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Nota Científica

FIRST REPORT ON THE DISTRIBUTION OF *DIGITONTHOPHAGUS GAZELLA* (FABRICIUS, 1787) (COLEOPTERA: SCARABAEIDAE) IN BOLIVIA

RESUMEN: Se reporta por primera vez la presencia de *Digitonthophagus gazella* en Bolivia, enlistando las localidades donde se han colectado especímenes de esta especie. Se discuten algunas hipótesis de su posible llegada a este territorio y sobre el posible patrón de dispersión.

Digitonthophagus gazella (Fabricius, 1787) (Scarabaeidae: Onthophagini) is a dung beetle of Indoafrican origin that was intentionally introduced in continental America in the state of Texas (USA) in 1970 (Blume & Aga 1978 *Folia Entomológica Mexicana* 39-40: 190-191; Fincher, Stewart & Hunter 1983 *The Coleopterists Bulletin* 37: 159-163) to help the local coprophagic beetle fauna in the removal of bovine excrement.

It has been also officially introduced in Brasil by the early 80's (Nascimento, Blanchin & Honer 1990 EMBRAPA Comunicado Técnico No. 33), in continental Chile and Easter Island (Ripa, Rojas & Velasco 1995 *Entomophaga* 40(3/4):427-440) and unofficial introduction in Venezuela (Gamez, Mora & Ascencao 1997 Resumen Congreso Venezolano de Entomologia Trujillo p. 51). Besides from these official introductions, during the following years, the species has increased its distribution range due to either unofficial introductions or range expansion, colonizing countries in Meso, Central and South America and is now reported in Mexico, Guatemala, Nicaragua, Cuba, Dominican Republic, the French Antilles, Colombia and Paraguay (Miranda, do Nacimiento & Bianchin 1990 EMBRAPA-Gado de Corte, Pes. And. 42:1-5; Rivera-Cervantes & García-R 1991 *The Coleopterists Bulletin* 45(4):370; Barbero & Lopez-Guerrero 1992 *Tropical Zoology* 5:115-120; Huchet 1992 L'Entomologiste 48(6):297-303; Kohlmann 1994 *Acta Zoológica Mexicana* 61:35-42; Lobo & Montes de Oca 1997 *Acta Zoológica Mexicana* 71:17-32; Maes, Ratcliffe & Jameson 1997 *Revista Nicaragüense Entomológica* 39:41-45; Bianchin, Alves & Koller 1998 *An. Soc. Entomol. Brasil* 27:275-279; Montes De Oca & Halffter 1998 *Studies on Neotropical Fauna and Environment* 33(1):37-45; Ruiz 2000 *Tese de Mestrado em Entomologia* 80 pp; Noriega 2002 *Caldasia* 24(1):213-215; Noriega, Solís, Quintero, Pérez, García & Ospino 2006 *Caldasia* 28(2):379-381).

The first collecting event of *D. gazella* known to us in Bolivia occurred in the department of Santa Cruz, within the urban perimeter of Santa Cruz de la Sierra city, on July of 1990, at 445 m. Later biological studies using different types of bait have collected additional specimens in other Bolivian provinces, which have been deposited in the Entomological Collection of the Noel Kempff Mercado Museum (MNKM), Santa Cruz, Bolivia (Fig. 1).

Examined specimens: Bolivia. SANTA CRUZ. **Andrés Ibáñez**: 1♀, Urban perimeter Santa Cruz (17º47'01''S - 63º10'00''W), 450 m, jul 1990, (MNKM). 1♀ and 2♂, Vallecito (17º41'32''S - 63º08'39''W), 460 m, mar 2002, (MNKM). 1♀,

