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Cope (1862) described the genus *Neurergus* with the type species *N. crocatus*. In 1916, Nesterov described a new species *derjugini* (in the genus *Rhithrotriton* at that time) from the Surkev Mountains (Kurdistan, Iran). He also described *Rhithrotriton derjugini var. microspilotus*, as a subspecies from the Avroman region of Iran. Nesterov (1916) described differences between these two subspecies based on the shape and number of yellow spots. *Rhithrotriton d. microspilotus* has spherical-shaped spots while *R. d. derjugini* has extended renal-shaped ones. After its type description, no further specimens of *R. derjugini* could be found and some researchers considered it as a synonym of *Neurergus crocatus* (see Hendrix et al., 2014). Later, Schmidtler and Schmidtler (1975) classified a newly found population of *Neurergus from Neurergus microspilotus*, based on the description of *R. derjugini var. microspilotus* from the geographically proximate Avroman Mountains in the west of Iran. Based on the first records of *R. derjugini* from its type locality, Fleck (2010) and Schneider and Schneider (2011, 2013) recommended that since both taxa resemble each other, it is better to consider them as synonyms. Accordingly, these authors proposed *N. derjugini derjugini* (Nesterov, 1916) and *N. derjugini microspilotus* (Nesterov, 1916) as valid taxonomic names. Hendrix et al. (2014) revealed weak genetic differences between these taxa by mitochondrial DNA and clear differences by a nuclear marker, and stated that a separate species status for *N. derjugini* and *N. microspilotus* seems currently not to be justified on the existing databases. So, we follow the previous taxonomic decision as two distinct subspecies, *N. d. derjugini* and *N. d. microspilotus* before more detailed studies.

Here we present a new locality and apparently the largest known population of *N. d. derjugini* from the mountainous southern perimiter of its geographic range in Kurdistan province of Iran. Since its discovery in 1916, this is the second study that provides exact locality data on the Iranian populations of *N. d. derjugini*.

The new locality, with approximate length of 1.4 km, lies in a region known as Miri Sour (35.439°N, 46.152°E; 1386 m a.s.l.; 8.3 km south of Marivan and 5.8 km west of Kani Dinar, Kurdistan Province, Iran, Fig. 1A-D). It was found during an ornithological survey on May the 17th 2015. Having a stepping stone structure, it is a combination of a single stream (0.6-1.8 m width), small rocky waterfalls and numerous small to medium sized ponds (1.2-3.3 m radius). The stream is fed by several springs. The stream substrate composition consists of boulder, cobble, gravel, pebble, fine sediment and coarse woody debris. Adjacent riparian plant and tree community includes Pennyroyal (*Mentha pulegium*), Bindweed (*Convolvulus* spp.), Common Wild Oat (*Avena fatua*), Grapevines (*Vitis* spp.), Raspberries (*Rubus* spp.), Willow (*Salix* spp.) and the Plane trees (*Platanus orientalis*). The surrounding habitats of the Miri Sour Stream is dominated by Brant’s Oak (*Quercus brantii*), mixed with Persian turpentine (*Pistacia atlantica*) and Hawthorn (*Crataegus aronia*). The Miri Sur adult nept
specimens are characterized as follows: the ground coloration of the head, dorsal and lateral sides of the trunk and anterior portion of the tail is black, covered with irregularly dispersed extended renal-shaped yellow spots; spots are also present on the limbs; the underside of the belly and tail is red-orange; the throat and chest mottled with very little red pigments; and tail flattened laterally (Fig. 2). The closest known \( N. \ d. \ derjugini \) locality to the Miri Sour Stream is Penjwin (35.583°N, 45.917°E; 26.6 km northwest of Miri Sour; a locality in the Sulaymaniyah Province of Iraqi Kurdistan region (Schneider and Schneider, 2011).

In summer 2015, the Miri Sour population experienced a severe drought. Extraction of stream water for use in downstream orchards was also a major problem. As a result, the newts and their larvae were restricted to thirteen remaining small ponds which were quickly running dry. In order to preserve the remaining population in Miri Sour Stream, which were suffering from drought and to minimize the negative effects of water usage by horticultural activities, we did awareness rising. Convincing the downstream orchard owners, water extraction was minimized as much as possible.

With the involvement of local people and applying streambed materials, we built five new ponds (1.6-2.1 m radius, water depth less than 15 cm) along the stream in the shade of trees. Four drying springs were revived and their water routes were directed towards the main streambed. In late-summer 2015 when the drought reached a peak, we used plastic pipes and gallons to

**Figure 1.** (A) Distribution of *Neurergus* species/subspecies (the square is *N. d. derjugini*); (B) previously known (circles) and new (Miri Sour: yellow square) localities of *N. d. derjugini* (A & B after Barabanov and Litvinchuk, 2015); (C & D) the Miri Sour Stream, Kurdistan Province, Iran. Photos (C-D) by Fatah Zarei.
transport the upstream spring water to the downstream ponds. Following these measurements and full-time protection of the habitat during the past three years, the initial newt population counted in May 2015 (n = 388) has now (counted in May 2017) reached to about 1,147 individuals (Fig. 3).

The number of known localities for *N. d. derjugini* remains small (n = 13), five in the west of Iran and eight in Iraqi Kurdistan region (Nesterov, 1916; Najafimajd and Kaya, 2010; Schneider and Schneider, 2011; Al-Sheikhly et al., 2013; Barabanov and Litvinchuk, 2015; Bozorgi et al., 2015). The total number of *N. d. derjugini* individuals observed also remains small, ranged from one in Baneh and Mawat-Isawa to 165 in Qara and Abubakra (Al-Sheikhly et al., 2013; Bozorgi et al., 2015). In nearly 60% of surveyed localities, less than 10 individuals have been found and almost 20% of occupied streams lacked records of either breeding or development through metamorphosis (Nesterov, 1916; Najafimajd and Kaya, 2010; Schneider and Schneider, 2011; Al-Sheikhly et al., 2013; Barabanov and Litvinchuk, 2015; Bozorgi et al., 2015). Our results suggest that the population size of *N. d. derjugini* in the Miri Sour Stream seems to be the largest, and nourishes hope for its future conservation. Apart from our conservation measurements, several other factors may have been involved in this population increase. Where impact of human density is low, there are higher populations of newts (Rastegar-Pouyani et al., 2015). Based on our observation, fortunately, this is the case in the Miri Sour Stream, as it remains relatively

![Figure 2. Two adults of *N. d. derjugini* in the Miri Sour Stream. Photo by Jalal Pezeshk.](image)

![Figure 3. A glance of present-day status of *N. d. derjugini* in the Miri Sour Stream. Photo by Fatah Zarei.](image)
unknown and difficult to reach by the public. Also, the extraordinary riparian forest and plant community along the stream play an important role in supporting primary production in the stream through exporting foliage to the benthic community of the highland streams where the macroinvertebrate community is the sole food source for the newts (Farasat and Sharifi, 2014).

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References


