On *Polposipus herculeanus* Solier, 1848 (Tenebrionidae: Coleoptera) on Round Island, Mauritius

J. Gerlach[1], P. Daszak[2] & C.G. Jones[3]
[1] 53 River Lane, Cambridge CB5 8HP, UK / PO Box 207, Mahé, SEYCHELLES.
[2] Faculty of Science, Kingston University, Pehrhyn Road,
Kingston upon Thames, Surrey KT1 2EE, UK.
[3] MauritiusConservation Programme Director, Wildlife Preservation Trusts,
Forestry Quarters, Black River, MAURITIUS

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Abstract: Historical records of the distribution of the Fregate island giant tenebrionid beetle *Polposipus herculeanus* were examined. It was concluded that a specimen reputedly collected on Round island, Mauritius in 1869 is correctly labelled. This species is one of several invertebrates recorded from Seychelles and from Round Island, Mauritius. Such species proably had a general western Indian Ocean distribution before the region was colonised.

Introduction

The highly distinctive tenebrionid beetle *Polposipus herculeanus* (Solier, 1848) is currently restricted to the island of Fregate in the central granitic group of the Seychelles islands. There are only two records from other localities, both of which have at times been viewed as being erroneous. The purpose of this paper is to review these records in order to determine the likely natural distribution of the species.

The Bengal specimen

The holotype is a specimen from the Dupont collection, with the type locality of Bengal. The specimen is labelled as having been collected by Duvacel. These data were refuted by Gebien (1922) and this has been accepted in all subsequent references. In the absence of any further information on the date of collection the origin of this specimen cannot be determined.

The Round Island specimen

In 1870 a specimen was entered into the British Museum (Natural History) Entomology Department accessions register as 'Platynotus sp. nov.'. This specimen was subsequently described as *Dysceladus tuberculatus* by Waterhouse (1875) which was subsequently synonymised with *P. herculeanus* by Gebien (1922). It is part of the material collected by Lt-Col. N. Pike on Round Island, Mauritius in 1869. The validity of the collection data have been disputed since 1962 (Vinson 1962 - although subsequently listed as a Mauritian-Seychelles species in Vinson 1967; Lionnet 1971) due to the inability of all subsequent expeditions to locate the species on Round Island and to the strange biogeographical pattern that acceptance of this record would imply. These references did not consider the impact of habitat degradation upon the beetle's habitat.

If the specimen was not collected on Round Island it must presumably have been a mis-labelled Fregate island specimen. Accordingly it has been suggested that either it was collected in Seychelles by Pike on his visit there or that it was sent to him by Ward who was resident in Seychelles at the time and who corresponded with Pike (Lionnet 1971). The former suggestion can be discounted as Pike did not visit Seychelles until 1871, a year after the specimen was entered in the BM(NH) records. The alternative suggestion could be acceptable if taken at face value but although Ward did send Pike written information on Seychelles (Pike 1873) there is no evidence of Ward sending out any specimens other than birds (Newton 1867). It has been suggested that the locality should be one of the Seychelles Round Islands (Champion 1914; Scott 1932) although there are no records of any naturalists or collectors visiting these islands at this time. This suggestion is not supported by any evidence and is an un-necessary complication.

If the available information relating to Pike's visits to Round Island are examined some light can be shed on this problem. Pike made two visits to the island: 6-8th Dec. 1868 and 9-10th Nov. 1869. On the former he noted the presence of "coleopterous insects, I think, of the genus *Tetramerans*" and collected some specimens (as indicated by a record of scorpions changing colour on placing in alcohol) (Pike 1870a & 1873). He does not give a specific description of his second visit (a description is given in Barklay 1870) but most of the material he collected appears to derive from the second visit. The collection he made was exhibited at the Mauritian Royal Society before being sent to England by Barklay. It contained several beetle species, of which number 27 was described as "A very singular beetle, of which I can find neither figure nor description, and I have never seen it in Mauritius" (Pike 1870), this is described elsewhere as "one brown beetle, about 11/2 inch in length, tubercled all over - but I can find neither figure nor description of it, nor do I think it is in Mauritius." (Pike 1873) and is identifiable as the *P. herculeanus* specimen. It is apparent that Pike himself was clear that it was one of his Round Island specimens and that it was in his possession before the 30th December 1869 when the collection was exhibited at the Mauritius Royal Society (Barklay 1870).

