Sightings of *Trachemys scripta elegans* (Reptilia: Emydidae), a New Potential Aquatic Alien Invasive Species in Trinidad, West Indies

The first sightings of the Red eared pond slider *Trachemys scripta elegans* in Trinidad were documented by Mohammed *et al.* (2010). That data included sightings from 2000 to 2010, and anecdotal records from F. Lucas dating back to the late 1980's (Mohammed *et al.* 2010). Records from various independent baseline surveys by R.S. Mohammed and S.H.. Ali spanning 2005 to 2016 have now been collated to provide an updated account of the distribution. This species is aggressive, and competes both for food and basking resources with our native wild freshwater turtles (Cadi and Joly 2003) making this a potential aquatic alien invasive species. An Invasive Alien Species refers to a species or subspecies or lower taxon, introduced outside its natural past or present distribution; includes any part, gametes, seeds, eggs, or propagules of such species that might survive and subsequently reproduce; whose introduction and/or spread threatens ecosystems, habitat or species (UNEP, GEF, CABI, 2011).

The natural distribution of *T. scripta elegans* occurs within the Mississippi Valley, from northern Illinois to south of the Gulf of Mexico (Lever 2003) but this has now expanded to several temperate and tropical regions placing this species in the list of the world's 100 most invasive species published by the IUCN (Lowe *et al.* 2000).

Site records of *Trachemys scripta elegans* between January 2005 and January 2017 are presented in Table 1 and Figure 1.

A large majority of these individuals would have made their way to the wild either by escaping from their enclosures or by pet owners' intentional releasing of animals that they could no longer care for. It is clear the distributions of sightings are very similar to major residential areas which support the suspicion these populations originated from individuals that were released or accidental escapees. Whilst most of the sightings have been of less than ten adults (per occurrence) we assume there are breeding populations as a wide range of sizes are observed but not measured.

We also suspect the population range might be expanding, however this might be the early phases of the invasion as egg clutches have not been detected. This suspicion is solely on the increased numbers being found at some sites, whereas in the 2010 report (Mohammed *et al.*) only lone individuals were found. We also suggest there is need to keep an account of the sightings as well as evidence of nesting (eg.egg shells) or juveniles where the density seems high currently. They seem to be ubiquitous as we have noted them in earthen and concrete ponds and rivers with a wide range of riparian and aquatic vegetation types. We have not observed this species being preyed upon by

Table 1. Notes on escapees and site descriptions where specimens have been caught or observed.

Date	General location	Site #	Grid Reference	Site descriptions	Number of individuals	Maturity and sex	Occurrence
1-Jan-05	Moruga, pipe line	1	684206E, 1123943N.	Earthen pond	2	Adult	Sighting
1-Jan-05	La Fortune, Moruga	2	689514E, 1118477N.	Earthen pond	2	Adult	Sighting
1-Mar-05	Cacandee River	3	670952E, 1167455N.	River	1	Adult male	Caught
1-Jan-09	Salazar Road	4	648979E, 1121605N.	River	1	Adult	Sighting
1-Jan-09	Forest Reserve	5	651592E, 1118406N.	Earthen pond	2	Adults	Sighting
1-Apr-10	St. Augustine	6	675047E, 1176519N.	Concrete drainage pond	2	Adults	Sighting
1-May-10	Churchill Roosevelt Highway	7	668505E, 1176191N.	Alongside highway near swamp	1	Adult male	Caught
1-May-10	Bamboo grove	8	672394E, 1175759N.	Aquaculture pond	2	Adult male and female	Caught
1-Jun-11	Point a Pierre	9	671335E, 1141520N.	Earthen pond	<1	Adults	Sighting
13-Jan-17	Tunapuna	10	677720E, 1177651N.	Yard	1	Adult	Escapee
1-Apr-14	Aranguez	11	670445E, 1174834N.	Aranguez south road	2	Adults	Sighting
1-Jul-14	Point a Pierre	12	669604E, 1142268N.	Earthen ponds (Dam #3)	< 10	Adults	Sighting
7-Jul-05	Diego Martin	13	657021E, 1184921N.	Yard	1	Juvenile	Escapee
1-Apr-15	Princes Town	14	676360E, 1137302N.	Along dirt road, former cane field	1	Juvenile	Caught
1-Oct-15	Aranguez	15	670156E, 1177029N.	Aranguez River	1	Adult	Sighting
1-Apr-16	Point a Pierre	16	670125E, 1141969N.	Earthen pond	11	Adults	Sighting
1-Dec-16	Orange grove	17	677633E, 1175624N.	Irrigation agriculture ponds	< 10	Adults	Sighting
1-Jan-17	Trincity	18	680308E, 1175059N.	Drainage pond near mall	3	Adults	Sightings
1-Jan-17	Point a Pierre	12	669604E, 1142268N.	Earthen ponds (Dam #5)	5	Adults	Sightings

