Amphibians can exhibit a number of external anomalies, including those relating to color and pattern, morphology, and those associated with edema or tumors and embryological causes (Henle et al. 2017). The presence of an additional limb (polymely) and the black-colored iris (black-eyed anomaly) are two of the most commonly known amphibian abnormalities and have been recorded in many amphibian species, more often in frogs and toads than newts (Sessions and Ruth 1990; Canestrelli et al. 2006; Henle et al. 2017).

On 14 April 2010, during field monitoring surveys on the biodiversity status of the Crati River (Calabria, southern Italy; Bonacci et al. 2011), one female Italian Edible Frog, *Pelophylax* kl. *hispanicus* (Bonaparte 1839), exhibited polymely (Fig. 1) and another female the black-eyed anomaly (Fig. 2). Both were collected along the banks of the Crati River in the Municipality of Tarsia, Province of Cosenza, Calabria, southern Italy (39.59169 N, 16.26342 E; elev. 58 m asl). A radiographic image of the individual with polymely revealed duplication of the left forelimb. In the same area and on the same date, we found three Italian Pool Frogs, *Pelophylax bergeri* Günther 1986, and eight Italian Edible Frogs without any apparent morphological anomalies.

*Pelophylax bergeri* and *P. kl. hispanicus* are two closely related taxa, of which *P. bergeri* is the parental species and *P. kl. hispanicus* is a hybridogenetic or klepton hybrid (Dubois and Ohler 1994; Günther and Plötner 1994; Capula et al. 2007; Dubey and Dufresnes 2017; Di Nicola et al. 2019). *Pelophylax bergeri* and *P. kl. hispanicus* are morphologically and chromatically very similar (Capula et al. 2007; Di Nicola et al. 2019) and only a few small morphological differences distinguish adults of the two species (Capula et al. 2007; Lapini et al. 2007). In Calabria, as in the rest of central and southern Italy, the two species often coexist in the same habitat (Capula et al. 2007; Di Nicola et al. 2019), although at different frequencies, *P. kl. hispanicus* being generally more abundant than *P. bergeri* in bodies of water characterized by

**Figure 1.** A female Italian Edible Frog (*Pelophylax* kl. *hispanicus*) from the Crati River in southern Italy with polymely and a radiograph of the same individual showing duplication of the left forelimb. Photographs by Gaetano Aloise.
Results of the investigations by Ouellet et al. (1997), Ouellet (2000), and Reeves et al. (2008). The area close to the Crati River is characterized by intense agricultural activity and massive use of pesticides (Ioel et al. 2020), and Battegazzore et al. (2007) and Lucadamo et al. (2007) noted the poor environmental quality and compromised biodiversity of the area. According to Lucadamo et al. (2008) chemical-physical parameters measured in Crati water revealed intense alterations due to solid and soluble reactive phosphorus associated with the use of pesticides and herbicides in local agricultural activities, suggesting that water polluted with pesticides likely is the main cause of the deformities observed in local frogs.

**Figure 2.** Female Italian Edible Frogs (*Pelophylax kl. hispanicus*) with the black-eyed anomaly from the Crati River (left) and a normally colored iris (right). Photographs by Massimo Capula.

**Figure 3.** A female Italian Stream Frog (*Rana italica*) with unilateral anophthalmia (right eye). Photographs by Massimo Capula.

**Literature Cited**


