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NOTE

First record of *Hydra viridissima* (Hydroida: Hydridae) in a freshwater environment of Corrientes, Argentina

Primer registro de *Hydra viridissima* (Hydroida: Hydridae) en un ambiente de agua dulce de Corrientes, Argentina

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Abstract

Hydra viridissima (Pallas, 1766) is reported for the first time in the city of Corrientes, Argentina, in a freshwater body. The specimens were attached to the roots of native aquatic plants and were found to be undergoing both sexual reproduction, with the presence of ovary and testis, and asexual reproduction through budding. The species was not recorded again in this body of water during 2023 and 2024.

Keywords: Corrientes, Green hydras, First finding, Paraná River, Wetlands.

Resumen

Se reporta por primera vez el registro de *Hydra viridissima* (Pallas, 1766) para la Ciudad de Corrientes, Argentina, en un cuerpo de agua dulce. Los ejemplares se encontraban adheridos a las raíces de las plantas acuáticas nativas y se hallaban tanto en reproducción sexual, con presencia de ovario y testículo, como en reproducción asexual mediante brotes. No se volvió a registrar a la especie en dicho cuerpo de agua durante el 2023 y 2024.

Palabras clave: Corrientes, Hidras verdes, Humedales, Primer hallazgo, Río Paraná.

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The *Hydra* genus consists of solitary organisms in the form of a tube or column, known as a polyp. At the foot, we can find the basal disc, which allows them to adhere to surfaces. At the opposite end, it has a crown of hollow and contractile tentacles around its mouth, called the hypostome. These tentacles vary in quantity, appearance, and length, depending on the species. They are mainly responsible for capturing food, as they contain batteries of cnidocytes (Deserti, 2012). *Hydra* are freshwater polyps found on all the continents except Antarctica (Campbell, 1999). Occasionally, they can reach dense populations, attributed to sprouting, morphological plasticity, and regeneration capacity (Zamponi, 1991). At high population densities, these organisms become important predators of small invertebrates and, occasionally, of fish and frog larvae that they manage to immobilize and capture through their nematocysts (Dumont, 1994; Elliott, Elliot, Leggett, 1997; Jankowski, Strauss, Ratte, 2005).

It is well known that hydras are divided into four groups. They are distinguished by their morphological characteristics and DNA analysis. The “*Broueri group*” consists of hydras that are small, unstalked, and monoecious. This group is classified based on whether the bud tentacles arise successively or simultaneously. However, the most distinctive feature is the broad, oval shape of the isorhiza holotricha. The “*Oligactis group*” includes hydras with showy peduncles and long, large tentacles. The two lateral tentacles of the buds develop earlier and are longer than the others. The shape of the holotrichous isorhiza is ‘narrowly oval.’ These hydras have a distinctive appearance due to their golden-yellow pigment, which gives the polyps a characteristic yellowish hue. They are strictly dioecious. The “*Vulgaris group*” includes hydras that are frequently used in research. They differ in that the bud tentacles arise nearly simultaneously, along with their nematocysts. The shape of the holotrichous isorhiza is ‘narrowly oval.’ The group is divided into those with desmonemes shorter than atrichous isorhizas and those with desmonemes as long as atrichous isorhizas. They are usually dioecious, although hermaphroditism and sex reversal can occur. The “*Viridissima group*” includes *Hydra viridissima* and other poorly known species. *Hydras* of these species almost always harbor numerous symbiotic algae in their endodermal cells, which gives them their characteristic green color; other green hydras lose this color during laboratory culture. They can be recognized by the small size of their nematocysts, and the systematic distinction is based on the structure of the embryotheca. *Hydras* in the *viridissima group* are monoecious (Campbell, 1983; Martinez, Iñiquez, Percell, 2010).

