



First Documentation of *Diversibipalium* genus (Kawakatsu et al., 2001) Chennai District, Tamil Nadu State, India.

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ABSTRACT

First time record of *Diversibipalium* sp. Chennai district, Tamilnadu, India. with identification based on the photographs. In this note discuss about the *Diversibipalium* sp. Background, Salient features, Descriptions and Distributions.

Keywords: New record, First report, *Diversibipalium* genus, Tamilnadu.

INTRODUCTION

Planarian the strangest and most fascinating animals in and around gardens and greenhouses area. Between continents, potted plants and soil carry land hammerhead worms, which frequently spread to other areas and become invasive (Justine *et al.*, 2014). Land flatworms may be a hazard to the local soil fauna and flora in the areas they invade since they are omnivores (Winsor, 1983b; Kawakatsu *et al.*, 1982).

Terrestrial is a numerous valuable habitat for many floras and faunas. The land planarian (*Bipalium kewense*), found in a greenhouse at the Kew Botanical Garden, close to London, England, was initially described by Moseley in 1878. A genus of huge, predatory terrestrial planarians is called *Bipalium* and *Diversibipalium* (Family: Geoplanidae). Cairn and Littlewood (2013), over 30,000 species had Platyhelminthes is one of the major groups of invertebrates in worldwide. There are just 822 nominally identified species of terrestrial planarians worldwide, making them extremely species deficient category groups (Sluys, 1999; Carbayo *et al.*, 2002). The genus *Bipalium* (Stimpson 1857), has approximately 160 species that are known to exist within this Asian triclad group. A total of 97 *Diversibipalium* were recorded in worldwide (BOPCO, 2020). Recently, Kawakatsu and Jayashankar (2013) reported a checklist of 27 known species with description of three unidentified *Diversibipalium* spp. from India. Its limited range, nocturnal lifestyle, physical similarity to earthworms, and other variables all played a part in the dearth of comprehensive research on it.

The land planarian (bipallid) fauna of India was primarily researched by Von Graff (1894, 1899), Whitehouse (1914), and De Beauchamp (1930). A recently published inventory of 27 known species includes three unexplained *Diversibipalium* sp. from India (Kawakatsu and Jayashankar, 2013). The report is uncompleted, since it does not provide a morphological description or biometric data for the pertinent species. Furthermore, previously one *Diversibipalium* genus level identification was done by Selvamurugan (2022) in Coimbatore district, Tamil Nadu. There are numerous indigenous species of the genus *Diversibipalium* in India. But this less well-known fauna is nevertheless, well, less well-known. Numerous observations have been made by both independent researchers from the northeastern highlands and the Zoological Survey of India.

Unfortunately, the original landscape has suffered changes since then, mainly by deforestation and population growth, and there are no recent records of land planarians in this region.

MATERIALS AND METHODS

Study area

The land planarian or hammerhead worms were recorded from green garden of Anna University Campus (13°0'38.0844" N, 80°14'3.966" E), Chennai district, Tamil Nadu (Figure 1). The land planarian was taken photographs record and visually observed in study area. This is the first record of *Diversibipalium* sp. from Chennai, on the Bay of Bengal in eastern India, is the capital of the state of Tamil Nadu (Figure 1). The specimen was not collected during the survey. Because, some species of genus *Bipalium* are presence of tetrodotxin were reported by Stokes *et al.* (2014). For examples

of two species of Bipaliid (*Bipalium adventitium* and *Bipalium kewense*). The basic keys found in the previously published research articles are used to identify the genus *Diversibipalium*.

