Inventory of some families of Hemiptera, Coleoptera (Curculionidae) and Hymenoptera associated with horticultural production of the Alto Valle de Río Negro and Neuquén provinces (Argentina)

ÁLVAREZ, Leopoldo J.1,2, BERNARDIS, Adela M.3, DEFEA, Bárbara S.1,2, DELLAPÉ, Pablo M.1,2, DEL RÍO, María G.1,2, GITTINS LÓPEZ, Cecilia G.3, LANTERI, Analía A.1,2, LÓPEZ ARMENGOL, María F.3,4,* MARINO DE REMES LENICOV, Ana M.2, MINGHETTI, Eugenia1,2, PARADELL, Susana L.2,5 & RIZZO, María E.1

1 CONICET.
2 Facultad de Ciencias Naturales y Museo, UNLP. La Plata, Argentina.
3 Facultad de Ciencias del Ambiente y la Salud, UNCo. Neuquén, Argentina.
* E-mail: m.lopezarmengol@conicet.gov.ar
4 Área de Investigación y Desarrollo Tecnológico para la Agricultura Familiar, Instituto Nacional de Tecnología Agropecuaria, INTA. Plottier, Argentina.
5 Comisión de Investigaciones Científicas de la Provincia de Buenos Aires-CIC-PBA. La Plata, Argentina.

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RESUMEN. El conocimiento de la fauna entomológica presente en los sistemas productivos es importante para el manejo agroecológico ya que los insectos beneficiosos son un recurso clave para el manejo de plagas en los sistemas hortícolas. Es esencial contar con información científica sobre la biodiversidad presente en un área determinada y la función ecológica y/o los hábitos alimenticios de los insectos. En el Alto Valle de Río Negro y Neuquén, los sistemas de producción hortícola pueden describirse como altamente dependientes de los insumos químicos para el manejo de plagas y fertilización. El objetivo de este estudio es realizar un inventario de la biodiversidad de algunas familias de Hemiptera, Coleoptera (Curculionidae) e Hymenoptera presentes en las chacras periurbanas y rurales ubicadas en Neuquén y Río Negro, respectivamente. Los insectos fueron recolectados a través de trampas de caída y red entomológica en cultivos de tomate y pimiento, y áreas circundantes no cultivadas.

Idiosystatus Berg (Auchenorrhyncha) fue citado por primera vez en Argentina. Especies citadas por primera vez en Neuquén: Hemiptera: Auchenorrhyncha:Acanalonia chloris (Berg), Syncharina punctatissima (Signoret), Amplicephalus dubius Linnauvori, Exitianus obscurinervis (Stål), Agalliana ensigera Oman y Bergallia signata (Stål); Hemiptera: Heteroptera: Harroestes (Harmostes) prolixus Stål y Atrachelus (Atrachelus) cinereus (Fabricius); Coleoptera: (Curculionidae): Hypurus bertrandi (Perris), Naupactus leucomelana Boheman, Otiorhynchus rugosostriatus (Goeze) y Sitona discoideus Gyllenhal e Hymenoptera: Xylocopa (Neoxylocopa) augusti Lepeletier and Pseudagapostemon (Neagapostemon) singularis Jörgensen. Especies citadas por primera vez en Río Negro: Hemiptera: Auchenorrhyncha:Amplicephalus dubius Linnauvori, Amplicephalus marginsellinus Linnauvori, Circulifer tenellus (Baker) y Xerophloea viridis (Fabricius); Hemiptera: Heteroptera: Tupiocoris cucurbitaceus (Spinola), Atrachelus (Atrachelus) cinereus...
The knowledge of the entomological fauna in productive systems is important for the agroecological management since beneficial insects are a key resource for pest management in horticultural systems. Scientific information on the biodiversity present in a given area is essential as well as the ecological function and/or feeding habits of the insects. In Alto Valle de Río Negro and Neuquén, horticultural production systems can be described as highly dependent on chemical inputs for pest management and fertilization. The aim of this study is to carry out an inventory of the biodiversity of some families of Hemiptera, Coleoptera (Curculionidae) and Hymenoptera present in peri-urban and rural farms located in Neuquén and Río Negro, respectively. Insects were collected through pitfall and sweeping net on tomato and pepper crops and the surrounding non-cultivated areas.

**Palabras clave.** Cultivos de tomate y morrón. Insectos benéficos. Plagas. Vegetación circundante.

**Abstract.** The knowledge of the entomological fauna in productive systems is important for the agroecological management since beneficial insects are a key resource for pest management in horticultural systems. Scientific information on the biodiversity present in a given area is essential as well as the ecological function and/or feeding habits of the insects. In Alto Valle de Río Negro and Neuquén, horticultural production systems can be described as highly dependent on chemical inputs for pest management and fertilization. The aim of this study is to carry out an inventory of the biodiversity of some families of Hemiptera, Coleoptera (Curculionidae) and Hymenoptera present in peri-urban and rural farms located in Neuquén and Río Negro, respectively. Insects were collected through pitfall and sweeping net on tomato and pepper crops and the surrounding non-cultivated areas.

**key words.** Beneficial insects. Pests. Surrounding vegetation. Tomato and pepper crops.

**Introduction.**

Insects make up a large part of the overall diversity in agricultural landscapes and encompass a broad range of functional groups (Kremen et al., 1993). They do not only represent agricultural pest species, insects also serve as biological control agents, provide pollination services, and form an important food resource for many vertebrates in agricultural landscapes (Diekötter et al., 2008).

An increasing number of studies show that the intensification of land uses and homogenization in agricultural landscapes, with the aim of increasing food supply, decreases biodiversity. At the local field scale, increased uses of crop monocultures, greater inputs of fertilizers and pesticides, and decreased within-field heterogeneity may affect species diversity and composition and the provision of ecosystem services to agricultural productivity (Tscharntke et al., 2005).

In the Alto Valle de Río Negro and Neuquén provinces, in the north of the Argentinian Patagonia, the main economic-productive development is linked to fruit production of pears and apples. The second most important activity, in terms of arable land area and impact on the rural economy, is horticultural production (Fernández Lozano, 2012). In this region, both the fruit and vegetable production models can be described as systems highly dependent on chemical inputs for pest management and fertilization (FAO, 2015a, 2015b). Besides, the progress of the real estate market and subsequent urbanization on former production areas is affecting the region’s biodiversity due to habitat fragmentation.

These productive activities take place within a dynamic and heterogeneous landscape. Horticulture farms are surrounded by fruit productive orchards, abandoned orchards, patches and corridors of spontaneous vegetation and poplar “shelterbelts” (e.g., Buck et al., 1999). This landscape heterogeneity provides resources such as nectar and pollen from a diversity of flowering plants, a variety of preys or hosts, and overwintering and nesting habitat for pollinators and...
predatory insects, which may regulate the incidence of pests and promote the presence of beneficial insects in crops.

Agroecological management has been proposed as an alternative to conventional agricultural management due to its alleged ability to rehabilitate degraded ecosystem services (De Leijster et al., 2019).

The knowledge of the entomological fauna present in productive systems is important for the agroecological approach, since beneficial insects are a key resource for pest management in horticultural systems, allowing a decrease in the use of agrochemicals, and providing other services such as pollination. The maintenance and management of agrobiodiversity is one of the most promising strategies in the search for sustainable agroecosystems. There is a growing consensus that a greater agrobiodiversity in its different dimensions (spatial, temporal, and structural) provides essential ecological services in agroecosystems (Stupino et al., 2014). The growing demand for productive systems with less dependence on chemical inputs promotes the search for management strategies to strengthen ecological processes weakened by a decrease in diversity.

In order to design productive systems with an agroecological approach, it is essential to have scientific information on the biodiversity present in a given area and the ecological function and/or feeding habits of the insects. For example, the order Hymenoptera includes families with a broad heterogeneity of functions: predators (e.g., Vespidae), pollinators (e.g., Apidae), and parasitoids (e.g., Braconidae).

The scientific knowledge of the insect fauna of the Alto Valle de Río Negro and Neuquén is scarce and strongly associated with pome fruit production for export markets, as illustrated by the following contributions: Hymenoptera (Dapoto & Giganti, 1994; Aquino et al., 2013; Garrido et al., 2017), Hemiptera: Sternorrhyncha (Giganti et al., 2004; Vera et al., 2012), Hemiptera: Auchenorrhyncha (Catalano et al., 2009; Paradell & Dellapé, 2015; D’Hervé et al., 2017); Lepidoptera (Garrido et al., 2007; Dapoto et al., 2010); Neuroptera (Gonzalez et al., 2011), Diptera (Santadino et al., 2015) and Coleoptera (Curculionidae) (del Rio et al., 2019). The aim of this study is to carry out an inventory of the biodiversity of some families of Hemiptera, Coleoptera (Curculionidae) and Hymenoptera present in rural and peri-urban horticultural farms, taking into account tomato and pepper crops and the surrounding non-cultivated areas (as spontaneous vegetation, abandoned fruit orchards, and poplar shelterbelts).

**MATERIAL AND METHODS**

**Study area**

Alto Valle de Río Negro and Neuquén is situated in the north of the Argentinian Patagonia, along parallel 39° S and meridians 68° to 66° W (Gili et al., 2004). It develops along the lower basin of Limay and Neuquén rivers and the upper basin of Río Negro river, as seen in Figure 1. Natural and semi-natural habitats, urban centers, peripheries and rural areas are alternated along almost 130 km. The Alto Valle is a long strip about 6 to 20 km wide. The arable land with the highest quality is located near the river terraces of Limay, Negro and Neuquén rivers.

The climate is temperate and semiarid, with an average annual temperature between 13.6 °C and 14.5 °C and thermal amplitude between 16.1 °C and 17.7 °C. The rainfall varies between 130 and 170 mm per year, depending on the locality, with a slightly progressive increase from west to east.

It is an area of strong winds higher than 4 m/s on average, with predominant direction southwest-west. The typical vegetation is composed of shrubs of the genera *Larrea* (‘jarillas’) (L. divaricata Cav., L. cuneifolia Cav. and exceptionally L. nitida Cav.) and some *Prosopis* L. such as P. alpataco Phil. (‘alpataco’), or *Schinus* (S. johnstonii F.A. Barkley (‘molle’). Permanent and ephemeral grasses grow under these shrubs, although in some areas this vegetation has changed due to the implementation of gravity irrigation system. The usual summer water deficit is mainly supplied by a channel network derived from the Limay, Neuquén and Negro rivers.

In the Alto Valle region, horticultural activities are mostly performed by small and medium farmers. The most important crops are tomatoes, peppers, carrots, pumpkins, lettuce, and other vegetables. The farm activities show strong seasonality depending on the climate (e.g., summer water stress, frost, strong winds, hail) (FAO, 2015a, 2015b).

