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Taxonomic and nomenclatural status of Iberian *Algyroides* (Lacertidae)

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Abstract. The taxonomy and nomenclature of Iberian *Algyroides* are problematic. The first taxon described, *A. hidalgoi* Boscá, 1916, was based on a single specimen that was subsequently lost. The description of the second taxon, *A. marchi* Valverde, 1958, was based on the comparison of a newly discovered population with the original description of *A. hidalgoi*. However, *A. hidalgoi* specimens have never been recorded since for any locality. Therefore, three questions need to be addressed: Is *A. hidalgoi* Boscá, 1916 a morphologically diagnosable taxon different from all non-Iberian species of *Algyroides*? are *A. hidalgoi* and *A. marchi* conspecific? And if so, which is the correct name for the species? To clarify the taxonomic status of the Iberian *Algyroides* we (1) compare Boscá's *A. hidalgoi* original description against the descriptions of all other species of *Algyroides*, (2) test the accuracy of Boscá's *A. hidalgoi* by comparing it against 204 Iberian museum specimens, and (3) designate a neotype of *A. hidalgoi* that fits the head pholidosis described in the original description. We show that none of the diagnostic characters used by Valverde to differentiate between *A. hidalgoi* and *A. marchi* are actually diagnostic, as we found high levels of variability on those characters in the studied specimens. Our results validate Boscá's description of *A. hidalgoi*, which fits within the morphological variability observed for southern Iberian *Algyroides*. As a result, we propose the strict synonymy of *A. marchi* Valverde, 1958 with *A. hidalgoi* Boscá, 1916.

Keywords: *Algyroides hidalgoi*, *Algyroides marchi*, morphological variability, neotype designation, nomenclature, nov. synonymy, taxonomy.

Introduction

The genus *Algyroides* Bibron and Bory de Saint-Vincent, 1833 includes four distinct Mediterranean species of lizards found along the eastern coasts of the Adriatic and Ionian seas (*Algyroides nigropunctatus*; Duméril and Bibron, 1839), Peloponnesus and nearby islands (*Algyroides moreoticus* Bibron and Bory de Saint-Vincens, 1833), the Tyrrhenian Islands (*Algyroides fitzingeri*; Wiegmann, 1834) and the northern Betic mountains of the southeastern Iberian Peninsula (*Algyroides marchi* Valverde, 1958). These *Algyroides* species are grouped in two morphologically distinct clades: a western clade formed by *A. fitzingeri* and *A. marchi* and an eastern clade formed by *A. moreoticus* and *A. nigropunctatus* (Arnold et al., 2007; Pavlicev and Mayer, 2009). Previous molecular studies of the genus did not support the monophyletic status of this genus as *Dinarolacerta* was included within *Algyroides* (Pavlicev and Mayer, 2009; Pyron et al., 2013). However, in a recent detailed molecular analysis, Mendes et al. (2016) recovered *Algyroides* as a monophyletic group, which is congruent with morphological studies (Arnold et al., 2007; Arribas, 2012).

In 1916, Eduardo Boscá, one of the most influent Spanish herpetologists of his time (Fraga Vázquez, 1989; Catalá Gorgues, 2004; Albaladejo et al., 2013), first noted the presence of *Algyroides* in the Iberian Peninsula. In his work, Boscá (1916a) provided a diagnosis and a detailed description of an Iberian *Algyroides* based on a juvenile specimen he received from San Ildefonso, a village supposedly located in the Sierra de Guadarrama mountain range in the province of Segovia (central Spain) (Boscá,

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1916a). Boscá named this species *Algiroides hidalgoi* Boscá, 1916 (*sic*, note the Latin "i" instead of "y" in the genus name), stating that it was closely related to *A. fitzingeri*. Unfortunately, this specimen, now lost, was not illustrated and therefore, detailed drawings of it do not exist.

No other specimens of *Algyroides* were reported in the Iberian Peninsula until José Antonio Valverde discovered several individuals in April 1958 in Piedra de Aguamula, in the Sierra de Cazorla mountain range in the province of Jaén (southeastern Spain) (Valverde, 1958), a location far (about 320 km by air) from the Sierra de Guadarrama. Valverde described the Cazorla specimens as a new species, *Algiroides marchi* Valverde, 1958 (*sic*, see above), that according to him was morphologically distinguishable from *A. hidalgoi*. After Valverde's discovery, several authors tried to find *A. hidalgoi* in the Sierra de Guadarrama, but all attempts were unsuccessful (Klemmer, 1960; García-París et al., 1989: 191-192), leading some authors to question the validity of *A. hidalgoi* (Klemmer, 1960; Mertens and Wermuth, 1960). However, other authors have considered *A. hidalgoi* a valid taxon (Valverde, 1958; Buchholz, 1964; Salvador, 1974; García-París et al., 1989; Engelmann et al., 1993; Pérez-Mellado, 1998; Fernández-Cardenete and García-Cardenete, 2014).