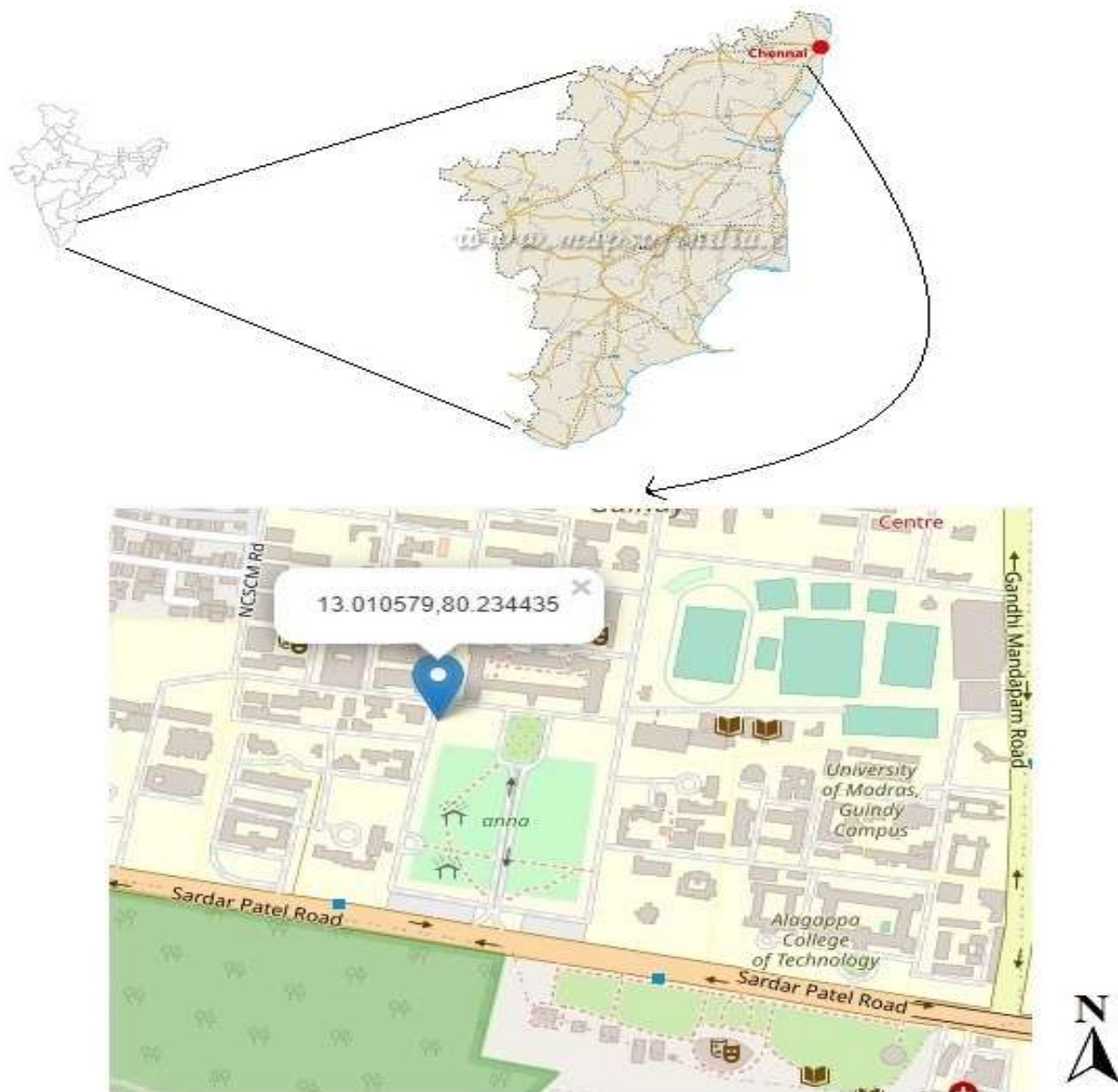


Figure 1. The study's map showed the locations of the *Bipalium* sp. collections.

Salient features of *Diversibipalium* sp.

