

NOTES ON SOME DUNG BEETLES COLLECTED
IN MOROCCO

(COLEOPTERA, SCARABAEIDAE)

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RESUME

Une courte visite a été effectuée au Maroc (provinces du Nord) durant le mois de mai 1976. Des récoltes de Scarabéides coprophages ont été faites dans 21 localités. 12 genres et 27 espèces ont été repértoiriés et des commentaires sur l'écologie et la répartition de certaines espèces ont été faits.

SUMMARY

During May 1976, a brief broad scale survey of dung beetles was made in Morocco. All genera and species encountered were recorded, and, where possible notes made on their ecology and distribution.

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INTRODUCTION

As part of a study on dung beetles as potential biological control agents of dung in Australia (WATERHOUSE, 1974), a visit was made to Morocco to select certain species for possible introduction to that country.

During the course of this investigation, observations were made on the distribution of species found during my brief visit during May 1976.

Dung beetles in this paper refers to the sub-family *Scarabaeinae*.

(Note : I do not distinguish between Sheep/Goat and Horse/Donkey dung.)

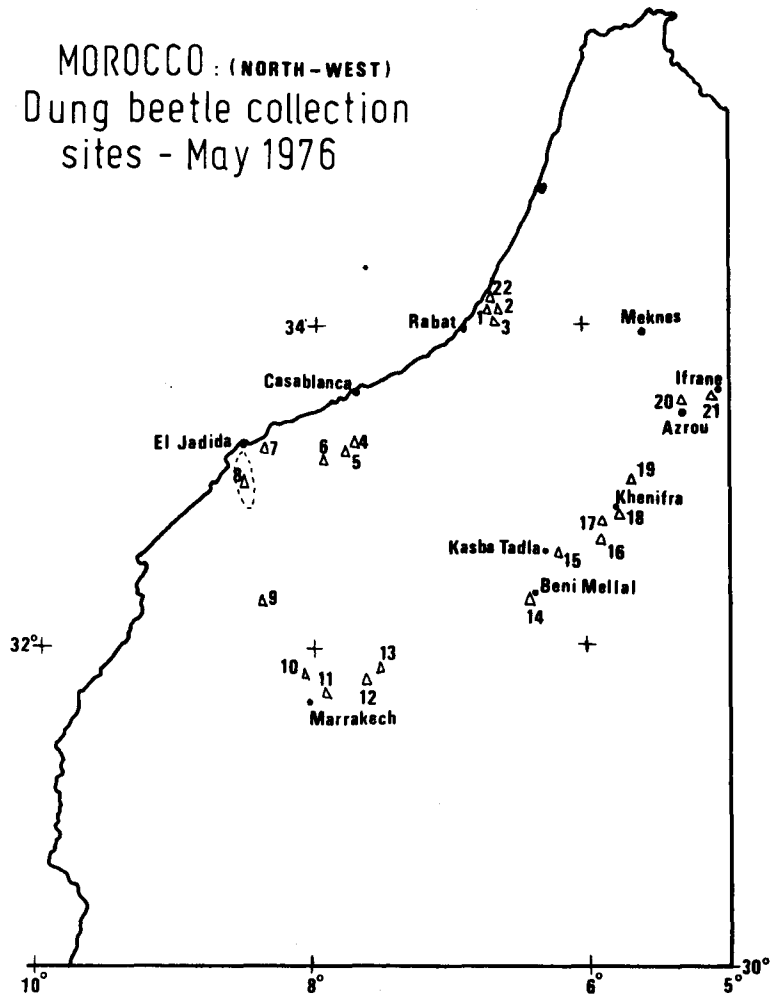
ROUTE FOLLOWED, AND METHODS USED

The localities visited are given on the map. As can be seen, collection sites followed the main routes. Frequent stops were made throughout the area when cattle or sheep were seen that were readily accessible from the road. Dung pads were investigated by manually sorting through them, and digging in the ground beneath them. No specific number of pads were dug at any one locality. The time spent searching pads and digging beneath them depended on, a) the richness of species found, and b) the time available.

All preserved material was identified by specialists of that particular group; and examples of the material collected was deposited with the "Direction de la Recherche Agronomique" in Rabat.

