Herpetology Notes, volume 10: 709-711 (2017) (published online on 08 December 2017)

Subcutaneous lipoma in the toad *Melanophryniscus sanmartini*, third case in amphibians

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Spontaneous neoplastic diseases have been scarcely reported in amphibians, with a few reports available from the literature (Balls and Clothier, 1974; Asashima et al., 1987; Green and Harshbarger, 2001; Stacy and Parker, 2004). However, numerous types of neoplasia were identified in these lower vertebrates, both of benign and malignant nature (Schlumberger and Lucké, 1948; Schlumberger, 1957; Balls, 1962; Harshbarger, 1977). Most reports correspond to cases of skin neoplasia which include papillomas, adenomas, carcinomas, lipomas, melanophoromas and also mesenchymal tumours (Schlumberger and Lucké, 1948; Balls, 1962; Berger et al., 2004; O`Brien et al., 2017). The more frequently occurring neoplasias in wild amphibians are the renal adenocarcinoma or Lucké tumour caused by a herpesvirus (Schlumberger and Lucké, 1948), and pollution-related melanophoromas (Rose and Harshbarger, 1977; Green and Harshbarger, 2001). In this communication we report the finding of a fatty tumour in the Neotropical toad *Melanophryniscus sanmartini* Klappenbach, 1968 (Anura, Bufonidae) during a pathogen surveillance survey of wild amphibians in Uruguay, central-eastern South America. An adult male specimen of this species measuring 23.4 mm snout-vent length was collected during winter at Valentines, Departamento de Treinta y Tres, 33º15'S, 55º06'W (July 5, 2009), eastern Uruguay. The toad was captured vocalising in a small pond in grassland habitat and was transported to the laboratory after gross examination, as it presented a noticeable mass on the back. A cutaneous application of 20% benzocaine gel was used for euthanasia, then the specimen was fixed in 10% formalin, and deposited at the herpetological collection of Museo Nacional de Historia Natural de Montevideo (MNHN 9510).

The mass was located on the lumbar region, measured approximately 3 mm diameter and was covered by intact skin (Fig. 1 A). No other anomalies were evident in the specimen. Dissection of the swelling revealed a subcutaneous tumour of lipomatous-like tissue (Fig. 1 B), limited by a thin capsule loosely adhered to the skin and to a lesser extent to the lumbar musculature. At histological examination, the neoplasia was mostly an irregular arrangement of adipocytes, with numerous small blood vessels (Fig. 1 C, D). Near the attachment to the dermis the tumour contained more flattened fat cells adjacent to fibrotic connective tissue. Adipocytes within the tumour appeared like typical fat tissue cells, with small and eccentric nuclei. The tumour was contained within the capsule and did not invade adjacent skin or lumbar muscles. The macro and microscopical features of this neoplasia matched with those of lipomas or fatty tumours.

Lipomas are of mesenchymal origin, with low growth rates, and are usually benign (Mentzel and Fletcher, 1995). They are the most common soft tissue neoplasia of humans, however, they are rare in wild animals (Schlumberger and Lucké, 1948; Effron et al., 1977; Garner et al., 2004), and in amphibians we are aware of only two published cases. Reichenbach-Klinke and Elkan (1965) described a lipoma originating from the wall of the urinary bladder in a male specimen of the toad *Bufo bufo* (Bufonidae) that died in captivity, but could not relate this finding with the death of the specimen. Another old case similar to our observations