The question of whether *A. hidalgoi* is a distinct species from *A. marchi* remains unsolved. Some authors have treated it as a *nomen dubium* (Klemmer, 1960), while other have questionably included the name *A. hidalgoi* under the synonymy of *A. marchi* (Mertens and Wermuth, 1960; Salvador, 1998; Alonso-Zarazaga, 2014). Unfortunately, the unique specimen of *A. hidalgoi* is missing: it is not in Boscá's personal collection in Valencia (Klemmer, 1960), which was destroyed (Geniez et al., 2014) nor at the Museo Nacional de Ciencias Naturales (MNCN), which possesses some of Boscá's other type material (Pérez-Mellado, 1998; García-Díez and González-Fernández, 2013). Fortunately, Boscá's description is very detailed and complete (Valverde, 1958; Salvador, 1974; Pérez-Mellado, 1998) and can be compared with large series of *A. marchi* specimens collected from different geographic areas available from several Spanish scientific collections, and also with the remaining species of *Algyroides*.

The problem is complex: first, whether *A. hidalgoi* and *A. marchi* represent two different taxonomic entities or a single one needs to be determined, and second, the nomenclatural validity and status of *A. hidalgoi* needs to be clarified. We address both issues by (1) comparing Boscá's original description of *A. hidalgoi* against (a) the descriptions and preserved specimens of all extant species of *Algyroides*, and (b) 204 Iberian *Algyroides* specimens to determine if the enigmatic morphology of *A. hidalgoi* can be recognized in any of them, and if so, (2) by designating a neotype of *A. hidalgoi* that corresponds to the head pholidosis described in Boscá's original description.

Material and methods

We studied preserved specimens of all species of *Algyroides*, plus a series of 198 specimens of Iberian *Algyroides* encompassing most of the described variability of the species, collected from several localities and currently held at the Museo Nacional de Ciencias Naturales (MNCN) (see supplementary appendix S1). We also examined one paratype of *A. marchi* (MNCN 7947). All other specimens of the type series are currently located at the collection of the Estación Biológica de Doñana (EBD-CSIC), and not, as stated in Valverde (1958), in the collection of the Instituto de Aclimatación de Almería (now Estación Experimental de Zonas Áridas – EEZA-CSIC). All specimens are preserved in 70% ethanol. Morphological characters were studied using a binocular microscope. Five quantitative morphological measurements were taken using a digital caliper. Digital photographs were taken with a reflex camera fitted with a macro lens. For comparisons among Iberian specimens we paid special attention to the characters used by both Boscá (1916a) and Valverde (1958). These characters are as follows: (1) parietal shields separated or in contact; (2) occipital and interparietal shields separated or in contact; (3) position of the tympanic scale: located directly over the upper border of the tympanum opening ("transverse" following cited authors) or at the upper-anterior corner of the tympanum opening ("oblique" *op. cit.*); (4) position of the mental scale in relation to the rostral scale: both scales at the same

vertical level or the rostral in a forward position; (5) ventral coloration (bright yellow or bluish-grey); (6) shape and relative size of the dorsal and lateral trunk scales; (7) presence of a central keel in the trunk scales; (8) shape of the scales in the upper limb areas of the flanks; (9) shape of the external scales of the hind limbs.

Results

Comparative diagnosis of A. hidalgoi

Boscá's original description of *A. hidalgoi* reads as follows: "cabeza pequeña, aplanada hacia adelante y coincidiendo en el mismo punto el extremo del hocico con el mentón. Escudo occipital mínimo, triangular redondeado, separado del interparietal por los escudos parietales que se tocan. Ojos grandes con cuatro escudos supralabiales anteriores al infraorbitario, que es rectangular y tan largo como el diámetro transverso del ojo. Región parietal con escudetes desiguales, existiendo en el lado derecho uno que es mayor, representando el escudo masetérico. Orificio auditivo grande, oval, con la membrana timpánica convexa, y sobre el borde superior, el escudo timpánico grande y en sentido horizontal. Pliegue angular manifiesto, separando la región en una parte anterior en la que las escamas son alargadas y bastante iguales entre sí, y otra parte posterior, en la que las escamas son redondeadas, pequeñas las de las primeras filas, aumentando gradualmente de tamaño, estando limitadas por siete escamas rectangulares, empizarradas y alternas sobre las escamas que forman el collar, en número de cuatro, que son algo mayores y con el borde posterior libre… Tronco protegido por escamas grandes, rombales, empizarradas, con una quilla que termina en punta aguda, dispuestas en 17 filas hacia la mitad del largo del cuerpo, siendo de igual tamaño; sobre los lados y región superior de los miembros aparecen algo pequeñas y de forma más suave. Región inferior brillante con 11 escudetes pectorales, de forma y tamaño desiguales, yuxtapuestos siguiendo en esa misma disposición seis filas de escudos ventrales, siendo más estrechas las de los de los lados y las 2 del centro. Escudo anal hexágono, bordeado en su parte anterior por otros 7 escudos, de los que es mayor el del centro, siguiendo a la abertura del ano tres filas de escamas granujientas. La cola como uno y un quinto de la longitud del resto del animal, gruesa y cilindrácea en su mitad anterior, terminando en punta afilada, y el saliente de la quilla de sus escamas forman una serie de verticilos ostensibles a simple vista. Patas posteriores extendidas hacia delante sobre los flancos no alcanzan la axila, y lo mismo que las extremidades anteriores, están cubiertas por su cara inferior por escamas lisas abrillantadas. Poros femorales en número de 9 a cada lado; dedos finos, con una fila de escamas gruesas en el borde de abajo, provistos de uña corta y ganchuda. El color café acompaña indistintamente a las partes superiores, viéndose machitas oscuras sobre los escudos cefálicos, así como sobre las escamas lisas que protegen las extremidades, pero en éstas las manchas son mayores, redondeadas y distribuidas con cierto orden. Partes inferiores de un gris azulado, también uniforme, excepto sobre la cola, que lleva el mismo color café toda ella. Longitud total, 59 mm.; cabeza, 6; cuello, 3; tronco, 18; cola, 32; mayor anchura sobre el abdomen, 5 mm."

