

Designation and description of a lectotype of
Rana aragonensis PALANCA SOLER & al., 1995
(Anura: Ranidae)

Designierung und Beschreibung eines Lektotyps für
Rana aragonensis PALANCA SOLER & al., 1995
(Anura: Ranidae)

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KURZFASSUNG

Das Taxon *Rana aragonensis*, welches kürzlich aus den Pyrenäen der spanischen Region Aragon beschrieben wurde, wird in der vorliegenden Arbeit durch die Designierung und detaillierte Beschreibung eines Lektotyps formal stabilisiert. Obwohl der Name *aragonensis* ursprünglich nur als vorläufige Bezeichnung einer Morphe eingeführt und in der Originalbeschreibung kein Typusmaterial benannt wurde, muß er aufgrund der detaillierten Diagnose in der Originalbeschreibung als verfügbar angesehen werden. Die Originalbeschreibung basierte auf einer größeren Anzahl von Exemplaren, die lebend in ihrem Habitat untersucht worden waren; sieben dieser Syntypen wurden konserviert und sind noch vorhanden. Ein adultes Männchen wird als Lektotyp designiert, wodurch die übrigen sechs Exemplare zu Paralectotypen werden. Das Typusmaterial wird beschrieben und anhand von Lebensfotos illustriert. Der taxonomische Status von *Rana aragonensis* wird kurz diskutiert. Es kann sich dabei sowohl um ein Synonym von *Rana temporaria* als auch um eine valide Unterart oder Art handeln, doch für endgültige Schlüsse sind weitergehende Untersuchungen erforderlich.

ABSTRACT

The taxon *Rana aragonensis*, recently described from the mountain ranges of the Aragon Pyrenees, Spain, is formally stabilized by designation and description of a lectotype. The name *aragonensis* must be considered as available due to the clear diagnosis included in the original description, although it was only created to refer to a morphotype in a preliminary way. No type specimens were designated in the original description which was based on a large number of specimens studied alive in the field and in captivity; seven of these were preserved and are still available. They are here considered as syntypes, and one adult male is designated as lectotype. It is described and illustrated, and morphological data on the restant six specimens - considered as paralectotypes - are provided. The status of *Rana aragonensis* is briefly discussed; it may be a synonym of *Rana temporaria*, but could also apply to a valid subspecies or species. Further studies are necessary to address this question.

KEY WORDS

Amphibia: Anura: Ranidae; *Rana aragonensis*; lectotype designation; taxonomy

INTRODUCTION

In 1995 the second and third author of the present paper participated in a study of the Brown Frogs of Aragón region, Spain, and there identified - beside *Rana pyrenaica* SERRA-COBO, 1993 and *R. dalmatina* BONAPARTE, 1840 - two further distinct forms similar to *R. temporaria* LINNAEUS, 1758 which both occurred syntopically in the Spanish Pyrenees (PALANCA SOLER & al. 1995). One of these morphs was assigned to *R. temporaria*, whereas the other morph was named *Rana aragonensis*. This name was originally meant to define a

morphotype in a preliminary way, not to describe a new species, but unfortunately this was not explicitly stated in the corresponding publication. The use of the name *aragonensis* was accompanied by a rather detailed diagnosis, and by the statement that the name refers to "una nueva forma (...) definida por nosotros en este trabajo" (PALANCA SOLER & al. 1995: 227 and 242). *Rana aragonensis* PALANCA SOLER, RODRIGUEZ VIEITES & SUAREZ MARTINEZ, 1995 is therefore an available name in the sense of the International Code of Zoological

Nomenclature (ANONYMOUS 1985). However, no type specimens were designated in the original description. The aim of the present paper is to stabilize the name *Rana aragonensis* by designation of a lectotype,

MATERIAL AND METHODS

Measurements were taken by the first author with a precision calliper to the nearest 0.1 mm. Abbreviations of measured variables are explained in the caption of table 1. Webbing formula is given according to BLOMMERS-SCHLÖSSER (1979). Museum acronyms used are MNCN - Museo Nacional de Ciencias Naturales, Madrid; MNHN - Museum National d'Histoire Naturelle, Paris; ZFMK - Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn.