Although the dung beetle fauna of Morocco has been well documented (KOCHER, 1958; BARAUD, 1971 & 1975), these works are basically catalogues or are of taxonomic value, and it was felt that the inclusion of these data would be an additional contribution to the knowledge of the Moroccan dung beetle fauna. It should be remembered however, that this survey was brief and by no means exhaustive

MOROCCO: (NORTH-WEST)
 Dung beetle collection
 sites - May 1976

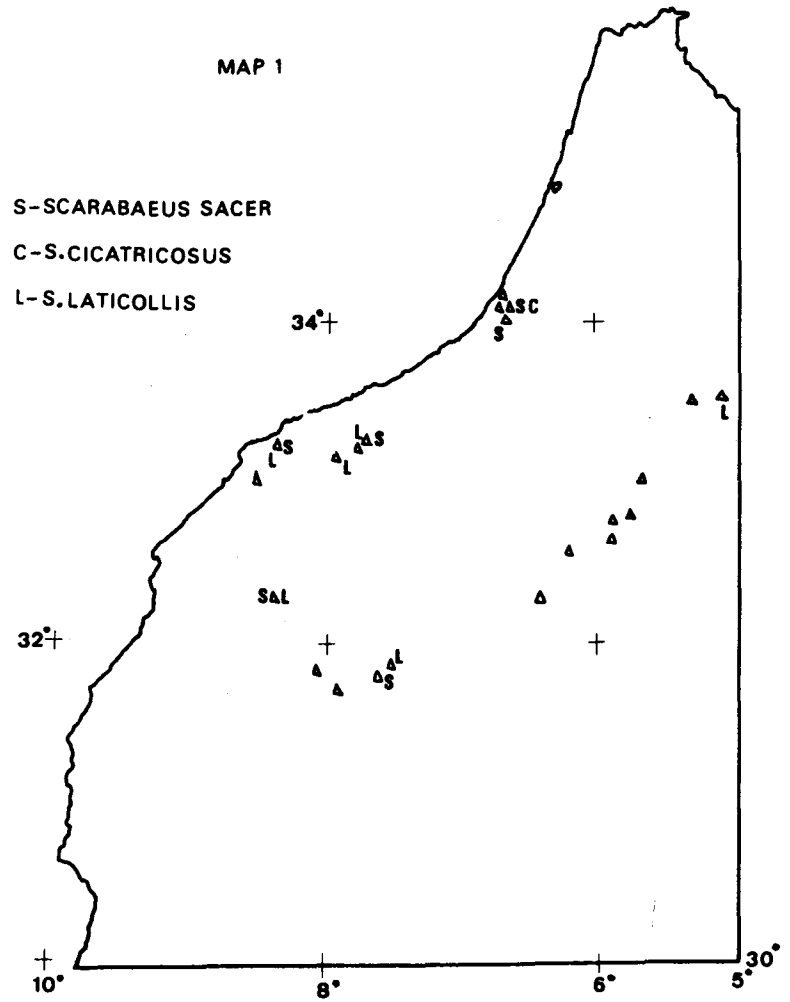


MAP 1

S-SCARABAEUS SACER

C-S.CICATRICOSUS

L-S.LATICOLLIS



DUNG BEETLES

GENERA AND SPECIES COLLECTED, WITH NOTES ON THEIR ECOLOGY AND DISTRIBUTION

SCARABAEIDAE

s. f. Scarabaeinae

Scarabaeus sacer L.

Map 1. This species was recorded from six localities, particularly in areas around Sidi Bouknadel and Marrakech, none of which were higher than 400 m above sea level. Soil type was either Sand or Sandy loam. Beetles were observed rolling balls actively during the daytime. These balls are likely, at this time of year to have been broad balls (LUMARET, 1978).

The beetles were found on both Cow Sheep/Goat dung.

Scarabaeus laticollis L.

Map 1. This species appeared to be much more widely distributed, both geographically and in altitude, and was found from sea-level (El Jadida) to 1650 m (Ifrane). One dung ball made by *S. laticollis* was found to contain adults of *onthophagus maki*, and the distribution of the latter, as I found it was very similar to that of *S. laticollis*. Map 9. Wether this association was purely co-incident, and the *O. maki* had become rolled into the ball in error, or whether they were in fact utilising the dung ball as some African species do, was not known. *S. laticollis* was collected on both Cow and Sheep dung.

Scarabaeus cicatricosus Lucas

Map 1. This species was collected from one locality only, 6 kms north of Sidi Bouknadel, where it was found in fresh Cow dung. It is a day flying species (BARAUD, 1977).

