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***Pipistrellus maderensis* (Dobson, 1878)
(Chiroptera: Vespertilionidae), a new addition
to the Azorean fauna (Atlantic Ocean)**

TRUJILLO, D. & C. GONZÁLEZ (2011). *Pipistrellus maderensis* (Dobson, 1878) (Chiroptera: Vespertilionidae), una nueva adición a la fauna de las islas Azores (océano Atlántico). *VIERAEA* 39: 215-218.

So far only three species of bats have been recorded for the Azores: *Nyctalus azoreum*, *Myotis myotis* and *Pipistrellus pipistrellus*. The only endemic species, *N. azoreum*, is distributed over most of the islands of this archipelago. Firstly recorded by Drouët, 1861 (*Éléments de la Faune açoréenne*), who registered the existence of bats which fly during the day. It was called *Pterygistes azoreum* (actually *N. azoreum*) by Thomas, 1901 (*Ann. Mag. Nat. Hist., Ser. 7, 8: 34*) and its specific identity later confirmed by other authors (Palmeirim, 1991 [*Mammalia* 55: 381-388]; Salgueiro *et al.*, 2004 [*Mol. Ecol.* 13: 3357-3366]; Salgueiro *et al.*, 2007 [*Genetica* 130: 169-181]). Palmeirim, 1979 (*Arq. Mus. Boc.* 7: 1-2) mentioned subfossil bone remains of *Myotis myotis* from at least three specimens found in a volcanic cave in Graciosa Island. More recently, Skiba, 1996 (*Myotis* 34: 81-84) listed the presence of *P. pipistrellus* in Flores, based on the analysis of ultrasounds emitted by an individual detected on 29 August, 1992 in the island capital.

Bannerman & Bannerman, 1966 (*Birds of the Atlantic Islands. Vol. II*) recorded the observation of a very large bat flying in Serra da Tronqueira (East of São Miguel). Furthermore, Le Grand *et al.*, 1982 (Pico da Vara: uma zona de valor internacional a preservar) and Le Grand, 1984 (Ornithologie et conservation aux Açores) also saw a large unidentified bat in the same area of the island. Later Le Grand, 1993 (*Cour. Forsch.-Inst. Senckenberg* 159: 33-37) argued that the previous observations must correspond to a new species in the Azores, discarding that it could be *M. myotis*, a possibility which was already noted by Palmeirim (1979).

The Madeiran Bat (*Pipistrellus maderensis*) was described as *Vesperugo maderensis* by Dobson, 1978 (*Catalogue of the Chiroptera in the Collection of the British Museum*) based on two individuals from Madeira and one from La Palma (Canary Islands). In the Canaries, Ibáñez & Fernández, 1985 (*Doñana, Act. Vert.* 12 [2]: 307-315) listed this species for La Gomera, and more recently, it was found in Tenerife and El Hierro (Trujillo, 1991 [*Murciélagos de las Islas Canarias*]; Trujillo & Barone, 1991 [*in Los murciélagos de España y Portugal*]). Furthermore, in April 1996 an individual belonging to the genus *Pipistrellus* or *Hypsugo* was observed and heard through an ultrasound detector in Porto Santo Island (archipelago of Madeira) (pers. obs.), from where no Chiroptera species were known until then.

A chiropterological expedition was carried out in the Azores archipelago in 1997. From 4th to 15th September the islands of São Miguel, Terceira and Santa Maria were visited.

In the first two islands we found *N. azoreum* and in the third *P. maderensis*, which makes up a new species for the bat fauna of this archipelago (identification recently confirmed by mitochondrial DNA analysis; J. Juste, pers. com.). Over three nights between 10th and 12th September, 1997, after a strong and rainy storm, a survey was carried out with an ultrasound detector along different roads of Santa Maria. Surprisingly, *P. maderensis* was detected in 14 1 × 1 km UTM squares (see Table I and Figure 1). Almost all contacts were located in the central and eastern parts of the island, where the habitat corresponds to woody areas made up by different species of the evergreen forest and alien plants such as *Pittosporum undulatum* and *Hedychium gardnerarum*. Besides, this area is characterized by the presence of rural populations with public lightening, where bats gather to hunt, a similar behaviour observed in the Madeira and Canary Islands. The altitudes where this bat was found in Santa Maria ranged between 190 and 490 m a.s.l. (288 ± 86 , N= 14) (see Table I).

The overall colour of three individuals captured in Santa Maria was very similar to *P. maderensis* from Madeira and the Canaries (see Figure 2). The absence of a whitish external edge in the wings of these individuals is a trait also present in the populations from Madeira and in the Canarian archipelago, only in some individuals from La Palma. In the heterodyne mode the ultrasounds of the Santa Maria population of *P. maderensis* sound very similar to those emitted by two individuals from the other two archipelagos. Maximum intensity frequency (MIF) of these individuals was 45-47 kHz. Due to this fact, and taking into account that Santa Maria and Flores are 600 km apart, we can not completely discard that the record of *P. pipistrellus* on Flores, with a MIF of 45 kHz obtained by Skiba (1996), actually represented a misidentified *P. maderensis*. The forearm measurements of the three *P. maderensis*, two males and one female, respectively, were: 31.4, 32.2 and 32.7 mm. These measurements fit within the species range (see Table II), although perhaps they might be slightly below the measurements for both sexes from other islands.