The original description of the taxon

RESULTS AND DISCUSSION

A total of seven *aragonensis* specimens, belonging to the series on which the original description was based, are still available. They must be considered as primary syntypes (see DUBOIS & OHLER 1996a, 1996b). We designate one of these as lectotype, the restant specimens becoming paralectotypes.

Description of the lectotype: Adult male, MNCN 23582, from Respomuso at the base of the Balaitous mountain, Circo de Piedrafita, Aragón region, Spain, collected by A. PALANCA SOLER and D. RODRIGUEZ VIETTES in 1995 (fig. 1). Specimen in good state of preservation; muscle tissue of left femur removed for allozyme electrophoresis and DNA analysis and stored at -80°C in the ZFMK tissue bank. Body slender, head clearly longer than wide, as wide as body; snout rather round shaped in dorsal and lateral view; nostrils directed dorsolaterally, not protuberant; canthus rostralis weakly developed, straight; loreal region plain, not concave; tympanum very distinct, large, regularly rounded, its diameter about 3/4 of eye diameter; supratympanic fold very slightly developed; tongue ovoid, distinctly bifid posteriorly; vomerine teeth distinct,

and by detailed morphological descriptions of this specimen and of several paralectotypes. Finally we will briefly discuss the status of the taxon, but final conclusions are postponed to forthcoming publications.

R. aragonensis was based on a large number of specimens which were all studied in summer 1995 alive in the field. A few of these specimens were taken to the laboratory and kept alive for several months to study their behaviour; four of these (ZFMK 64549, 64550, MNHN 1997.2683, 1997.2685) died during this time, and were first preserved in a freezer and then transferred to ethanol. Three additional specimens (MNCN 23582, MNHN 1997.2684, ZFMK 64548) were sacrificed, fixed in 90% ethanol, and preserved in 65% ethanol.

situated slightly posterior to choanae; choanae small, rounded. Arms rather robust; subarticular tubercles single, slightly developed; inner and outer metacarpal tubercles not recognizable; no webbing between fingers; finger length: $2 < 1 < 4 < 3$; no terminal finger disks; greyish, faintly developed nuptial pads on first finger. Legs relatively slender; tibiotarsal articulation reaches centre of eye; feet with a distinct elliptical inner metatarsal tubercle; no outer metatarsal tubercle; subarticular tubercles single, rounded, slightly developed; no terminal toe disks; well developed webbing between toes; webbing formula 1 (0.25), 2i (1), 2e (0.25), 3i (1), 3e (0.25), 4i (1.25), 4e (1), 5 (0); lateral metatarsalia separated; toe length: $1 < 2 < 3 = 5 < 4$. Skin on the upper surface of throat, thorax and venter smooth, ventral surface of femur granular, anal region strongly granular. Dorsolateral ridges present, closer to each other at the centre of the back than in inguinal and head region. For measurements of the lectotype see table 1.

Colour of lectotype in preservative: Dorsum brownish with some irregular small yellowish marblings. A few irregular black spots at the centre of the back. Dorso-

Table 1: Morphometric measurements in lectotype (LT) and paralectotypes (PLT) of *Rana aragonensis*. M - male, F - female; SVL - snout vent-length; HW - head width, HL - head length; Eye - horizontal eye diameter; Tym - horizontal tympanum diameter; Eye-Tym - distance between eye and tympanum; Eye-Ns - distance between eye and nostril; Ns-St - distance between nostril and tip of snout; Ns-Ns - distance between nostrils; ArmL - arm length from axil to tip of longest finger; HaL - hand length; HiL - length of hindlimb from anus to tip of longest toe; T1 to T5 - length of toe 1 to toe 5; F1 and F3 - length of finger 1 and finger 3; IMTL, IMTW, IMTH - length, width and height of inner metatarsal tubercle.

Tabelle 1: Morphometrische Messungen am Lektotyp (LT) und an den Paralectotypen (PLT) von *Rana aragonensis*. M - Männchen, F - Weibchen; SVL - Kopf-Rumpf-Länge; HW - Kopfbreite; HL - Kopflänge; Eye - horizontaler Augendurchmesser; Tym - horizontaler Trommelfelddurchmesser; Eye-Tym - Abstand zwischen Auge und Trommelfeld; Eye-Ns - Abstand zwischen Auge und Nasenloch; Ns-St - Abstand zwischen Nasenloch und Schnauzenspitze; Ns-Ns - Abstand zwischen den Nasenlöchern; ArmL - Armlänge von Achselhöhle bis zur Spitze des längsten Fingers; HaL - Handlänge; HiL - Hinterbeinlänge vom After bis zur Spitze der längsten Zehe; T1 bis T5 - Länge der Zehen 1 bis 5; F1 und F3 - Länge der Finger 1 und 3; IMTL, IMTW, IMTH - Länge, Breite und Höhe des inneren Metatarsaltuberkels (Fersenhöckers).