This description differs in many traits from all species of *Algyroides* with the exception of *A. marchi*. For example, *Algyroides hidalgoi* differs markedly from *A. fitzingeri and A. moreoticus* because they present similar shaped scales in the lateral and the dorsal areas of the central portion of the trunk (markedly different in *A. hidalgoi*) (see for example Speybroek et al., 2016); and have highly keeled lateral trunk scales, along the area comprised between the limbs (not keeled in *A. hidalgoi*). The flank scales from the area located directly above the limbs are small, rounded and un-keeled in all species of *Algyroides*, quite similar to the lateral trunk scales described for *A. hidalgoi*. There are marked differences in the shape of the

limb scales; while keeled in *A. fitzingeri* and *A. moreoticus*, they are smooth in *A. hidalgoi*.

Algyroides hidalgoi differs in many traits from the two subspecies of *A. nigropunctatus* (*A. n. nigropunctatus* and *A. n. kephallithacius*; Keymar, 1986) but the most obvious characters are that they have lateral scales and hind limb external (inferior) scales markedly keeled (often asymmetrically keeled), while they are not keeled in *A. hidalgoi* ("Patas posteriores... cubiertas por su cara inferior por escamas lisas abrillantadas..." "... así como de las escamas lisas que protegen las extemidades,...").

The most similar species to *A. hidalgoi* is *A. marchi*, which is the only species of *Algyroides* that presents lateral scales small and not-keeled, and limb scales smooth and polished. *Algyroides marchi niethammeri* was described as subspecies of *A. marchi* by Buchholz (1964), based on coloration of the throat and differences in the number of dorsal scales. *Algyroides m. niethammeri* was synonymized with typical *A. marchi* by Palacios et al. (1974), after the study of several specimens from its type locality: Bogarra (Albacete).

Most of the quantitative and qualitative characters indicated in Boscá's description of *A. hidalgoi* are represented across the highly variable species *A. marchi*. Valverde (1958) described *A. marchi*, by directly comparing Boscá's description with his newly collected materials. In the following paragraphs we discuss one by one those characters in a separate section. In addition, other authors (Buchholz, 1964) and colleagues (*in litteris*) added a few more characters, not discussed by Valverde, but that could be used to separate *A. marchi* from *A. hidalgoi*. These characters are discussed below.

One of these characters is the number of rows of dorsal scales. Boscá's (1916a) stated that *A. hidalgoi* has 17 rows of dorsal scales (only dorsal, and not total as indicated by Buchholz, 1964: 242), while *A. marchi* usually present 9 dorsal rows. This difference, although obviously clear, might however by just a consequence of the counting process: in many specimens of *A. marchi* dorsal scales are not arranged in a clear linear position, especially along the broadest part of the dorsum (fig. 1A). If Boscá counted scales, through an inverted V line across dorsum (see numbers in fig. 1A), the count will be between 16 to 18, including therefore the number indicated by Boscá (1916a). If differences in the way of counting scales are responsible for the differences described, this character cannot be considered a diagnostic trait for *A. hidalgoi* vs. *A. marchi*.

