



## New data on the morphology and distribution of *Euglandina obtusa* (Pfeiffer, 1844) Gastropoda: Spiraxidae) a Nicaraguan endemism

### Nuevos datos sobre la morfología y la distribución de *Euglandina obtusa* (Pfeiffer, 1844) (Gastropoda: Spiraxidae) un endemismo de Nicaragua

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#### ABSTRACT

Aspects related to the morphology and distribution of *Euglandina obtusa* (Pfeiffer, 1844) a Nicaraguan endemism are presented. Regarding morphology, a complete redescription of the shell and the first description of the genital system are included. The number of records has been increased, from one, the type locality, to 16. Current data have allowed us to draw a distribution map of the species in Nicaragua.

#### RESUMEN

Se presentan aspectos relacionados con la morfología y la distribución de *Euglandina obtusa* (Pfeiffer, 1844) un endemismo de Nicaragua. En relación con la morfología, se presenta una redescrición de la concha y la primera descripción del aparato genital. El número de registros de la especie en el país ha sido incrementado de una a 16 localidades. Las cifras anteriores nos han permitido elaborar un mapa preliminar de distribución para la especie en Nicaragua.

KEY WORDS: New data, *Euglandina obtusa*, Gastropoda, Spiraxidae, Nicaragua, Endemism.

PALABRAS CLAVE: Nuevos datos, *Euglandina obtusa*, Gastropoda, Spiraxidae, Nicaragua, Endemismo.

#### INTRODUCTION

According to PILSBRY (1908), PILSBRY AND VANATTA (1936), BAKER (1945) and THOMPSON (1995), the genus *Euglandina* Fischer and Crosse, 1870 contains 92 species along its distribution range. According to ZILCH (1959-60), the distribution of this genus ranges from southern North America to northern South America, including Central America.

In the Nicaraguan Pacific Slope the genus *Euglandina* is represented by two species: *Euglandina cumingii* (Beck, 1837) and *Euglandina obtusa* (Pfeiffer, 1844). *E. obtusa* is a species endemic to Nicaragua, only known to date from the type locality, Realejo, in the department of Chinadega (UTM 16PDU8286); the only information existing about this

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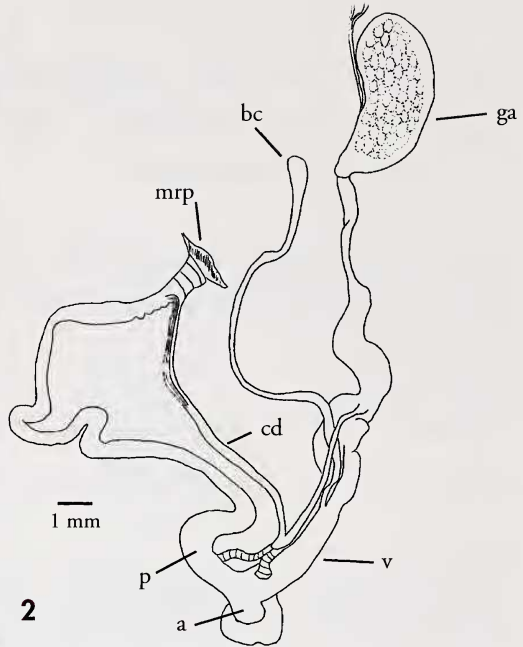


Figure 1. *Euglandina obtusa*. Shell morphology. Cayanlipe, Chinandega, 97:84 (D 11,26 mm, Alt. 27.15 mm). Figure 2. Genital system. Cayanlipe, Chinandega, 97:84 (e= 1 mm).

Figure 1. *Euglandina obtusa*. Morfología de la concha. Cayanlipe, Chinandega, 97:84 (D 11.26 mm, Alt. 27.15 mm). Figura 2. Aparato reproductor. Cayanlipe, Chinandega, 97:84 (e= 1 mm).

taxon so far was a brief description of the shell (PÉREZ, 1999).

The citations for this species in the XIX century literature can be summarized as follows:

*Glandina obtusa* Pfeiffer, 1844, in Philippi (1842-1845), p. 132, pl. 1 fig. 3.

*Achatina obtusa*: Reeve (1849 in 1848-1850), Monograph of the genus *Achatina* pl. 15, species 62.

