



First record of Presence of the Invasive Land Flatworm Two Undescribed New Species (*Australopacifica*, *Diversibipalium*, *Geoplanidae*) in Tamilnadu, India.

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ABSTRACT

The land flat worm (*Australopacifica*, *Diversibipalium*, Geoplanidae) is recorded of the first time from the western part of Coimbatore city, Tamilnadu, India. Photographs were taken during study period October 2019 to January 2020. In this paper, we record a finding of *Australopacifica*, *Diversibipalium*, genus with identification of based on photographs. The report showed the presence of species, study area and discussions.

Key words: New species, first record, *Australopacifica* genus, *Diversibipalium* genus, south India.

INTRODUCTION

An undesirable consequence of globalization, a relatively modern phenomenon, has been an increase in the number of biological invasions that challenge the conservation of biodiversity and natural resources (Secretariat of NOBANIS, 2012; Simberloff, 2014). Invasive Alien Species (IAS) have been defined as “plants, animals, pathogens and other organisms that are non-native to an ecosystem, and which may cause economic or environmental harm or adversely affect human health. In particular, they impact adversely upon biodiversity, including decline or elimination of native species—through competition, predation, or transmission of pathogens—and the disruption of local ecosystems and ecosystem functions” (Convention on Biological Diversity, 2009).

Species of the genera *Bipalium* and *Diversibipalium*, or bipaliines, are giants among land planarians (family Geoplanidae), reaching length of 1 m; they are also easily distinguished from other land flatworms by the characteristic hammer shape of their head. Bipaliines, which have their origin in warm parts of Asia, are invasive species, now widespread worldwide. However, the scientific literature is very scarce about the widespread repartition of these species, and their invasion in European countries has not been studied (Justine, *et al.* 2018).

Many species of land planarians described during the second half of the 19th century and the first half of the 20th century were classified based solely on external characters. Currently, the land planarian genera are highly based on internal anatomy, especially the anatomy of the copulatory apparatus. As a result, species with old descriptions that were never redescribed, so that their internal anatomy remains unknown, cannot be assigned to the correct genus. Thus, the genus *Australopacifica* was erected to temporarily accommodate species of the tribe Caenoplanini whose anatomy of the copulatory apparatus is still unknown (Wikipedia).

Land flatworms are transported with earth and pot plants between continents and often become invasive (Justine *et al.*, 2014, 2015; Winsor, 1983) Since land flatworms are predators, they constitute a potential danger for the local soil fauna of the areas they invade. Among these land flatworms (family Geoplanidae), the hammerhead flatworms (subfamily Bipaliinae) are spectacular, by their large size, up to one meter, their distinctive colours, and the typical shape of their head which makes them easy to identify (Winsor, 1983). Land planarians (Platyhelminthes, Geoplanidae) are predatory soil-associated animals. Although small species (generally less than 1 cm in length) such as *Microplana* spp. Or *Rhynchodemus* spp. is autochthonous in Europe (Álvarez-Presas *et al.*, 2012).

The references from the foreign nations indicate that such worms are found in gardens and in vermi-composting pits and are responsible for causing heavy casualty of earthworms. The genus *Bipalium* includes some 170 species worldwide. Their native is in the Indo-Malaysian region, the Southeast Asiatic area and Madagascar. First Record of Presence of the Invasive Land Flatworm both species are to be found in (*Australopacifica*, *Diversibipalium*) genus, further research on monitoring of species.

STUDY AREA

RS Puram (11.2°N 77.0°E) is situated in the western part of the city near Old Coimbatore area. RS Puram (or "Rathina Sabapathi Puram") is a posh residential area and shopping center in Coimbatore city in the state of Tamil Nadu, India. R.S Puram is considered a perfect mixture of commercial and

residential hub. The neighborhood is abound with multi-national commercial establishments, important government offices, sprawling educational institutions, shopping complexes, sporting facilities, tourist spots, restaurants, and cultural centers. R.S Puram also a prime residential area in Coimbatore.



Figure1. The Invasive Land Flatworm undescribed species (*Australopacifica* genus).



Figure 2. The Invasive Land Flatworm undescribed species (*Diversibipalium* genus).

DISCUSSIONS:

Records based on photographs were from October 2019 to January 2020, in localities, Coimbatore city, Tamilnadu, India (Figure 1 and Figure 2). Observations are from gardens, not wild areas. Many of the species have their origin in Asia but have invaded the world. The two “giant” species *Bipalium kewense* Moseley, 1878 and *Diversibipalium multilineatum* (Makino & Shirasawa, 1983), which can be as long as 30 cm, have been reported in many locations worldwide (Justine *et al.*, 2018b; Mazza *et al.*, 2016; Morffe *et al.*, 2016; Winsor, 1983). *Bipalium adventitium* Hyman, 1943, which is smaller, but still a noticeable species up to about 10 cm in length, is known only from the USA (Hyman, 1943; Kawakatsu *et al.*, 2002); is known only from the USA (Hyman, 1943; Kawakatsu *et al.*, 2002); It's new and unidentified species, I have first record in the world, Identified genera only. The identification of land planarians from specimens or photographs is sometimes a futile exercise, In this paper, record a finding of (*Australopacifica*, *Diversibipalium*) in Coimbatore district, Tamilnadu India (Figure 1. & figure 2). *Australopacifica* about – 4 cm length, *Diversibipalium* about- 6 cm length. The specimens collect and future study, species level of identification, Barcoding of sequencing based on both external morphological and molecular characters. We need more surveys in the region to see if the Invasive Land Flatworm is distributed in some nearby places, Mountain, landscape and gardens.

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