Another character used to separate *A. marchi* from *A. hidalgoi* is the number of femoral pores, stated as 9 in Boscá's description of *A. hidalgoi*, while represented by 11 to 16 in *A. marchi* (Pérez-Mellado, 1998). Femoral pores in young specimens of *A. marchi* are sometimes difficult to count. In fact, two young specimens from the collection of the MNCN present 9 poorly marked femoral pores in at least one leg. So, if Boscá's specimen was a juvenile, as it seems to be based on its size (59 mm length, tail included), it seems quite possible that the 9 femoral pores observed correspond to the 9 pores sometimes observed in juvenile *A. marchi*. Consequently, this character cannot be considered diagnostic for *A. hidalgoi* vs. *A. marchi* comparisons either. A third character considered distinctive of *A. hidalgoi* vs. *A. marchi* is the dorsal/lateral contrasting coloration shown by the latter, versus a dark brown uniform coloration in the former. However, once again, the coloration in preservative fades through time depending upon the quality and timing of the actual preservation. In the MNCN collection, many old specimens of *A. marchi* present the typical coloration of the individual described by Boscá (1916a) (fig. 1B), making this character invalid for any diagnostic usage between live and preserved specimens.

Figure 1. A. Dorsal row of scales fitting the number counted by Boscá's description. B. Homogeneous dorsal body coloration after years of fluid preservation.

There is a somewhat ambiguous phrase in Boscá's description: "Tronco protegido por escamas grandes, … igual tamaño; sobre los lados y región superior de los miembros aparecen algo pequeñas y de forma más suave". The last portion of this sentence "on the sides and upper region of the limbs they appeared somewhat smaller and of smoother shape" (translation ours) could be interpreted as if the species presents the scales over the limbs smaller and smooth, a character that would not be present in any other species of *Algyroides*. However, we are convinced that in this sentence Boscá refers to the trunk scales located above the limbs (not on the limbs), which are small and rounded in all species of *Algyroides*, including *A. marchi*. We believe this is the case because Boscá, as any other trained taxonomist, will describe separately the characteristics of the trunk from those of the limbs, never mixing them in the same sentence. In fact, Boscá described the scales on the limbs a few sentences below: "Patas posteriores… cubiertas por su cara inferior por escamas lisas abrillantadas…" "…así como sobre las escamas lisas que protegen las extremidades, …"

Morphological comparisons using Valverde's (1958) criteria

We found high morphological variability in pholidosis, even among individuals of the same population (as previously reported by Palacios et al., 1974). Five morphological characters were discussed in the original descriptions of both *A. hidalgoi* and *A. marchi* (Boscá, 1916a;