*Achatina obtusa*: Deshayes (1850) in Férussac and Deshayes (1819-1851), p. 173, pl. 134 figs. 3, 4.

*Oleacina obtusa*: Tryon (1885), p. 24, pl. 4 fig. 55

*Glandina obtusa*: Martens (1891 in 1890-1901), pp. 76-77.

*Euglandina obtusa*: Pilsbry (1908 in 1907-1908), p. 204.

In this paper we present new data on distribution and morphology for *E. obtusa*. Fifteen new localities are added to the one previously known. Data on

shell biometry and the first description of the genital system is also given.

## MATERIAL AND METHODS

**Source of data:** Data presented in this paper have been taken from PÉREZ (1999); this work has been based on gathering, comparison and synthesis of information from two main sources: In the first place, data obtained from revision of bibliography regarding land and freshwater snail species present in Nicaragua and Central America and, secondly, field data obtained from four major sampling campaigns.

**Samplings:** Sampling campaigns were carried out as follows: 1) December 1994 to March, 1995, 2) August-September, 1996, 3) September-December, 1997 and, 4) July-October, 1998. Fieldwork was done as one-day trips, collect-

Table I. *Euglandina obtusa*. Dimensions. X: Average, DS: Standard Deviation.Tabla I. *Euglandina obtusa*. Dimensiones. X: Promedio, DS: Desviación estándar.

Variable	X	Minimum	Maximum	Range	DS
Height	24.81	22.2	27.15	4.95	2.19
Diameter	10.5	10.1	11.3	1.2	0.49

Table II. Examined material (52 specimens, 19 live, 33 shells). Dp: department, Coord: coordinates in UTM notation, Ev: animals, C: shells.

Tabla II. Material examinado (52 ejemplares, 19 vivos, 33 conchas). Dp: Departamento, Coord: coordenadas en notación UTM, Ev: ejemplares vivos, C: conchas.

Dp	Lot	Locality	Coordinates	Ev	C
LE	96:40	El Bosque	16PEJ2496	—	1
LE	96:50	3 km al NE de El Empalme	16PEK6504	3	—
LE	96:54	Buenos Aires	16PEJ0169	—	2
LE	96:67	Carretera El Sauce-Esteli	16PEK5432	—	2
CH	97:56	19 de Julio (Paso Caballo)	16PDJ7986	—	1
CH	97:75	El Rincón	16PEK2328	—	1
CH	97:76	Mayocundo	16PEK2515	—	2
CH	97:78	km 194 Chinandega-Somotillo	16PEK1237	—	1
CH	97:81	km 166 Chinandega-Jiquilillo	16PDK5706	—	6
CH	97:82	Tomvalle	16PDK6704	2	—
CH	97:84	Cayanlpe	16PEK0927	—	4
CH	97:85	La Concepción	16PEK3122	—	1
CH	97:86	Las Garzas	16PEK3325	—	3
CH	97:92	Hilocán	16PDK3721	7	2
CH	97:93	Laberinto de San Juan	16PDK3422	7	7

ing at various points each day. A minimum of one point per 10 x 10 km quadrant was sampled, and a maximum of three points. The quantity of points was determined by the punctual species richness; if it was low (below three species) we sampled another point within the same quadrant. There were four persons collecting for an hour at each sampling point.

*Collection and conservation of material:* Material was hand-collected, kept in plastic boxes and labeled for taking to the lab. Living specimens were relaxed in water with menthol crystals for 24 hours and then stored in 70° alcohol. Once fixed, material was separated, identified and definitively stored in glass vials within glass jars with 70°

alcohol, in the case of live-taken specimens, or in glass vials within cardboard boxes, in the case of empty shells.

*Abbreviations:* The following abbreviations have been used: B.C.A.: Biología Centrali Americana, Carr.: Road, e: scale, p./ pp.: page/ s, s.l.p.c.: without an exact locality consigned, RAAN: Región Autónoma del Atlántico Norte, RAAS: Región Autónoma del Atlántico Sur, UCA: Universidad Centroamericana.

