

The invasive spider *Badumna longinqua* (L. Koch, 1867) (Araneae: Desidae) in Argentina: New distributional records, with notes on its expansion and establishment

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ABSTRACT: *Badumna longinqua* (L. Koch 1867) is a medium-sized spider native from Australia. Due to its synanthropic habitat, this spider expanded their range distribution, reaching Germany, Japan, New Zealand, Uruguay and USA. We found specimens of this species in different localities from Buenos Aires Province, Argentina. Therefore, we report the first records of *B. longinqua* to Argentina, and discuss aspects of its distribution.

The family Desidae has actually 181 species distributed in 38 genera (Platnick 2012). *Badumna longinqua* (L. Koch, 1867) (Desidae) is a native spider from Australia and was introduced into New Zealand, Japan, United States and in South America, where it was recorded only from Uruguay (Platnick 2012). Recently, it was found in Germany (Kielhorn and Rödel 2011). The introduced spider *B. longinqua* is a medium-sized cribellate spider and commonly known as “grey house spider” (Simó *et al.* 2011). *Badumna*’s web consists of a retreat with numerous sheets, radiating at various angles (Ubick 2005). This species can be easily found living in tree trunks, rock walls and also is very common inhabiting synanthropic habitats, such as window frames, wall crevices, inside or outside houses, and in urban parks (Simó *et al.* 2011). From Australia this species spreaded to other parts of the world by human activities mainly by inert phoresy on vehicles and merchandise, where they build their webs (Main 2001). In South America, the species was reported from southern urban localities of Uruguay (Costa 1993; Capocasale and Pereira 2003). In North America, the species was recorded in woodlands and agroecosystems in California and Oregon (United States) (Shorthouse 2010).

Recently, Simó *et al.* (2011) published additional distributional and ecological data about *B. longinqua* in Uruguay. In this country, this species is associated with synanthropic areas and it is also very abundant in *Eucalyptus* forests (Simó *et al.* 2011). The *Eucalyptus* plantations recorded in Uruguay represents 16.5% of the projected surface to be forested in the future (Petraglia and Dell’Aqua 2006). This noticeable growth is due to an increased global interest on *Eucalyptus* for making pulpwood, oil, gum and wood chips for papermaking, home construction, chemical industry and energy production (Batish *et al.* 2008).

The increase in *Eucalyptus* cultivation had a positive effect on the expansion of the distribution range of *B.*

longinqua in Uruguay (Simó *et al.* 2011). In Argentina, *Eucalyptus* trees are very abundant, whether on large plantations for industrial purposes, as well as urban forest parks (Braier 2004). However, until now there were no formal records of this species published for Argentina or another South American country (Platnick 2012). The aim of this work is to report for the first time the presence of *B. longinqua* in Argentina.

As was indicated for other countries, we collected specimens by hand in *Eucalyptus* plantations and natural reserves forested with *Eucalyptus*, as well as in houses and other buildings in different urban localities from Buenos Aires Province, Argentina. Voucher specimens were deposited in the Laboratorio de Zoología de Invertebrados II (LZI), Universidad Nacional del Sur, Bahía Blanca, Argentina and in the Museo Municipal de Ciencias Naturales “Lorenzo Scaglia” (MMPE), Mar del Plata, Argentina. We studied additional specimens from the arachnological collections of the Museo Argentino de Ciencias Naturales “Bernardino Rivadavia”, Buenos Aires, Argentina (MACN) and of the MMPE, Mar del Plata, Argentina. We made the distribution map using Global Mapper ver. 11.0. In total, we collected 24 specimens from 9 different localities of Buenos Aires Province, and studied 10 specimens which were deposited in the museums (Figure 1). All the spiders were collected in synanthropic environments, like gardens, front yards, walls of buildings and urban parks (Figure 2). The first collected specimen in Argentina we know about is from Mar del Plata and it was captured in 1998 (Table 1).