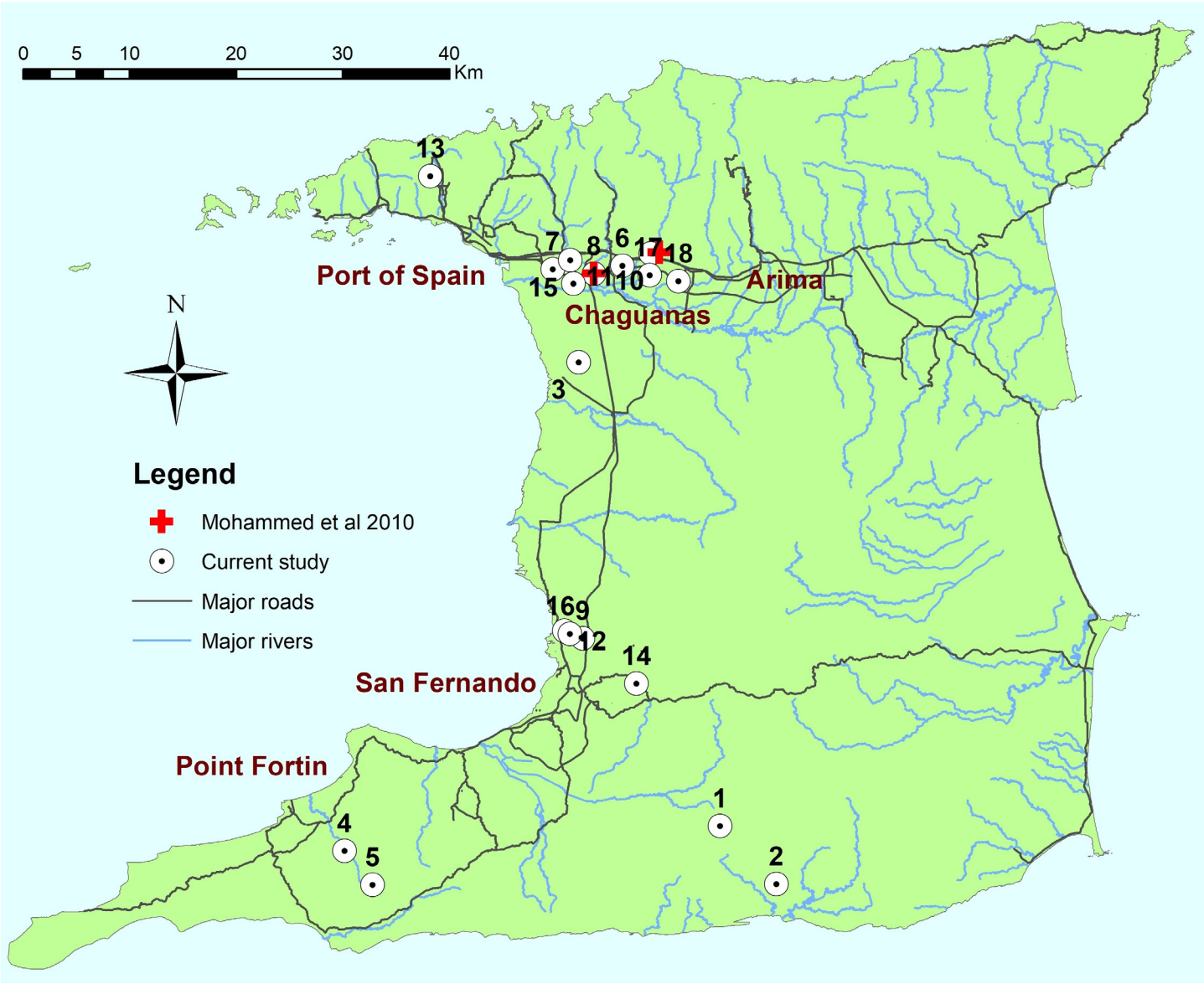

Fig.1. Occurrences of *Trachemys scripta elegans* between 2005 to 2017.

any other animals. They typically live approximately 30 to 40 years in nature (Cleiton and Giuliano-Caetano, 2008).