Localities studied. The coexistence of peri-urban and rural farms is frequent in the Alto Valle, for that reason we selected one peri-urban farm located on the eastern side of Plottier city (38°57’02.5” S; 68°12’29.5” W), Neuquén province and a rural one located in Campo Grande (38°41’11.5” S; 68°11’25.6” W), Río Negro province. The first one is about 6 hectares in size and belongs to a larger pear orchard (25 hectares in size), abandoned 10 years ago. Currently, this orchard is surrounded by real estate projects with different levels of development (Fig. 1a). The rural farm is about 3 hectares, located in a fruit production area of the Alto Valle. About 20 years ago this area was a pome orchard surrounded by other fruit and vegetable farms. The plot for cultivation is adjacent to the abandoned pear orchard (Fig. 1b).

**Sampling methods**

**Collecting insects**

For collecting insects in the horticultural systems (peri-urban and rural), we used different sampling techniques, carried out every 30 days, from January to April 2017 (January 6th, February 3rd, March 3rd and
Sampling design
The agricultural landscape was defined as a heterogeneous land area made up of a group of ecosystems, repeated across length and width in similar ways (Forman & Godron, 1986). The landscape represents a mosaic of farms, semi-natural habitats, human infrastructure and, occasionally, natural habitats (Marshall & Moonen, 2002). For this reason, the selected sites included not only tomatoes and pepper crops, but also feral plant communities located on the margins of these crops: abandoned pear orchards, spontaneous vegetation and poplar shelterbelts. Sampling stations were established within each sampling site. The number of stations was based on the site’s surface. Each station consisted of the locations where each pitfall trap was placed.

Vegetation sampling
For vegetation sampling we applied quadrat method (Goodall, 1952). At each sampling station a 1 m x 1 m quadrat was randomly placed and all plants within the quadrat were recorded and identified at species level (Kennedy & Addison, 1987), when possible.

RESULTS

Characterization of sites
Peri-urban farm. Tomato and pepper crop. Accompanied by low coverage of herbaceous species (Table I).
Rural farm. Tomato and pepper crop. These crops are accompanied by a low coverage of herbaceous species (Table I).
Abandoned pear orchard. It contains pear, rosehip and wild vine plants within a plantation frame of 6 m x 4 m. Accompanied by an herbaceous stratum where grasses predominate (Table II).
Spontaneous vegetation. It shows the greatest complexity in vegetation structure, with herbaceous, shrub and tree layers (Table II).
Poplar shelterbelt. It is characterized by dominant arboreal species and a medium coverage of herbaceous layer (Table II).
Abandoned pear orchard. It is characterized by a herbaceous layer (Table II).
Spontaneous vegetation. It is characterized by a predominant shrub and herbaceous layers (Table II).
Poplar shelterbelt. The arboreal layer of *Populus* L. "Poplar" is accompanied by a herbaceous shrub layer of medium to low coverage (Table II).

Inventory of insects

ORDER HEMIPTERA

Suborder Auchenorrhyncha
Superfamily Fulgoroidea
Family Delphacidae
Subfamily Asiracinae
Tribe Idiosystanini

**Idiosystatus Berg**

Geographic distribution. Native to Chile, Argentina: Río Negro and Santa Cruz (Patagonia) (Bourgoin, 2019). Río Negro is a new province record.

Feeding habits. Phytophagous.

Plant associations. *Schoenoplectus californicus* (C.A. Mey.) Sojak (Cyperaceae) in the Metropolitan Region of Chile (Campodonico, 2017). The traps were placed under the tomato plants on the ridges, in addition, feral vegetation cover was very low, so we consider that tomato is a new crop association.

Economic importance. Unknown.

Material studied: Río Negro. Campo Grande. Tomato (pitfall), 06-I-2017, (1 male). Bernardis-Gittins-López Armgol, cols. (Table III).

Subfamily Delphacinae
Tribe Delphacini

**Metadelphax propinquua (Fieber)**

Geographic distribution. Pantropical. In Argentina it is widely distributed north of 33° S (Remes Lenicov & Tesón, 1989; Remes Lenicov & Paradell, 2012).

Feeding habits. Phytophagous.

Plant associations. Mostly cultivated and wild Poaceae, including “barley”, “maize”, “oat”, “rice”, “sorghum”, and “sugarcane” (Remes Lenicov & Virla, 1999). New crop associations with tomato and pepper. It also occurs in abandoned pear orchard.

Economic importance. It is a vector of viruses that affects various crops: Cynodon Chlorotic Streak Nucleorhabdovirus (CCSV), Maize Rough Dwarf Virus (MRDV), and Barley Yellow Striate Mosaic Cytorhabdovirus (BYSMV) (Harpaz, 1972). In Argentina it is the vector of the Mal de Río Cuarto Virus (MRCV), affecting “maize” and “wheat” (Remes Lenicov et al., 1985; Velazquez et al., 2017).

Material studied. Neuquén. Plotter. Pepper (pitfall), 3-III-2017, (1 male, 1 nymph). Río Negro. Campo Grande. Tomato (pitfall), 03-III-2017, (2 males, 4 females, 1 nymph). Pepper (pitfall), 03-II-2017, (1 male, 1 female); 31-III-20172 (2 females). Abandoned pear orchard (sweeping net), 31-III-2017, (1 male). Bernardis-Gittins-López Armengol, cols. (Table III and IV).

**Delphacodes kuscheli Fennah**

Geographic distribution. Native to Chile, Argentina and Uruguay. Widespread in Argentina (32° to 39° S). Its northern expansion occurred with gramineae such as “oat”, “barley”, “wheat” and “maize” (Remes Lenicov & Tesón, 1978; Remes Lenicov & Paradell, 2012).

Feeding habits. Phytophagous.

Plant associations. “Maize”, outbreak populations of “oat”, breeds of “wheat”, “barley” and several wild grasses, most of them reservoirs of MRCV (Remes Lenicov & Virla, 1999).

Economic importance. It is a major pest of “maize” in Argentina as vector of MRCV (Remes Lenicov & Paradell, 2012).

### Table I: Plant species associated to tomato and pepper crop.

| Species                  | Growth habit | Tomato | Pepper |
|--------------------------|--------------|--------|--------|
|                          |              | Neuquén | Río Negro | Neuquén | Río Negro |
|                          |              | Periurban | Rural | Periurban | Rural |
| *Cynodon dactylon* (L.) Pers. | Graminoid | X | X | X | X |
| *Panicum capillare* L. | Graminoid | X | | |
| *Setaria verticillata* (L.) P. Beauv. | Graminoid | X | X | | |
| *Carduus acanthoides* L.* | Forb/Herb | | | X | |
| *Galinsoga parviflora* Cav.* | Forb/Herb | | | X | |
| *Polygonum aviculare* L. | Forb/Herb | X | X | | |
| *Portulaca oleracea* L. | Forb/Herb | X | X | | |
| *Melilotus albus* Medik.* | Subshrub | | | X | |
| *Plantago lanceolata* L.** | Forb/Herb | | X | X | X |

* = Species pollen and nectar source. ** = Species pollen source.
Table II. Plant genus/species associated to abandoned pear orchard, spontaneous vegetation and poplar shelterbelt

| Genus/Species                        | Growth habit | Abandoned pear orchard | Spontaneous vegetation | Poplar shelterbel |
|--------------------------------------|--------------|-------------------------|-------------------------|-------------------|
|                                      |              | Neuquén | Río Negro | Neuquén | Río Negro | Neuquén | Río Negro | Neuquén | Río Negro |
|                                      |              | Pitter | Campo Grande | Pitter | Campo Grande | Pitter | Campo Grande | Pitter | Campo Grande |
|                                      |              | Rural | Rural | Rural | Rural | Rural | Rural | Rural | Rural |

Bromus catharticus Vahl. | Graminoid | X |
Cynodon dactylon (L.) Pers. | Graminoid | X | X | X | X | X |
Distichlis spicata (L.) Greene | Graminoid | X |
Lotus L. | Graminoid | X | X |
Macrochloa tenacissima (L.) Kunth | Graminoid | X | X |
Pennisetum capillare L. | Graminoid | X |
Setaria verticillata (L.) P. Beauv. | Graminoid | X |
SORGHUM HALEPENE (L.) Pers. | Graminoid | X | X | X |
Helianthus salicifolius (Ruiz & Pav.) Pers* | Shrub | X |
Carduus acanthoides L.* | Forb/Herb | X |
Cichorium intybus L.* | Subshrub | X | X | X | X |
Cirsium vulgare (Sav.) Ten.* | Forb/Herb | X |
Calendula officinalis L. | Forb/Herb | X |
Sonchus oleraceus L. | Forb/Herb | X | X |
Tegetes minuta L.* | Subshrub | X |
TARAXACUM OFICINALE G.H. Weber ex Willd* | Forb/Herb | X |
Tessaria absinthioides D.C.* | Subshrub | X |
Arctostaphylos pumila Ruiz & Pav.* | Tree | X |
Cardaria draba L. | Forb/Herb | X |
Rhaponticum ramosum (L.) All* | Forb/Herb | X |
Chenopodium quinoa Willd. | Forb/Herb | X |
Kochia scoparia (L.) Schrad. | Subshrub | X | X |
Trifolium * | Tree | X |
Pedicularis avicularia L. | Forb/Herb | X |
Rumex crispus L. | Forb/Herb | X | X |
Portulaca oleracea L. | Forb/Herb | X |
Malva sativa L. | Forb/Herb | X | X | X | X | X |
Rutabaria pseudoocrea I.* | Tree | X |
Trifolium repens L.* | Forb/Herb | X |
Trifolium pratense L.* | Forb/Herb | X |
Plantago lanceolata L.* | Forb/Herb | X | X |
Plantago major L.* | Forb/Herb | X | X |
Pappus I.* | Tree | X | X | X | X |
Populus alba L. | Tree | X |
Umex I.* | Tree | X |
Adiantum aleutium (Meisn) Willd* | Tree | X |
Convolvulus arvensis L.* | Subshrub | X |
Vitis vinifera L.* | Vine | X |

Material studied. **Río Negro**. Campo Grande. Tomato (pitfall), 06-I-2017, (1 female); 03-II-2017, (1 female). Pepper (pitfall), 03-II-2017, (1 male). Bernardis-Gittins-López Armengol, cols. (Table III).

**Neodelphax fuscoterminata (Berg)**

Geographic distribution. Native to Argentina, where it is widely distributed in the humid Pampean region (Remes Lenicov & Viria, 1999).

Feeding habits. Phytophagous.

Plant associations. It is common and abundant in maize and “rice” agrosystems, and several grasses: “johnson grass”, “bermuda grass”, Bromus sp., Setaria sp., “dandelion” and “ribwort” plantain (Remes Lenicov, 1996). Associated with “apple” in the main cultivated area of Río Negro province (D’Hervé et al., 2017). Tomato and pepper are new crop associations. It also occurs on poplar shelterbelt.