Gymnopleurus sturmi Macleay

Map 2. This species was recorded from nine localities, varying in altitude from sea level (El Jadida) to 1200 m (near Khenifra). In southern France, it occurs only between 800-1200 m (LUMARET, 1978). In one locality east of Marrakech, large numbers of this species were observed flying into fresh Donkey dung, although Human dung in the area was even more attractive. The altitude at this site was about 450 m and the temperature 29°C. KOCHER (1958) states that this species occurs throughout Morocco, except in the arid regions of the east and south.

Gymnopleurus flagellatus (F.)

Map 2. This beetle was also found at nine localities, in many cases being sympatric with *G. sturmi*, although it did not seem to occur in such large numbers.

It was found on Cow and Sheep dung.

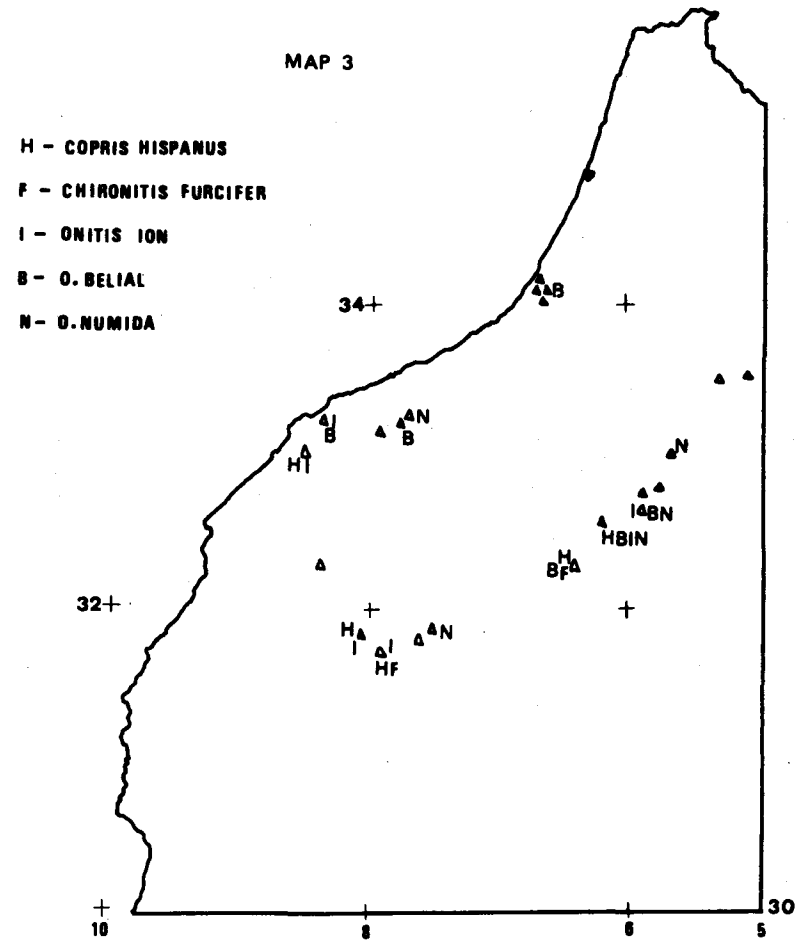
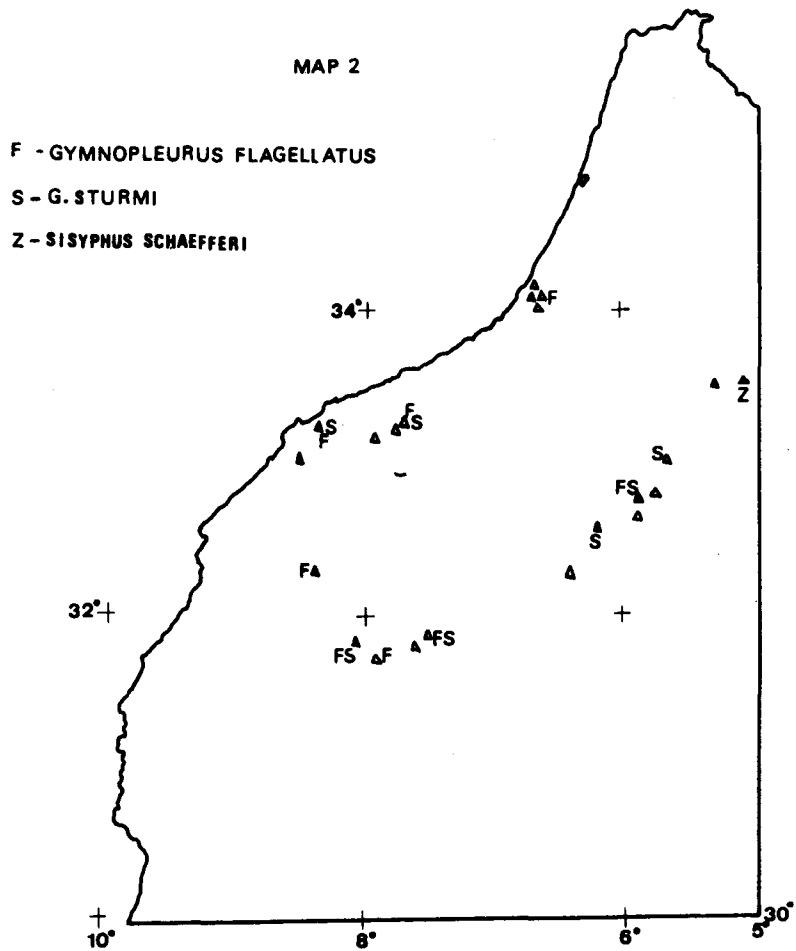
Sisyphus schaefferi (L.)