For Argentina, the genus *Hydra* is cited for only a few provinces: *Hydra sp.* for Córdoba and Río Negro (Carranza Perales, 2020 iNaturalist; Segura, 2023 iNaturalist), *Hydra plagiodesmica* in Santa Fé (Dioni, 1968), *Hydra pseudoligactis*, Buenos Aires (Deserti, Zamponi & Escalante, 2012), *Hydra viridissima*, Buenos Aires and Santa Fé (Deserti, 2016; Tamagno, 2019 iNaturalist; GBIF Secretariat, 2023) *Hydra vulgaris*, Buenos Aires and

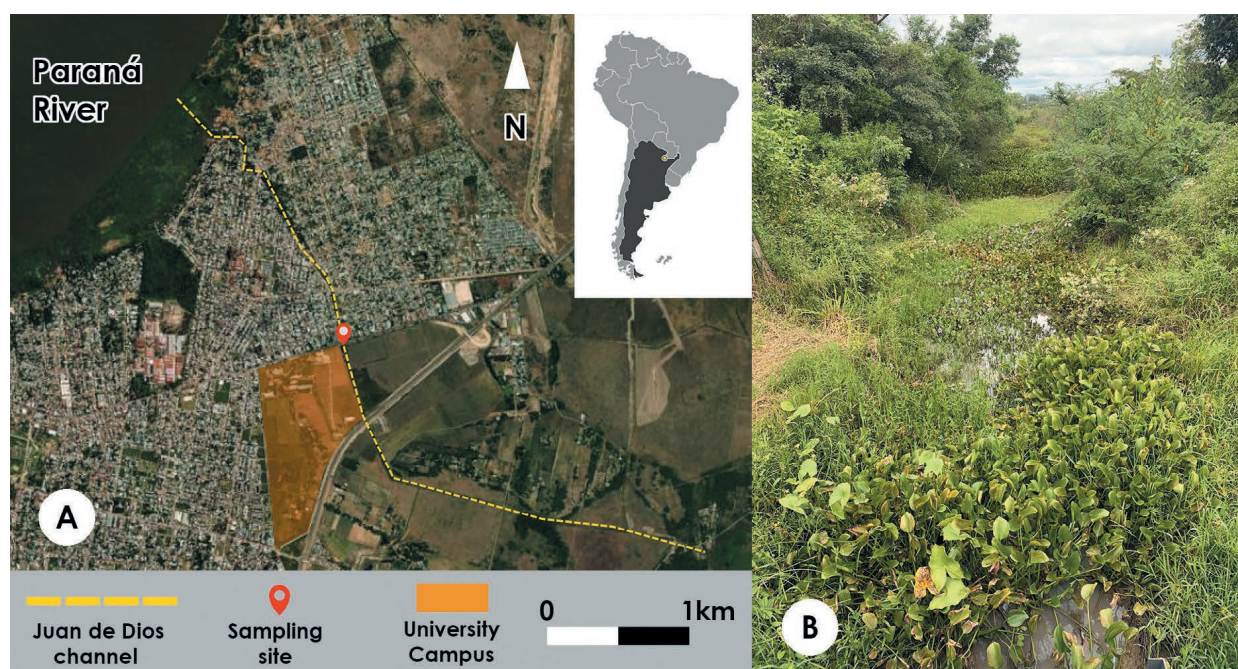


Figure 1. Study area in the city of Corrientes, Argentina. A) Satellite image of the Juan de Dios channel. B) Sampling site.

Figura 1. Área de estudio en la ciudad de Corrientes, Argentina. A) Imagen satelital del canal Juan de Dios. B) Sitio de muestreo.

La Pampa (Deserti & Zamponi, 2011; GBIF Secretariat, 2023), and *Hydra vulgaris pedunculata*, Buenos Aires (Deserti, Zamponi & Escalante, 2011). This shows a scattered distribution of the genus across the country, as well as areas where its presence remains unknown due to the lack of studies.

The sampling was carried out in August 2022 in the Juan de Dios channel (S 27°27'52.0", W 58°46'48.5"), located in the city of Corrientes, Argentina (Fig. 1A). This channel is a branch of the Paraná River and belongs to the so-called "Wetlands of northwestern Corrientes". In addition, this water body crosses the Deodoro Roca University Campus (Universidad Nacional del Nordeste) and is 5.72 km long (Fig. 1B). It has a variety of aquatic plant species, the most abundant being *Nymphoides idica* (L.) Kuntze and *Pontederia azurea* Sw., from which the root was extracted. Water was extracted using plastic buckets, and aquatic plants were collected from two zones: a marginal zone and a deep zone (up to 4 meters). The samples were transported to the laboratory for live observation of the organisms under a stereoscopic binocular magnifying glass (Leica E24).

