Barn owl pellets collected in coastal savannas yield two additional species of small mammals for French Guiana

Antoine Baglan, Francois Catzefflis

► To cite this version:

Antoine Baglan, Francois Catzefflis. Barn owl pellets collected in coastal savannas yield two additional species of small mammals for French Guiana. *Mammalia*, 2016, 80 (1), 10.1515/mammalia-2014-0120 . hal-01836192

HAL Id: hal-01836192

<https://hal.umontpellier.fr/hal-01836192>

Submitted on 12 Jul 2018

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Accepted for publication 22-october-2014

Short Note for MAMMALIA

Manuscript ID: Mammalia.2014.0120-R1

Barn owl pellets collected in coastal savannas yield two additional species of small mammals for French Guiana.

Antoine Baglan ^a, François Catzefflis ^{b,*}

*** Corresponding author: François Catzefflis**, Université de Montpellier-2, Institut des Sciences de l'Evolution, Case Courrier 064, Place Eugène Bataillon, 34095 Montpellier cedex 05, France, e-mail : francois.catzefflis@univ-montp2.fr
Tel.: +33 672 675 412

Antoine Baglan: SEPANGUY, Maison de la nature de Sinnamary, RN1 PK125, 97315 Sinnamary, Guyane française.

RUNNING TITLE:

Small non-volant mammals in French Guianan savannas

ARTICLE INFO

Received 26 august 2014; Accepted 22 october 2014; Available online XXX

Abstract:

A sample of 251 pellets regurgitated by the Barn owl in an old building located in Sinnamary (French Guiana) provided a rare opportunity to get a preliminary inventory of small rodents and opossums living in grassy savannas along the coastal non-forested landscapes of this Guianan region.

From a total of 329 specimens of vertebrate remains, we focused on 259 small rodents and opossums which could be positively identified. Two species previously unknown in French Guiana were evidenced: a very small opossum of the genus *Cryptonanus* and the medium-sized terrestrial rodent *Sigmodon alstoni*. Whereas *Cryptonanus* was an unexpected finding so far away from its Amazonian distribution area, the presence of *Sigmodon* in French Guiana fills a gap between Suriname and Brazilian Amapa where this species is typical of grassy savannas.

The species of small mammals most commonly preyed upon by the Barn owls of Sinnamary was a large semi-aquatic rodent, *Holochilus sciureus*, followed in decreasing order by two sigmodontines typical of non-forested ecosystems: *Oligoryzomys fulvescens* and *Zygodontomys brevicauda*.

Keywords:

Cryptonanus; *Holochilus sciureus*, *Sigmodon alstoni*; Coastal savannas; Amazonia

50 TEXT

51 The analysis of owl pellets contents is a useful tool for providing an inventory of small
52 mammal communities especially in open habitats such as agricultural landscapes or in
53 cerrado-like biotopes (caatinga, savannas, llanos, grassy marshes, ...) in the Neotropics
54 (Rocha et al. 2011; Scheibler and Christoff 2007). The Barn owl (*Tyto alba* (Scopoli, 1769))
55 is a specialized predator and most of its preys are small non-volant mammals weighting from
56 15 to 250 grams. Several recent investigations of Barn owl pellets in Brazil and elsewhere in
57 South America have evidenced the presence of some species of small rodents and opossums
58 which otherwise were very rarely caught by standard trapping methods using live- or snap-
59 traps.

60 For example, Souza et al. (2010) found two rare dwarf opossums (*Gracilinanus agilis*
61 Burmeister, 1854; *Cryptonanus agricolai* (Moojen, 1943)) among 162 pellets collected in the
62 Northeastern Atlantic Forest realm, and those records were new for the coastal region of
63 Pernambuco state. Similarly, Bonvicino and Bezerra (2003) found three rare species (2 small
64 opossums, 1 cerrado mouse) in Barn owl pellets which could not be collected with traps,
65 suggesting that trapping “was either inefficient or was not performed near their specific
66 microhabitats”.

