

Incomplete albinism in *Discoglossus pictus* (Otth, 1837)

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Abstract. The authors present an incomplete albinism case in a *Discoglossus pictus* subject found in Sicily. This is the first note for Italian territory, the second for the species and the third for *Discoglossus* genus.

Keywords. *Discoglossus pictus*, albinism, Alitidae, Discoglossidae, amphibians.

Discoglossus pictus belongs to the Alitidae family, previously called Discoglossidae (Lanza et al., 2007, 2009). Two genera belong to Alitidae: *Alytes* (present in Morocco, Iberian Peninsula, France, transalpine Switzerland, Southern Belgium, Southern Netherlands and Western Germany) and *Discoglossus* (distributed in Maghreb Africa, Southern Europe and Israel) (Table 1).

Discoglossus pictus is a western mediterranean species, distributed in Sicily, Malta and Gozo Island, Tunis, including Galita Island, Northern Algeria. It is also a naturalized species in Northern Spain and Southern France (Lanza et al., 2007, 2009). *Discoglossus pictus* presents three different dorsal colourations: a “spotted” phenotype with brown, brown-greenish, brown-yellowish or greenish stains on brown-reddish or brown-yellowish background, a “striped” phenotype characterized by a median band and two lateral bright bands, coupled with numerous spots similar to the previous phenotype, and a third “con-color” phenotype, brown, brown-reddish or reddish normally uniform or with small and shed dark sketches (Lanza et al., 2007, 2009).

As a premise, it should be remembered that albinism is due to a blockade of melanophores metabolic pathway leading to melanine synthesis (Lanza et al., 2007, 2009). If metabolic alteration impacts skin and eye melanophores, complete albinism occurs; incomplete albinism occurs when metabolic alteration impacts only skin or eye melanophores (Lanza et al., 2007, 2009). Partial albinism, instead, consists of the presence of achromic areas in more or less wide and more or less numerous portions of the skin (Lanza et al., 2007, 2009).

Table 1. Summary of species of the family of Alitidae and reports of albinism.

FAMILY	GENUS	SPECIES	REPORTS	REFERENCES
Alitidae	<i>Alytes</i>	<i>cisternasii</i> (Boscá, 1879)	1 adult and some tadpoles complete albinism	Márquez, 2009
		<i>dickhilleni</i> (Aritzten and García-Paris, 1995)	1 incomplete	Benavides et al., 2000
		<i>maurus</i> (Pasteur and Bons, 1962)	no reports	
		<i>muletensis</i> (Sanchiz and Adrover, 1979)	no reports	
		<i>obstetricans</i> (Laurenti, 1768)	about 10 complete or incomplete albinism	García-Paris et al., 2004, Héron-Royer, 1878, 1886, Diego-Rasilla et al., 2007
	<i>Discoglossus</i>	<i>galganoi</i> (Capula, Nascetti, Lanza, Bullini & Crespo, 1985)	no reports	
		<i>montalenii</i> (Lanza, Nascetti, Capula & Bullini, 1984)	no reports	
		<i>nigriventris</i> (Mendelssohn & Steinitz, 1943)	no reports	
		<i>pictus</i> (Oth, 1837)	1 tadpole incomplete albinism	Boulenger, 1897
		<i>sardus</i> (Tschudi, 1837)	3 tadpoles partial albinism	Capanna, 1968, 1969
		<i>scovazzi</i> (Camerano, 1878)	no reports	

In Amphibians there are a number of reports of complete and incomplete albinism. Thus it has been mandatory to concentrate bibliographic research on albinism cases in Alitidae family (Table 1). For *Discoglossus* genus, albinism records are extremely rare. For instance, in 1879, Lataste claims a lack of albino *Discoglossus pictus* to complete its researches on tadpoles pigmentation (Lataste, 1879).