RESULTS AND DISCUSSION

From the water samples analyzed, seven specimens of green hydras were found, with algae present inside them. The hydras were found attached to the roots of the aquatic plants. To remove them, the roots were isolated

and shaken in water from the same channel inside plastic trays, and then isolated for later measurements.

The column was observed to be slender and tubular with a length of 5.5 mm when fully extended. There were 7-8 moniliform tentacles of uniform diameter, with a length of 1/2 to 3/4 of the body length. In the center of the crown of tentacles, the hypostome is dome-shaped and transparent in color. Most of the specimens were in sexual reproduction. In the anterior portion of the tentacles, close to the hypostome, there is a single transparent and bulb-shaped testicle, on top of which moving spermatozoa were observed. In the middle portion of the column, the ovary was distinguished in the form of a wide, dark green ring (Fig. 2A).

Two of the specimens were in asexual reproduction, with the presence of one bud each. They had a thick barrel-shaped column, 7 short and robust moniliform tentacles and a triangular-shaped hypostome. They also had a greenish coloration and the presence of algae (Fig. 2B).

Everything observed coincides with what was previously cited by Campbell and Deserti for the species *Hydra viridissima*, which helps us confirm the first finding of this species in water bodies in the city of Corrientes.

Finally, several samplings were carried out throughout 2023 and 2024, but it was not possible to find the species again. As is known, hydras are considered bioindicators of water quality and are susceptible to small physical and chemical changes in the environment (Huarachi, 2012). This may be related to water quality, as the canal is located within the city and it is possible that there are contaminants presents in the water.

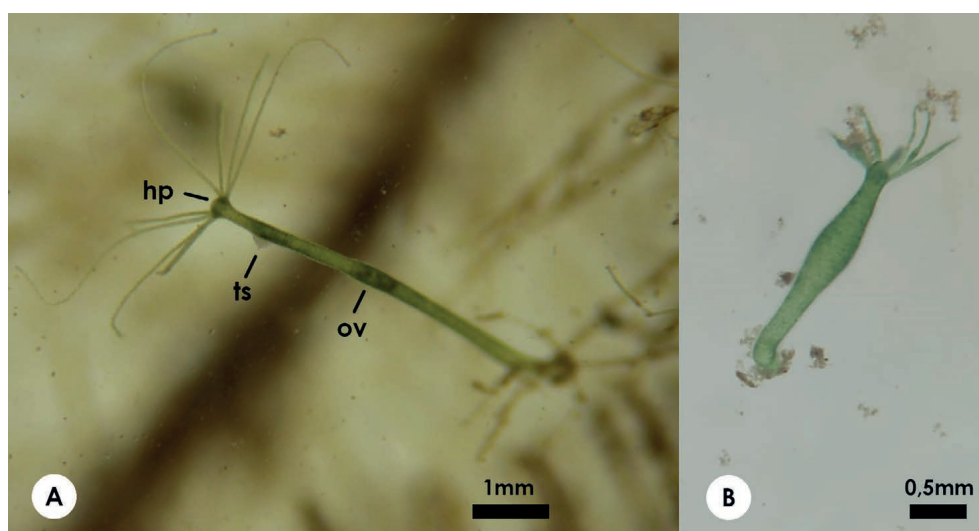


Figure 2. *Hydra viridissima* (Pallas, 1766) found in the Juan de Dios channel in Corrientes city, Argentina. A) Sexually mature individual. B) Bud detached from the parent. Abbreviations: hp = hypostome, ov = ovary, ts = testicle.

Figura 2. *Hydra viridissima* (Pallas, 1766) hallada en el canal Juan de Dios en la Ciudad de Corrientes, Argentina. A) Individuo sexualmente maduro. B) Brote desprendido del progenitor. Abreviaturas: hp = hipostoma, ov = ovario, ts = testículo.

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