67

68 This study reports on Barn owl pellets which were collected in an old water-tower in
69 downtown Sinnamary, French Guiana (05°23' N; 52°57'W) in march 2011 (120 pellets) and
70 in september 2013 (131 pellets). Sinnamary is a small city (3100 inhabitants in 2013) at ca.
71 100 km north-west from Cayenne; it is located within the coastal northern strip of the country,
72 where non-forested areas, such as agricultural lands, grass and bush savannas, small thickets
73 of trees, grassy swamps and marshes, predominate. The nearest large area of well-drained
74 tropical rainforest starts at 3-4 km south-west from the village, and extends for dozens of km
75 towards the south (the forest locality of Paracou studied by Voss et al. (2001) is only 12 km
76 from the Barn owl breeding site of Sinnamary). Within a radius of 3 km from the Barn owl's

nest, swamp areas and pastures with draining canals constitute most of the area to the north-east, whereas grass and bush savannas intermingled with small thickets dominate to the south-east. The western sides of the water-tower are a mixture of highly degraded secondary forests and of agricultural openings for pastures and various abandoned crops.

The 251 pellets were individually examined for their bony content and a total of 329 vertebrate specimens were isolated. Besides birds (46 individuals), bats (3 skulls of Molossidae) and unidentified murids (21 individuals), the pellets yielded 259 small rodents and opossums which could be identified to species level in most cases. For securing the identification, we relied on comparisons with cleaned skulls of reference specimens (vouchers deposited at Paris MNHN and Geneva MHNG museums) and descriptions and drawings found in Husson (1978), Voss et al. (2001), and Voss and Jansa (2009). All skull and mandibles materials from the owl's pellets have been kept and are available for examination upon writing to the senior author. The following craniodental variables were used and are illustrated and/or defined in Voss et al. (2001) and in Carleton and Musser (1989): BR = Breadth of Rostrum; BZP = Breadth of Zygomatic Plate; LBP = Length of Bony Palate; LIB = Least Interorbital Breadth; LIF = Length of Incisive Foramen; M^1 , M^1M^2 , M^1M^3 : lengths of upper molars; ZB = Zygomatic Breadth.

Craniodental measurements were taken with digital callipers and recorded to the nearest 0.01 mm, but values reported herein are rounded to the nearest 0.1 mm. Univariate statistical tests for comparing measurements between groups included Mann–Whitney nonparametric test, as implemented by the software PAleontological STatistics (PAST: Hammer et al. 2011).

The following taxa were found in the pellets collected at Sinnamary:

- *Cryptonanus* sp Voss et al. 2005: 10 individuals of that very tiny opossum bring an additional taxon to the mammalian fauna of French Guiana. The identification of these remains (mandibles were almost complete, whereas skulls were highly damaged and resumed

to the maxillary, palatine and jugal bones) was kindly established by Robert S. Voss (AMNH, New York).

The upper molars measurements for 7 adult (all 4 upper molars definitive and erupted) individuals are (mean, minimum, maximum) : M^1 1.5 (1.3 to 1.5); M^1M^2 2.8 (2.8 to 3.0); M^1M^3 4.2 (4.1 to 4.4); M^1M^4 4.8 (4.6 to 4.8); width of M^4 (measured as in Voss and Jansa 2009) 1.9 (1.7 to 2.0).

The Sinnamary specimens of *Cryptonanus* appear smaller than *C. agricolai*, as judged by comparing M^1M^3 and M^1M^4 lengths values detailed in Voss et al. (2005: Table 5).

We refrain from naming to species level our pellets-derived materials of *Cryptonanus* sp., pending future analysis on complete vouchered animals that has been recently acquired (two adults weighing 14.5 and 15.5 g: unpublished data).

- *Marmosa murina* (Linnaeus, 1758): 7 individuals, whose upper molars measurements are as follows: M^1M^2 3.7 (3.5 to 4.0); M^1M^3 5.6 (5.1 to 6.0); M^1M^4 6.6 (6.3 to 7.1). Adult *M. murina* weigh ca 41 g (average of 39 individuals caught in French Guiana – unpublished materials).

- *Philander opossum* (Linnaeus, 1758): 1 juvenile (only 1. and 2. upper molars erupted) : $M^1 = 3.8$; $M^1M^2 = 7.8$; *P. opossum* weighs ca. 220 g at that age (unpublished data).