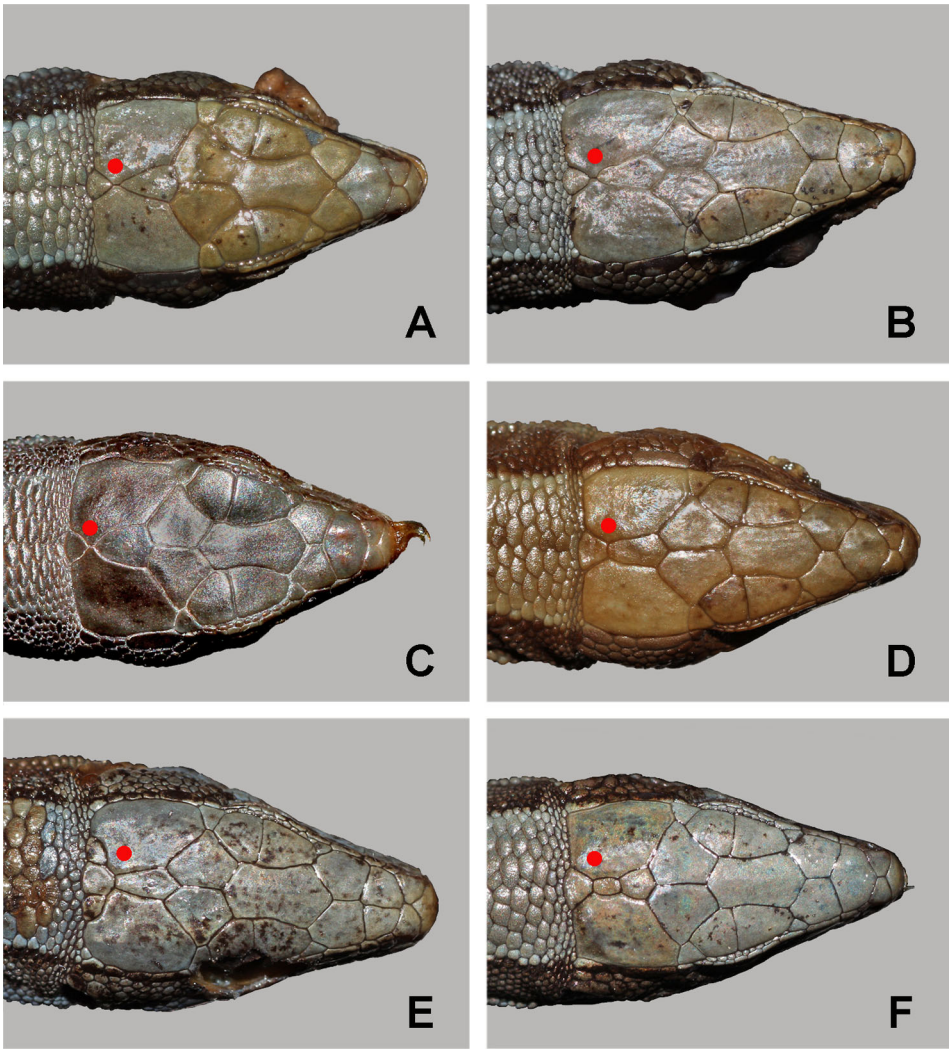

Figure 2. Dorsal variability in head scales (a red dot is placed on the left parietal scale). A-C represents parietals in contact as noted by Boscá (1916a). D-F shows individuals with parietals separated as described by Valverde (1958). E represent a distinctive individual with parietal plates fragmented, note also that its internasal is divided in two plates. Figure F shows the interparietal fragmented. A: MNCN 32020; B: MNCN 32125; C: MNCN 32082; D: MNCN 32058; E: MNCN 32144; F: MNCN 31976.

Valverde, 1958). Variation of characters 1 and 2 always follows a specific pattern: 8 specimens (of the 198 examined) have the parietal shields in contact and the occipital and interparietal shields separated, as in the description of *A. hidalgoi* (Boscá, 1916a) (fig. 2), while the other 190 show separated parietals and occipital and interparietal in contact, as in the description of *A. marchi* (Valverde, 1958) (fig. 2). Character 3, the tympanic scale, is variable in shape and position (fig. 3). Of the 198 specimens, 53 present the scale over the upper edge of the tympanum opening as described by Boscá (1916a) (fig. 3) and 145 show it at the upper-anterior corner of the tympanic opening as recorded by Valverde (1958) (fig. 3). Although the tympanic scale is occasionally broken into smaller pieces, its position can be unambiguously determined (fig. 3). Although character 4, the mental scale, is easily recorded, it is based on a moveable

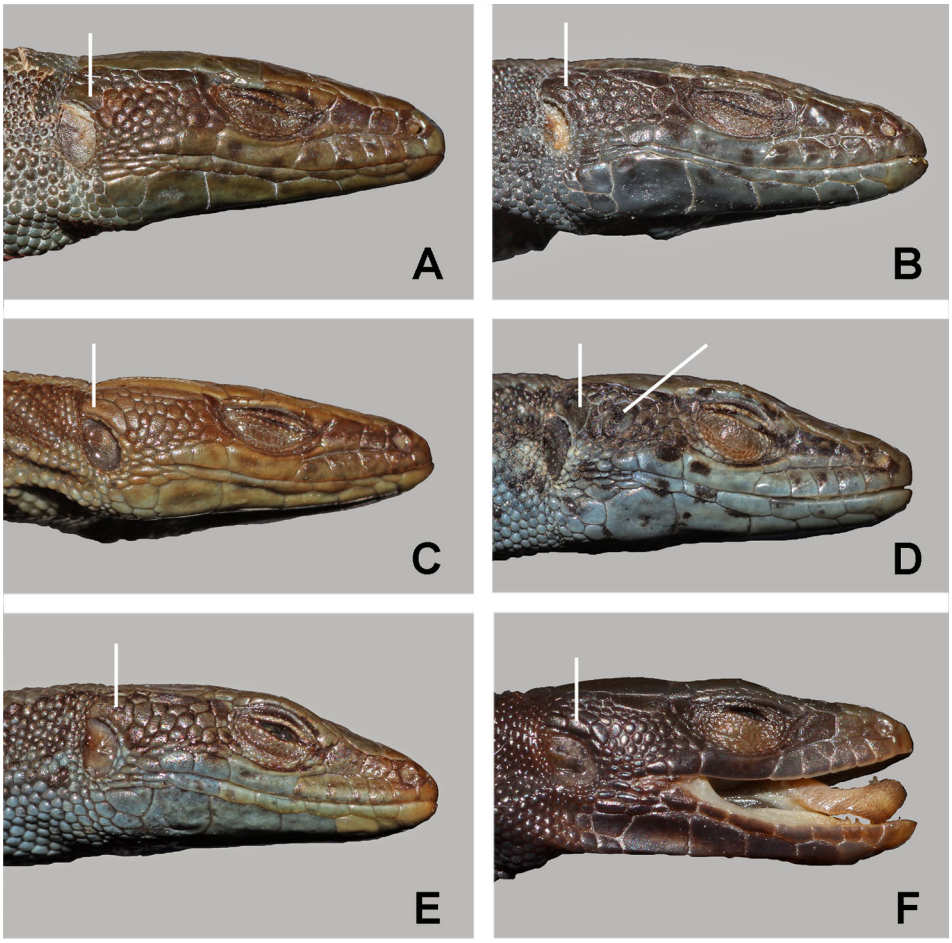

Figure 3. Lateral view of the head: scales variability. White lines point to tympanic scale (A-F) and masseteric plate (D). A-B: Tympanic scale horizontally positioned as described by Boscá (1916a). C-E: Tympanic scale positioned as described by Valverde (1958). F: Tympanic scale fragmented. Note the presence of masseteric plate in specimen of D. A: MNCN 32054; B: 32074; C: 32058; D: 32139; E: 32013; F: 32098.

structure (lower jaw position with respect to the upper jaw), so its value is highly relative: 41 of the 198 specimens have the mental and rostral scales at the same vertical level, as in Boscá's description (fig. 3), while the other 157 specimens show the pattern described by Valverde (fig. 3). With respect to character 5, ventral coloration, all specimens studied (which were previously preserved in ethanol), including a paratype of Valverde's *A. marchi* (MNCN 7947), present a bluish or, more rarely, brownish ventral coloration as indicated by Boscá (1916a) (fig. 4).