Cf. Kawakatsu, Ogren, Froehlich and Sasaki (2001: 165): "The generic name of *Diversibipalium* is from Latin: diversi (different, various, diversity) + *Bipalium*". A collective group within the subfamily Bipaliinae Von Graff, 1896 (formerly known as Family: Bipaliidae, Von Graff, 1896) to provisionally assign species inquirendae and nomina dubia is called genus *Diversibipalium*. No species type was identified. Latterly, Ogren and Kawakatsu (1987) discovered in two species of *Diversibipalium*: *Diversibipalium gebai* (Synonymy: *Bipalium pictum* Geba, 1909; *Bipalium gebai* Ogren and Kawakatsu, 1987) and *Diversibipalium whitehousei* (Synonymy: *Placocephalus superbus* Whitehouse, 1914; *Bipalium whitehousei* Ogren and Kawakatsu, 1987).

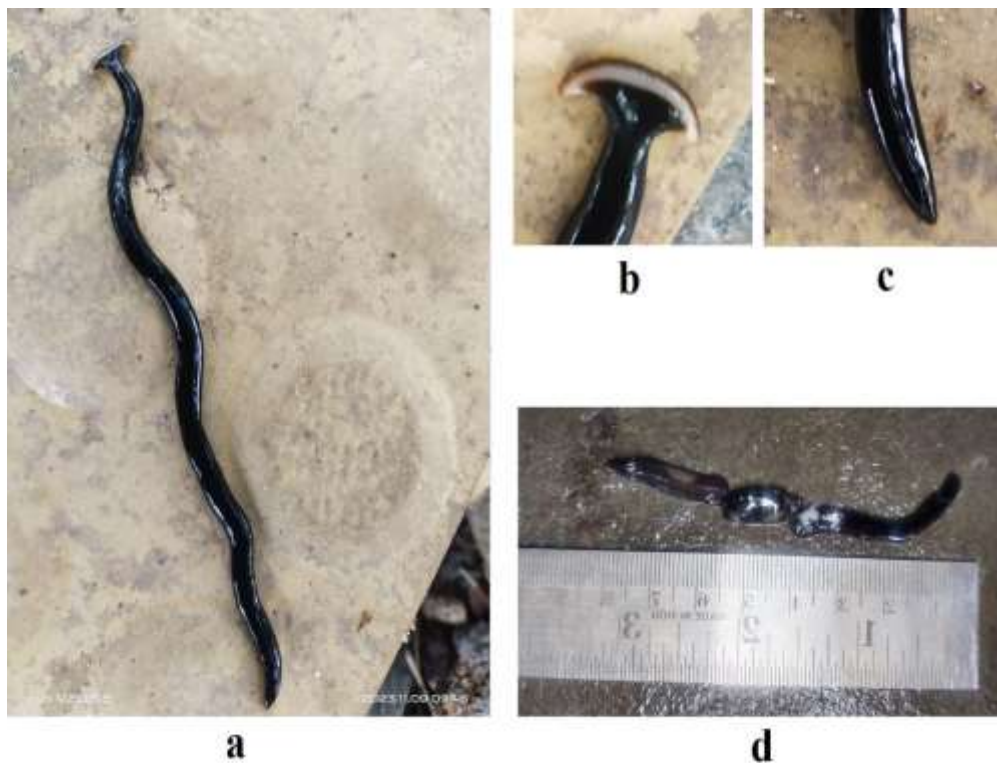


Figure 2. *Diversibipalium*: a) Full image of genus *Diversibipalium*, b) Anterior portion showing enlarge head, c) Body ended in a bluntly pointed posterior end, and d) Scale bar of measured flatworm of genus *Diversibipalium*.

Distributions – A total of 97 *Diversibipalium* were recorded in worldwide (BOPCO, 2020). *Diversibipalium gebai* this species was found in Sakana, Urward / S. Madagascar (Ogren and Kawakatsu, 1987). *Diversibipalium whitehousei* were collected in Royung, Assam / India (Ogren and Kawakatsu, 1987). According to Kawakatsu and Jayashankar (2013), reported two species of genus *Diversibipalium* in Bangalore. In Tamil Nadu, (Selvamurugan, 2022) reported occurrence of *Diversibipalium* genus first time in Coimbatore district. Due to its completely distinct shape and character, this species was the first to be reported in Tamil Nadu, however it was not the earlier *Diversibipalium* genus as reported by Selvamurugan (2022).