- *Holochilus sciureus* Wagner, 1842: this large (adult animals of Guyana average 157 g: Twigg 1965) sigmodontine rodent was the most frequent prey of *Tyto alba* at Sinnamary, with 106 individuals (41 % of all 259 rodents and opossums), most of them being adults (as defined by having three fully erupted molars). The recognition of skull remains of *Holochilus sciureus* from similar-sized *Nectomys rattus* (Pelzeln, 1883) is straightforward if molars are still present, as their dental pattern is quite different (see page “A Sampler of Sigmodontine molars” in Myers et al. 2014). When upper molars are lacking (as was the case in 12 skulls), the recognition of *Holochilus* from *Nectomys* can be easily reached by measuring the Least

Interorbital Breadth (LIB), as already shown by Husson (1978) for Surinamese animals. In French Guiana, *Holochilus sciureus* have LIB values smaller than 5.4 mm whereas *Nectomys rattus* skulls are larger than 6.1 mm for that measurement (Table 1).

- *Nectomys rattus*: this large (average weight of 177 g for 23 adults in French Guiana: Catzefflis 2012) terrestrial rodent was represented by 26 individuals (10 %) and was ranked second after *Holochilus* when biomass was considered. See above for *Holochilus* concerning the identification of *Nectomys*.

- *Oligoryzomys fulvescens* (Saussure, 1860) was ranked second for its occurrence (59 individuals, or 23 %) but its contribution to the diet of *Tyto alba* was less than 4% of the total biomass, as this terrestrial oryzomyine weighs ca 17 g (average for 7 adults caught in French Guiana). The identification of this taxon was based upon dental and skull characters described and illustrated in Carleton and Musser (1989). We also compared the values of some selected craniodental measurements (Table 2) in Sinnamary pellets with those measured in vouchered specimens from French Guiana (housed at MNHN and MHNG museums).

- *Sigmodon alstoni* (Thomas, 1881): two individuals of this terrestrial sigmodontine bring an additional taxon to the mammalian fauna of French Guiana. The identification of this medium-sized (average weight is 61.5 g in Venezuela: Vivas 1986) species is straightforward due to its peculiar upper incisors which are broad and deeply grooved. Voss (1992) provides an excellent description together with detailed figures for the different species of *Sigmodon*, of which *S. alstoni* is the one already known in Suriname and Brazilian Amapá.

The following craniodental measurements characterize the 2 *S. alstoni* from Sinnamary owl's pellets: LIB 5.0 & 5.2; M¹M² 4.1 & 3.9; M¹M³ 6.0 & 5.5; ZB 18.9 & 17.8.

- *Zygodontomys brevicauda* (J.A. Allen and Chapman, 1893): 38 individuals of this terrestrial sigmodontine were identified by comparison with reference materials of French Guianan vouchers, together with the descriptions and drawings available in Voss (1991).

Zygodontomys weigh ca 58 g (average for 52 adult specimens caught in French Guiana), therefore this species ranked third by its biomass in the diet of *Tyto alba* at Sinnamary. The following craniodental measurements are derived from 22 skull-remains : LIB 4.9 ± 0.3 (4.4 to 5.4) ; LIF 6.4 ± 0.6 (4.7 to 7.1); M^1M^2 3.3 ± 0.1 (3.0 to 3.5); M^1M^3 4.2 ± 0.1 (4.0 to 4.4);

- *Mus musculus* Linnaeus, 1758: one single damaged skull was identified through the unique murine pattern of the upper molars, and had the following measures: LIB 3.4; M^1M^2 2.7; M^1M^3 3.2; LIF 5.0. *Mus musculus* caught in French Guiana have an average weight of 14.0 g (average for 23 adults: unpublished data).