	MNCN 23582	MNHN 1997.2684	ZFMK 64548	ZFMK 64549	ZFMK 64550	MNHN 1997.2683	MNHN 1997.2685
Sex	M	F	F	F	M	M	F
Status	LT	PLT	PLT	PLT	PLT	PLT	PLT
SVL	54.5	55.3	59.5	58.2	51.5	52.5	53.7
HW	15.5	16.9	17.2	18.2	15.1	15.9	16.5
HL	17.3	18.3	19.3	19.5	17.0	16.4	17.4
Eye	5.0	5.3	5.0	5.1	4.0	4.7	5.0
Tym	3.6	3.5	4.4	3.7	3.3	4.0	3.8
Eye-Tym	1.7	1.9	1.7	2.2	1.5	1.1	2.0
Eye-Ns	2.9	3.3	2.8	3.7	2.8	3.0	3.4
Ns-St	4.3	5.1	5.0	4.4	4.2	4.1	4.8
Ns-Ns	4.0	4.2	4.6	4.5	4.1	4.1	4.6
ArmL	29.4	30.0	29.6	32.6	25.7	28.5	38.5
HaL	13.0	14.5	14.4	14.8	12.6	13.4	14.1
HiL	87.8	90.4	96.4	98.5	89.0	87.1	90.8
FoT	42.6	45.5	46.5	47.6	43.0	43.9	43.4
FoL	29.0	30.9	31.8	32.0	29.4	30.3	29.2
T1	4.1	5.3	4.8	4.8	3.6	3.9	4.7
IMTL	2.4	2.9	2.2	3.0	2.2	2.9	2.3
IMTW	1.7	1.5	1.2	-	-	-	-
IMTH	1.2	1.4	1.2	-	-	-	-
F1	6.2	7.1	6.8	-	-	-	-
F3	8.9	9.3	8.2	-	-	-	-
T3	14.7	15.0	15.4	-	-	-	-
T4	19.9	21.8	21.8	-	-	-	-
T5	12.2	13.9	15.4	-	-	-	-