Discussion

We have determined that none of the five diagnostic characters used by Valverde (1958) to differentiate between *A. hidalgoi* and *A. marchi* are actually diagnostic. Four characters (all related to scales) are highly variable within populations, and both character states (Boscá's and Valverde's) are observed within the same populations (e.g. Peal de Becerro, Cazorla, Riópar and Bogarra). The fifth character, ventral coloration, is uniform in all specimens examined, including material from the type series of *A. marchi*. However, Valverde (1958) correctly indicated the ventral color as "amarillo canario

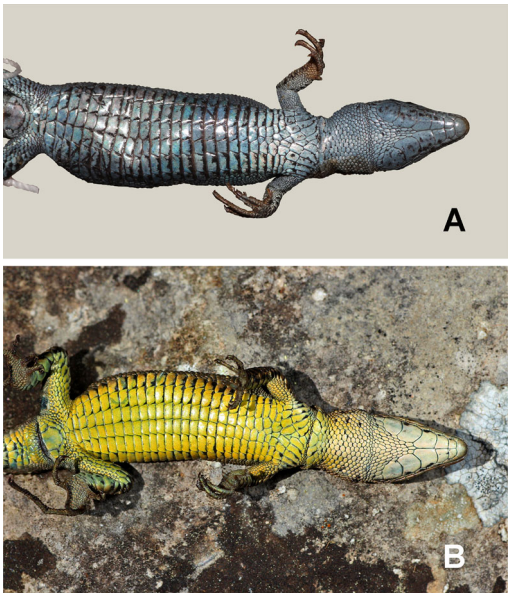

Figure 4. Differences in ventral coloration between preserved and living specimens of Iberian *Algyroides*. A shows the ventral grey-bluish coloration of a preserved specimen (MNCN 32144) as described by Boscá (1916a). B depicts the canary yellow ventral coloration of a live individual from Río Mundo (Albacete) (not collected).

brillante" ("bright canary yellow") as this is the color observed in live specimens. The yellow color faded to bluish-grey in the type material of *A. marchi* and in other preserved *Algyroides* specimens. Therefore, the bluish-grey ventral coloration described by Boscá, and also observed for Valverde's specimens, is an artifact of preservation in ethanol.

Valverde (1958) stated that "Esto parece indicar que se trata de una especie diferente o bien que la descripción, basada sobre un joven, es errónea" (it seems to indicate that [Boscá's specimen] represent a different species or otherwise, that its description, based on a juvenile, is erroneous). Based on our morphological analysis, both assumptions seem incorrect: Boscá's description was accurate, and it indicates intraspecific variability rather than specific differentiation. Valverde (1958) only studied five specimens, and likely did not consider the possibility of large population variability. Additionally, none of the characters suggested by other authors (Buchholz, 1964) or our colleagues to differentiate between *A. marchi* and *A. hidalgoi* are diagnostic, in fact most of them possibly correspond to erroneous interpretations of Boscá's writing.

Based on the evidence provided here, we demonstrate that the specimens used to describe both *A. hidalgoi* and *A. marchi* represent a single taxonomic and evolutionary unit.

Nomenclature of Iberian Algyroides

Klemmer (1960), Buchholz (1964) and Pérez-Mellado (1998) have commented on the nomenclatural problems associated with the name *A. hidalgoi*. Klemmer (1960) suggested that the name *A. hidalgoi* was a *nomen dubium*: "so läßt sich doch *hidalgoi* nach der unzureichenden Beschreibung nicht mit der notigen Exaktheit deuten, so dag dieser Name als ein *Nomen dubium* einstweiIen ruhen muß" (*hidalgoi*, according to the inadequate description, cannot be interpreted with the necessary exactness, so that this name must rest, as a *Nomen dubium*, for the time being).

Buchholz (1964: 246) argued in favor of the validity of the name *A. hidalgoi*: "1. Der Name *Algyroides hidalgoi* kann nicht als nomen dubium aufgefaßt werden. Nach der detaillierten Beschreibung von Boscá ist das Taxon ohne weiteres identifizierbar." (The name *Algyroides hidalgoi* cannot be treated as a nomen dubium. According to the detailed description of Boscá, the taxon is readily identifiable.).