It is worthwhile pointing out that this new *P. maderensis* population of Santa Maria is located about 850 km from the Madeiran Archipelago, and therefore represents the northernmost and westernmost locality for this endemic Macaronesian mammal.

Finally, it is remarkable that the presence of bats on the islands of Flores and Santa Maria was already suggested by Le Grand (1993). Their presence has now been confirmed with the detection of *P. pipistrellus* and *P. maderensis* in these islands.

Drs. Carlos Ibáñez, Javier Juste, Jorge Palmeirim, José R. Aihartza, Juan Tomás Alcalde, Manuel Nogales (that also carried out the English translation) and Aurelio Martín, and also Rubén Barone and Felipe Siverio critically read and improved the initial manuscript. Dr. João Paulo Constância kindly helped us during our visit to the Museu Carlos Machado of Ponta Delgada (São Miguel), and permitted bibliographic consulting in this institution.

DOMINGO TRUJILLO¹ & CESÁREO GONZÁLEZ²

¹José Betancor Cabrera 20, Los Realejos, Tenerife, Canary Islands, Spain
(domingotrujillogonzalez@yahoo.es)

²Camino La Arbeja 177, Urb. La Luz, vivienda 2, La Orotava, Tenerife
Canary Islands, Spain

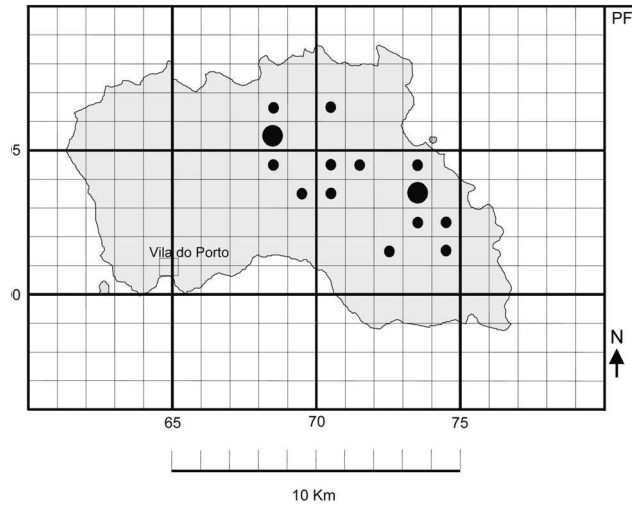


Figure 1.- Distribution of *Pipistrellus maderensis* in 1 × 1 km UTM squares in Santa Maria Island (Azores Archipelago), during the period 10-12 September 1997. Large points: captures; small points: contacts located by ultrasounds detector.



Figure 2.- *Pipistrellus maderensis* captured in Santa Maria Island. Photo: D. Trujillo.

RECORD	DATE	LOCALITY	UTM	ALTITUDE (m)
Detector	10.IX.97	Ribeira do Engenho	68/94	250
1 ♂ y 1 ♀	11.IX.97	Covões	68/95	210
Detector	11.IX.97	Feteiras de Baixo	68/96	200
Detector	11.IX.97	Feteiras	70/96	230
Detector	11.IX.97	Santa Bárbara	71/94	225
Detector	11.IX.97	Cruz dos Picos	70/93	400
Detector	11.IX.97	Pico Alto	70/94	490
1 ♂	11.IX.97	Azenha de Cima	73/93	290
Detector	12.IX.97	Santo António	73/92	295
Detector	12.IX.97	Almas	74/92	250
Detector	12.IX.97	Ribeira do Salto	73/94	190
Detector	12.IX.97	Vela	74/91	300
Detector	12.IX.97	Setadas	72/91	375
Detector	12.IX.97	Ponte dos Agriões	69/93	325

Table I.- Presence of *Pipistrellus maderensis* in 1 × 1 km UTM squares on Santa Maria Island, between 10-12 September 1997.

SEX	CANARIES				MADEIRA	AZORES
	EL HIERRO	LA PALMA	LA GOMERA	TENERIFE		
♂♂	32.23 ± 0.65 28 (30.95-33.90)	32.73 ± 0.57 38 (31.85-33.80)	32.18 ± 0.54 73 (31.20-33.80)	32.65 ± 0.74 34 (31.20-34.45)	32.51 ± 0.61 8 (31.70-33.30)	31.80 2 (31.40-32.20)
♀♀	32.87 ± 0.63 25 (31.25-34.10)	33.47 ± 0.75 26 (31.80-34.90)	32.79 ± 0.64 79 (31.15-34.30)	33.27 ± 0.83 78 (29.90-34.90)	33.61 ± 0.43 7 (32.90-34.25)	32.70 1

Table II.- Forearm measurements (mm) of *Pipistrellus maderensis* from the Canaries and Madeira. Mean (plus standard deviation), sample size and in brackets, range. We offer also the measurements of the three individuals captured in the Azores Islands.

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