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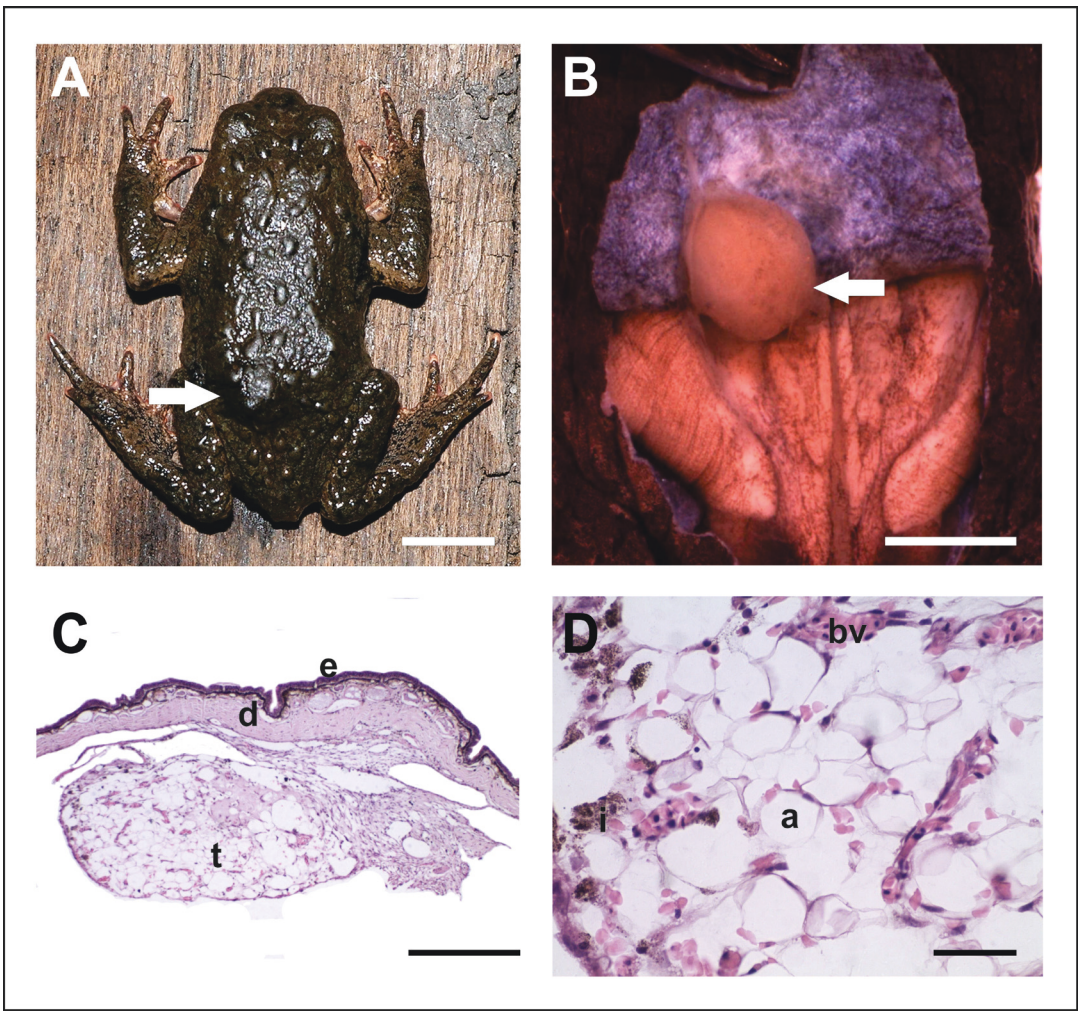

Figure 1. Subcutaneous fatty tumour in the toad *Melanophryniscus sanmartini*, MNHN 9510. (A) Dorsal view of anesthetised specimen, notice the dorsal mass caused by the neoplasia (bar = 5 mm). (B) Dissection of the lesion in the fixed specimen (bar = 2 mm). (C) Histologic section of the tumour *in toto*, and adjacent skin: e, epidermis; d, dermis; t, tumour (bar = 500 µm). (D) Histologic section of the tumour at higher magnification; a, adipocytes; bv, blood vessels; i, iridiophores (bar = 50 µm).

was reported by Balls (1962) in a female of the frog *Xenopus laevis* (Pipidae) from Cape Town, which developed a subcutaneous lipoma of approximately 20 mm noticeable as a prominent mass in the dorsum. It was localized under the skin, poorly vascularized, and joined to the right fat body through the dorsal musculature. Like in these previously published cases, the lipoma identified in *M. sanmartini* presented the structure and appearance of a benign neoplasm. Due to its small size and superficial location it was unlikely to caused major illness in the toad. To our knowledge, this report constitutes the first finding of a spontaneous neoplasia in a wild Neotropical amphibian.

Acknowledgements. We thank María Jesús Sabalsagaray and Antonio Moraña for their support at the laboratory. Lee Berger and Diego Baldo kindly reviewed the manuscript. PEDECIBA and ANII-Sistema Nacional de Investigadores provided financial support.

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Accepted by Benjamin Tapley