

First cases of predation of *Bufo spinosus* by two leech species in Algeria

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Leech predation of amphibians is a common phenomenon, but in North Africa is documented in just a few short reports (Beukema & de Pous, 2010; Ben Ahmed et al., 2014; Merabet et al., 2017). In the Maghreb, intensive leech predation in synergy with the continuing decline of amphibian habitats may ultimately lead to the decline of amphibian populations (Beukema & Philip de Pous, 2010; Samraoui et al., 2012). In fact, the proliferation of freshwater leeches may affect amphibian survival directly by predation or indirectly by contributing to the spread of pathogens and secondary parasitic organisms. This may especially be the case for vulnerable amphibians with highly fragmented populations such as the newt *Pleurodeles nebulosus* (Ahmed et al., 2014).

We report here predation of *Bufo spinosus* Daudin, 1803 in Algeria by two species of leech, *Hirudo troctina* Johnson, 1816 and *Batrachobdella algira* (Moquin-Tandon, 1846). On the evening of 8th March 2019, we encountered several adult *B. spinosus* in amplexus near a large permanent pond known as Lac Noir situated at 1260 m asl (36° 41'48.5" N, 4° 36'08.1" E) in Akfadou forest in Kabylia (Fig.1). In one of the couples, the male had a single specimen of *B. algira* attached to his right flank and the female had one sanguinary leech *Hirudo troctina* at the insertion of the anterior right leg (Fig. 2). Leeches were photographed and then identified on the basis of external features.

In Tunisia, it is relatively common to find *B. algira* on amphibian hosts during the anuran-breeding season (Ben



Figure 1. Lac Noir in Akfadou forest (Kabylia), where observations on *Bufo spinosus* and leeches were made



Figure 2. Predation by *Batrachobdella algira* and *Hirudo troctina* upon a pair of *Bufo spinosus* in amplexus (arrows indicate positions of leeches)

Ahmed et al., 2014) and in Algeria *B. algira* has been observed on *Pelophylax saharicus* (Billet, 1904). We observed an abundance of unattached *H. troctina* in the permanent pond which suggests a significant threat from this species. Together with other threats, the presence of *H. troctina* with vulnerable amphibians such as the *P. nebulosus* may result in significant population decline, as has already been reported for this predator/host combination in a permanent pond close to this region (Merabet et al., 2017).

Although the current observations do not show whether or not leech predation is associated with mortality in the case of *B. spinosus*, further study of the impacts of leeches on amphibian populations in this pond would be of value especially in view of the lack of knowledge on the ecology and distribution of *B. spinosus* in Algeria (Mateo et al., 2013).

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