The authors would like to offer their assistance to owners who feel the need to dispose of their unwanted pets. However it is strongly advised that before pet owners decide to acquire any animal, that they consider the biological and ecological needs of that animal. This would include its dietary requirements, lifespan, territory ranges of the animal and suitable housing as these would reduce the incidences of both escapees as well as intentional releases. The carapace of *T. scripta elegans* can reach more than 40cm in length, but the average length ranges from 15 to 20 cm (Close and Seigel, 1997) and this should be considered as these are currently sold as juveniles (carapace length <4cm) without any regulation in Trinidad and Tobago.

Lastly, we would like to acknowledge Mr Graham White and Mr Renoir Auguste for informing us of sites where the species were likely to inhabit.

REFERENCES

Cadi A. and **Joly P.** 2003. Competition for basking places between the endangered European pond turtle (*Emys orbicularis galloitalica*) and the introduced red-eared turtle (*Trachemys scripta elegans*). *Canadian Journal of Zoology* 81: 1392–1398

Cleiton, F. and **Giuliano-Caetano, L.** 2008**.** Cytogenetic characterization of two turtle species: *Trachemys dorbigni* and *Trachemys scripta elegans*. *Caryologia*, 61: 253-257.

Close, L.M. and **Seigel, R.A., 1997.** Differences in body size among populations of red-eared sliders (*Trachemys scripta elegans*) subjected to different levels of harvesting.

Chelonian Conservation and Biology, 2: 563-566.
Fifth Draft Strategy and Action Plan For Invasive Alien Species in the Caribbean Region 2011-2015. (UNEP, GIF, CABI, 2011)
Lowe S., Browne M. and **Boudjelas S.** (2000). 100 of the World's Worst Invasive Alien Species. A Selection From the Global Invasive Species Database. IUCN/SSC Invasive Species Specialist Group (ISSG), Auckland, New Zealand.
Mohammed, R.S., Mahabir, S.V., Joseph, A.K., Manickchan, S. and **Ramjohn, C.** 2010. Update of freshwater turtles' distributions for Trinidad and possible threat of an exotic introduction. *Living World, Journal of The Trinidad and Tobago Field Naturalists' Club*, 2010: 54-58.

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Further Expansion of the Range of the Frog *Eleutherodactylus johnstonei* (Anura: Eleutherodactylidae) in Trinidad and Tobago, with a Note on Reproduction

The Lesser Antillean whistling frog *Eleutherodactylus johnstonei* (Fig. 1.) may have originated on Saint Lucia or one of the other Antillean islands (Hedges *et al*. 2010). It has expanded well beyond its original range, probably aided by human agency, to occupy most Caribbean islands, Bermuda and some of Central and South America. It is considered that the species' reproductive mode and habitat needs have helped its expansion. It is a direct developer, requiring no standing water, with eggs deposited in damp soil; females can produce clutches of up to 30 eggs as often as four times a year; the frogs are small (males up to 25mm long, females 35mm) and cryptically coloured (Bourne 1997); they thrive in human-disturbed habitats such as gardens and waste ground. All these factors would aid dispersal through trade in plants and plant produce.

Kenny (1979) was first to report *E. johnstonei* (as *E. martinicensis*) from Trinidad, around the docks of Port of Spain, the species not having been found for his 1969 account of Trinidad's amphibians (NB this report is mis-cited as Kenny 1980 in Kaiser 1997). Kaiser (1997) and Murphy (1997) both report *E. johnstonei ,* still apparently restricted to the dockland area of Port of Spain (Kaiser's personal observations were made in 1992). However, one of us (JRD, previously unpublished field notes) noted the presence of many *E. johnstonei* calling from a wasteland site close to the junction of the Priority Bus Route and the Lady Young Road on the outskirts of eastern Port of Spain in July 1996; this population was noted again in 1998 and 2000, and a further population recorded from gardens in Diego Martin in 1998. Since Kaiser does not state how extensively he searched for *E. johnstonei* around Port of Spain in 1992, we cannot determine how soon these frogs dispersed from the dockland area, but they had clearly expanded beyond it by 1996.

In 2011, Manickchan *et al.,* based on fieldwork from 2000 until 2002, and then October 2009 to February 2011, reported a considerable expansion of *E. johnstonei*: the frog could now be found along Trinidad's northern east-west corridor from Chaguaramas to La Horquetta. Manickchan *et al.* surveyed very extensively along Trinidad's roads at night, listening for *E. johnstonei'*s distinctive call, so we can be reasonably sure that their work defined the frog's dispersal up to 2011. In addition, White (2013) reported the occurrence of a small number of *E. johnstonei* from the grounds of the Magdalena Hotel in southern Tobago in November 2012.