Map 2. This species was only found in a localised area around Ifrane; however it did occur in very large numbers to the south and east of the town. The beetles at this site were observed to have a marked preference for Sheep dung as Cow dung put out as bait only attracted one specimen. It is recorded as having an equal preference for Sheep and Human dung (LUMARET, 1978).

Coprini

Copris hispanus (L.)

Map 3. This species was found at seven localities ranging in altitude



from 100-725 m. It was commonly found in Cow dung. *C. hispanus*, as a night flying dung beetle was found in large numbers beneath the lights of a hotel in Beni Mellal. It was found to be very abundant in the heavy clay soil in this area.

Chironitis furcifer (Rossi)

Map 3. Only found at two localities; near Marrakech and Beni Mellal. It is however recorded as occurring throughout Morocco, except in the Saharian area (KOCHER, 1958). It was found in both Cow and Sheep dung.

Onitis ion (Olivier)

Map 3. Found at six localities, from El Jadida through to Kasba Tadla; it was not found to be common. One specimen was observed "working" the dung during the day when the temperature was 26°C. This species was found in Cow, Sheep and Donkey dung.

Onitis belial (Goeze)

Map 3. This beetle was also recorded from six localities. It appears to be widely distributed in Morocco. It was found in both Cow and Donkey dung in the heavy soils. This species was also observed flying during the day in southern Spain

Onitis numida Cast.

Map 3. This species was only found in five localities, predominantly towards the east of the area visited. It was found at altitudes varying from about 200 m at Berrechid to about 1200m near Khenifra. Specimens were found in both Sheep, Cow and possibly Donkey dung (one collection was unsegregated). KOCHER (1958) stated that this species is, above all a mountainous species. Beetles were seen moving about in the dung during the daytime. In none of the collection sites was it found to be common.

Bubas bubalus (Olivier)

Map 4. In north Africa, this species is represented by the sub-species *bubaloides*, differing from the nominate race in the shape of the paramere, but with little external difference (JANSSENS, 1938). I recorded this species from five localities, all on the atlantic maritime side of the country, and all in Cow dung.

Bubas bison (L.)

Map 4. Only found at two localities, both in the higher parts of the country (600 and 700m), from both Cow and Donkey dung. In neither locality was this beetle abundant.

Euoniticeillus fulvus (Goeze)

