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Short communication

First record of *Rattus rattus* in Botswana

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The murid rodents *Rattus rattus* (Linnaeus, 1758) and *Rattus norvegicus* (Berkenhout, 1769) are widely distributed in Africa (Kingdon 1974; Rosevear 1969; Skinner and Smithers 1990) and indeed boast nearly cosmopolitan distributions (Musser and Carleton 1993). These ubiquitous commensals are usually associated with human habitation. Several authors have noted the absence of these rodents from Botswana (Davis 1946; de Graaff 1981; Skinner and Smithers 1990), which may be the last African nation for which there is no published record of either species' presence.

I spent September to December 1999 in Botswana, devoting some time to trapping and preserving rodents, especially in areas inhabited by people, both urban and rural. Four specimens of *Rattus rattus* were trapped in the eastern sector (Fig. 1). All of them were captured in close association with human habitation: one from under a kitchen stove in Mmathubudukwane (Museum of Comparative Zoology No. 62631), a rural village near the border with South Africa; one in a granary at Francistown (MCZ 62632); and two from a basement in Ramotswa near Gaborone (MCZ 62633–62634).

These specimens of *Rattus rattus* (Tab. 1) most likely represent an invasion into Botswana that occurred within the last thirty years. Smithers (1971) noted that it was not recorded in the country despite 5 years of effort during the 1964–1969 Botswana Mammal Survey. He labeled *Rattus rattus* as a "species not recorded but which may occur," noting that despite the absence of specimens from Botswana, it had been trapped nearby at Kariba Dam in Rhodesia (now Zimbabwe), which lies on a railway line that extends into Botswana. Considering its now long-term presence in neighboring South Africa as well, it is rather surprising that the black rat did not invade Botswana earlier. Other common synanthropic rodents have been similarly slow to colonize the country; *Rattus norvegicus* has not been recorded, and Smithers (1971) listed only a single specimen of *Mus musculus* trapped in Botswana. De Graaff (1981) suggested that the aridity of much of the country precludes invasion by exotic rodent commensals like *Rattus*. Other relevant factors discouraging colonization probably include the extremely low population density of the country, its distance from port cities, and, perhaps, the diversity of native rodents

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Table 1. Specimens of *Rattus rattus* collected in Botswana. Measurements are given in millimeters as Total Length – Tail Length – Hindfoot Length – Ear Length.

MCZ No.	Age	Sex	Measurements	Locality	Date collected
62631	adult	M	410–220–35–18	Mmathubudukwane	28 September 1999
62632	adult	F	381–209–35–25	Francistown	6 December 1999
62633	adult	F	383–207–36–25	Ramotswa	15 December 1999
62634	juvenile	M		Ramotswa	15 December 1999

Fig. 1. Localities described in the text; 1, Jao, a small village in the Okavango Delta; 2, vicinity of Toromoja and Xhumo; 3, Francistown, 4, Mmathubudukwane and 5, Ramotswa, sites where *Rattus rattus* has been recorded.

acting as human commensals. Most areas of the country seem to remain free of *Rattus rattus*; at one such locality, a remote village in the Okavango Delta named Jao, I trapped four native rodents – *Aethomys chrysophilus* (de Winton, 1897), *Mastomys coucha* (Smith, 1834), *Saccostomus campestris* Peters, 1846, and *Graphiurus murinus* (Desmarest, 1822), living in or entering huts and outbuildings. The most common rodent in Botswana is the multimammate mouse *Mastomys coucha*, which was caught in both wild and settled areas in the Okavango Delta, the northern Kalahari region, and the eastern sector (from Francistown to the Gaborone area).

Rattus rattus has not been recorded from any areas but the thickly settled eastern sector, and is probably unlikely to invade the Okavango Delta or the more sparsely settled and arid Kalahari region of Bostwana's interior. Despite reports of *Rattus rattus* from the Boteti District that were made by rodent surveyors following the bubonic plague epidemic in Xhumo and Toromoja in 1989–90 (Mokgweetsinyana pers. comm.),

there is no evidence of its existence there. No voucher specimens were preserved, but I have examined survey records at the headquarters of the Ministry of Health in Francistown, and the recorded measurements clearly demonstrate that the animals were not *Rattus* but misidentified *Mastomys*. *Rattus* was thus almost certainly not involved in this epidemic, which as Davis (1946) noted for a previous epidemic in the region, was a case of sylvatic plague, implicating native *Tatera* as a permanent reservoir and *Mastomys*, which travels between *Tatera* colonies and human dwellings, as a vector for transmission of plague fleas.

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