

Taxonomic Identity of an Extralimital Population of *Algyroides* Lizards (Squamata: Lacertidae) from Apulia Region in Southern Italy

Piero Carlino
Museo di Storia naturale del Salento
Sp. Calimera-Borgagne km 1
73021 Calimera, Lecce
ITALY
piero.carlino@msns.it

Olivier S. G. Pauwels
Département des Vertébrés Récents
Institut Royal des Sciences naturelles de Belgique
Rue Vautier 29, B-1000 Brussels
BELGIUM
osgpauwels@yahoo.fr

Abstract

We present the first vouchered report of a population of the genus *Algyroides* from Lecce Province in southeastern Italy, about 750 airline km S-SE of the only known Italian population in the northeastern provinces of Gorizia and Trieste. The population is morphologically referable to the Blue-throated Keeled Lizard, *A. n. nigropunctatus*. It is possibly introduced from Albania or western Greece through maritime traffic.

Keywords

Herpetofauna, *Algyroides nigropunctatus*, introduced species, karst, Mediterranean pseudo-steppe, Italy, Albania, Greece.

Introduction

The lacertid genus *Algyroides* is represented in Italy only by a population of *A. nigropunctatus nigropunctatus* (Duméril and Bibron, 1839) established in a narrow geographical strip in the northeastern provinces of Gorizia and Trieste (Bressi, 2010). In 2012 we discovered a population of *Algyroides* in Apulia Region, in the southeasternmost area of Italy, at about 750 airline km S-SE of the northern Italian population. The population is well established in the northern part of the “Costa Otranto—Santa Maria di Leuca e Bosco di Tricase” Natural Regional Park and its direct surroundings. It lives on steep karstic reliefs surrounded by Mediterranean pseudo-steppe vegetation, and, although easily distinguishable from other local species by its coloration and habitus, it is very difficult to approach and eluded capture until we eventually secured an adult male along a road on a small karst outcrop. This individual is described below to assess the population identity and some ecological notes on the Apulian population are provided.

Material and Methods

The voucher specimen (MSNS Rept 232) was collected on

21 August 2016 in Lecce Province, Otranto Sud, Capo d’Otranto, western side of the Provincial Road SP 87, in proximity to the Italian aeronautical base “136^a Squadriglia Radar Remota.” It was preserved in 70% ethanol and deposited in the herpetological collection of the Natural History Museum of Salento (Museo di Storia naturale del Salento, MSNS), Calimera. Measurements were taken with a Juwel digital caliper to the nearest 0.1 mm. Paired meristic and biometric characters are given left/right. The chromatical description is based on the colors of the individual in life.

Results

Description of the voucher specimen (Figures 1 and 2):

Adult male (hemipenes partly everted). Snout–vent length (from the tip of snout to the vent) 60.1 mm. Tail length (from the vent to the tip of the tail) 80.2 mm (only 6.4 anterior mm original, posterior part regenerated). Regenerated part progressively tapering, tip pointed. Distance snout-tip to posterior extremity of occipital scale 16.3 mm. Tail maximum width 6.8 mm. Head length (from the posterior margin of the retroarticular process of the lower jaw to the tip of the snout) 16.8/17.5 mm.



Figure 1. Lateral view of an adult male *Algyroides nigropunctatus nigropunctatus* (MSNS Rept 232) from Capo d’Otranto, Lecce Province, southeastern Italy. Photograph by O. S. G. Pauwels.



Figure 2. Ventral view of an adult male *Algyroides nigropunctatus nigropunctatus* (MSNS Rept 232) from Capo d’Otranto, Lecce Province, southeastern Italy. Photograph by O. S. G. Pauwels.