Of the rest of Pike's material only two beetles were entered into the BM(NH) register alongside the *P. herculeanus* specimen. These two, 'Uloma sp.' and 'Cetonia maculata', are identifiable as *Alphitiobius diaperinus* (Panzer) and *Protaetia aurichalcea* (Fabricius, 1775), both widely distributed in the Indian Ocean (Marshall 1982). It is interesting to note that the accession register for 1870, which contains details of the case delivered by Sir Henry Barkly appears to be incomplete in other respects. A scolopendrid centipede was reported by Barkly (1870) in the case and is not mentioned in the accession record, however examination of the centipede collection at the BM(NH) reveals a scolopendrid dated 1870, suggesting that the specimen was delivered but not entered in the register. Other beetle material in the BM(NH) labelled 'Round Island, Mauritius' comprises 8 specimens identifiable as Curculionidae (*Cratopus griseovestitus* Linell, 1897, *C. aurostriatus* Fairm., 1892 and *C. segregatus* Champion, 1914) and Oedemeridae (*Oxacis grisescens* (Fairm., 1897)). These are all western Indian Ocean species,

three of which are restricted to Seychelles and Round Island, and one which is also found in Madagascar and Glorieuse. This total of 11 specimens of 7 species with Round Island, 1870 data matches the 'half dozen' species and the number of specimens referred to by Pike (1870) as being in the collection from Round Island.

There are additional Seychelles species that have specimens from 'Round Island' (eg. Oedmeridae: *Ananca aldabrana* Champion, 1917 and Mordellidae: *Mordella peregrinator* Champion, 1917) but the data on these are ambiguous and are not explicitly the Mauritian Round Island.

Pike's Round Island beetles thus contain two widespread species and five restricted to the western Indian Ocean. Although *P. herculeanus* is the only species with such an extremely disjunct distribution, three species approach the pattern closely. This suggests that it is plausible that all the specimens have the same origin, in which case Round Island, Mauritius is most likely.

The remainder of the material has all been accepted as true Round Island material with the exception of one snake. Vinson (1964) claimed that the material included a dried specimen of a snake "charactéristique des Seychelles". This specimen appears to be the same as the one described by Pike (1870b) as "The died (sic) specimen I sent you however was very pugnacious and bold raising and flattening his head like the poisonous Snakes ... Unlike any other Snake I know, it glides with extreme rapidity over the ground with its head elevated." The detail provided implies that Pike had seen the specimen alive and had collected it himself, in which case it must have been collected on one of his Round Island visits. All the snakes collected by Pike and donated to the BM(NH) by Barklay are identified and registered as *Casarea dussumieri* or *Boyleria mulicarinata*, both Round Island endemics. Vinson's claim that a Seychelles species was included presumably rests on a mis-identification and cannot be used to dispute the provenance of the material. This raises a dilemma since Vinson was a good herpetologist well aquainted with the round Island species. Perhaps the poor condition of this dried specimen caused Vinson to make an uncharacteristic error. Unfortunately this specimen cannot be located and the true identity cannot be determined.

The biogeographical connection between Round Island and Seychelles is also apparent in other invertebrates, notably the scorpions and amblypygids. Of the former, three Round Island species include a cosmopolitan species (*Isometrus maculatus* Geer), an endemic species *Lychas serratus* (Pocock, 1890), a genus otherwise restricted to Africa and Seychelles, and a western Indian Ocean species *Ischnurus ochropus* Koch, 1838 found also in Seychelles and on Zanzibar, this distribution is also found in the amblypygid *Phrynichus scaber* Gervais.

The arthropod fauna of Round Island thus appears to have a strong biogeographical connection with the islands of the Seychelles group and to have relatively little connection with Mauritius. This association could be explained by two hypotheses. Firstly that the distribution represents a pattern caused by dispersal through rafting. Colonisation of Round Island must inevitably have been by rafting for the flightless taxa and although rafting from Mauritius would seem most likely, long distance transport from Seychelles is a possibility (Fig. 1.). The alternative is that the Seychelles - Round Island distribution is a remnant of a more general

western Indian Ocean distribution. Under this hypothesis several other populations of these species would have been exterminated through habitat destruction and predator introduction since the colonisation of Seychelles and the Mascarenes in the 18th and 17th centuries respectively. A combination of these two possibilities may be the most accurate explanation. Species which have survived habitat disturbance and predator introduction can only be explained by the vagaries of oceanic dispersal. This applies to the *Cratopus* weevils of which Pike collected three non-Mauritian species on Round island. These are not known to survive on the island at present and have been replaced by the Mauritian *C. punctum* Champion, 1914 (Vinson 1949). Most of the flightless species have highly disjunct distributions within Seychelles and are rare on heavily disturbed or predator colonised islands. These species may have had a wider distribution in the past and may have been present on both Round Island and Mauritius. Of these only the amblypygid *Phrynictus scaber* survives on Round Island. The most extreme case is the giant tenebrionid *Polposipus herculeanus*, now restricted to Fregate island.