In the month of June 2009, in Ragusa province (Italy), precisely in Marina di Ragusa, few meters over the sea level and approximately 500 meters from the sea, an albino *Discoglossus pictus* individual was found. The animal was in a small lake rich in *Nymphaea alba*, in a big garden of a private owner. In the same area many subjects of the same species were present, all belonging to the spotted phenotype (Fig. 2 C). Studied subject jumped among other presenting a uniform white skin coloration with black eyes (Fig. 1; Fig. 2 A, B). It was a sub-adult (5 cm body length), incomplete albino individual, extreme-

**Fig. 1.** *Discoglossus pictus* with albinism incomplete. Left view.



Fig. 2. (A) Right view; (B) Dorsal view; (C) Other *Discoglossus pictus* “spotted” phenotype with the albino (photo by Viola S.).

ly vital and in apparently good health status (Fig. 1; Fig. 2 A, B). Dimension and actual lack of secondary sexual characters did not allow us to determine gender, but we expect it was a female. The animal is still alive and it is the first case of *Discoglossus pictus* incomplete albino on the Italian territory.

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REFERENCES

- Benavides, J., Viedma, A., Clivilles, J., Ortiz, A., Gutiérrez, J.M. (2000): Albinismo en *Alytes dickhilleni* y *Salamandra salamandra* en la Sierra de Castril (Granada). Bol. Asoc. Herpetol. Esp. **11**: 83.

- Boulenger, G.A. (1897): The Tailless Batrachians of Europe. Part I. Ray Society, London.
- Capanna, E. (1968): Osservazioni sul semialbinismo degli anfibi. *Boll. Zool.* **34**: 100-101.
- Capanna, E. (1969): Albinismo parziale in una popolazione insulare di *Discoglossus sardus* Tschudi. *Boll. Zool.* **36**: 135-141.
- Diego-Rasilla, F.J., Luengo, R.M. (2007): Varios casos de albinismo en *Alytes obstetricans* (Laurenti, 1768). *Bol. Asoc. Herpetol. Esp.* **18**: 92.
- García-París, M., Montori, A., Herrero, P. (2004): Amphibia. Lissamphibia. En: Fauna Iberica. Vol. 24. Ramos Sánchez, M.A., et al. Eds, Museo nacional de Ciencias Naturales, Madrid.
- Gilboa, I., Dowling, H.G. (1974): A bibliography on albinism in amphibians and reptiles, 1849-1972. A bibliographic service by Herpetological Information Search Systems, American Museum of Natural History, New York, *Publ. Herpetol.* **6**: 3-11.
- Héron-Royer, B. (1878): Recherches sur la fécondité des batraciens anoures *Alytes obstetricans*, *Hyla arborea*, et sur la fécondation des oeufs du *Bufo bufo* dans l'obscurité. *Bull. Soc. Zool. France* **3**: 278-285.
- Héron-Royer, B. (1886): Sur la reproduction de l'albinisme par voie héréditaire chez l'Alyte accoucheur et sur l'accouplement de ce batracien. *Bull. Soc. Zool. France* **11**: 671-679.
- Lanza, B., Andreone, F., Bologna M.A., Corti, C., Razzetti, E. (2007): Fauna d'Italia. Vol. XLII, Amphibia, Calderini, Bologna.
- Lanza, B., Nistri, A., Vanni, S., (2009): Anfibi d'Italia. Ministero dell'Ambiente e della Tutela del Territorio e del Mare, ISPRA Grandi & Grandi Editori, Savignano sul Panaro (Mo).
- Lataste, F. (1879): Étude sur le *Discoglossus pictus* Otth. *Actes Soc. L. Bord.* **4**: 275-341.
- Márquez, R. (2009): Sapo partero ibérico – *Alytes cisternasii*. En: Enciclopedia Virtual de los Vertebrados Españoles. Salvador, A., Ed, Museo Nacional de Ciencias Naturales, Madrid. <http://www.vertebradosibericos.org/>.