Head width (measured at the angles of the jaws) 10.0 mm. Head depth (maximum height of head from the occiput to the throat) 8.0 mm. Internarial distance (measured between the nares across the rostrum) 2.3 mm. Ear opening vertically elliptical. Rostral separated from the frontonasal scale by the two supranasals which are in broad contact with each other. Postnasal scales 2/2. Anterior loreal smaller than the posterior one. Prefrontals in contact. Parietals separated by the frontoparietals, the interparietal and the occipital. Interparietal and occipital in contact. Supralabial scales anterior to subocular scale 4/4. Supralabial scales posterior to subocular scale 2/2. Total number of supralabials including subocular 7/7. Supraocular scales 4/4. Supraciliaries 6/6. Supraciliary granules 10/10, row of supraciliary granules complete. Postoculars (in contact with anterior temporals) 2/3. Anterior temporals 3/4. Supratemporal scales along the parietal 4/3. Rostral, supranasals, internasal and prefrontals smooth, remaining scales of the upper surface of the head slightly rugose. Mental bordered posterolaterally by the first supralabial on each side, and posteriorly by the first pair of postmentals. Infralabials 6/6. Five pairs of postmentals in contact with the infralabials. Scales of the anterior two pairs of sublinguals in full contact with each other, scales of the third pair partly separated posteriorly by two gular scales, scales of the fourth and fifth pairs fully separated from each other by gular scales. Fourth pair of sublinguals largest. Gular scales along the throat midline 19, not including the collar scale. Nine enlarged collar scales. Scales of the ventral surface of the head and throat smooth. Enlarged mid-ventral scales counted longitudinally 23. Ventral scales smooth. Dorsal scales around midbody 27, the 12 mediadorsal ones much larger than the ones on the flanks. Dorsal scales each with a median keel. Anal plate anteriorly surrounded by eight preanal scales. A continuous series of 19/19 pore-bearing scales along the whole length of each femur, the two femoral pore-bearing scale series medially separated by two non pore-bearing scales. Lamellar scales under fourth toe 25/27. Supracaudals and infracaudals rectangular, each with a longitudinal keel, both on the original and regenerated parts. Dorsal surface of head, body and tail uniformly dark brown, with a few scattered black dots on the upper flanks. Lower flanks dark orange, gradually turning to dark brown upwards. Underside of head blue until the collar included, except a small dark orange lateral area on each side just before the collar. Undersurface of belly, arms and legs dark orange, slightly lighter along the belly midline and in the cloacal area. Underside of original part of tail dark orange. Underside of regenerated part of tail dark grey, darkening posteriorly, black at tail tip. Undersurfaces of palms, fingers and toes grey. Several adult males with a blue throat and an orange belly were observed in situ. Hatchlings observed in situ had a uniform dark brown dorsal color on body and tail.

Ecological notes:

Besides the above described specimen, we observed the species in the nearby “Costa Otranto—Santa Maria di Leuca e Bosco di Tricase” Natural Regional Park. It is mostly found on karst cliffs facing the sea, and on large karst boulders fallen from the cliffs and partly covered with vegetation (Figure 3). Individuals always stay near deep rock crevices where they quickly disappear when approached. A visit on 20 August 2016,

departing at 0600 h from the Palacia lighthouse and going northwards, allowed us to observe five adults and a hatchling between 0745 and 0900 h on a 500 m transect along the cliffs. The next day seven individuals, including five adults and two juveniles, all different from the individuals seen the day before, were observed on the same transect between 0800 h and 0930 h. Individuals became active when the temperature reached about 26°C (temperature was 21°C at sunrise at 0604 h). They spend some time basking in the morning, and when the temperature rises in the late morning and afternoon, they search rock surfaces in the shadow. On the same rocks, i.e., in strict syntopy, we observed *Tarentola mauritanica* (Linnaeus, 1758) (Gekkonidae), *Lacerta bilineata* Daudin, 1802 and *Podarcis siculus* (Rafinesque-Schmaltz, 1810) (Lacertidae) and *Hierophis viridiflavus* (Lacepède, 1789) and *Zamenis situla* (Linnaeus, 1758) (Colubridae). The *Podarcis* were in much higher density than the *Algyroides*, and much easier to approach. *Hemidactylus turcicus* (Linnaeus, 1758) (Gekkonidae) was also observed in this part of the park, but not in strict syntopy with *Algyroides*. We first noticed this *Algyroides* population in 2012, and we observed hatchlings, juveniles and adults, indicating that this population is well established and reproducing.