- *Rattus norvegicus* (Berkenhout, 1769): 6 individuals were identified through qualitative craniodental characters, and selected measurements confirmed their belonging to *R. norvegicus* (see pp. 382-420 in Niethammer and Krapp 1978). Average (N from 4 to 6 individuals) and range of values for Sinnamary's materials are: LIB 6.5 (6.2 to 7.2); M^1M^2 5.4 (5.3 to 5.5); M^1M^3 7.1 (7.0 to 7.2); BZP 4.5 (4.0 to 4.9). We assume that those *R. norvegicus* were not full grown adults whose weight is too large for *Tyto alba* (Husson (1978) gives ca. 420 g for the average of 5 adult *R. norvegicus* from Suriname).

- *Rattus rattus* (Linnaeus, 1758): 2 individuals were identified by comparison with voucher specimens from French Guiana and by examining the characters currently in use for recognizing *R. rattus* from *R. norvegicus* in owl pellets (Corbet and Harris 1991; Niethammer and Krapp 1978). In French Guiana, *R. rattus* weighs ca. 120 g (average of 35 adult animals: 121 ± 33 g – unpublished data).

- *Proechimys guyannensis* (E. Geoffroy, 1803) : one single damaged skull was identified through its typical dental pattern and by comparison with voucher materials. This was an adult with all molars erupted, corresponding to a weight of ca. 190 g (Catzefflis and Steiner 2000).

Two taxa are new for French Guiana (Catzefflis 2010; Lim 2012): *Cryptonanus* sp. and *Sigmodon alstoni*. Before the recent discovery of *Cryptonanus* in Brazilian Amapa (da Silva et al. 2013), the nearest locality for that diminutive opossum was Crato (07°14'S; 39°23'W) in Brazilian Ceara state for the species *C. agricolai* (Voss et al. 2005), that is ca. 2000 km south-east from Sinnamary. Da Silva et al. (2013) mention the capture of one specimen of *Cryptonanus* sp. in a grassy savanna landscape from south-east Amapa, in a locality along Highway BR-156 (0°05' S; 51°10' W) near the Maraca River, that is still a distance of ca. 650 km south-east from Sinnamary. In September 2013 two adult *Cryptonanus* were caught in pitfalls at Sinnamary (unpublished data of F. Catzefflis and B. de Thoisy), and those preserved animals are under study for their identification to species level.

The discovery of *Sigmodon alstoni* in the pellets of the Barn owl from Sinnamary should be no surprise, as the presence in French Guiana of this savanna dweller was suspected by Voss (1992) who wrote that “*alstoni* should occur in the coastal savannas there “ because at that time *S. alstoni* was known from Suriname (Husson 1978; Williams et al. 1983) and Brazilian Amapa (Carvalho 1962). This species was also recently caught in southern Amapa, in grassy savannas near Ferreira Gomes (da Silva et al. 2013). *Sigmodon alstoni* is apparently not common around Sinnamary, as only two skulls were found (less than 1% of all 259 identified small mammals), whereas the similar-sized *Zygodontomys* accounts for 15 % of the preys.

At Sinnamary, Barn owls have a large range of prey sizes, from the tiny species around 15 g (*Cryptonanus* sp.; *Mus musculus*; *Oligoryzomys fulvescens*) to the larger taxa around 250 g (juvenile of *Philander opossum*; *Proechimys cayennensis*; subadults of *Rattus norvegicus*). Four species comprise 88% of all preys and 90% of the eaten biomass: by decreasing frequency those are *Holochilus* (157 g on average), *Oligoryzomys* (17 g), *Zygodontomys* (58 g), and *Nectomys* (177 g) (Table 3). Clearly, the “food value” (the energy) derived from an *Holochilus* is much higher than the one provided by an *Oligoryzomys*, and it is apparently more profitable for owls to select larger prey. With 106 individuals or 41% of all 259 prey items, *Holochilus sciureus* was apparently very common in the hunting area of the Barn owls, and it has been shown elsewhere in the Guianan Region that this rodent species might fluctuate in numbers up to high densities (Twigg, 1965). At Sinnamary, where grassy marshes and savannas are the most abundant places within a 3 to 4 km radius from downtown (unpublished data based on the examination of aerial pictures), the Barn owls secure 78 % of their consumed biomass of non-volant mammals through two species of “large” sigmodontines: *Holochilus sciureus* and *Nectomys rattus* (Table 3). But the selection of larger prey-species is not the rule everywhere, as shown by Scheibler and Christoff (2004) in agro-ecosystems of southern Brazil where *Tyto alba* preyed mostly (82% of 3618 vertebrates) upon *Mus musculus*, despite the fact that much larger rodents (*Akodon*; *Necromys*) were common in their study area.