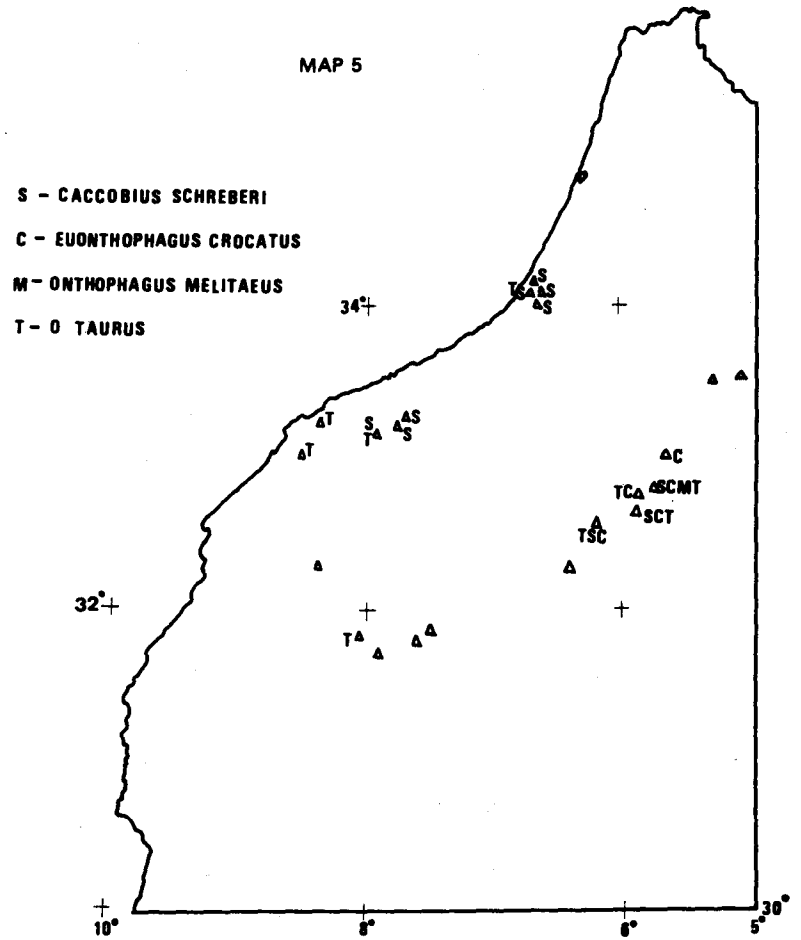
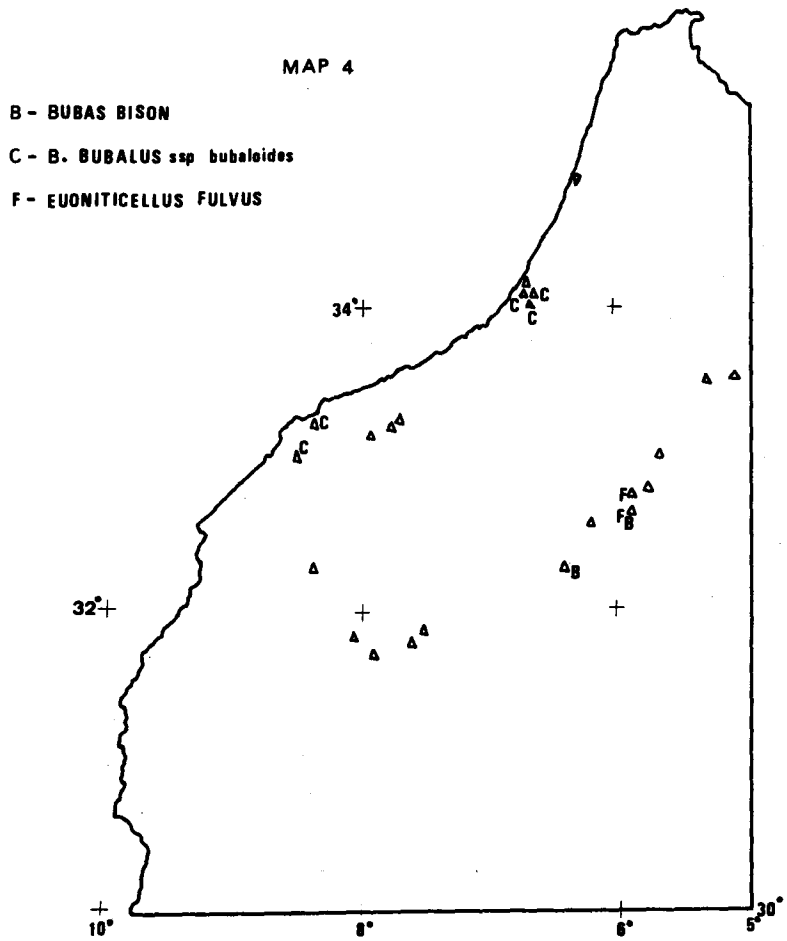
Map 4. This species was only found on the eastern side of the country, at altitude of about 700 m. At Za-ech-Cheikh, two collections were made, one in Cow dung and one in Donkey dung; it was only in the latter dung that *E. fulvus* was found. It was also recorded from Sheep dung.

Caccobius schreberi (L.)

