1993). No studies have been done on the effects of these turtle introductions on native freshwater fauna, but anecdotal evidence, in the case of *P. sinensis*, suggests they can adversely impact native species. Since 1981, the Division of Aquatic & Wildlife Resources (DAWR) has not issued any permits allowing the importation of any turtle species into Guam, for personal or commercial use (G.W. Davis, pers. comm.). Thus, most accidental pet releases appear to be a result of the illegal transport of turtles to the island.

Chinemys reevesii (Gray, 1831)

The native range of Reeve's turtle (*Chinemys reevesii*) is central and southeastern China, Korea, and Japan, but all populations outside China may be introductions (Obst et al. 1988). According to a local youth, a specimen of *C. reevesii* (estimated carapace length 25 cm) in his possession was caught crossing

a road in the village of Ordote in the summer of 2000. This is most likely the result of an accidental pet release. No other individuals of this species have been reported on island.

Chelydra serpentina (Linnaeus, 1758)

Common snapping turtles (*Chelydra serpentina*) are native to North America (Obst et al. 1988). An adult was first seen on Guam in October 1997 (G.W. Davis, pers. comm.). Since that time, DAWR has received several confirmed and unconfirmed reports of the species' presence in various areas in southern Guam. Early in 1998, an adult snapping turtle was reportedly found in the village of Chalan Pago, but upon further investigation, the owner of the turtle disclosed that it may have been purchased from someone living near the Ylig River in the village of Yona. A hatchling snapping turtle (approximate carapace length of 6 cm) was caught with a talaya (cast net) in the mouth of the Pago River in April 1998. Another hatchling with a carapace length of 5.7 cm was caught in the Talofoto River in April 1998. It was given to Gerald W. Davis, then Fisheries Supervisor at DAWR, in January 2000 for disposal. At that time, the turtle's carapace measured 31.8 cm. In the fall of 1998, a juvenile snapping turtle with a carapace length of 10 cm was also caught in the lower reaches of the Talofoto River.

Since 1998, DAWR has sent out press releases and given school presentations regarding the dangers posed by a successful introduction of *C. serpentina* to both public health and welfare and freshwater ecosystems on the island. Snapping turtles are carnivorous, feeding mainly on fish, amphibians, molluscs, and occasionally water birds (Obst et al. 1988). In an attempt to determine the status of snapping turtle populations, DAWR staff set baited hooks on the Pago River and examined the banks of the Ylig River for evidence of snapping turtles for several months in early 1999. No turtles were caught and no conclusive evidence was found.

Kinosternon sp.

Mud turtles in the genus *Kinosternon* Spix, 1824 are native to the Americas (Obst et al. 1988). There is currently 1 specimen at the Cushing Zoo in Tumon, Guam. The zoo acquired it in the late 1970s from a former Chief of DAWR, who had been given the turtle (J. Cushing, pers.comm.). The origin of the turtle was unknown (J. Cushing, pers.comm.).

Ocadia sinensis (Gray, 1834)

Chinese striped turtles (*Ocadia sinensis*) are native to southwestern China, Taiwan, and northern Vietnam (Obst et al. 1988). The same local youth mentioned above in the account of *C. reevesii* possesses 4 individuals, with

carapaces ranging in length from 10-25 cm. All four specimens were caught in the Agana Springs area within the last 4 years. According to the youth, these turtles are commonly sold in the Philippines and their presence on Guam is most likely the result of accidental pet release.

Pelodiscus sinensis (Wiegmann, 1835)

The soft-shell turtle *Pelodiscus sinensis* is native to the Amur region of Russia, China, Korea, Taiwan, Japan, and Vietnam (Obst et al. 1988). According to Charfauros & Tucker (1979), the soft-shell turtle *Trionyx sinensis* (= *Pelodiscus sinensis*) was cultured on Guam (location unspecified but probably in the village of Mangilao) in 3 concrete tanks (20x 7x 0.7 m) with Chinese carp (*Aristichthys nobilis*, *Hypophthalmichthys molitrix*, *Ctenopharyngodon idellus*) and tilapia (no species specified but presumably *Oreochromis mossambicus*) as secondary species. These turtles were brought in from Taiwan and marketed to restaurants as a live food item. They were phased out within a year due to expense and a limited market. No information is provided as to the means of their disposal. However, established populations of *P. sinensis* are found in the Inarajan area, Fadian area (in the village of Mangilao) (McCoid 1993), Agana Springs, and within Fena Reservoir (Leberer, unpubl. data). A specimen was also found in the Umatac area in January 1992 (McCoid 1993). A hatchling was observed in the Inarajan area in November 1990 (McCoid 1993) and an individual with a carapace length of 6 cm was caught by talaya (castnet) in Fena Reservoir in August 2000 (Leberer, unpubl. data), suggesting breeding populations in those areas. An adult soft-shell turtle, with an approximate carapace length of 30 cm, was caught in the lower reaches of the Talofofu River (below the confluence of the Ugum and Talofofu Rivers) in the fall of 1998.

In September of 1998, a family in Inarajan reported an infestation of soft-shell turtles in a naturally occurring pond on their property. According to the family, this pond normally contained large amounts of the native shrimp *Macrobrachium lar* (Fabricius, 1798). The family first remembers catching soft-shell turtles in the pond in 1987, and since that time the number of turtles has increased while the number of shrimp has decreased. It is the family's assertion that the shrimp are being eaten by the turtles. DAWR staff members were able to catch two specimens (ave. carapace length 15 cm) in this pond, on hook and line with frozen shrimp for bait. They are carnivorous and in their native range, their diet includes a variety of fish and macroinvertebrates (Obst et al. 1988).

Terrapene carolina triunguis (Agassiz, 1857)

The three-toed box turtle *Terrapene carolina triunguis* is native to the southeastern United States of America (Obst et al. 1988). Specimens of *T. carolina triunguis* have been seen in a few areas in central Guam (McCoid 1992). Its introduction was accidental, again most likely due to released or escaped pets

(McCoid 1993). There is currently 1 specimen at the Cushing Zoo in Tumon, Guam. The zoo acquired it in the mid-1970s, but its origin was unknown (J. Cushing, pers.comm.).

Trachemys scripta elegans (Wied, 1838)

The red-eared slider *Trachemys scripta elegans* is native to the eastern United States of America (Obst et al. 1988). Anecdotal evidence suggests that red-eared sliders were an accidental introduction to Guam sometime in the 1970s (T. P. Flores, Jr., pers. comm.). Breeding populations almost certainly occur in many areas in central and southern Guam, given the prevalence of hatchlings used as prizes at island fiestas. Established populations are most likely the result of released or escaped pets (McCoid 1993).

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