Most authors who have compared inventories of small mammals through pellets analysis and through conventional trapping have concluded that those methods were complementary (Bonvicino and Bezerra 2003; Magrini and Facure 2008; Rocha et al. 2011; Scheibler and Christoff 2007). Thus our results can not be taken as an inventory of the non-volant small mammals living in the grassy savannas, marshes and shrublands around Sinnamary. Future research in these areas there should use conventional trapping as well as pitfalls for improving

235 our knowledge of rodents and opossums living in the non-forested coastal landscapes of
236 French Guiana.

237

238

239

240 Acknowledgements: we thank Elisabeth Cabirou for her technical skills at sorting skulls and
241 bones remains from the Sinnamary owl pellets. Our colleague and friend Robert S. Voss
242 (AMNH, New York) was kind enough to examine and identify the skull remains of
243 *Cryptonanus* sp. AB thanks the SEPANGUY association for allowing him to work on this
244 project. We thank the environmental services of the municipality of Sinnamary for access to
245 the water-tower building. That research was funded by institutional support of the French
246 CNRS and of the University Montpellier-2.

247

248 References

249

- 250 Bonvicino, C. R., and A. M. Bezerra. 2003. Use of regurgitated pellets of barn owl (*Tyto*
251 *alba*) for inventorying small mammals in the cerrado of central Brazil. *Stud. Neotrop.*
252 *Fauna Envir.* 38: 1-5.
- 253 Carleton, M. D., and G. G. Musser. 1989. Systematic studies of oryzomyine rodents
254 (Muridae, Sigmodontinae): A synopsis of *Microryzomys*. *Bull. Amer. Mus. Nat. Hist.*
255 191: 1-83.
- 256 Catzefflis, F. 2010. Liste des Mammifères de Guyane française. *Arvicola* 19: 39-44.
- 257 Catzefflis, F. 2012. A survey of small non-volant mammals inhabiting Wayampi Amerindian
258 houses in French Guiana. *Mammalia* 76: 327-330.
- 259 Catzefflis, F., and C. Steiner. 2000. Nouvelles données sur la morphologie comparée et la
260 distribution des rats épineux *Proechimys cuvieri* et *P. cayennensis* (Echimyidae:
261 Mammalia) en Guyane française. *Mammalia* 64: 209-220.
- 262 Corbet, G. B., and S. Harris. 1991. *The Handbook of British Mammals*. Blackwell Scientific
263 Publications, Oxford, UK.
- 264 da Silva, C. R., A. C. Moreira Martins, I. J. de Castro, E. Bernard, E. Matos Cardoso, D. Do
265 Santos Lima, R. Gregorin, R. V. Rossi, A. R. Percequillo, and K. d. C. Castro. 2013.
266 Mammals of Amapa state, eastern Brazilian Amazonia: a revised taxonomic list with
267 comments on species distributions. *Mammalia* 77: 409-424.
- 268 de Carvalho, C. T. 1962. Lista preliminar dos mamiferos do Amapa. *Pap. Avul. Dept. Zool.*
269 *Secr. Agric. Sao Paulo* 15: 283-297.
- 270 Hammer, Ø., D. A. T. Harper, and P. D. Ryan. 2011. PAST: Paleontological Statistics
271 Software Package for Education and Data Analysis. *Palaeontologia Electronica* 4: 1-9.
- 272 Husson, A. M. 1978. *The mammals of Suriname*. E. J. Brill, Leiden.
- 273 Lim, B. K. 2012. Biogeography of Mammals from the Guianas of South America. Pp. 230-
274 258 in B. D. Patterson and L. P. Costa, eds. *Bones, Clones, and Biomes: The History*

275 and Geography of Recent Neotropical Mammals. . University of Chicago Press,
 276 Chicago, Illinois, USA.