There are a further 6 specimens in the BM(NH) labelled "Seychelles". These are from the Nevinson collection and were purchased from O.E. Janson who bought them from an amateur collector. Their island of origin is not known. All subsequent specimens are known to have been collected on Fregate (Including J.S. Gardiner's 14 specimens from 1905 and 1908). One other puzzle remains; that is the failure of Pike to collect *P. herculeanus* on Fregate when he visited the island in 1871. His description of the island as treeless with only bushes (Pike 1872) implies that the present-day abundance of the beetle may be a result of the maturation of plantations on the island providing abundant dead wood for the larvae.

In conclusion it is probable that the historical arthropod fauna of Round Island was dominated by western Indian Ocean species, some of which were also present on Mauritius but were exterminated early in the human history of the island. This fauna was collected by Pike in 1868 and 1869 and included the giant tenebrionid beetle *Polposipus herculeanus*. This species is therefore known to have occurred on Round Island, Mauritius and on Fregate island, Seychelles. It is probable that it was also present on other islands in the Seychelles group.

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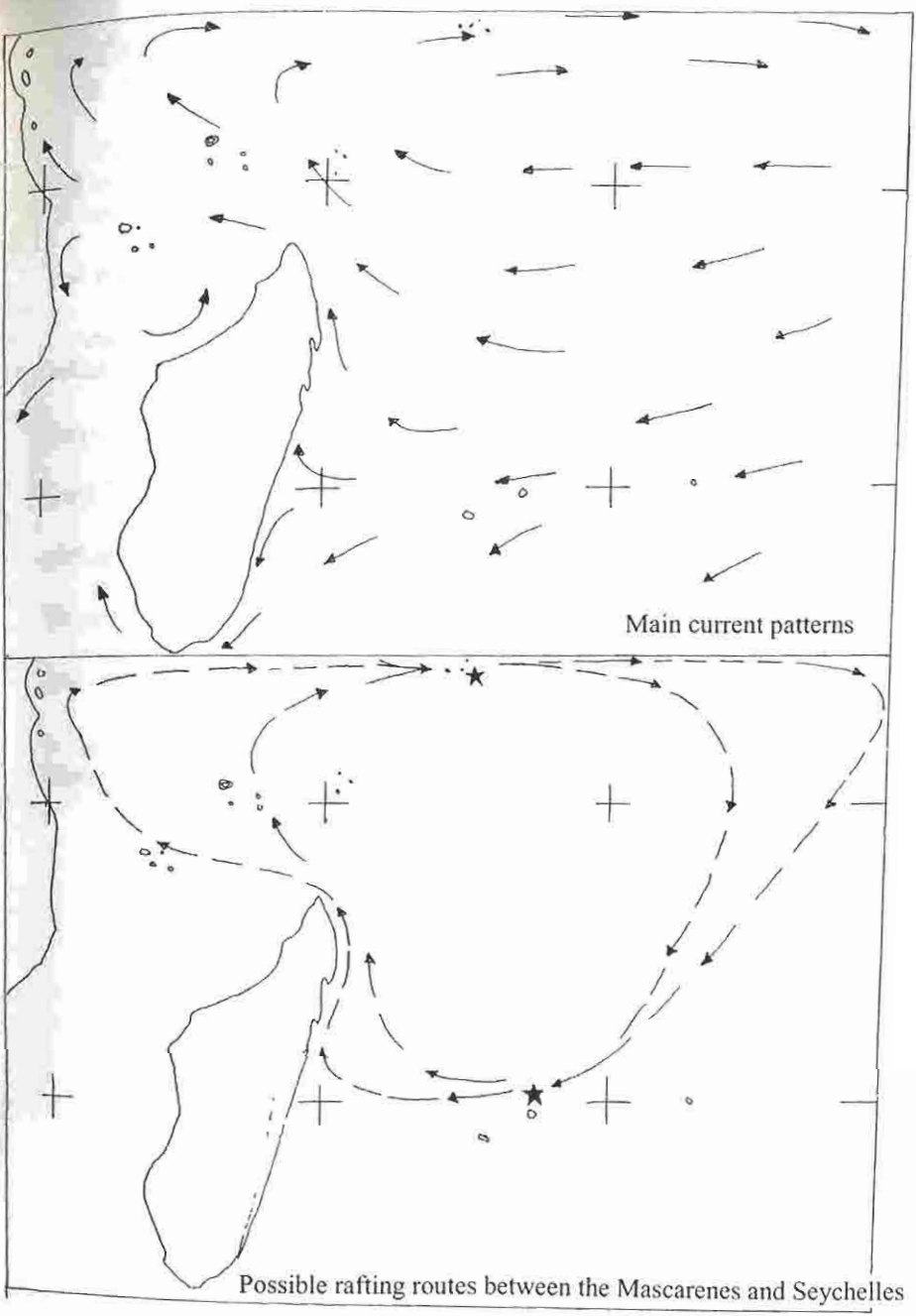

Fig. 1. Ocean currents of the Indian Ocean

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