Economic importance. It is probably another vector of MRCV in central Argentina (Remes Lenicov & Brentassi, 2017).

Material studied. Neuquén. Plotter. Poplar shelterbelt (pitfall), 03-III-2017, (1 female). Pepper (sweeping net), 03-III-2017, (1 nymph). Río Negro. Campo Grande. Tomato (pitfall), 03-II-2017, (1 male). Pepper (sweeping net), 31-III-2017, (1 nymph). Abandoned pear orchard (pitfall), 03-II-2017, (1 female); (sweeping net), 03-II-2017, (2 females); (sweeping net), 03-III-2017, (1 female). Spontaneous vegetation (pitfall), 06-I-2017 (1 nymph). Bernardis-Gittins-López Armengol, cols. (Table III and IV).

Family Acanalonidae

**Acanalonia chloris (Berg)**

Geographic distribution. Native to Uruguay and Argentina: Misiones, Corrientes, Córdoba, Mendoza and Buenos Aires (Berg, 1879). Neuquén is a new province record.

Feeding habits. Phytophagous.

Plant association. It is associated with spontaneous...
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vegetation.

Material studied. Neuquén. Plotter. Spontaneous vegetation (sweeping net), 03-II-2017, (2 males, 3 females); spontaneous vegetation (pitfall), 31-III-2017, (1 male). Bernardis-Gittins-López Armengol, cols. (Table IV).

Superfamily Membracoidea
Family Membracidae
Subfamily Smlinae
Tribe Ceresini
Ceresa brunnicorns (Germar)
Geographic distribution. Native to South America between 15° and 39° S. It occurs in Northern and Central Argentina, and in Brazil (Remes Lenicov, 1973).

Feeding habits. Phytophagous.

Plant associations. Acacia sp., "vire", "wheat", "alfalfa" and "potato" (Remes Lenicov, 1973). It is associated with abandoned pear orchards and spontaneous vegetation.

Economic importance. Mechanical damage caused by feeding on Acacia spp. and "vire" canes (Torres, 1946; Remes Lenicov, 1973).

Material studied. Neuquén. Rio Negro. Material studied. Neuquén. Spontaneous vegetation (sweeping net), 03-III-2017, (3 females); spontaneous vegetation (pitfall), 03-III-2017, (1 female). Bernardis-Gittins-López Armengol, cols. (Table IV).

Family Cicadellidae
Subfamily Cicadellinae
Syncharina punctatissima (Signoret)
Geographic distribution. It occurs in Argentina, Bolivia, Brazil and Uruguay. In Argentina, it is widespread: Salta, Jujuy, Corrientes, Entre Ríos, Santa Fe, Buenos Aires, Mendoza, Córdoba, Catamarca, Tucumán, and San Juan (Defea, 2018). Neuquén is a new province record.

Feeding habits. Phytophagous.

Plant associations. "Pangola grass", "maize", "whet", "oat", "barley", Trifolium sp., "alfalfa", "rice", "rye", "sorghum", "winter vetch" (Young, 1977; Remes Lenicov et al., 1985, 2006; Paradell et al., 2014), Citrus sp., "parsley" and "radish root" (Defea, 2018). It was only associated with spontaneous vegetation.

Phytosanitary importance. Unknown.

Material studied. Neuquén. Plotter. Spontaneous vegetation (sweeping net), 3-III-2017, (1 female). Bernardis-Gittins-López Armengol, cols. (Table IV).

Tapajosa rubromarginata (Signoret)
Geographic distribution. Native to Argentina (Young, 1968), Brazil (Azevedo-Filho & Carvalho, 2004, 2006) and Paraguay (Dellapé et al., 2011). In Argentina, it is widespread in Salta, Catamarca, Tucumán, Santa Fe, Córdoba, Mendoza, San Luis, San Juan, Santiago del Estero, Formosa, Chaco, Misiones, Corrientes, Entre Ríos, Buenos Aires, Neuquén and Río Negro (Dellapé et al., 2011; Paradell et al., 2012).

Feeding habits. Phytophagous.

Plant associations. "Onion", Eryngium sp., Baccharis sp., "garden dahilia", Conyza sp., "lapacho", "whitemouth day flower", Ipomea sp., "soybean", "alfalfa", "burclover", "cowpea", "mint", Chorisier sp., "arrowleaf", "black mulberry", Plantago sp., "oat", Paspalum sp., "sugarcanec", Setarea sp., "bermuda grass", "johnson grass", "sorghum", "maize", "wheat", "rescue grass", Populus sp., Cardiospermum sp., "black nightshade", "common lantana", "chinese ibiscus", "sweet orange" and "vire" (Costilla et al., 1972; Paradell, 1995; Remes Lenicov et al., 1998, 2006; Azevedo-Filho & Carvalho, 2004, 2006; Viria et al., 2007; Azevedo-Filho et al., 2008; Paradell et al., 2012), "blueberry" (Dellapé, 2013). It is associated with abandoned pear orchards.

Phytosanitary importance. Species positive for Xylella fastidiosa Wells et al. (Xanthomonadaceae) in Argentina (Dellapé et al., 2016).

Material studied. Rio Negro. Abandoned pear orchard (sweeping net), 31-III-2017, (1 male). Bernardis-Gittins-López Armengol, cols. (Table IV).

Subfamily Deltocephalinae
Amplacephalus dubius Linnavuori
Geographic distribution. Native to Argentina: Salta, San Juan, Mendoza, Córdoba, Santa Fe and Buenos Aires (Paradell, 1995). Neuquén and Río Negro are new provinces records.

Feeding habits. Phytophagous.

Plant associations. "Maize", "wheat", "rice", "barley", "oat", Cynodon sp., Digitaria sp. and "cebadilla" (Paradell et al., 2001). New crop association with tomato. It also occurs in abandoned pear orchards and spontaneous vegetation.

Phytosanitary importance. Unknown.

Material studied. Neuquén. Plotter. Spontaneous vegetation (sweeping net), 3-II-2017, (1 female). Rio Negro. Tomato (pitfall), 3-II-2017, (2 females). Abandoned pear orchard (sweeping net), 3-II-2017, (1 nymph). Bernardis-Gittins-López Armengol, cols. (Tables III and IV).

Amplacephalus marginellanus Linnavuori
Geographic distribution. Native to Brazil, Bolivia, Paraguay and Argentina: Jujuy, Chaco, Misiones, Corrientes, Entre Ríos, Santa Fe, Tucumán, San Luis, Córdoba and Buenos Aires (Paradell, 1995). Río Negro is a new province record.

Feeding habits. Phytophagous.

Plant associations. Spontaneous vegetation with "pangola grass" and "bahiagrass" (Zanol & Menezes, 1982); "maize", "wheat", "gramon", "cebadilla" and "oat" (Paradell, 1995). New crop association with tomato. It is also in abandoned pear orchard.

Phytosanitary importance. Unknown.
Material studied. \textit{Rio Negro}. Campo Grande. \textit{Tomato} (pitfall), 6-I-2017, (1 female). Abandoned pear orchard (pitfall), 6-I-2017, (1 female). Bernardis-Gittins-López Armengol, cols. (Tables III and IV).

\textit{Circulifer tenellus} (Baker)

Geographic distribution. Almost cosmopolitan (Nearctic, Palearctic, Oriental and Neotropical regions). In America it is present in Canada, USA, Central American and Caribbean countries, Brazil, Peru, Suriname, Colombia, Venezuela and Argentina (Zanol, 2006). Rio Negro is a new province record.

Feeding habits. Phytophagous.

Plant associations. “Potato” and “carrot” (Creamer et al., 2003; Munyanza et al., 2010). New crop association with pepper. It also occurs in abandoned pear orchard, spontaneous vegetation and poplar shelterbelt.

Phytosanitary importance. It is a vector of phytosanitary importance in Mexico, especially on horticultural plants such as “radish root” and “pepper”. It is also vector of Beet curly top virus (BCTV) that produces the Carrot purple leaf (Weintraub & Beanland, 2006; Lee et al., 2006).

Material studied. \textit{Rio Negro}. Campo Grande. Pepper (pitfall), 3-III-2017, (4 males, 9 nymphs). Abandoned pear orchard (pitfall), 3-II-2017, (1 female). Spontaneous vegetation (pitfall), 6-I-2017, (2 males); 31-III-2017, (1 male). Bernardis-Gittins-López Armengol, cols. (Tables III and IV).

\textit{Exitianus obscurinervis} (Stål)

Geographic distribution. Peru, Brazil, Paraguay, Uruguay and Argentina, where it is widespread in several provinces: Jujuy, Salta, Catamarca, Formosa, Chaco, Tucumán, Santiago del Estero, Misiones, Corrientes, Entre Ríos, Santa Fe, Córdoba, Mendoza, Buenos Aires and Rio Negro (Paradell, 1995). Neuquén is a new province record.

Feeding habits. Phytophagous.

Plant associations. Cereals, mainly "maize", "wheat" and "rice", "cotton", "castor bean", "oat", "rescue grass", "bermuda grass", "hairy crabgrass", "pangola grass", "barnyard grass", "bahia grass", "sugarcane", "big blue stem" and "creeping vegetation", "barley", "bean", "sorghum" and "citrus" (Cordo et al., 2004). Tomato and pepper and new crop associations. It is also in abandoned pear orchards and spontaneous vegetation.

Phytosanitary importance. This species transmits the bacteria \textit{Spiroplasma kunkelii} (Entomoplasmatales: Spiroplasmataceae) under experimental conditions, suggesting that may be a vector of the disease called “Corn Stunt Spiroplasma” in Argentina (Carloni et al., 2011).

Material studied. \textit{Neuquén}. Plottier. Tomato (pitfall), 3-II-2017, (1 female); 3-III-2017 (2 males, 1 nymph); 31-III-2017, (4 nymphs). Pepper (pitfall), 3-III-2017, (1 male, 1 female, 1 nymph). \textit{Rio Negro}. Campo Grande. Tomato (pitfall), 6-I-2017, (1 male); 3-II-2017, (4 males); 3-III-2017, (1 male); 31-III-2017, (5 males, 1 female, 2 nymphs). Pepper (pitfall) 6-I-2017, (1 male); 3-III-2017, (5 males, 1 nymph); 31-III-2017, (6 males, 1 nymph). Abandoned pear orchard (pitfall), 6-I-2017, (1 female); 3-II-2017, (4 males, 1 female, 1 nymph); 31-III-2017, (2 males); 31-III-2017, (1 male). Spontaneous vegetation (pitfall), 31-III-2017, (1 nymph). Bernardis-Gittins-López Armengol, cols. (Tables III and IV).

\textit{Paratanus exitiosus} (Beamer)

Geographic distribution. Native to Chile and Argentina: Jujuy, Chaco, San Luis, Córdoba, Buenos Aires, San Juan, Mendoza and Rio Negro (Paradell et al., 2014).