277 Magrini, L., and K. G. Facure. 2008. Barn owl (*Tyto alba*) predation on small mammals and
 278 its role in the control of hantavirus natural reservoirs in a periurban area in
 279 southeastern Brazil. *Brazil. J. Biol.* 68: 733-740.

280 Myers, P., R. Espinosa, C. S. Parr, T. Jones, G. S. Hammond, and T. A. Dewey. 2014. The
 281 Animal Diversity Web (online),
 282 http://animaldiversity.ummz.umich.edu/collections/mammal_anatomy/sigmodontine_t
 283 eeth/. Accessed 13 may, 2014

284 Niethammer, J., and F. Krapp. 1978. *Handbuch der Säugetiere Europas*. Akademische
 285 Verlagsgesellschaft, Wiesbaden, Germany.

286 Rocha, R. G., E. Ferreira, Y. L. R. Leite, C. Fonseca, and L. P. Costa. 2011. Small mammals
 287 in the diet of barn owls, *Tyto alba* (Aves: Strigiformes) along the mid-Araguaia river
 288 in central Brazil. *Zoologia (Curitiba)* 28: 709-716.

289 Scheibler, D. R., and A. U. Christoff. 2004. Small mammals in the diet of barn owls (*Tyto*
 290 *alba*) in agroecosystems of southern Brazil. *Ornitol. Neotrop.* 15: 65-70.

291 Scheibler, D. R., and A. U. Christoff. 2007. Habitat associations of small mammals in
 292 southern Brazil and use of regurgitated pellets of birds of prey for inventorying a local
 293 fauna. *Brazil. J. Biol.* 67: 619-625.

294 Souza, D. P., P. H. Asfora, T. C. Lira, and D. Astua. 2010. Small mammals in Barn Owl (*Tyto*
 295 *alba* - Aves, Strigiformes) pellets from Northeastern Brazil, with new records of
 296 *Gracilinanus* and *Cryptonanus* (Didelphimorphia, Didelphidae). *Mammalian Biol.* 75:
 297 370-374.

298 Twigg, G. I. 1965. Studies on *Holochilus sciureus berbicensis*, a cricetine rodent from the
 299 coastal region of British Guiana. *Proc. Zool. Soc. London* 145: 263-283.

300 Vivas, A. M. 1986. Population biology of *Sigmodon alstoni* (Rodentia: Cricetidae) in the
 301 Venezuelan Llanos. *Rev. Chilena Hist. Nat.* 59: 179-191.

302 Voss, R. S. 1991. An introduction to the Neotropical muroid rodent genus *Zygodontomys*.
303 Bull. Amer. Mus. Nat. Hist. 210: 1-113.

304 Voss, R. S. 1992. A revision of the South American species of *Sigmodon* (Mammalia:
305 Muridae) with notes on their natural history and biogeography. Am. Mus. Novit. 3050:
306 1-56.

307 Voss, R. S., and S. A. Jansa. 2009. Phylogenetic relationships and classification of didelphid
308 marsupials, an extant radiation of New World metatherian mammals. Bull. Amer.
309 Mus. Nat. Hist. 322: 1-177.

310 Voss, R. S., D. P. Lunde, and S. A. Jansa. 2005. On the contents of *Gracilinanus* Gardner and
311 Creighton, 1989, with the description of a previously unrecognized clade of small
312 didelphid marsupials. Amer. Mus. Novit. 3482: 1-34.

313 Voss, R. S., D. P. Lunde, and N. B. Simmons. 2001. The mammals of Paracou, French
314 Guiana: A Neotropical lowland rainforest fauna. Part 2: Nonvolant species. Bull.
315 Amer. Mus. Nat. Hist. 263: 1-236.

316 Williams, S. L., H. H. Genoways, and J. A. Groen. 1983. Results of the Alcoa Foundation -
317 Suriname expeditions. VII. Records of mammals from central and southern Suriname.
318 Ann. Carnegie Mus. 52: 329-336.