The reasons for the successful expansion and establishment of particular spider species are usually unknown but it might be a combination of several factors, such as occurrence in buildings (synanthropy) and species specific traits (Nedved *et al.* 2011). Human activities are responsible for most of the range expansion of *B. longinqua*, including spread with goods on transportation

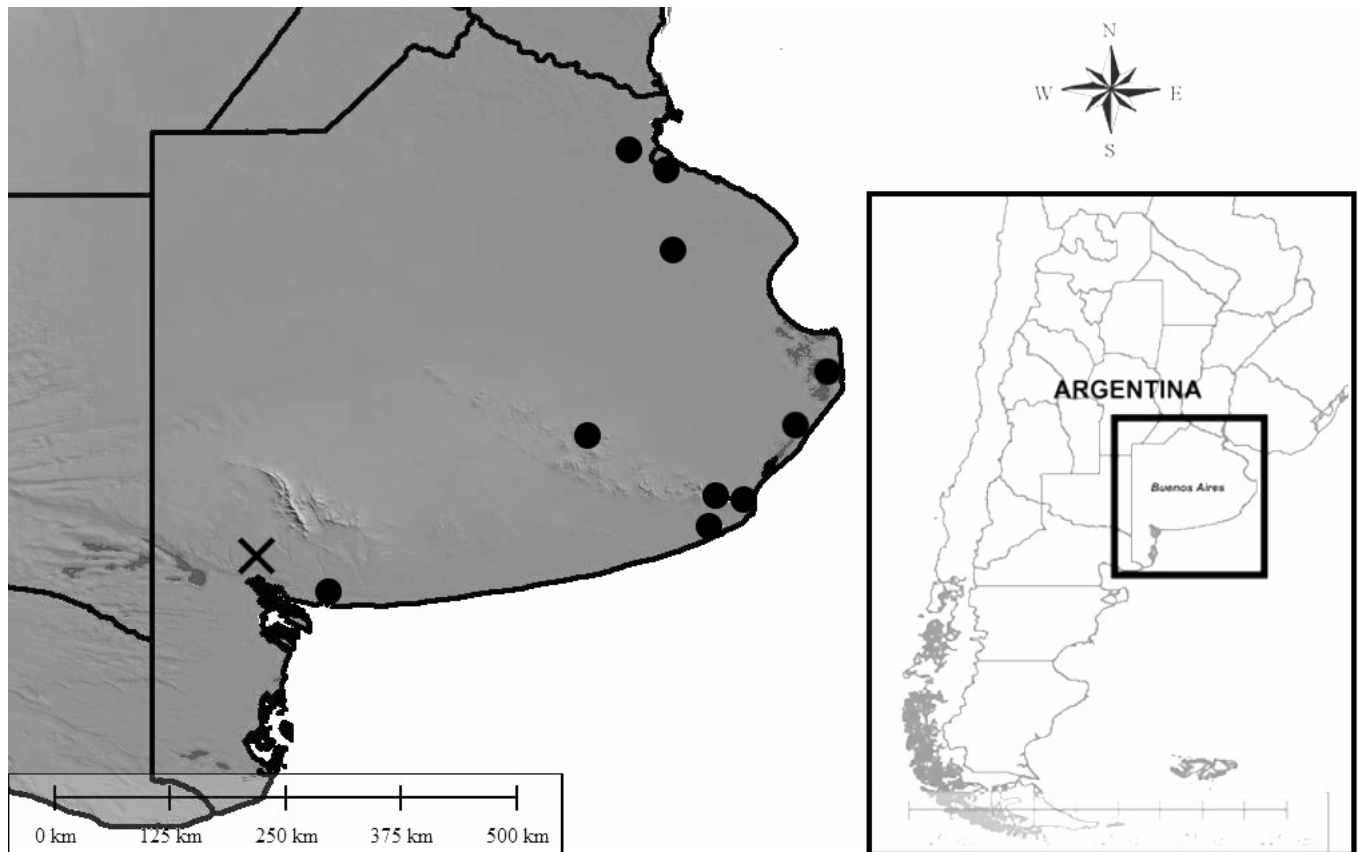


FIGURE 1. Geographic distribution of *B. longinqua* at Buenos Aires Province, Argentina (black dots). Black cross indicates the absence of *B. longinqua* in Bahía Blanca city next to the southern known record of the species.



FIGURE 2. *Badumna longinqua*, live habitus of female from Monte Hermoso (A) and web retreat in a bark in Laguna de los Padres, Mar del Plata (B).

such as ships, trains and planes offering suitable warm habitats and availability of food. An affinity for building material has likely promoted the dispersal of several spider species in Europe, and probably in other countries around the world (Nedved *et al.* 2011). Kobelt and Nentwig (2008) argue that the geographic closeness and the high level of trade connections between different areas could be the main causes promoting the invasions of the spiders. Moreover, there are other records of exotic spiders in Argentina and Uruguay. For example, the introduction of *Phoneutria* species (Ctenidae) from Brazil by terrestrial transport (Simó 1984; Simó and Brescovit 2001). Also, *Holocnemus pluchei* (Scopoli 1763) (Pholcidae) was introduced into Argentina from Europe (Laborda and Simó

2008). One more example could be *Kukulcania hibernalis* (Hentz 1842) a successful invasive spider in South America that only inhabits anthropic areas been very common in most Argentinean cities (Ramírez and Grismado 2008).