Feeding habits. Phytophagous.

Plant associations. “Maize”, “rice”, “wheat”, “sugar beet”, “sorghum”, “garlic”, “alfalfa” and “hairy vetch” (Paradell et al., 2014). Tomato is a new crop record. It occurs in abandoned pear orchard and spontaneous vegetation.

Phytosanitary importance. It is a vector of Virus Sugar Beet Yellow-Wilt causing the disease “Yellow Wilt” of “sugar beet”. This is also a potential vector of fitoplasm 16SrIII X-disease, that causes “Garlic decline” disease (Paradell et al., 2014).

Material studied. \textit{Rio Negro}. Campo Grande. Tomato (pitfall), 6-I-2017, (2 males); 31-III-2017, (1 male). Abandoned pear orchard (pitfall), 3-III-2017, (1 male); 31-III-2017 (2 males). Spontaneous vegetation (pitfall), 6-I-2017, (1 female); 3-II-2017 (1 female, 1 nymph); 31-III-2017, (1 male). Bernardis-Gittins-López Armengol, cols. (Tables III and IV).

Subfamily Idiocerinae

\textit{Rhystodous decimusquartus} (Schrank)

Geographic distribution. Australian, Palearctic, Nearctic and Neotropical regions. In Argentina occurs in Mendoza, Neuquén, Rio Negro and Chubut (Paradell & Dellapé, 2015).

Feeding habits. Phytophagous.

Plant associations. Poplar used as wind curtain and porrum (Paradell & Dellapé, 2015).

Material studied. \textit{Neuquén}. Plottier. Poplar shelterbelt (pitfall), 6-I-2017, (1 male). Bernardis-Gittins-López Armengol, cols. (Table IV).

Subfamily Ledrinae

Tribe Xerophloeini

\textit{Xerophloeoa viridis} (Fabricius)

Geographic distribution. Nearctic and Neotropical regions (Jones & Deitz, 2009). USA, Mexico, Peru, Venezuela, Brazil, Bolivia, Chile, Argentina: Salta, Tucumán, Catamarca, La Rioja, Misiones, Entre Ríos,
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Córdoba, Mendoza, San Juan, Santa Fe, Buenos Aires and Neuquén (Paradell et al., 2014). Río Negro is a new province record.

Feeding habits. Phytophagous.

Plant associations. "Weeds", "wheat", "maize", "barley", "sweet potato", Ipomoea sp., "yams", "tomato", "lettuce", "San Jose weed", "broom jute", "pangola grass", "citrus", "alfalfa", Poaceae (Jones & Deitz, 2009), "garlic", "hairy vetch" (Paradell et al., 2014). New records for pepper crop, abandoned pear orchard, spontaneous vegetation and poplar shelterbelt.

Phytosanitary importance. Vector of "Virus Sugar Beet Yellow- Wilt" to sugarcane in Argentina (Bennet & Munck, 1946).

Material studied. Neuquén. Plottier. Tomato (pitfall), 6-I-2017, (2 females); 3-II-2017, (1 male); 3-III-2017, (3 males). Pepper (pitfall), 3-II-2017, (1 male, 1 nymph); 3-III-2017, (1 nymph). Spontaneous vegetation (pitfall), 6-I-2017, (1 female); 3-II-2017, (1 male, 1 nymph); 3-III-2017, (1 nymph). Poplar shelterbelt (sweeping net), 6-I-2017, (1 male, 1 nymph); 3-II-2017, (1 male, 1 female). Río Negro. Campo Grande. Tomato (pitfall), 6-I-2017, (1 male); 3-III-2017, (1 female). Pepper (pitfall), 3-III-2017, (1 female). Abandoned pear orchard (pitfall), 6-I-2017, (1 male, 1 female); 3-III-2017, (1 male, 1 nymph). Abandoned pear orchard (pitfall), 6-I-2017, (5 males, 3 females); 3-II-2017, (2 males, 1 female); 3-III-2017, (5 males). Spontaneous vegetation (pitfall), 6-I-2017, (1 male, 1 nymph). Bernardis-Gittins-López Armengol, cols. (Tables III and IV).

*Bergallia signata* (Stål)

Geographic distribution. Argentina: Jujuy, Tucumán, Chaco, Misiones, San Juan, Mendoza, Buenos Aires and Río Negro (Paradell et al., 2014). Neuquén is a new province record.

Feeding habits. Phytophagous.

Plant associations. "Maize", "wheat", "prieir grass", "potato", "beet", "radish root", "turnip", "purslane", "pepper", "tomato", "carrot", "hairy vetch" (Paradell et al., 2014). It is also in abandoned pear orchards and spontaneous vegetation.

Phytosanitary importance. Unknown

Material studied. Neuquén. Plottier. Tomato (pitfall), 31-III-2017, (1 male). Pepper (sweeping net), 31-III-2017, (1 male, 3 females). Río Negro. Campo Grande. Tomato (pitfall), 6-I-2017, (1 male); 3-II-2017, (1 female). Pepper (pitfall), 6-I-2017, (1 female); 3-II-2017, (1 male); 31-III-2017, (4 males, 1 female). Abandoned pear orchard (pitfall) 6-I-2017, (3 males, 3 females); 31-III-2017, (4 males, 1 female). Abandoned pear orchard (pitfall) 6-I-2017, (3 males, 3 females); 3-II-2017, (1 male); 31-III-2017, (4 males, 1 female). Abandoned pear orchard (sweeping net), 03-II-2017, (2 males). Bernardis-Gittins-López Armengol cols. (Table IV).

Subfamily Megophtalminae

Tribe Agallini

*Agalliana ensigera* Oman

Geographic distribution. Neotropical. Argentina: Jujuy, Salta, Tucumán, La Rioja, Catamarca, Santiago del Estero, Chaco, Misiones, Entre Ríos, San Juan, Mendoza, Santa Fe, La Pampa, Buenos Aires and Río Negro (Paradell et al., 2014). Neuquén is a new province record.

Feeding habits. Phytophagous.

Plant associations. "Pumpkin", "potato", "pepper", "tomato", "broadbean", "zucchini", "berrie", "cotton", "wheat", "maize", "alfalfa", "soybean", "sugarbeet", "sorghum", "tobacco", "sunflower", "oat", "prairie grass" and "weeds", "garlic", "citrus", "carrot", "hairy vetch" (Paradell et al., 2014). New records for abandoned pear orchard and spontaneous vegetation.

Phytosanitary importance. Vector of "Argentine Curly Top Virus" on sugar cane and "Brazilian Curly Top Virus" tomato. Possible vector of "Witches-Broom Disease" alfalfa. Potential vector of phytoplasma 16SrIII X-disease "Garlic decline" (Paradell et al., 2014).

Material studied. Neuquén. Plottier. Tomato (pitfall), 31-III-2017, (1 male). Pepper (pitfall), 31-III-2017, (1 female). Pepper (sweeping net), 31-III-2017, (1 male, 1 female). Río Negro. Campo Grande. Pepper (pitfall), 6-I-2017, (1 female); 31-III-2017, (1 male). Abandoned pear orchard (pitfall), 6-I-2017, (5 males, 3 females); 3-II-2017, (2 males, 1 female); 3-III-2017, (5 males). Spontaneous vegetation (pitfall), 6-I-2017, (1 male, 1 nymph). Bernardis-Gittins-López Armengol, cols. (Tables III and IV).

*Orius sp.*

Feeding habits. Predator.

Comments: Various species of *Orius* Wolff are important predators of Thysanoptera, mites, and eggs of Lepidoptera, both in greenhouse and field crops situations (Schuh & Weirauch, 2020).

Material studied. Neuquén. Plottier. Abandoned pear orchard (sweeping net), 03-II-2017, (2 males). Bernardis-Gittins-López Armengol cols. (Table IV).

Superfamily Naboidea

Subfamily Prostemmatinae

Tribe Prostemmatini

*Pagasa* (*Lampropagasa*) *fuscipennis* Reuter & Poppius

Geographic distribution. Argentina: Buenos Aires, Chaco, Chubut, Córdoba, La Pampa, Misiones, Río Negro, Salta, San Luis, Santa Fe and Santiago del Estero. This species is also known from Brazil, Paraguay and Uruguay (Cornelis & Coscarón, 2013; Melo et al., 2020).

Feeding habits: Predator. Species in the genus are known predators of other Heteroptera, particularly...
| Order/Family/Species | Tomato | Pepper |
|----------------------|--------|--------|
|                      | Neuquén Plottier | Neuquén Plottier | Río Negro Campo Grande | Río Negro Campo Grande |
|                      | Periurban | Rural | Periurban | Rural |
| HEMIPTERA            |        |        |        |        |
| Fam. Delphacidae     |        |        |        |        |
| Idiosystatus sp. *   |        |        |        |        |
| Metadelphax propinquua |        | X | X | X |
| Delphacodes kuscheli | X | X |        |        |
| Neodelphax fuscoterminalata | X | X | X | X |
| Fam. Cicadellidae    |        |        |        |        |
| Ampelisculus dubius * |        | X |        |        |
| Ampelisculus marginellanus * | X |        |        |        |
| Circulifer tenellus * |        | X |        |        |
| Exitianus obscurinervis * | X | X | X | X |
| Paratanus exitiosus |        | X |        |        |
| Xerophloeoa viridis * | X | X | X | X |
| Agalliana ensigera * | X | X | X | X |
| Bergallia signata *  | X | X | X | X |
| Fam. Miridae         |        |        |        |        |
| Tulpocius cucurbitaceus * |        | X |        |        |
| Fam. Reduvidae       |        |        |        |        |
| Atrachelus cinereus * |        | X |        |        |
| Fam. Pentatomidae    |        |        |        |        |
| Dichelops furcatus * |        | X |        |        |
| Fam. Geocoridae      |        |        |        |        |
| Geocoris sp.         |        | X |        |        |
| Fam. Lygaeidae       |        |        |        |        |
| Nyssius simulans     |        | X | X | X | X |
| COLEOPTERA           |        |        |        |        |
| Fam. Curculionidae   |        |        |        |        |
| Hydropus bertrandii * |        | X | X |        |
| Listroderes costirostris species complex |        |        |        |        |
| Naupactus xanthographus * | X | X |        |        |
| HYMENOPTERA          |        |        |        |        |
| Fam. Apidae          |        |        |        |        |
| Xylocopa augusti *   |        | X |        |        |
| Fam. Halictidae      |        |        |        |        |
| Dialictus atranellus * |        | X | X |        |
| Pseudagapostemon singularis * |        | X |        |        |
| Pseudagapostemon panpicanus | X | X |        |        |
| Fam. Vespidae        |        |        |        |        |
| Vespsula germanica   |        | X |        |        |

Table III. Order, Family, and species collected in tomato and pepper crops in peri-urban and rural farms. "*" = new records.