319

320

321

Tables

Table 1: Measurements (mm) of four craniodental variables in adult *Holochilus sciureus* and *Nectomys rattus*

	<i>Holochilus sciureus</i>	<i>P-value</i>	<i>Nectomys rattus</i>
LIB	4.8 $\pm$ 0.3 (4.0-5.4) 91	< 0.001	6.7 $\pm$ 0.4 (6.1-7.7) 25
M ¹	3.0 $\pm$ 0.1 (2.6-3.3) 90	NS	3.0 $\pm$ 0.1 (2.8-3.2) 10
M ¹ M ²	4.9 $\pm$ 0.2 (4.4-5.3) 92	NS	4.9 $\pm$ 0.2 (4.5-5.3) 11
ZB	20.1 $\pm$ 1.3 (17.9-22.8) 39	NS	21.0 $\pm$ 2.1 (17.1-24.1) 8

Summary statistics include the sample mean $\pm$ one standard deviation, the observed range (in parentheses), and the sample size. P-values for Mann-Whitney tests.

Abbreviations: LIB = Least Interorbital Breadth; M¹, M²: lengths of upper molars; ZB = Zygomatic Breadth; NS = non significant at p = 0.05 level

333

334 Table 2: Measurements (mm) of four craniodental variables in *Oligoryzomys fulvescens* skulls
 335 from Sinnamary pellets and in adult voucher specimens from French Guiana.

336

	Sinnamary owl's pellets	P-value	Reference specimens
LIB	3.6 $\pm$ 0.2 (3.3-4.1) 35	NS	3.6 $\pm$ 0.2 (3.3-4.2) 29
M ¹ M ³	3.0 $\pm$ 0.1 (2.7-3.1) 38	NS	3.0 $\pm$ 0.1 (2.8-3.2) 29
BR	4.3 $\pm$ 0.3 (3.9-5.1) 26	NS	4.3 $\pm$ 0.3 (3.8-5.1) 26
LBP	3.9 $\pm$ 0.1 (3.6-4.2) 23	NS	3.8 $\pm$ 0.2 (3.0-4.1) 25

337

338 Summary statistics include the sample mean $\pm$ one standard deviation, the observed range (in
 339 parentheses), and the sample size. P-values for Mann-Whitney tests.

340 Abbreviations: LIB = Least Interorbital Breadth; M¹M³: lengths of upper molars; BR =

341 Breadth of Rostrum; LBP = Length of Bony Palate; NS = non significant at p = 0.05 level

342 Reference specimens examined for *Oligoryzomys fulvescens*: MNHN-1981-183, 1986-174,

343 175, 177, 480, 482, 956 to 959, 962 to 966, 968 to 973, 975; 1998-673; MHNG-1979.04;

344 Catzeflis V-1007, V-1899.

345

346

347 Table 3: Relative contribution of each prey species to energy intake of the Barn owl, as

348 expressed by the product of the sample size by the average weight of an individual. The total

349 weight of all 259 ingested preys is 27'475 g, and energy intake is represented by the weight.

350

	Weight (ref.)	N ind.	% ind.	% energy
<i>Cryptonanus</i> sp.	15 (a)	10	3,9	0,5
<i>Marmosa murina</i>	41 (a)	7	2,7	1,0
<i>Philander opossum</i>	220 (a)	1	0,4	0,8
<i>Holochilus sciureus</i>	157 (b)	106	40,9	60,6
<i>Nectomys rattus</i>	177 (c)	26	10,0	16,7
<i>Oligoryzomys fulvescens</i>	17 (a)	59	22,8	3,7
<i>Sigmodon alstoni</i>	61,5 (d)	2	0,8	0,4
<i>Zygodontomys brevicauda</i>	58 (a)	38	14,7	8,0
<i>Mus musculus</i>	14 (a)	1	0,4	0,1
<i>Rattus norvegicus</i>	300 (a)	6	2,3	6,6
<i>Rattus rattus</i>	120 (a)	2	0,8	0,9
<i>Proechimys cayennensis</i>	190 (e)	1	0,4	0,7

351

352 Abbreviations: (ref.) = reference for the average weight. a = unpublished data from wild-

353 caught animals in French Guiana; b = Twigg (1965); c = Catzefflis (2012); d = Vivas (1986); e

354 = Catzefflis and Steiner (2000).

355