Map 5. This was one of the most widespread of all species collected. It was found throughout the area, except around Marrakech and Ifrane. It was found from sea level up to about 850 m, in Cow, Donkey and Sheep dung. Wherever it occurred it was always abundant.

O. (Euonthophagus) crocatus (Mulsant)

Map 5. BARAUD (1977) states that this species is common in north Africa: in Morocco it occurred abundantly in six localities, all of which were in the



DUNG BEETLES

higher eastern parts of the country. It was found in Cow, Donkey and Sheep dung in soils that were of a Sandy loam, or Sandy Clay loam type.

Onthophagus taurus (Schreber)

Map 5. Found at the majority of collection sites. It was found in Cow, Sheep and Donkey dung. This species was often found in large numbers in the Cow dung.

Onthophagus melitaeus (Fabricius)

Map 5. Only one specimen of this beetle was found at a single locality near Khénifra on sandy soil. It is recorded as occurring between "Tanger , Taza and Safi" (KOCHER, 1958). It was found in Sheep dung.

Onthophagus andalusicus (Waltl.)

Map 6. A beetle that was found to be particularly abundant in the coastal area north of Rabat, and south at El Jadida. It was found at six localities, and was seen on the wing during the day. At one locality, the beetle was particularly abundant on 5 May, but by 11 May very few seen. It was collected from Cow, Sheep and Donkey dung.

Onthophagus opacicollis D'Orbigny

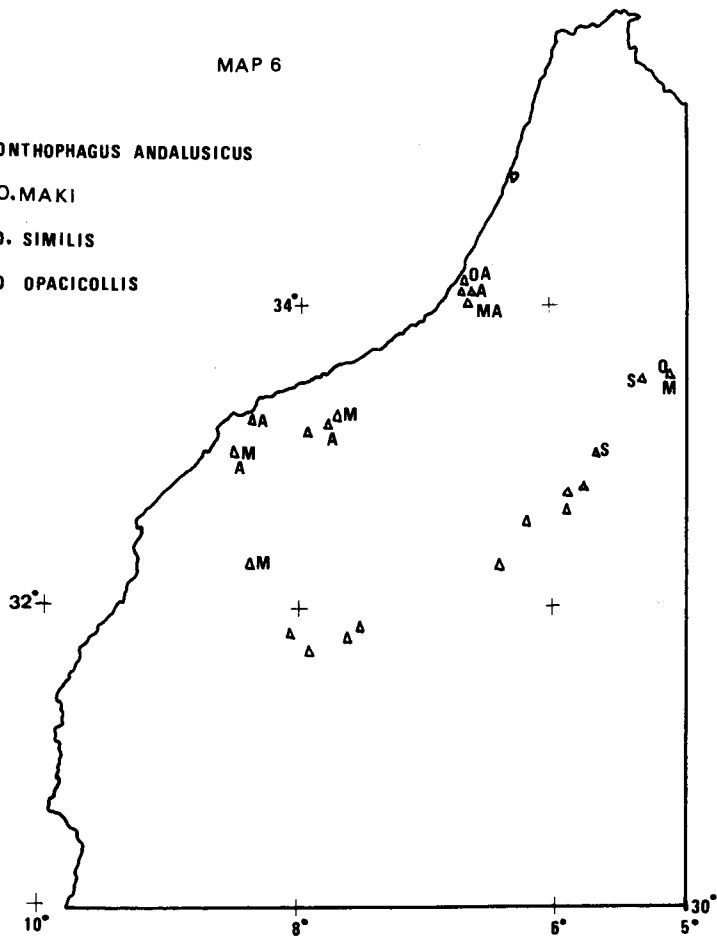
Map 6. Only found at two localities, varying in altitude from almost sea level to 1650 m. At both localities it was found in Sheep dung.

Onthophagus maki (Illiger)

Maps 6 and 9. This species was found at six localities (see *S. laticollis*) having a fairly wide distribution. It was found in both Cow and Sheep dung,