Blissidae, Geocoridae, and Rhyparochromidae (Lattin, 1989). Economic importance. Although the members of Nabidae are generalist predatory species, and some species are frequently present in agroecosystems, the role of nabids in regulation of pest populations of importance to urban agriculture remains largely unknown (Braman, 2000).

Material studied. Río Negro. Campo Grande: abandoned pear orchard (pitfall), 03-II-2017, (2 males). Bernardis-Gittins-López Armengol, cols. (Table IV).
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Superfamily Miroidea
Family Miridae
Subfamily Bryocorinae
Tribe Dicyphini

_Tupiocoris cucurbitaceus_ (Spinola)

Geographic distribution. Buenos Aires, Catamarca, Corrientes, Entre Ríos, Jujuy, Mendoza, Salta and Tucumán (Carpintero & Carvalho, 1992; Carpintero & De Biase, 2011; Carpintero et al., 2014, 2016; Melo et al., 2020). Río Negro is a new province record.

The North American records of this species are misidentifications as was shown by Kelton (1980), so its distribution has been restricted to the Neotropical Region (Fiúza Ferreira & Henry, 2011). These records include Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Panama, Peru and Uruguay (Spinola, 1852; Carvalho, 1958; Carvalho & Fiúza Ferreira, 1972; Carvalho & Afonso, 1977; Melo et al., 2020).

Feeding habits. Although _T. cucurbitaceus_ is a zoophagous aphid, it has a limited phytophagy, which is restricted to its nymphal instars (Orozco-Muñoz et al., 2012). Until now, no crop damage has been observed due to this mirid species, however, these observations need verification (Polack et al., 2017).

Plant associations. "Tobacco", "bean", "potato", _Cucurbita_ sp., "geranium" (Carpintero & Carvalho, 1992), _Rubus_ sp., "eupatoire", _Adesmia_ sp. (Carpintero & De Biase, 2011), "tomato" (Fiúza Ferreira et al., 2001).

Economic importance. This species has been used as a biological control agent of _Tuta absoluta_ Meyrick (Lepidoptera: Gelechiidae) in South America (Salas Gervasio et al., 2019). In Argentina the _Instituto Nacional de Tecnología Agropecuaria_ (INTA) has raised and tested this mirid species as a predator of _Trialeurodes vaporariorum_ Westwood and _Bemisia tabaci_ (Gennadius) (Hemiptera: Aleyrodidae) and _Mysus persicae_ (Sulzer) (Hemiptera: Aphididae) in "tomato" crops (Polack et al., 2017). A recent study indicated that _T. cucurbitaceus_ can successfully prey on different tomato pests, such as _B. tabaci, T. vaporariorum, Sitotroga cerealella_ Olivier (Lepidoptera: Gelechiidae), _T. absoluta, M. persicae_ and _Tetranychus urticae_ Koch (Acari: Tetranychidae) (López et al., 2019).

Material studied. _Río Negro_. Campo Grande. Tomato (sweeping net), 31-III-2017, (1 nymph). Bernardis-Gittins-López Armengol, cols. (Table III).

Superfamily Reduvioidae
Family Reduviidae
Subfamily Harpactorinae
Tribe Harpactorini

_Atrachelus_ (Atrachelus) _cinereus_ (Fabricius)

Geographic distribution. Argentina: Buenos Aires, Catamarca, Chaco, Córdoba, Corrientes, Entre Ríos, Formosa, Jujuy, La Pampa, La Rioja, Mendoza, Misiones, Salta, San Juan, San Luis, Santa Fe, Santiago del Estero and Tucumán (Dellapé et al., 2015, 2020; Melo et al., 2017, 2020). Río Negro and Neuquén are new provinces records. This species has been also recorded for Chile, Cuba, Guatemala and Uruguay (Maldonado Capriles, 1990).

Feeding habits. Predator.

Economic importance. No economic damages registered.

Material studied. _Neuquén_. Plotter. Spontaneous vegetation (pitfall), 06-I-2017, (1 nymph). Poplar shelterbelt (sweeping net), 03-III-2017, (1 nymph). Pepper (sweeping net), 31-III-2017, (3 nymphs). _Río Negro_. Campo Grande. Spontaneous vegetation (sweeping net), 06-I-2017, (1 nymph). Abandoned pear orchard (pitfall), 31-III-2017, (3 nymphs). Poplar shelterbelt (sweeping net), 31-III-2017, (1 male, 1 female). Bernardis-Gittins-López Armengol cols. (Tables III and IV).

Infrarorden Pentatomomorpha
Superfamily Pentatomoidea
Family Pentatomidae
Tribe Carpochorini

_Dichelops furcatus_ (Fabricius)

Geographic distribution. Argentina: Buenos Aires, Chaco, Córdoba, Jujuy, Mendoza, Misiones, Salta, San Juan, Santa Fe, Santiago del Estero and Tucumán (Grazia & Schwertner, 2008). This species is widely distributed in the Neotropical region (Pannizi et al., 2016, 2018). Río Negro is a new province record.

Feeding habits. Polyphagous.

Plant associations. This species feeds on 27 host plants including cultivated and wild species, such as "soybean", "sunflower", "maize", "oat", "wheat" (Pannizi et al., 2016, 2018).

Economic importance. This species can cause an important damage in "soybean" and "maize" (Chocorosqui & Pannizi, 2004; Roza-Gomes et al., 2011).

Material studied. _Rio Negro_. Campo Grande. Abandoned pear orchard (pitfall), 03-III-2017, (3 nymphs). Abandoned pear orchard (sweeping net), 03-III-2017, (2 nymphs). Tomato (sweeping net), 31-III-2017, (1 male). Bernardis-Gittins-López Armengol, cols. (Table III and IV).

Superfamily Coreoidea
Family Rhopalalidae
Subfamily Rhopalalinae
Tribe Harmostini

_Harmostes_ (Harmostes) _prolixus_ Stål

Geographic distribution. Argentina: Buenos Aires, Catamarca, Chaco, Córdoba, Corrientes, Entre Ríos, Jujuy, La Pampa, La Rioja, Mendoza, Misiones, Salta, San Luis, Santa Fe, Santiago del Estero and Tucumán (Melo & Montemayor, 2015; Dellapé et al., 2020). _Río Negro_ and _Neuquén_ are new province records. This species is also known from Bolivia, Brazil, Paraguay, Peru and Uruguay (Göllner-Scheiding, 1978, 1983; Melo...
Feeding habits. Phytophagous.

Economic importance. No economic damages registered.

Material studied. Neuquén. Plottier. Spontaneous vegetation (sweeping net), 03-II-2017, (1 female). Río Negro. Campo Grande. Abandoned pear orchard (sweeping net), 03-III-2017, (1 female). Bernardis-Gittins-López Árremengol, cols. (Table IV).

**Harmostes (Neoharmostes) procerus Berg**

Geographic distribution. Argentina: known from all provinces (Melo & Montemayor, 2015; Dellapé et al., 2020). It has been also recorded for Brazil, Peru, and Uruguay (Melo & Montemayor, 2015).

Feeding habits. Phytophagous.

Plant associations. Seepwillow, "romerillo", "pichana" (Melo & Montemayor, 2015).

Economic importance. No economic damages registered.

Material studied. Río Negro. Campo Grande. Spontaneous vegetation (pitfall), 03-II-2017, (1 male). Bernardis-Gittins-López Árremengol, cols. (Table IV).

**Superfamily Lygaeoidea**

Family Geocoridae

Subfamily Geocorinae

**Geocoris sp.**

Feeding habits. Predator.

Comments: All species in this genus are predators, and can be abundant in agroecosystems. Some species in the genus are considered to be of value in biological control of crop pests.

Material studied. Neuquén. Plottier. Tomato (sweeping net), 06-I-2017, (1 nymph). Pepper (pitfall), 03-III-2017, (1 male). Río Negro. Campo Grande. Abandoned pear orchard (pitfall), 3-II-2017, (1 male, 1 female). Bernardis-Gittins-López Árremengol, cols. (Table III and IV).

Family Lygaeidae

Subfamily Orsillinae

**Nysius simulans Stål**

Geographic distribution. Argentina: Buenos Aires, Catamarca, Chaco, Chubut, Córdoba, Corrientes, Entre Ríos, La Pampa, La Rioja, Mendoza, Misiones, Neuquén, Río Negro, Salta, San Juan, San Luis, Santa Fe, Santiago del Estero and Tucumán (Dellapé, 2014; Pall et al., 2016; Dellapé et al., 2020). This species has been also recorded for Brazil, Paraguay, and Uruguay (Dellapé & Henry, 2020).

Feeding habits. Phytophagous.

Plant associations. According to Pall et al. (2016) the following list of plants are associated with the attack by *N. simulans* in Argentina: Gramineae: "maize", Linaceae: "flax", Poaceae: "wheat", Malvaceae: "cotton", Asteraceae: "lettuce", Solanaceae: "tobacco" and "potato", Rosaceae: "plum", Vitaceae: "vine", Fabaceae: "soybean" (Di iorio, 2004). Also, other plants, Asteraceae: *Gamochara* sp., Brassicaceae: "capsella", "field mustard", "rapeseed" and "giant mustard" (Aragón & Flores, 2006); more recently, it has been found in "sunflower", and exotic plants as "wild rocket" and "barnaby thistle" all Asteraceae (Carmona et al., 2015).

Economic importance. *Nysius simulans* is abundant in most of the country and frequently present on many cultivated plants. This species has been recently a problem to "soybean" (Aragón & Flores, 2006; Igarzábal et al., 2009; Molinari & Gamundi, 2010), "quinua" (Dughetti et al., 2015; Rivas & Dughetti, 2015) and "sunflower" (Carmona et al., 2015; Renzi Pugni et al., 2015).

Comments: Although *N. simulans* is an almost ubiquitous species in Argentina, it is commonly confused or mixed with populations of other species in the genus, and with species of the closely relative genus *Xyonysius*.

Material studied. Neuquén. Plottier. Spontaneous vegetation (pitfall), 06-I-2017, (20 males, 19 females); 03-II-2017, (1 male, 1 female). Spontaneous vegetation (sweeping net), 06-I-2017, (5 males, 3 females); 03-II-2017, (17 males, 10 females); 31-III-2017, (2 males). Pepper (pitfall), 06-I-2017 (1 females); 03-II-2017, (17 males, 10 females); 31-III-2017, (2 males), (sweeping net), (1 male, 2 females); 03-II-2017, (2 females); 03-III-2017, (1 male); 31-3-2017 (1 male). Poplar shelterbelt, 06-I-2017, (sweeping net) (2 females). Poplar shelterbelt (pitfall), 03-II-2017, (1 specimen). Río Negro. Campo Grande. Spontaneous vegetation (pitfall), 06-I-2017, (43 males, 44 females); 3-II-2017, (1 male, 2 females); 31-III-2017, (1 female). Spontaneous vegetation (sweeping net), 06-I-2017, (1 male); 3-II-2017, (1 female); 31-III-2017, (2 males, 3 females). Abandoned pear orchard (pitfall), 06-I-2017, (6 males, 6 females); 3-II-2017, (1 female). Pepper (pitfall), 06-I-2017, (3males, 4 females); 3-II-2017, (1 males). Pepper (pitfall), 06-I-2017, (4 males, 4 females). Tomato (sweeping net), 06-I-2017, (2 males). Pepper shelterbelt (pitfall), 06-I-2017, (1 female). Abandoned pear orchard (sweeping net), 31-III-2017, (2 females). Bernardis-Gittins-López Árremengol, cols. (Tables III and IV).