We agree with Buchholz (1964) as the description of *A. hidalgoi* is complete and cannot be confused with any other *Algyroides* species. However, the type of *A. hidalgoi* is lost so cannot be used to inform on this issue. In 1914, Boscá's type collection was incorporated into the collections at the MNCN in Madrid (García-Díez and González-Fernández, 2013). Notably though, *A. hidalgoi* was described after this event. In 1958, Francisco Bernis, then head of the MNCN vertebrate collections, searched for but was unable to find the type of *A. hidalgoi* in the collections

(Valverde, 1958). Klemmer (1960) tried to locate the specimen at Boscá's work place in Valencia but was also unsuccessful. The type has been considered lost since then (García-Díez and González-Fernández, 2013; M. Calvo herpetological collection data). Recently, Geniez et al. (2014) indicated that Bosca´s contemporary types of *Podarcis guadarramae* were destroyed. Boscá probably sent specimens of his collection, in exchange or for discussion, to contemporary specialists. Fernand Lataste, George Albert Boulenger, and Jacques von Bedriaga, described new taxa using Boscá's materials, discussed his identifications, or were recognized with new taxa dedicated to them (see for example Lataste, 1879; Boscá, 1880; Boulenger, 1919), so it could have been possible that any of them received the holotype of *A. hidalgoi* for examination. The collections of all these three herpetologists are held at the Natural History Museum (London), which do not include any specimen that could be associated with *Algyroides hidalgoi* (http://www.nhm.ac.uk/our-science/collections/zoology-collections/herpetology-collections.html).

As discussed in the previous section, Iberian *Algyroides* are represented by a single taxonomic unit; however, two valid names are available for this unit: *A. hidalgoi* and *A. marchi*. In order to address the two-name nomenclatural problem, exacerbated by the loss of the *A. hidalgoi* type material, and to avoid future taxonomic problems and uncertainties, we deem necessary to designate a neotype for *A. hidalgoi* (ICZN, 2000: Article 75.3).

Designation of neotype for Algyroides hidalgoi

An adult specimen (MNCN 32128) mostly consistent with Boscá's original description, including parietal scales in contact and occipital and interparietal scales separated, was selected as the neotype (fig. 4). The locality of the selected neotype (Los Rasos, Peal de Becerro) is relatively far from the one indicated by Boscá's. However, Boscá's locality was probably erroneous or the consequence of accidental transport with plants or other materials to the San Ildefonso Royal Gardens (O. Arribas in http://www.montesdevalsain.es/index_reptiles.html; consulted: 21/2/2017), making it impossible to select a neotype from that locality. Boscá (1916b) described *Lacerta muralis guadarramae* (= *Podarcis guadarramae*) also from specimens, he did not collect, from San Ildefonso. He found these materials at the collections of the Botanical Garden of the University of Valencia (Boscá, 1916b; Geniez et al., 2014). The description of the coloration pattern of *L. m. guadarramae*, described as presenting six longitudinal stripes, fits precisely with the coloration pattern of the specimens of *Podarcis* from Sierra de Cazorla (the area selected for the neotype of *A. hidalgoi*), and not at all with the coloration pattern of female specimens from the Guadarrama mountains (always presenting less than six stripes). This additional observation supports either an erroneous labelling of both Boscá's *Podarcis* and *Algyroides*, or more likely the existence of a local toponym named "San Ildefonso" in the mountains of southeastern Spain, then and now forgotten. The name "San Ildefonso" is a common one all over southern Spain and, for example, it is currently held by a chapel and a "cortijo" in the province of Jaén (Google search: "San Ildefonso, Jaén"). The mentioned "Cortijo of San Ildefonso" is located in Montizón, a village relatively close to Sierra de Cazorla.

Description of neotype: adult male (fig. 5); SVL 42.86 mm; total length 78.94 mm; belly color bluish (fig. 5B); 24 femoral pores on both hind limbs; head length (snout-collar) 15.81 mm; head width: 7.08 mm; anal scale width 3.13 mm; 6 ventral scale rows; 8 collar scales. Masseteric plate large. Tail regenerated.

The neotype, MNCN 32128, which bears the labels "Los Rasos-Cazorla-Cauce del Guadalquivir" "7.6.1981, 13h, 1.6 gr" // "7539" [Fernando Palacios leg.] // *Neotypus* des. by