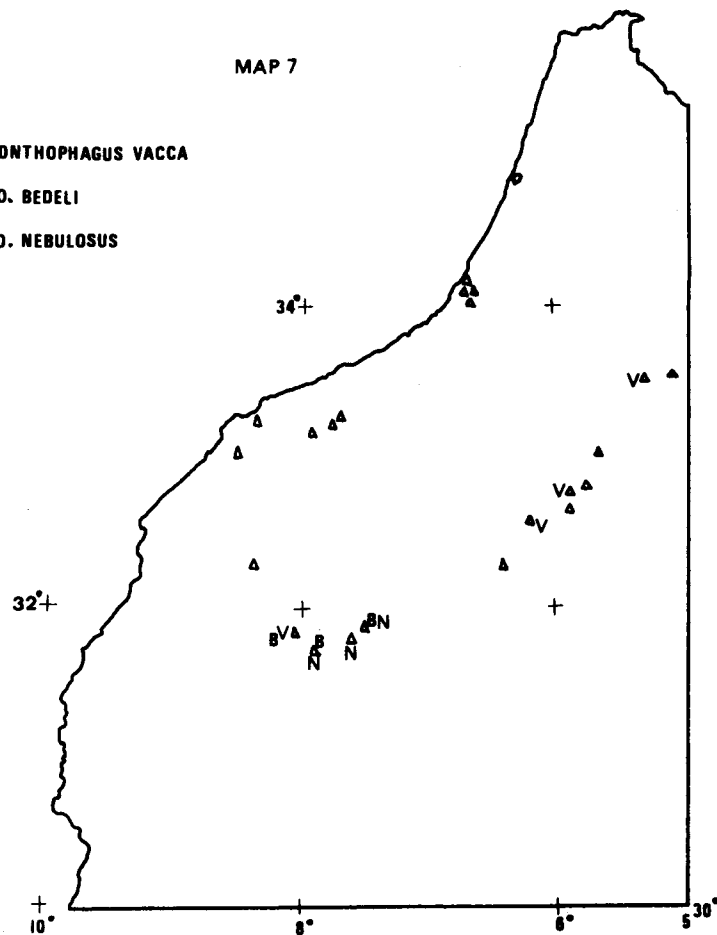
MAP 6

A - ONTHOPHAGUS ANDALUSICUS
 M - O. MAKI
 S - O. SIMILIS
 O - O. OPACICOLLIS



MAP 7

V - ONTHOPHAGUS VACCA
 B - O. BEDELI
 N - O. NEBULOSUS



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although predominantly in the latter.

Onthophagus similis Scriba

Map 6. A seemingly local species, being found at only two localities in the higher eastern part of the country; apparently the preferred type of locality (KOCHER, 1958). It was found in Sheep and Donkey dung.

Onthophagus vacca (L.)

Map 7. A widespread European species; found mainly in the north and central parts of Morocco. I found it predominantly towards the east of the country in Cow, Sheep and Donkey dung.

O. (Euonthophagus) bedeli Reit.

Map 7. This species was found at three localities, in the Marrakech and Tamelelt areas. It was found to occur in Sheep and either Cow or Donkey dung (These two collections were not separated).