**ORDER COLEOPTERA**

Family Curculionidae

Subfamily Ceutorhynchinae

**Hypurus bertrandii (Perris)**

Common name. Portulaca leaf mining weevil.

Geographic distribution. Native to the Mediterranean region of Europe and Africa, and introduced in North America and South America (Chile and Argentina). In Chile was reported for the Maule region. Neuquén is a new province record.
| Order/Family/Species | Abandoned pear orchard | Spontaneous vegetation | Poplar shelterbelter |
|---------------------|-----------------------|------------------------|---------------------|
|                     | Neuquén | Rio Negro | Neuquén | Rio Negro | Neuquén | Rio Negro |
|                     | Periurban | Campo Grande | Rural | Periurban | Campo Grande | Rural | Periurban | Campo Grande | Rural |
| **HEMIPTERA**       |          |            |        |          |            |        |          |            |        |
| Fam. Delphacidae    |          |            |        |          |            |        |          |            |        |
| Metadelphax propinquus | X         |           |        |          |            |        |          |            |        |
| Neodelphax fuscoateriorata | X         |           |        |          | X          | X      |        |            |        |
| Fam. Acanaloniidae  |          |            |        |          |            |        |          |            |        |
| Acanalonia chloris * | X         |           |        |          |            |        |          |            |        |
| Fam. Memblicidae    |          |            |        |          |            |        |          |            |        |
| Ceresa brunnicornis | X         |           |        |          | X          |        |          |            |        |
| Fam. Cieadleidae    |          |            |        |          |            |        |          |            |        |
| Syncharina punctatissima * | X         |           |        |          |            |        |          |            |        |
| Tapajoa rubromarginata | X         |           |        |          |            |        |          |            |        |
| Amplicephalus dubius * | X         |           |        |          | X          | X      |        |            |        |
| Amplicephalus marginellanus * | X         |           |        |          |            |        |          |            |        |
| Circulifer tenellus * | X         | X          |        |          | X          | X      |        |            |        |
| Eutamias obscurinervis * | X         |           |        |          | X          |        |          |            |        |
| Paratamas esitiosa | X         |           |        |          |            |        |          |            |        |
| Rhythidonus decimusquartus | X         |           |        |          |            |        |          |            |        |
| Xerophlebia viridis | X         | X          |        |          | X          | X      |        |            |        |
| Agalliana ensigera * | X         |           |        |          | X          |        |          |            |        |
| Bergallia signata * | X         |           |        |          | X          |        |          |            |        |
| **Fam. Anthocoridae** |          |            |        |          |            |        |          |            |        |
| Orius sp. |          | X         |        |          |            |        |          |            |        |
| **Fam. Nabidae**    |          |            |        |          |            |        |          |            |        |
| Pagaga fascipennis |          | X         |        |          |            |        |          |            |        |
| **Fam. Reduvida**   |          |            |        |          |            |        |          |            |        |
| Atractelidae cinereus * | X         | X          |        |          | X          |        |          |            |        |
| **Fam. Pentatomidae** |          |            |        |          |            |        |          |            |        |
| Dichelops furcatus * | X         |           |        |          |            |        |          |            |        |
| **Fam. Rhopalidae** |          |            |        |          |            |        |          |            |        |
| Harmostes prolisus * | X         | X          |        |          |            |        |          |            |        |
| Harmostes procerus |          |            |        |          |            |        |          |            |        |
| **Fam. Geocoridae** |          |            |        |          |            |        |          |            |        |
| Geocoris sp. |          | X         |        |          |            |        |          |            |        |
| **Fam. Lygaeidae**  |          |            |        |          |            |        |          |            |        |
| Nyssius simulans | X         | X          |        |          | X          |        |          |            |        |
| **COLEOPTERA**      |          |            |        |          |            |        |          |            |        |
| Fam. Curculionidae  |          |            |        |          |            |        |          |            |        |
| Hydrorus bertrandii * | X         |           |        |          |            |        |          |            |        |
| Listroderes costirostris species complex | X         |           |        |          |            |        |          |            |        |
| Aroacis tesselatus | X         |           |        |          |            |        |          |            |        |
| Naupactus cervinus | X         |           |        |          |            |        |          |            |        |
| Naupactus leucoloma * | X         | X          |        |          | X          |        |          |            |        |
| Naupactus xanthographus * | X         | X          |        |          | X          |        |          |            |        |
| Otiorynchus ovatus | X         |           |        |          |            |        |          |            |        |
| Otiorynchus rugosostriatus * | X         | X          |        |          | X          |        |          |            |        |
| Otiorynchus sulcatus | X         |           |        |          |            |        |          |            |        |
| Sitona discoides * | X         |           |        |          |            |        |          |            |        |
| **HYMENOPTERA**     |          |            |        |          |            |        |          |            |        |
| Fam. Apidae         |          |            |        |          |            |        |          |            |        |
| Diadasia pereyrae * | X         |           |        |          |            |        |          |            |        |
| Fam. Halictidae     |          |            |        |          |            |        |          |            |        |
| Pseudagapostemon singularis * | X         |           |        |          |            |        |          |            |        |
| Fam. Vespidae       |          |            |        |          |            |        |          |            |        |
| Vespa germanica | X         | X          |        |          | X          |        |          |            |        |

Table IV. Order, Family, and species collected in fruit abandoned orchard, spontaneous vegetation and poplar shelterbelt in peri-urban and rural farms. * = new records.
Feeding habits. Phytophagous.

Plant associations. It shows preference for "portulaca". The larvae mine in Portulaca sp. leaves and adults also feed on leaves. Considered a pest in several countries, it is a potential pest in Argentina.

Material studied. **Neuquén**: Plotter. Spontaneous vegetation (pitfall), 06-I-2017, (2 specimens). Tomato (pitfall), 03-II-2017, (3 specimens); 03-III-2017, (11 specimens). Pepper (pitfall), 06-I-2017, (4 specimens); 03-II-2017, (12 specimens); 03-III-2017, (12 specimens); 31-III-2017, (1 specimen). Bernardis-Gittins-López Armengol cols. (Tables III and IV).

Subfamily Cyclominae

**Listroderes costirostris Schoenherr species complex**

Common name. Vegetable weevil.

Geographic distribution. Native to South America, where it was recorded in Argentina, Bolivia, Brazil, Chile (including Easter Island and Juan Fernández Islands). In Argentina it is widespread in several provinces: Buenos Aires, Catamarca, Chaco, Chubut, Córdoba, Corrientes, Entre Ríos, Formosa, Jujuy, La Pampa, La Rioja, Mendoza, Misiones, Neuquén, Rio Negro, Salta, San Juan, San Luis, Santa Fe, Santiago del Estero and Tucumán. It has been introduced into Australia, France, New Zealand, Portugal, Spain, South Africa, USA and Japan (Lanteri et al., 2002).

Feeding habits. Phytophagous.

Plant associations. It is a primary pest of vegetables, found in many wild and cultivated hosts (more than 80).

It is frequent especially on cruciferous. In Argentina it was reported on "pale dock" (Polygonaceae), Senecio sp. (Asteraceae), Stellaria sp. (Caryophyllaceae) and several legumes (Fabaceae), "field mustard", "rapeseed", "cabbage", "radish" and Nasturtium sp. (Brassicaceae); "sunflower", "camomile" (Asteraceae); "soybean" (Fabaceae); "tobacco", "potato" (Solanaceae); "celery" and "carrots" (Apiaceae) (Lanteri et al., 2002).

Larvae destroy the tender young crown leaves of carrots and turnips. Adults often cause extensive damage by feeding on the leaves of small "tomato" and "potato" plants (Solanaceae), by cutting off the stems of plants at ground level. Females reproduce by parthenogenesis.

Material studied. **Río Negro**: Campo Grande. Abandoned pear orchard (pitfall), 31-III-2017, (1 female). Bernardis-Gittins-López Armengol cols. (Table IV).

Subfamily Entiminae

**Naupactus cervinus Boheman**

Common names. Fuller's rose weevil, Fuller's rose beetle.

Geographic distribution. Native to Argentina, southern Brazil, Paraguay and Uruguay. Introduced in Chile, Australia, New Zealand, Japan and several Pacific Islands, as well as other countries of Central America, North America, Europe, and South America. In Argentina it is widespread in several provinces: Buenos Aires, Catamarca, Chaco, Chubut, Córdoba, Corrientes, Chubut, Entre Ríos, Jujuy, Mendoza, Misiones, Salta, Santa Fe and Tucumán (Lanteri & del Río, 2020).

Feeding habits. Phytophagous.

Plant associations. Harmful for roots of cereals as 'wheat', 'oat' and 'barley'. It causes damage on alfalfa (Fabaceae), "sunflower" (Asteraceae), "potato" (Solanaceae), 'weat', 'oat' and 'barley' (Poaceae) (Lanteri et al., 2002). In Chile it affects "raspberry", "sweet cherry", "apple" (Rosaceae), and Lupinus sp. (Fabaceae) (Elgueta, 1993).

Lifecycle. Males are unknown or scarce and the species reproduces by parthenogenesis in most of its range. It is common in pastures, shrubs and crops of the Pampean biogeographic province.

Material studied. **Neuquén**: Plotter. Spontaneous vegetation (sweeping net), 06-I-2017, (2 females); 02-III-2017, (1 female). Bernardis-Gittins-López Armengol cols. (Table IV).

Subfamily Cyclominae

**Listroderes costirostris Schoenherr species complex**

Common name. Vegetable weevil.

Geographic distribution. Native to South America, where it was recorded in Argentina, Bolivia, Brazil, Chile (including Easter Island and Juan Fernández Islands). In Argentina it is widespread in several provinces: Buenos Aires, Catamarca, Chaco, Chubut, Córdoba, Corrientes, Entre Ríos, Formosa, Jujuy, La Pampa, La Rioja, Mendoza, Misiones, Neuquén, Rio Negro, Salta, San Juan, San Luis, Santa Fe, Santiago del Estero and Tucumán. It has been introduced into Australia, France, New Zealand, Portugal, Spain, South Africa, USA and Japan (Lanteri et al., 2002).

Feeding habits. Phytophagous.