Discussion

The combined presence of a blue throat in adult males, of two postnasals, of small granular scales on lower flanks and the absence of a dark lateral band on flanks and of a dark vertebral line readily distinguishes the Apulian *Algyroides* from *A. fitzingeri* (Wiegmann, 1834), *A. marchi* Valverde, 1958 and *A. moreoticus* Bibron and Bory, 1833 (Arnold et al., 2007). The fourth species in the genus, *Algyroides nigropunctatus*, is found along the eastern Adriatic coast from northeastern Italy to western Greece and the Ionian islands. Only two subspecies are currently recognized. The possession of an orange belly and a blue throat is typical of the nominal subspecies and absent in *Algyroides nigropunctatus kephallithacius* Keymar, 1986. Males of the latter subspecies, endemic to the Greek islands of Kefallonia and Ithaca, show a yellow belly and a greenish throat (Peek, 2007). All the meristic, morphometric and chromatical



Figure 3. Biotope of *Algyroides nigropunctatus nigropunctatus* in “Costa Otranto—Santa Maria di Leuca e Bosco di Tricase” Natural Regional Park, Lecce Province, southeastern Italy. Photograph by O. S. G. Pauwels.

characters of the male described above fully agree with the variation known in the nominal subspecies (Bressi, 2010; Koleska and Jablonski, 2015). Melanistic individuals, reported from several localities within the range of *A. n. nigropunctatus* (Urošević, 2014), were not observed in the Apulian population.

The newly reported Apulian *Algyroides* population lives three km south of Otranto harbor. There are regular maritime lines between Otranto harbor and Vlora harbor in southwestern Albania, Corfu harbor on the Greek island of Corfu (type locality of *A. n. nigropunctatus*) and Igoumenitsa harbor in continental Greece. The boats carry diverse goods including construction materials and cement. Picariello and Scillitani (1988) suggested, based on genetic and morphological analyses, that the Apulian population of *Mediodactylus kotschy* (Steindachner, 1870) (Gekkonidae) could have been recently introduced from Greece through maritime traffic. We similarly suggest that the Apulian *Algyroides* population was recently founded by the incidental

importation through maritime traffic of individuals from southern Albania or western Greece. Genetic studies would be useful to assess more precisely the geographical origin of the Apulian population, and its affinities with some intraspecific clades already identified (Podnar and Mayer, 2006, Sergiadou et al., 2015). A monitoring of the Apulian population would allow for evaluation of its geographical extent and its potential competition with other, indigenous, lacertids.

Acknowledgments

We thank Massimo Marrocco (Otranto Port authorities) for useful information on local maritime traffic. We are grateful to Thomas P. C. Pauwels (Brussels) for companionship in the field, to Olivier Riche (SNCB, Brussels) for his kind efforts in arranging Brussels-Lecce train tickets, and to Antonio Durante (MSNS) for providing working facilities.

Literature Cited

- Arnold, E. N., O. Arribas and S. Carranza. 2007. Systematics of the Palaearctic and Oriental lizard tribe Lacertini (Squamata: Lacertidae: Lacertinae), with descriptions of eight new genera. *Zootaxa* 1430:1-86.
- Bressi, N. 2010. *Algyroides nigropunctatus nigropunctatus* in Italy: Notes on ecology, habitat selection and conservation (Reptilia, Lacertidae). *Italian Journal of Zoology* 71(supp. 1):113-116.
- Koleska, D., and D. Jablonski. 2015. Tail trifurcation in *Algyroides nigropunctatus* (Duméril and Bibron, 1839). *Ecologica Montenegrina* 3:26-28.
- Peek, R. 2007. Waarnemingen aan de blauwkeelkielhagedis (*Algyroides nigropunctatus kephallithacius*) van het eiland Kefallonia, Griekenland. *Lacerta* 65(4):136-141.
- Picariello, O., and G. Scillitani. 1988. Genetic distances between the populations of *Cyrtodactylus kotschy* (Squamata: Gekkonidae) from Apulia and Greece. *Amphibia-Reptilia* 9(3):245-250.
- Podnar, M., and W. Mayer. 2006. First insights into the mitochondrial DNA diversity of Dalmatian *Algyroides*, *Algyroides nigropunctatus* (Lacertidae). *Periodicum Biologorum* 108(1):85-87.
- Sergiadou, D., C. Papadaki and K. Sotiropoulos. 2015. Genetic uniformity in the Dalmatian *Algyroides* (*Algyroides nigropunctatus*) from the Greek mainland. P. 172. In: Abstracts. 13th International Congress on the Zoogeography and Ecology of Greece and Adjacent Regions. Hellenic Zoological Society, Irakleio.
- Urošević, A. 2014. Record of a melanistic Dalmatian *Algyroides*, *Algyroides nigropunctatus* (Duméril and Bibron 1839) (Squamata, Lacertidae), on the Island of Corfu, Greece. *Hyla* 2014(1):13-17.