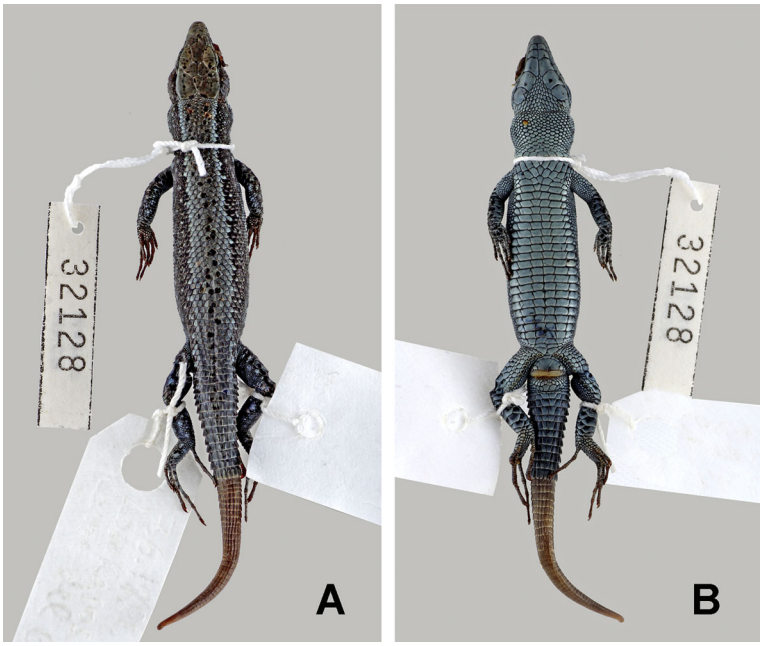

Figure 5. Habitus of the neotype of *Algyroides hidalgoi* (MNCN 32128) (Los Rasos, Peal de Becerro, Jaén). A: dorsal view; B: ventral view.

Sánchez-Vialas, Calvo-Revuelta and García-París, 2018 //, is held at the MNCN Herpetological Collection and is preserved in 70% ethanol. Variability of Cazorlan populations has been previously described in detail by Palacios et al. (1974); variability, including extreme values for key characters, can be further evaluated based on the following specimens from Los Rasos-Cazorla: MNCN 32125: male, SVL 44.59 mm; total length 127.16 mm; 26 femoral pores on both hind limbs; head length (snout-collar): 17.31 mm; head width: 7.84 mm; anal scale width: 3.34 mm; 6 ventral scale rows; 9 collar scales; masseteric plate present. MNCN 32126: female, SVL 45.67 mm; head length (snout-collar): 14.70 mm; head width: 6.79 mm; anal scale width: 2.54 mm; 6 ventral scale rows; 9 collar scales; no masseteric plate; both parietal shields fragmented into two plates situated on both sides of the occipital scale. MNCN 32127: female, SVL 46.81 mm; head length (snout-collar): 15.18 mm; head width: 6.68 mm; anal scale width: 2.63 mm; 6 ventral scale rows; 8 collar scales; no masseteric plate.

By designating a neotype for *A. hidalgoi*, using a specimen collected close to the type locality of *A. marchi*, we definitively and unambiguously solve both the taxonomic and the nomenclatural problems, resulting in *A. hidalgoi* and *A. marchi* becoming "objective" synonyms. Following the "precedence" rule of the ICZN (2000: 23.1), the name *Algyroides hidalgoi* must be retained over *Algyroides marchi*, which becomes a junior synonym of *A. hidalgoi*.

The conservation of the widely used name *A. marchi* is problematic. Reversal of precedence for *A. marchi* is not immediate. ICZN (2000: 23.9.1.1) establishes that reversion of precedence cannot be applied when the oldest name was published after 1899. The name *A. hidalgoi* was used for the first time in 1916 and has been used repeatedly in recent times (Buchholz, 1964; Salvador, 1974; García-París et al., 1989; Engelmann et al., 1993, among others) and consequently establishing precedence of *A. marchi* over *A. hidalgoi* would require an application to the ICZN.

Synonymic list

Algyroides hidalgoi Boscá, 1916

Algiroides hidalgoi Boscá, 1916a: 295. Terra typica: "San Ildefonso (Segovia)"

Algiroides marchi Valverde, 1958: 127. Terra typica: "Piedra de Aguamula, en la Sierra de Cazorla (Jaén)". ***syn. nov***.

Algyroides marchi niethammeri Buchholz 1964: 244. Terra typica: "Sierra de Agua (Jaén), SO-Spanien, nahe dem Paß (1480 m) an der Straße Alcaráz-Riópar, bei ca. 1430 m". Synonymy with *A. marchi* established by Palacios et al. (1974).

Boscá (1916a) and Valverde (1958) used the name *Algiroides* Duméril and Bibron, 1839 instead of *Algyroides* Bibron and Bory de Saint-Vincent, 1833. *Algiroides* is an incorrect subsequent spelling of *Algyroides* and, according to the code, incorrect spellings or emendations at the genus level do not have to be treated as new combinations (ICNZ 2000: 51.3.1). Following this logic, the combinations recorded in the synonymic list of Salvador (1997, 2014) based on incorrect subsequent spellings were removed from the list presented here. Boulenger (1920: 339) misspelled *A. hidalgoi* as "*Algiroides hidalgi*". Boulenger (1921) also proposed erroneously that *A. hidalgoi* was a synonym of *Ophisops occidentalis* Boulenger, 1887. However, it seems clear that Boulenger did not study the original specimen, and its attribution was speculative.

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