Descriptions

So far, the criteria of selection of a genus in Bipaliidae demonstrate that there are two genera, *Bipalium* and *Humbertium*, which can be recognized obviously by at least one focuses. Another sort, *Diversibipalium* was made from *Bipalium* which need data on sexual construction however every species is isolated from one another morphologically. Winsor (1983a) remarked that Stimpson's conventional finding which depends on outer morphology ends up being inadmissible. Yet, the contention is that quality controls the morphology of a person. So, morphology based scientific classification ought not be disposed of rather it can additionally be confirmed by atomic scientific classification. The creation of a new genus (from *Bipalium* to *Diversibipalium*) on the basis of its anatomical description is not acceptable because morphologically described species after molecular taxonomy ascribed as synonymous or grouped into a species group as found in many other cases. Recently, molecular study of Mazza *et al.* (2016) indicates that *Diversibipalium multilineatum* is akin to *Bipalium nobile* and *Novibipalium venosum* appears to be a member of *Bipalium* species group. So, it can be concluded that all the following genera are synonymous of *Bipalium*.

This revealed the existence of genus *Diversibipalium* specimens in earthworm cultures from India's Western Ghats. Photographs alone were used to identify these specimens. Furthermore, the collar can be identified as posterior to the skull plate and dorsally interrupted. These specimens seem to be of the genus *Diversibipalium* as a result. Kawakatsu and Jayashankar (2013), reported two species of genus *Diversibipalium* in Bangalore. It can attain lengths of 3 to 5 cm and widths of 5 to 7 mm within the size of both species. The body ended in a bluntly pointed posterior end. In Tamil Nadu, (Selvamurugan, 2022) reported occurrence of genus *Diversibipalium* first time in RS Puram, Coimbatore district. But this species was totally different from our genus of *Diversibipalium*.

Diversibipalium sp. (Tan ground colour, single dark mid-dorsal stripe, with a white transverse collar). This species is characterized by a mid-brown dorsal ground colour, with a dark brown mid-dorsal stripe that extends anteriorly to a well-defined white transverse band - "collar" (generally slightly speckled with brown), that merges with a black transverse band divided medially that extends as paired out-turned cuneiform shapes at the posterior half of the headplate; the central region of the headplate is a whitish colour usually speckled with brown, with a black headplate anterior margin. The body ended in a bluntly pointed posterior end (Figure 2). A similar species is present in other regions, but lacks the median stripe.

Photos showing the head and eye pattern, and especially the ventral surface showing the positions of the mouth and gonopore are uncommon. Eye pattern, the colour and stripe pattern of the ventral surface, and the relative positions of the mouth and gonopore are rarely provided, but in many species greatly

aid in identifying a species, or at least discounting species of similar appearance (Figure 2). In additionally, this species measured where length was 3.4 cm to 10 cm and the width 0.4 mm to 0.7 mm. Therefore, further investigation is required to confirm that the species found in *Diversibipalim* sp.

Only few molecular phylogenetic studies have been carried out that included representatives of the Bipaliinae and among these only a couple of studies included specimens that were identified on both molecular data and the anatomy of their copulatory apparatus (Morffe *et al.*, 2016; Justine *et al.*, 2022). In India needs more taxonomic research and surveys because of its vast biodiversity and cultures. This further implies that the species is widely distributed throughout the nation, particularly in places that have been impacted by human activity. Morphological and genetic research on a more widely represented geographic sampling effort will be necessary to provide additional support for this conclusion.

CONCLUSION

An invasive alien species is *Diversibipalim*. It is thought to pose a risk to the local fauna. Its appearance poses a threat to the regional biodiversity in Tamil Nadu. This study is the first report of its sort to come out of Chennai, Tamil Nadu, India. The genus *Diversibipalim* of the land planarian has been identified. Furthermore, future research involving histological examinations and molecular analysis was merged with exterior morphology for identification purposes for the first time at a new site.

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