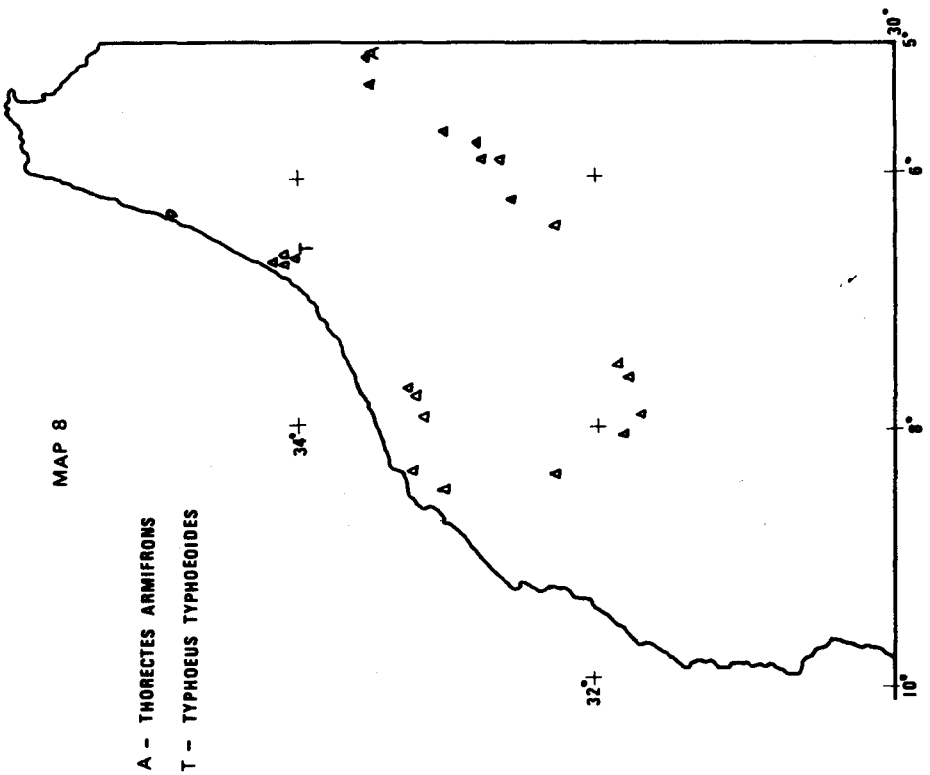
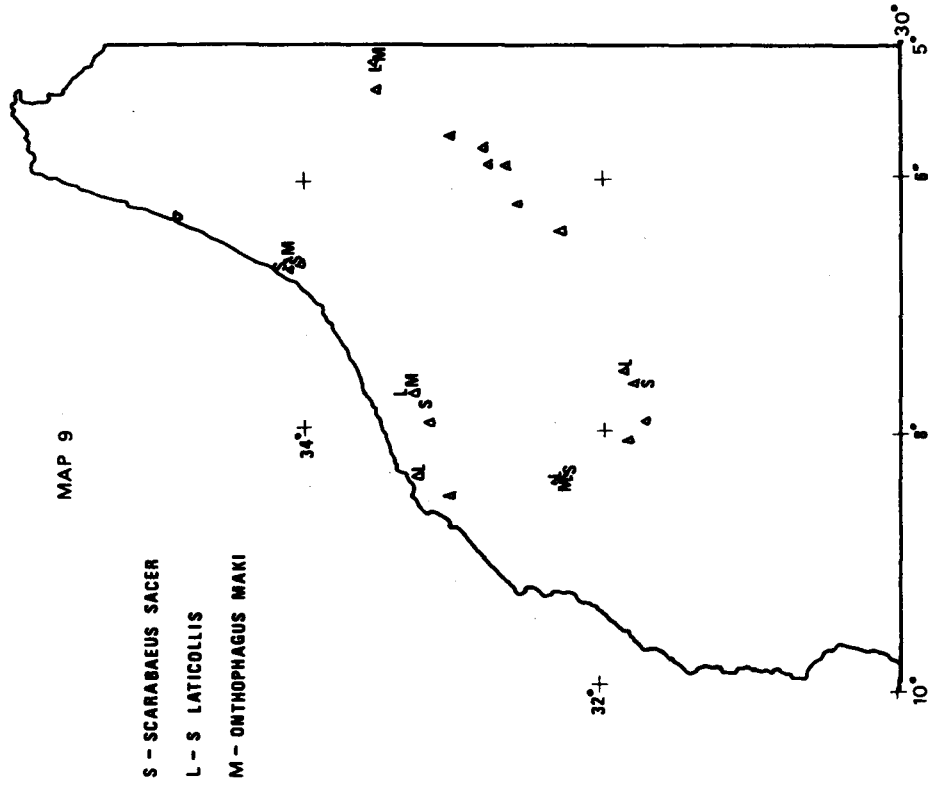
Onthophagus nebulosus Reiche

Map 7. This species was found to occur also in the Marrakech area, but it was collected only from Sheep dung on sandy loamy soils.

GEOTRUPIDAE

Thorectes armifrons Reit.

Map 8. Only at one locality, Ifrane, was this species found. It was observed to be active in the morning (0900 h) before all other species, when the temperature was 20°C. It is a noted high altitude species (KOCHER, 1958), and



it was seen taking dung pellets underground.

Typhoeus typhoeoides Fairm.

Map 8. Reported as being very common between Tanger and Rabat (KOCHER, 1958), it was found at the latter locality in moist Sandy loam soil in Sheep dung.

This species was only found at this one locality, at the edge of a small wood.

All the dung beetles collected belong to two broad groups; those which cut out balls of dung and roll them some distance from the dung pad before burying and utilising them e.g. *Scarabaeini*, *Gymnopleurini* and *Sisyphini*. These beetles are known as Telecoprids (BORNEMISSZA, 1974).

The other groups are those which take the dung from the pad directly beneath or very close to the pad, e.g. *Coprini*, *Onthophagini* and *Geotrupidae*. These beetles are known as Paracoprids (BORNEMISSZA, 1974).

It became apparent during this survey that there was little dung specificity shown by the dung beetles collected; all species with only a few exceptions were found in all available dung types.

ACKNOWLEDGEMENTS

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