Pentastomids are wormlike crustacean endoparasites usually found in the respiratory system of vertebrates, primarily in carnivorous reptiles (Kelehear et al., 2011). These endoparasites are known to have a high potential for zoonotic diseases (Paré, 2008). *Raillietiella* Sambon, 1910 comprised approximately 39 species that infect mainly small lizards (Kelehear et al., 2011). *Raillietiella affinis* is known from Africa, Indonesia and Hawaii (Christoffersen and De Assis, 2013), and was described parasitizing lung of the tokay gecko *Gekko gecko* (Bovien, 1927). It has been then described in geckos, *Lepidodactylus lugubris* (Self and Kuntz, 1957), *Gehyra mutilata* “as Peropus mutilatus” (Nicoli, 1963), *Hemidactylus leschenaulti* (Haffner, 1964), *Hemidactylus angulatus* “as H. brookii angulatus” (Awachie, 1974), in skinks, *Chalcides sepsoides* and *Scincus scincus* “as S. officinalis” (Self and Kuntz, 1957), *Eumeces shneideri seneideri* “as Eumeces schneiderii” (Brygoo, 1963), in agamids, *Stellagama stellio* “as Agama stellio” (Brygoo, 1963), *Trapelus mutabilis* “as Agama mutabilis” (Ali et al., 1982) and in the marine toad *Rhinella marina* “as Bufo marinus” (Eldredge, 2000).

Native from Madagascar, *Phelsuma grandis* Gray, 1870 (Fig. 1a) is a large diurnal and arboreal gecko which displays a territorial behavior and an omnivorous diet (Glaw and Vences, 2007). This lizard is also known from Hawaii, Florida, Mauritius and Reunion Island, where it is considered as an invasive species (Kraus, 2009; Buckland et al., 2014; Sanchez and Probst, 2014). From Hawaii, it is known to be the host of several parasites, including one cestode, three nematodes and one pentastomid *Raillietiella frenatus* (Goldberg et al., 2010).

Here we report the first record of *R. affinis* as an endoparasite of *P. grandis* and a new locality for the parasite. Into Mascarenes archipelago alongside Mauritius and Rodrigues islands, Reunion Island lies about 700 km east of Madagascar in the Indian Ocean. Like many other islands experiencing human colonization, Reunion Island endured several introductions of alien reptile species (Cheke and Hume, 2008). Introduced in the middle of the 90’s, the expansion and the impacts of *P. grandis* on Reunion Island are closely monitored (e.g. Dervin et al., 2013; Sanchez and Probst, 2014).

Eight *P. grandis* (mean Snout-Vent Length, SVL = 98 mm ± 10 SD, range = 76-107 mm) were collected from five populations around Reunion Island between September 2010 and May 2013 (four populations in western coast and one population in north east coast; Fig. 2). The lizards were manually caught and, according to a legal destruction agreement, were euthanized by freezing.

Endoparasites were removed from trachea and lungs (Fig. 1b and 1c). All the eight geckos were parasitized and 69 parasites, all at adult stage, were found (mean = 8.62 ± 8.12 SD, range = 1-21). Pentastomids were cleared in a few drops of lactophenol on a glass microscope slide, cover slipped and studied utilizing a binocular microscope (Leica ATC 2000). They were
identified as *Raillietiella affinis* based upon the presence of blunt posterior hooks and the male copulatory spicule exhibiting a flared base devoid of ornamentation.

*Raillietiella* species have a life cycle which can include two hosts. Eggs are released through the feces of the definitive host and they are ingested by the intermediate host (Ali and Riley, 1983). In some cases, cockroaches may be used as intermediate host by the parasite (Paré, 2008). On Reunion Island, *P. grandis* consumes a large amount of Blattidae (Dervin et al., 2013). We suggest that these coprophagous insects could be used as intermediate host by *R. affinis* on Reunion Island. When the intermediate host is consumed by a suitable definitive host for the parasite, this last one migrates to the respiratory system of its host where it will feed on blood (Paré, 2008). Previous studies have already shown the ability of *Raillietiella* species for switching its definitive host (e.g. from a gekkonid species, *Hemidactylus frenatus* to a bufonid species, *Rhinella marina*), possibly leading to enhance the spread of the parasite (Barton, 2007; Kelehear et al., 2013). The bufonid *Amietophrynus gutturalis* and the gekkonid *H. frenatus* are both alien species widely distributed through Reunion Island (Cheke and Hume, 2008). Thus, we believe they could carry the potential for spreading the parasite outside of the current distribution of *P. grandis*.

The present paper reports a new host and a new distribution for *R. affinis*. It also emphasizes that conservation issues could occur in a local context of biological invasion between *P. grandis* and endemic threatened geckos of Reunion Island (*Phelsuma inexpectata* and *P. borbonica*; UICN France et al.,...
2013), through the introduction of an endoparasite to an island possibly free of this parasite. Further studies should focus on the natural prevalence of *R. affinis* in the populations of the native Reunion day geckos, at places free of *P. grandis*. Also, evaluating the presence of the parasite in the populations of alien reptiles and amphibians could lead to a better understanding of the spread mechanisms of *R. affinis* on Reunion Island.

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