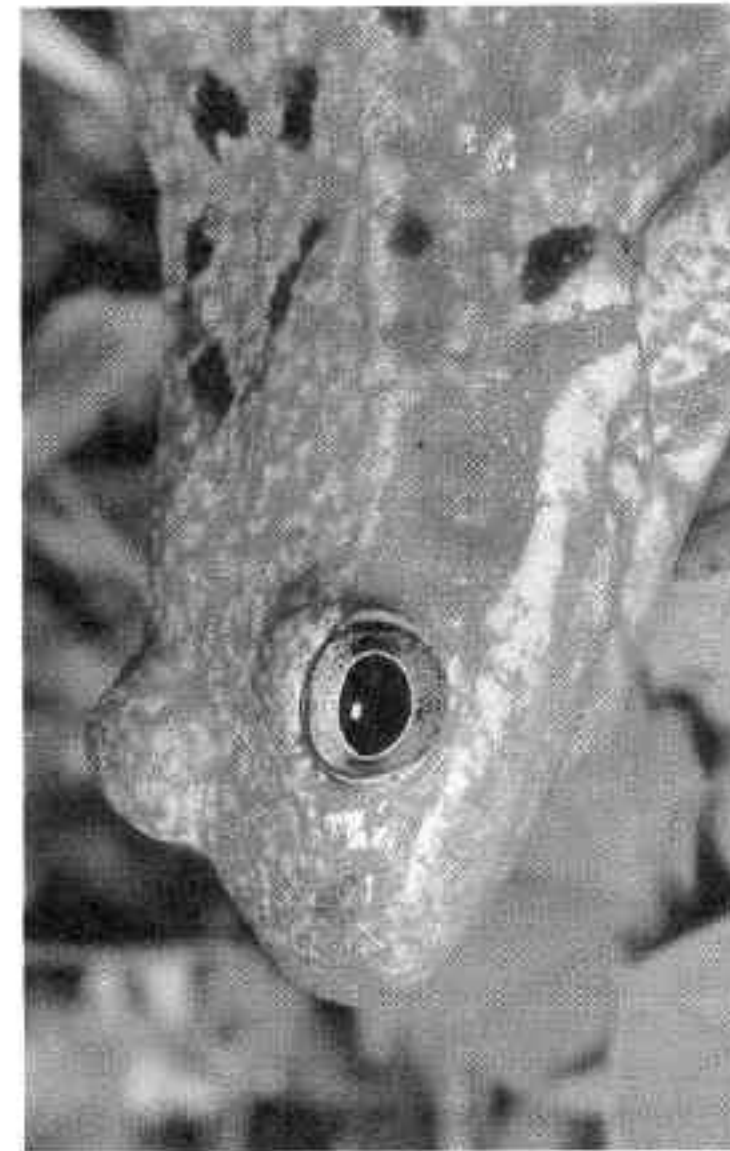
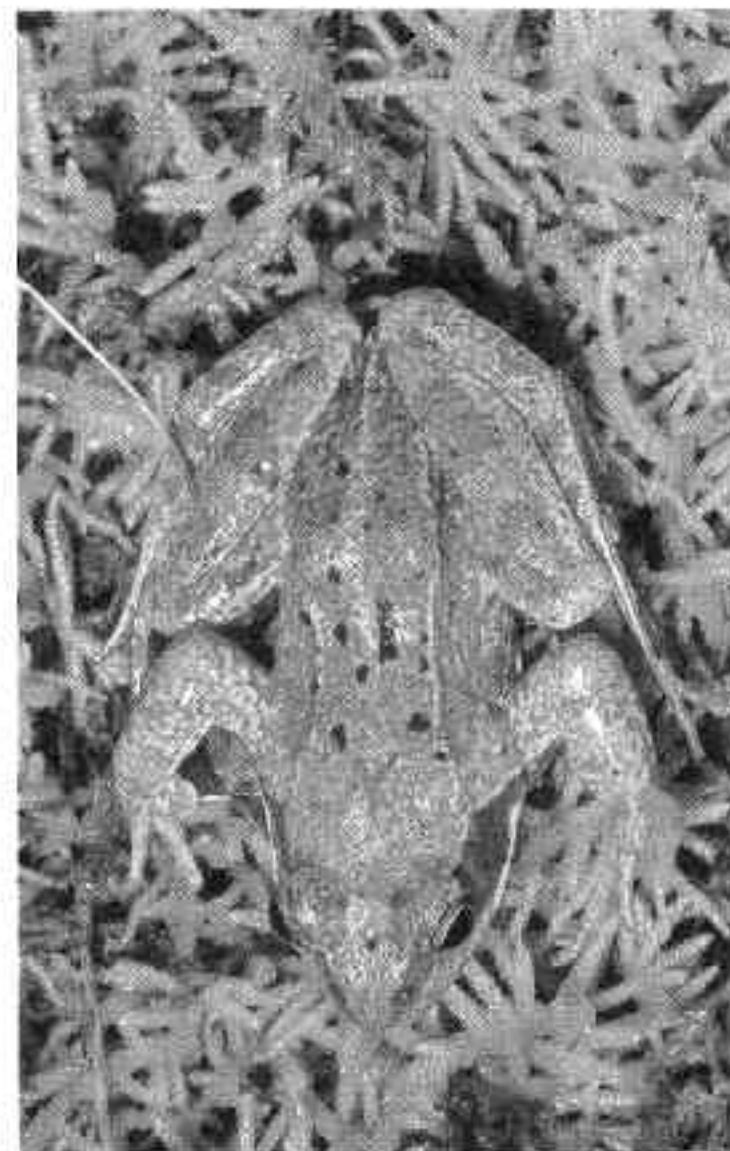
lateral ridges somewhat more yellowish than the rest of the back. Tympanic region with a distinct, triangular dark brown patch running from the eye to the arm insertion. Anterior view of humerus with longitudinal dark brown marking. Flanks at the inguinal region blackish, marbled with white. Tibia with about four faintly recognizable, indistinct dark crossbands. Ventral side of arms and legs dirty white, of throat, thorax and venter dirty white with dark mottling. Colour in life was generally similar.