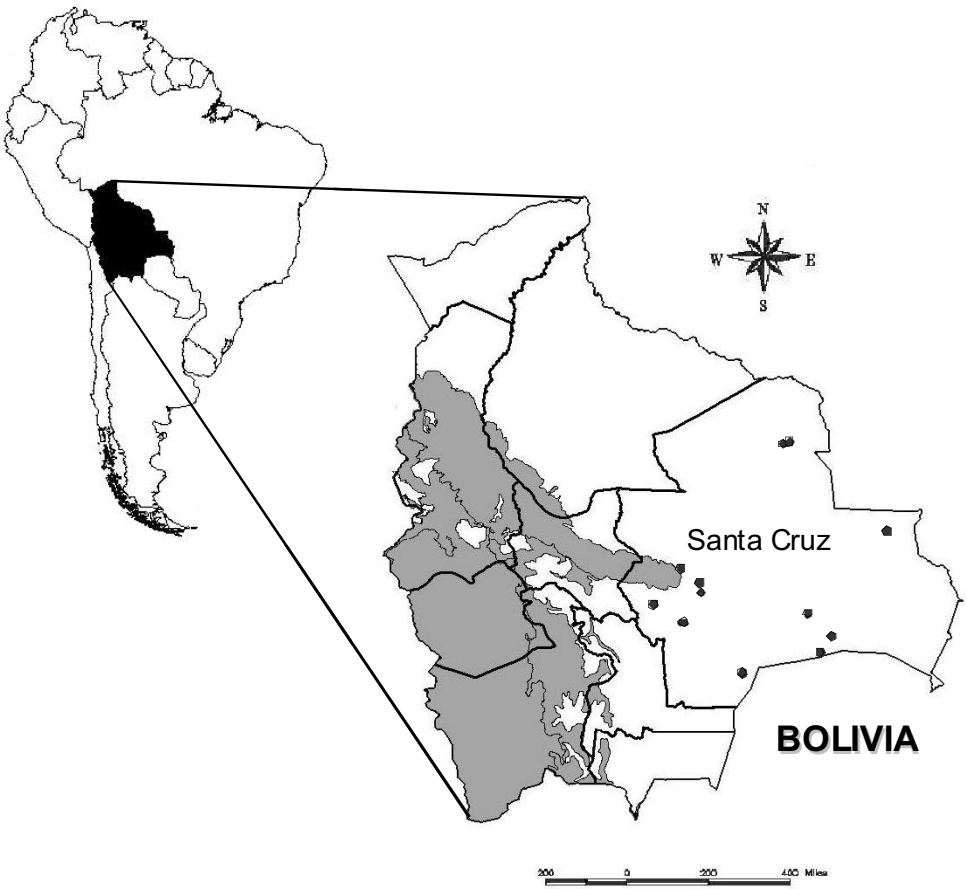

Figure 1. Localities (●) where the presence of *D. gazella* has been registered in Bolivia. In gray showing Andes mountainous system.

Vallecito (17º41'32''S - 63º08'39''W), jun 2002, L. Céspedes, *leg*, (MNKM). **Ángel Sandoval**: 3♀, San Fernando (17º15'36"S - 58º38'17"W), may 1997, C. Jordan, *leg*, (MNKM). **Chiquitos**: 1♀ and 2♂, Santa Adriana (19º03'07"S - 60º17'57"W), april 2001, J. Aramayo, *leg*, (MNKM). 1♀ and 3♂, Santa Elena (16º41'13"S - 59º00 59"W), apr 1999, J. Aramayo, *leg*, (MNKM). **Cordillera**: 1♀ y 4♂, Misiones (19º54'06"S - 62º12'01"W), aug 2000, J. Ledezma, *leg*, (MNKM). 1♀ and 1♂, Parabanó (18º25'25"S - 63º30'12"W), 1100m, nov 2004, J. Aramayo, *leg*, (MNKM). 2♀, Parabanó (18º25'00"S - 63º29'10"W), may 2004, T. Vidaurre, *leg*, (MNKM).

5 ♀ and 9 ♂, Palmar de las Islas (19º25'00"S - 60º32'10"W), feb 2007, T. Vidaurre, *leg*, (MNKM). **Florida**: 1 ♀ , Pampagrande (18º05'32''S - 63º 06'19''W), 1300 m, aug 1994, A. Langer, *leg*, (MNKM). **Ichilo**: 3 ♀ , Zurutu (17º32'00"S - 63º40'00"W), 400 m, feb 1991, J. Aramayo, *leg*, (MNKM). **Velasco**: 2 ♀ and 5 ♂, 1 ♀ and 1 ♂, San Rafael (14º50'13"S – 61º58'47"W), nov 2000, T. Gutierrez, *leg*, (MNKM). 3 ♀ and 5 ♂, Caparu (14º48'00"S - 61º10'00"W), 180 m, apr 2007, A. Alcoba, *leg*, (MNKM). 9 ♀ and 16 ♂, Caparu (14º47'00"S - 61º10'00"W), 180 m, dec 2005, C. Hamel, *leg*, (MNKM).

This work is the first one to report *D. gazella* in Bolivia. We also confirm the presence of this species in the Paraguayan territory (Ruiz 2000 *Tese de Mestrado em Entomologia* 80 pp.), since the first author collected 14 individuals in a cattle ranching area (Palmar de las Islas) limiting with Paraguay (Fig. 1). It also possible that *D. gazella* is could be present in northern regions of Argentina.

Apparently this species is colonizing cattle-disturbed habitats and open savannas with scattered forest remnants. Up to the present, these samples had came from sites below 1500 m, and it is possible that the altitudinal amplitude (above 2000 m) could be a limiting factor for this species in Bolivia, presenting biogeographical barriers such as the high altiplanos cordillera. The remaining ecoregions will probably be gradually colonized if not already, despite the existence of some biogeographical barriers like the dry inter-Andean valleys and pre-puna.

How *D. gazella* appeared in Bolivian territory is still uncertain and two possible hypotheses are presented: 1) their arrival could have been accidentally caused by the exchange of livestock between Brazil and Paraguay to Bolivia, specially by the presence of dung inside cattle trucks; and 2) its arrival could be another example of their high power of dispersion from cattle ranching areas adjacent to Bolivia, especially from Paraguay and Brazil. It is difficult to believe that these populations might had arrive from continental Chile, since *D. gazella* does not prosper in this country (Ripa, Rojas & Velasco 1995 Entomophaga 40(3/4):427-440).

The presence of this species in the Bolivian territory could affect some native species, due to interspecific competition for habitats and resources, occasioned by their easy adaptation to open fields. A further ecological study related to the possible effects on some native species is recommended. Regarding its distribution and ongoing colonization of new geographic area, a review is proposed to elucidate these and other issues in the Neotropical region.

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