## RESULTS AND DISCUSSION

*Description:* Shell cylindrical-fusiform, opaque, solid, glossy (Fig. 1). Spire represents a little less than 1/3 of total shell

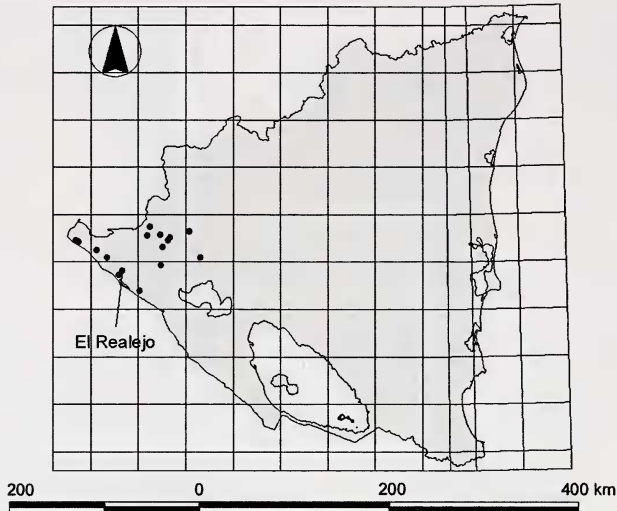


Figure 3. *Euglandina obtusa*. Distribution in Nicaragua, in UTM notation of 50 x 50 km and with mention of the type locality (El Realejo).

Figura 3. *Euglandina obtusa*. Distribución en Nicaragua, en notación UTM de 50 x 50 km de lado con mención de la localidad tipo (El Realejo).

length. Colour brown. Sculpture of fine radial folds. Suture slightly marked. Apex obtuse. Whorls 6, moderately convex. Base imperforate. Aperture long and ovate, placed laterally regarding the shell axis; it represents approximately 1/3 of the body whorl height. Peristome simple and not reflexed. Columella curved and truncated, somewhat thickened. Protoconch of a white to corneous colour, smooth, whorls 1.5.

*Dimensions*: Alt. 27.15 mm, D. 11. 26 mm (see Table I).

Genital apparatus with a long brawny penis (Fig. 2); retractor muscle wide and short; vas deferens attached to the penis and to the vagina by conjunctive stripes. Vagina short in relation to the penis and as wide as its proximal part. Bursa copulatrix rather small and club-shaped, duct long and thin.

*Remarks*: MARTENS (1891 in 1890-1901) pointed out that though descriptions and pictures all cite Realejo (also written as Real Llejos) as the locality in which the species was collected, they referred to two different forms, showing differences in size and shape. The smallest one measures between 16

and 19 mm in height and more or less half the width; it was first described by PFEIFFER (1844) in PHILLIPPI (1842-1851), and is the one represented in Pfeiffer's collection; according to MARTENS (1891), this is the form which he studied. The larger form, measuring 26 to 28 mm and being half as wide as high, is the one depicted by REEVE (1849) and DESHAYES (1850) in FÉRUSAC AND DESHAYES (1819-1851); this form resembles very much in its dimensions *Euglandina largillierti* Pilsbry, 1891, from Guatemala and Yucatán, but seems to be smoother and brighter.

TRYON (1885) recognized only the dimensions of the larger form (26-28 mm), as relevant to *E. obtusa*. Later, PILSBRY (1908 in 1907-1908), referred to TRYON's (1885) description and added that this species seems to link the group of the smooth Central American forms to usual *Euglandina*.

Our material agrees which what would be the larger "form" mentioned by MARTENS (1891), although with slightly smaller dimensions. Its smooth and lustrous shell sculpture makes the identification of this species very clear.

The genital system of this species is described for the first time in this paper, and as this taxon was known previously only from the type locality, all distribution data given in this paper are new and expand considerably its distribution range.

*Distribution:* This species was previously cited only from the type locality, but we have added 15 new localities to the one cited in the literature (Fig. 3, Table II). New localities are distributed in two departments (= provinces) (Dpt. of Chinandega and Dept. of León) of northwestern Nicaragua, both within the Nicaraguan Pacific Slope, which sug-

gests a very restricted distribution range. This may be confirmed also by the fact that it has not been collected so far elsewhere in the country over the years.

Along its distribution range *E. obtusa* was collected on road edges, in dry forests ranging from savannah forests with abundant shrubs to low-medium semideciduous secondary forests. Soil was covered by abundant leaf litter, with or without sand and wet, and illumination was of filtered sun and shade.

It should also be pointed out that *E. obtusa* is a rare species, since lots collected consist only of 1 to 14 specimens.

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