Paralectotypes: Two males

(ZFMK 64550, MNHN 1997.2683) and four females (MNHN 1997.2684 and 1997.2685, ZFMK 64548 and 64549) with same collecting data as lectotype. The females MNHN 1997.2684 and ZFMK 64548 are in excellent state of preservation; MNHN 1997.2684 (figs. 2-4) has muscle tissue of left femur removed (stored at -80°C in the ZFMK tissue bank). Webbing formula is 1 (0), 2i (1), 2e (0), 3i (1), 3e (0.25), 4i (1.25), 4e (1), 5 (0) in MNHN 1997.2684 (fig. 4) and 1 (0.5), 2i (1), 2e (0.25), 3i (1), 3e (0), 4i/e (1.25), 5 (0) in ZFMK 64548.



1 2 3 4



Relative finger and toe length was ascertained in MNHN 1997.2684 and ZFMK 64548 (same as in lectotype). ZFMK 64549, 64550, MNHN 1997.2683 and 1997.2685 are in mediocre to bad state of preservation. Morphological data of the paralectotypes agree largely with the lectotype (measurements see table 1). Especially the females have a conspicuously short and stout snout (fig. 3). MNHN 1997.2684 and ZFMK 64548 have a light brown dorsal colouration finely marbled with yellowish. In ZFMK 64549 and 64550 the dorso-lateral ridges are bordered with black, and the tibiotarsal articulation reaches slightly beyond the eye.

S t a t u s: The systematics of the Brown Frog populations from northern Spain and the Pyrenees are poorly known, as indicated by the recent description of the new species *R. pyrenaica* by SERRA-COBO (1993) which is rather well differentiated (VENCES & al. 1997), and by the existence of different *temporaria*-like morphs at high and low altitudes in the French Pyrenees (DUBOIS 1983) as well as important differences in tadpole morphology (VENCES & al. 1997). Studies in progress will use molecular techniques (allozyme electrophoresis and DNA sequencing) to gather data on

the genetic differentiation of the morphologically identified forms. It cannot even be totally excluded that the two *temporaria*-like forms observed syntopically by PALANCA SOLER & al. (1995) in fact refer to two distinct species, since we are not aware of any example of well differentiated morphs of a single anuran species occurring syntopically. Several alternative taxonomic scenarios could arise from this fact: (a) The form *R. aragonensis* could be demonstrated to be genetically similar to populations from north-western Spain attributed to *R. temporaria parvipalmata* SEOANE, 1885. Both forms are rather similar by some morphological characters as size, web extension and femur shape, but differ drastically in head shape (pers. obs.). (b) All three taxa *temporaria*, *aragonensis*, and *parvipalmata* may be genetically differentiated at either species or subspecies level. (c) The taxon *aragonensis* may be a subspecies or synonym of *R. temporaria*, but the high-altitude populations from the Pyrenees, attributed to *R. temporaria* by PALANCA SOLER & al. (1995), may in fact be a distinct species (either undescribed or referable to the taxon *R. temporaria canigonensis* BOUBÉE, 1833; see DUBOIS 1983).

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Figs. 1-4 (opposite page): 1 - Lectotype of *Rana aragonensis* (adult male, MNCN 23582) in life. 2 - Paralectotype of *Rana aragonensis* (adult female, MNHN 1997.2684) in life. 3 - Paralectotype of *Rana aragonensis* (adult female, MNHN 1997.2684) in life. Lateral view of head. Note short snout. 4 - Paralectotype of *Rana aragonensis* (adult female, MNHN 1997.2684) in life. Ventral view of foot, showing web extension.
 Abb. 1-4 (gegenüberliegende Seite): 1 - Lektotyp (adultes Männchen, MNCN 23582) von *Rana aragonensis* im Leben. 2 - Paralectotyp (adultes Weibchen, MNHN 1997.2684) von *Rana aragonensis* im Leben. 3 - Paralectotyp (adultes Weibchen, MNHN 1997.2684) von *Rana aragonensis*. Kopfportrait, beachte die kurze Schnauze. 4 - Paralectotyp (adultes Weibchen, MNHN 1997.2684) von *Rana aragonensis*. Ventralseite des Hinterfußes.

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