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First Record of Presence of the Invasive Land Flatworm *Platydemus manokwari* (Platyhelminthes, Geoplanidae) in Guadeloupe

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Abstract

The land flatworm *Platydemus manokwari* (Platyhelminthes, Geoplanidae) is recorded for the first time from the island of Guadeloupe (French West Indies) in the Caribbean arc. Photographs and records were obtained from citizen science and ranged from the end of 2018 to 2020; specimens were deposited in the collections of the Muséum National d'Histoire Naturelle in Paris, France. This is the first record in Guadeloupe and the second for an island in the Caribbean, after Porto Rico.

Introduction

The land flatworm *Platydemus manokwari* is a highly invasive species, listed among the “100 World’s Worst Invader Alien Species” (Lowe et al. 2000). Originally described from a locality in Papua New Guinea (de Beauchamp 1962), it has been recorded since in many islands of the

Pacific Ocean, Australia, and, more recently, in Porto Rico in the Antilles, Florida in mainland USA (Justine et al. 2015; Justine et al. 2014), and mainland Asia in Hong Kong (Hu et al. 2019) and Thailand (Chaisiri et al. 2019). We report here its presence in Guadeloupe, an island of the Caribbean arc.

Material and Methods

Records were obtained from Citizen Science; photographs were received from various non-professionals, and specimens were solicited and received. Specimens were killed in hot water, stored in ethanol and sent to the laboratory. The species was identified by the examination of photographs of living animals and preserved specimens

Results

Table 1. Records of *Platydemus manokwari* in Guadeloupe. Names of non-professionals who communicated information are given as initials.

Date	Locality	Details	Observer
07-01-2019	Saint François	Photo only (Figures 1-2)	FF
09-01-2019	Saint François	Photo only	FF
08-11-2019	Saint François	Photo and 5 specimens, MNHN JL358	FF
01-01-2020	Baie Mahault	With <i>Bipalium kewense</i>	MN
06-01-2020	Baie Mahault	Photo only	VD
05-03-2020	Bouillante	2 specimens	FF

Several records were received (Table 1). Records based on photographs or specimens were from January 2019 to March 2020, in three localities, Saint François (Figure 1), Baie Mahault

and Bouillante. Observations are from gardens, not wild areas. One observer (MN) also recorded the invasive species *Bipalium kewense* in the same garden in Baie Mahault where he found *Platydemus manokwari*. In addition to the information in Table 1, Observer FF (François Ferrasson) mentioned that the species was present in his garden in Saint François since the end of 2018 and that he noticed a drastic decrease in the number of Giant African Snails (*Achatina fulica*) in his garden. He also sent a photograph showing several *Platydemus manokwari* eating a dead lizard (unidentified Anole) (Figure 2).

Specimens from Saint François were received and registered in the collections of the Muséum National d'Histoire Naturelle in Paris under number MNHN JL358. A molecular identification was planned but could not be achieved because of the lockdown of the laboratory due to the Covid-19 pandemics; for this reason, we publish the present manuscript as a preprint, without molecular results.

Discussion

Platydemus manokwari is an invasive species and a threat to the biodiversity of land animals, including molluscs (Gerlach 2019; Iwai et al. 2010; Ohbayashi et al. 2005; Sugiura 2010; Sugiura & Yamaura 2008). It has been recorded in many islands of the Pacific, and more recently in France, but only in a hothouse (Justine et al. 2014) and was not recorded later in the field (Justine et al. 2015). In North America, it has been recorded in Florida (Justine et al. 2015). Information available from iNaturalist (https://www.inaturalist.org/observations?taxon_id=199342, date: 27-04-2020) suggests that it has now invaded a large part of Florida and also Texas. In the Antilles Arc, it has been recorded only in Porto Rico (Justine et al. 2015) and Guadeloupe is thus the second island with a record. It is likely that the species is present in other islands of the Antilles Arc, and there is a probable report from Jamaica (Kostik 2019). However, we received various records of land flatworms in Martinique, another French island close to Guadeloupe: none (yet) was *Platydemus manokwari*.

A study of the COI gene sequence of *Platydemus manokwari* has shown that two haplotypes could be differentiated, but that only one had invaded most of the world (Justine et al. 2015). The complete mitogenome of the species has also been sequenced (Gastineau et al. 2020). We expect to provide a molecular account of the specimens from Guadeloupe as soon as the end of the covid-19 lockdown will allow it.

Acknowledgements

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Figures



Figure 1. *Platydemus manokwari*, photographed in Saint François, Guadeloupe, 7 January 2019. Scale in centimetres. Photograph by François Ferrasson, CC-BY.



Figure 2. *Platydemus manokwari*, photographed in Saint François, Guadeloupe, 7 January 2019; group of flatworms eating a dead lizard. Photograph by François Ferrasson, CC-BY.