Plant associations. It is a primary pest of vegetables, found in many wild and cultivated hosts (more than 80).

It is frequent especially on cruciferous. In Argentina it was reported on "pale dock" (Polygonaceae), Senecio sp. (Asteraceae), Stellaria sp. (Caryophyllaceae) and several legumes (Fabaceae), "field mustard", "rapeseed", "cabbage", "radish" and Nasturtium sp. (Brassicaceae); "sunflower", "camomile" (Asteraceae); "soybean" (Fabaceae); "tobacco", "potato" (Solanaceae); "celery" and "carrots" (Apiaceae) (Lanteri et al., 2002).

Larvae destroy the tender young crown leaves of carrots and turnips. Adults often cause extensive damage by feeding on the leaves of small "tomato" and "potato" plants (Solanaceae), by cutting off the stems of plants at ground level. Females reproduce by parthenogenesis.

Material studied. **Río Negro**: Campo Grande. Abandoned pear orchard (pitfall), 31-III-2017, (1 female). Bernardis-Gittins-López Armengol cols. (Table IV).

Subfamily Entiminae

**Aramagus tessellatus (Say)**

Geographic distribution. Native to South America (Argentina, southern Brazil and Uruguay). In Argentina it is widespread in several provinces: Buenos Aires, Chaco, Córdoba, Corrientes, Entre Ríos, Jujuy, La Pampa, Misiones, Neuquén, Rio Negro, Santa Fe, Santiago del Estero and Tucumán. Introduced in Chile, Mexico and USA (Lanteri & del Río, 2020).

Feeding habits. Phytophagous.

Plant associations. Harmful for roots of cereals as 'wheat', 'oat' and 'barley'. It causes damage on alfalfa (Fabaceae), "sunflower" (Asteraceae), "potato" (Solanaceae), 'weat', 'oat' and 'barley' (Poaceae) (Lanteri et al., 2002). In Chile it affects "raspberry", "sweet cherry", "apple" (Rosaceae), and Lupinus sp. (Fabaceae) (Elgueta, 1993).

Lifecycle. Males are unknown or scarce and the species reproduces by parthenogenesis in most of its range. It is common in pastures, shrubs and crops of the Pampean biogeographic province.

Material studied. **Neuquén**: Plotter. Spontaneous vegetation (sweeping net), 06-I-2017, (2 females); 02-III-2017, (1 female). Bernardis-Gittins-López Armengol cols. (Table IV).
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Material studied. Neuquén. Plottier. Abandoned pear orchard (pitfall), 31-III-2017, (1 female). Bernardis-Gittins-López Armengol cols. (Table IV).

**Naupactus leucoloma Boheman**

Common names. White-fringed weevil, white-fringed beetle.

Geographic distribution. Native to South America: Argentina, southern Brazil and Uruguay. Introduced in Chile (including Easter Island and Juan Fernández Islands), Peru, Mexico, USA, Australia, New Zealand and South Africa. In Argentina it is widespread in several provinces: Buenos Aires, Catamarca, Chaco, Chubut, Córdoba, Corrientes, Entre Ríos, Formosa, Jujuy, La Pampa, La Rioja, Mendoza, Río Negro, Salta, San Juan, San Luis, Santa Fe, Santiago del Estero and Tucumán (Lanteri & del Río, 2020). Neuquén is a new province record.

Feeding habits. Phytophagous.

Plant associations. It shows a broad host range, of about 385 plant species worldwide, including ornamentals, fruit trees, horticultural and industrial crops and forage. The major crop species are: *Brassica* sp. (Brassicaceae), "carrots" (Apiaceae), "strawberry", *Rubus* sp. and *Prunus* sp. (Rosaceae), "peanut", "soybean", "alfalfa", "beans", "pea", "cowpea" and *Trifolium* spp. (Fabaceae), "onion" (Amaryllidaceae), "potato" and "pepper" (Solanaceae), "maize" (Poaceae), "sweet potato" (Convolvulaceae). Fabaceae are major hosts in Argentina, Brazil, Chile and Uruguay (Lanteri et al., 2002). Pastures can be seriously damaged in Australia and New Zealand.

Lifecycle. Adults feed at the bases of leaf margins, leaving characteristic "notching". This feeding behavior injures plants seriously only if adults are very numerous. Larvae gnaw at tap roots, the basal parts of stems and the small lateral roots. When feeding is severe, plants turn yellow, wilt and die. Plants on which only a small amount of the cambium layer is eaten usually survive, but produce little or no crop. In lucerne, the larvae usually chew into the taproot, make a furrow along it and these results in the death of young plants. In "potatoes" damage is more spectacular, as larvae tunnel inside the tubers. The nitrogen fixation rate of *Trifolium repens* L. is reduced by 92% by *N. leucoloma* in New Zealand.

Except in some small areas of Argentina, populations of *N. leucoloma* include only parthenogenetic females.

Material studied. Neuquén. Plottier. Poplar shelterbelt (sweeping net), 06-I-2017, (1 female); Spontaneous vegetation (pitfall), 03-III-2017, (1 female). Abandoned pear orchard (pitfall); 03-III-2017, (1 female). Bernardis-Gittins-López Armengol cols. (Table IV).

**Naupactus xanthographus (Germar)**

Common names. Grapefruit weevil, peach-tree weevil, fruit weevil, grape snout beetle.

Geographic distribution. Native to South America (Argentina, southern Brazil, Paraguay and Uruguay). Introduced in Chile, being prevalent in the central zone. The current distribution in Argentina includes several provinces: Buenos Aires, Catamarca, Chaco, Chubut, Córdoba, Corrientes, Entre Ríos, Jujuy, La Pampa, La Rioja, Mendoza, Misiones, Salta, San Juan, San Luis, Santa Fe, Santiago del Estero, Neuquén and Tucumán (Lanteri & del Río, 2020). Río Negro is a new province record.

Feeding habits. Phytophagous. The adults feed on shoots and leaves, being particularly injurious to young plants. The larvae live in soil during the whole year, eating the plant's roots.

Plant associations. The major crop species include "vine" (Vitaceae), other fruit plants, mainly "pear", "apple", *Rubus* sp., *Prunus* sp., (Rosaceae), *Ribes* sp. (Grossulariaceae), "cherries" and "berries" (del Río et al., 2010); "kiwifruit" (Actinidiaceae), "tangerine" (Rutaceae), "avocado" (Lauraceae) and "walnut" (Juglandaceae). It also causes damage in "alfalfa", *Trifolium* spp. and "bean" (Fabaceae), "maize" (Poaceae), horticultural plants such as "potato", "tomato" (Solanaceae), "asparagus" (Liliaceae) and "beet" (Chenopodiaceae); and garden plants as *Ligustrum* sp. (Oleaceae) and *Rosa* sp. (Rosaceae) (Lanteri et al., 2002).

Material studied. Neuquén. Plottier. Abandoned pear orchard (pitfall), 03-III-2017, (1 male). Poplar shelterbelt (sweeping net), 06-I-2017, (1 female); (pitfall), 03-III-2017, (1 female). Tomato (pitfall), 06-I-2017, (1 male); 03-II-2017, (1 female). Río Negro. Campo Grande. Tomate (pitfall), 03-II-2017, (1 male). Abandoned pear orchard (pitfall), 03-II-2017, (1 male). Bernardis-Gittins-López Armengol cols. (Tables III and IV).

Tribe Otiorhynchini

**Otiorhynchus ovatus** (L.)

Common names. Strawberry Root Weevil

Geographic distribution. It is native to Europe and has been introduced in Canada, USA, Australia, New Zealand, Chile and Argentina: Chubut, Neuquén, Río Negro and Santa Cruz. It is considered invasive due to its parthenogenetic reproduction and associations with many plant species.

Feeding habits. Phytophagous.

Plant associations. It was found associated with "strawberry", *Fragaria* sp. (Rosaceae) and "blueberry" (Ericaceae) (del Río et al., 2010). In other countries, it causes damage to various ornamental, fruit and forest species.

Material studied. Neuquén. Plottier. Abandoned pear orchard (pitfall), 06-I-2017, (7 female). Bernardis-Gittins-López Armengol cols. (Table IV).

**Otiorhynchus rugosostriatus** (Goeze)

Common names. Rough Strawberry Root Weevil, "Otiorrinco de la frutilla".

Geographic distribution. It is native to Europe and
North Africa (Palaearctic region), and introduced in New Zealand, Australia, Tasmania, Canada, USA, Chile and Argentina. In Argentina, it was first cited in Río Negro province associated with red fruits (del Río et al., 2010). Neuquén is a new province record. It is considered invasive due to its parthenogenetic reproduction and associations with many plant species.

**Feeding habits.** Phytophagous.

**Plant associations.** Mainly, fruits, ornamentals and "berries". In Argentina, it was found associated with "strawberry" and in Chile, it causes damage to "blueberries", "raspberries", "strawberries" *Fragaria* sp., "apples", "redcurrant" and "vine" (del Río et al., 2010).

Material studied. **Neuquén.** Plottier. Abandoned pear orchard (pitfall), 06-I-2017, (1 female). **Río Negro.** Campo Grande. Poplar shelterbelt (pitfall), 31-III-2017, (1 female). Bernardis-Gittins-López Armengol cols. (Table IV).

**Otiorynchus sulcatus** (Fabricius)

Common names. Black Vine Weevil, Greenhouse weevil.

**Geographic distribution.** It is native to Europe (Palaearctic region) and introduced in several places around the world, North America (broadly distributed), Hawaii, Australia, New Zealand, Japan, Malaysia and Russia. In South America it is present in Chile and Argentina: Chubut, Neuquén and Río Negro provinces. In Argentina it was registered for the first time in 2000 (Lanteri et al., 2002). It is considered invasive due to its parthenogenetic reproduction and associations with many plant species.

**Feeding habits.** Phytophagous.

**Plant associations.** Numerous host plants of economic importance have been cited in Europe and North America, mainly ornamental, forest, horticultural and fine fruit plants. In Argentina, it causes damage to "strawberry" and "raspberry" (Lanteri et al., 2002; del Río et al., 2010). In Chile, it causes damage in fruit trees (Elgueta, 1993) such as "strawberry", "raspberry", "vine" and "blackberry" (Rosaceae).

Material studied. **Neuquén.** Plottier. Abandoned pear orchard (pitfall), 03-III-2017, (1 male). **Rio Río Río Negro.** Campo Grande. Poplar shelterbelt (pitfall), 03-I-2017, (2 males). Abandoned pear orchard (pitfall), 03-III-2017, (1 male). Bernardis-Gittins-López Armengol cols. (Table IV).

**Tribe Stotonini**

**Sitona discoideus** Gyllenhal

Common names. Alfalfa root weevil.

**Geographic distribution.** Native to southern Europe and northern Africa, introduced in North America, Australia, New Zealand, Tasmania, South Africa, Chile and Argentina: Río Negro. Neuquén is a new province record.