Badumna longinqua is an additional introduced spider species and also constitutes the first record of the family Desidae in Argentina. One attribute of *B. longinqua* as an invasive species is the good ability for human dispersion and its adaptation to different synanthropic habitats (Simó *et al.* 2011). Environmental conditions could limit the success of an invasive species and *B. longinqua* exhibits a great tolerance for varied climate, if the expansion of this species in different parts of the world is taken in account

(Platnick 2012). Simó *et al.* (2011) also considered that temperate zones have more risk of invasion than tropical zones. These authors observed a niche and habitat competition between *B. longinqua* and the native spider species *Metaltella simoni* (Keyserling 1878) (Amphinectidae), which uses the same microhabitat. For this reason, more comprehensive studies are needed to elucidate how this invasive spider influences both native fauna and human populations.

Our data suggest an effective trend of introduction along the Atlantic coast of Argentina with some records in localities far from the coast, for example a few kilometers, such as in Ranchos and Tandil localities (Figure 1). The most austral distributional record corresponds to the locality of Monte Hermoso (38°59'33"S, 61°15'55"W), but in the Southern and larger city of Bahía Blanca, only at a

distance of 100 km from Monte Hermoso, no specimens or webs of *B. longinqua* were found. Monte Hermoso locality comprise an important tourist centre, and usually a large proportion of people from Bahía Blanca locality travel to Monte Hermoso on holidays or even at weekends. Though we can consider that actually a tradeoff between the two cities probably exists, increasing thus the probability of invasiveness of *B. longinqua*. However, we do not know why this spider has not yet expanded its distribution to Bahia Blanca. Maybe some climatic characteristics of this city are not adequate for the colonization by this species (for example, it is drier than the localities *B. longinqua* was found). Therefore, although preliminary, these data open many opportunities to study both beneficial and harmful effects that this introduced and invasive species may cause in Argentina or in other countries around the world.

TABLE 1. Material examined of *Badumna longinqua* from Argentina

LOCALITY	NUMBER OF SPECIMENS	DATE	LOCATION OF SPECIMENS
Buenos Aires city	3 juveniles	14 January 2003	MACN 21006
Buenos Aires city	1 juvenile	10 December 2008	MACN 21007
Buenos Aires city	1 juvenile	20 January 2009	MACN 21010
Buenos Aires city	2 juveniles	7 January 1999	MACN 21011
Buenos Aires Province, Avellaneda, Sarandí	1 female	30 September 2007	MACN 12870
Buenos Aires Province, Mar Chiquita	1 female and 1 juvenile	04 March 2012	MMPE
Buenos Aires Province, Mar de Ajó	1 female and 1 juvenile	10 March 2012	MMPE
Buenos Aires Province, Mar de Cobo	1 female	04 March 2012	MMPE
Buenos Aires Province, Mar del Plata	1 female	April 1998	MMPE
Buenos Aires Province, Mar del Plata	1 female	14 September 2000	MMPE
Buenos Aires Province, Mar del Plata	1 juvenile	27 November 2011	MMPE
Buenos Aires Province, Mar del Plata, Laguna de los Padres	1 female and 2 juveniles	28 January 2012	MMPE
Buenos Aires Province, Mar del Plata,	2 juveniles	17 February 2012	MMPE
Buenos Aires Province, Mar del Plata,	1 juvenile	24 February 2012	MMPE
Buenos Aires Province, Mar del Plata,	1 juvenile	26 February 2012	MMPE
Buenos Aires Province, Mar del Plata,	3 juveniles	28 February 2012	MMPE
Buenos Aires Province, Mar del Plata,	1 female	06 March 2012	MMPE
Buenos Aires Province, Miramar	1 juvenile	05 February 2012	MMPE
Buenos Aires Province, Monte Hermoso	1 female and 1 juvenile	20 February 2012	LZI
Buenos Aires Province, Ranchos	1 female	10 January 2012	MMPE
Buenos Aires Province, Tandil, Sierra del Tigre municipal reserve	1 female	22 February 2012	LZI
Buenos Aires Province, Villa Gesell	1 female and 1 juvenile	12 March 2012	MMPE

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