**Feeding habits.** Phytophagous.

**Plant associations.** It prefers legumes such as "alfalfa", other *Medicago* sp. and *Trifolium* sp. It is a pest of pastures in Australia and New Zealand.

**ORDER HYMENOPTERA**

**Family Apidae**

**Subfamily Eucerinae**

**Trabe Emphorini**

**Diadasia pereyrae** (Holmberg)

**Geographic distribution.** Neotropical. Uruguay and Argentina: Buenos Aires, Catamarca, Córdoba, Mendoza, Salta, San Juan, San Luis, Santiago del Estero and Tucumán (Moure, 2007). Río Negro is a new province record.

**Biological comments.** Pollinator. *Diadasia pereyrae* nests in the soil and has a solitary life behavior (Jörgensen, 1909). In Mendoza, Jörgensen (1909, 1912) reported that this species visited 32 plant species belonging to 11 families, including Asteraceae, Malvaceae, Convolvulaceae and Solanaceae.

Material studied. **Río Negro.** Campo Grande. Poplar shelterbelt (pitfall), 03-III-2017, (2 males). Abandoned pear orchard (pitfall), 03-III-2017, (1 male). Bernardis-Gittins-López Armengol cols. (Table IV).

**Subfamily Xylocopinae**

**Tribe Xylocopini**

**Xylocopa** (Neoxylocopa) **augusti** Lepeletier

**Geographic distribution.** Neotropical. Southeastern Brazil, Chile, Paraguay, Uruguay and Argentina: Buenos Aires, Chaco, Corrientes, Córdoba, Entre Ríos, Formosa, Jujuy, La Pampa, Mendoza, Misiones, Río Negro, San Luis, Santa Fe and Tucumán (Lucia et al., 2014). Neuquén is a new province record.

**Biological comments.** Pollinator. This species nests in solid wood and has a parasocial life behavior (Lucia et al., 2017). *Xylocopa augusti* is a polllectic species, the presence of 18 pollen types from 11 families of brood cells of several artificial nests was recorded (Lucia et al., 2017). This species presents buzzing behavior to collect pollen and was recorded visiting eggplant crops (Alvarez et al., 2014).

Material studied. **Neuquén.** Plottier. Tomato (sweeping net), 03-II-2017, (1 female). Bernardis-Gittins-López Armengol cols. (Table III).

**Tribe Halictini**

**Dialictus autranellus** (Vachal)

**Geographic distribution.** Neotropical. Paraguay and Argentina: Buenos Aires (Dalmazzo et al., 2014). Río Negro is a new province record.

**Biological comments.** Pollinator. Species of *Dialictus*...
nest in the soil and present life habits from solitary to eusocial (Michener, 2007; Dalmazzo et al., 2014).

Material studied. **Río Negro.** Campo Grande. Tomato (pitfall), 03-III-2017, (1 female); Pepper (pitfall), 31-III-2017, (1 female). Pepper (pitfall), 06-I-2017, (1 male); Pepper (pitfall), 03-II-2017, (1 male); Pepper (pitfall), 31-III-2017, (1 male). Pepper (pitfall), 03-III-2017, (1 male). Pepper (pitfall), 31-III-2017, (1 male) (Tables III and IV).

**Pseudagapostemon (Pseudagapostemon)** pampeanus (Holmberg)

Geographic distribution. Neotropical. Brazil, Uruguay and Argentina: Buenos Aires, La Rioja, Mendoza, Río Negro and Salta and Santa Fe (Dalmazzo et al., 2014). Neuquén is a new province record.

Biological comments. Pollinator. Species of Pseudagapostemon nest in the soil (Michener, 2007). Jörgensen (1912) reported this species on *P. alpataco* Phil.

Material studied. **Neuquén.** Plotter. Abandoned pear orchard (pitfall), 03-III-2017, (1 female); Pepper (pitfall), 31-III-2017, (2 females). Bernardis-Gittins-López Armengol, cols. (Table III).

**Pseudagapostemon (Neagapostemon)** singularis Jörgensen

Geographic distribution. Neotropical. Argentina: Buenos Aires, La Rioja, Mendoza, Río Negro and Salta and Santa Fe (Dalmazzo et al., 2014). Neuquén is a new province record.

Biological comments. Pollinator. Species of Pseudagapostemon nest in the soil (Michener, 2007).

Material studied. **Neuquén.** Plotter. Abandoned pear orchard (pitfall), 03-III-2017, (1 female); Pepper (pitfall), 31-III-2017, (1 male). Bernardis-Gittins-López Armengol, cols. (Table III).

Family Vespidae

Subfamily Vespinae

**Vespula germanica** (Fabricius)

Geographic distribution. Native to the Palaearctic, and introduced in Australia, New Zealand, North America, South America, South Africa, Ascencion Island, Madeira, Canary Islands and Iceland (Beggs et al., 2011). In Argentina it was registered by Willink (1980), and it is distributed from the north of the province of Mendoza to the south of the province of Tierra del Fuego and from the Andes to the Atlantic Ocean (Masciocchi & Corley, 2013; Sola et al., 2015).

Biological comments. Eusocial and with generalist predator behavior, it can negatively affect natural ecosystems and economic activities, including beekeeping, horticulture and tourism (Masciocchi & Corley, 2013).

Material studied. **Neuquén.** Plotter. Spontaneous vegetation (pitfall), 06-01-2017, (3 males); 03-II-2017, (1 male); 31-III-2017 (1 male). Pepper (pitfall), 03-II-2017, (1 male); 03-III-2017, (1 male). Pepper (pitfall), 06-I-2017, (1 female). Pepper (pitfall), 03-II-2017, (1 female); Pepper (pitfall), 31-III-2017 (1 male); (pitfall), 31-III-2017, (1 male). Pepper (pitfall), 31-III-2017, (1 male). Pepper (pitfall), 03-III-2017, (1 male). Pepper (pitfall), 31-III-2017, (1 male). Pepper (pitfall), 03-III-2017, (1 male). Pepper (pitfall), 31-III-2017, (1 male) (Tables III and IV).

**DISCUSSION**

Among the species listed in the present work, 74% are herbivorous, of which 55% are pests, but within this percentage only 35% correspond to horticultural species and the rest to cereals and fruit trees. The remaining 45% of herbivorous species are not pests and can act as alternative prey for predator populations with interest for biological control. Among the non-herbivores (26%) three species are of interest for biological control and five for pollination. It is worth mentioning that only some of the insect families captured in the study are published in the present work. Even so, the species listed herein show the importance of the vegetation areas surrounding the crops. The predatory species were found mainly in the patches of vegetation with greater complexity in their structure since there are herbaceous, shrub and arboreal species (abandoned fruit orchard in the rural area and spontaneous vegetation patch in the peri-urban area), and which also present a greater number of species that represent a source of pollen and/or nectar for insects. Other studies analysing bees, true bugs, and carabids separately in each landscape confirmed that diversity patterns in mosaic agricultural landscapes are strongly determined by the interplay of species’ dispersal abilities and landscape structure (Steffan-Dewenter & Tscharntke, 2002; Thomas, 2000). Something similar is observed with species that are pollinators. Floral resource availability is considered a major driving force that directly regulates the abundance and diversity of wild bees’ communities (Potts et al., 2003; Roulston & Goodell, 2011).

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**LITERATURE CITED**

Álvarez, L.J., Lucia, M., Ramello, P.J., & Abrahamovich, A.H. (2014) Abejas asociadas a cultivos de Berenjena (Solanummelongena L. Solanaeaceae) en invernadero del Cinturón Horticola de La Plata, Buenos Aires, Argentina. Revista de la Facultad de Agronomía, La Plata, 113(2), 211-217.
Aquino, D.A., Cíchón, L., Garrido, S., Lago, J., Amún, E., & D’Herve, F. (2013) First record of Acerophagus griseus (Hymenoptera: Encyrtidae) as parasitoid of Pseudococcus viburni (Signoret) (Hemiptera: Pseudococcidae) in Alto Valle del Río Negro, Argentina. Revista de la Sociedad Entomológica Argentina, 72(1-2), 35-39.

Aragón, J., & Flores, F. (2006) Control Integrado de Plagas en Soja en el Sudeste de Córdoba. INTA Marcos Juárez, Argentina. Available at: http://www.inta.gov.ar/mjuarez

Azevedo-Filho, W.S., & Carvalho, G.S. (2006) Guía para coleta e identificação de cigarrinhas em pomares de citros no Río Grande do Sul. Edipucrs, Porto Alegre.

Azevedo-Filho, W.S., Botton, M., Paladini, A., Carvalho, G.S., Ringenberg, R., & Lopes, J.R.S. (2008) Egg brochosomes of Proconinini (Hemiptera: Cicadellidae, Cicadellinae) species associated with cultivation of grapevines. Scientia Agricola, 65(2), 209-213.

Baggs, J.R., Brockerhoff, E.G., Corley, J.C., Kenis, M., Masciocchi, M., Muller, F., Rome, Q., & Vilmant, C. (2011) Ecological effects and management of invasive alien Vespidae. BioControl, 56, 505-526.

Bennett, C.W., & Munck, C. (1946) Yellow Willow of sugar beet in Argentina. Journal of Agricultural Research, 73, 65-64.

Berg, C. (1879) Hemiptera. Argentina (Continuación). Anales de la Sociedad Científica Argentina, 8, 209-226.

Bourgoin, T. (2019) FLOW (Fulgorumphora Lists on The Web): a world knowledge base dedicated to Fulgoromorpha. Available at: http://hemiptera-databases.org/flow/

Braman, S.K. (2000) Damsel bugs (Nabidae). Heteroptera of Economic Importance (ed. Schaefer, C.W., & Panizzi, A.R.), pp. 639-656. CRC Press, Boca Raton.

Buck, L., Lassioie, J., & Fernandez, E. (1999) Agroforestry in Sustainable Agricultural Systems. CRC Press, Boca Raton.

Camposdónico, J.F. (2017) A new species of Pentagramma Van Duze (Hemiptera: Delphacidae: Asiracinae) from Chile, with notes on the host relations of the Idiosystatini Emeljanov. Zootaxa, 4291(3), 588-594.

Carloni, E., Viria, E., Paradelli, S., Carpano, P., Nome, C., Laguna, I., & Gimenez Pecci, M.P. (2011) Extitus obscurinervis (Hemiptera: Cicadellidae), a new experimental vector of Spiroplasma kunkelii. Journal of Economic Entomology, 104(6), 1793-1799.

Carmona, D., Dughetti, A., Rodriguez, G., Quiroz, F., & Manetti, P. (2015) La “chinchita diminuta”, Nysius simulans Stål, problema emergente en cultivo de girasol. Informe Técnico INTA.

Carpintero, D.L., & Carvalho, J.C.M. (1998) A catalogue of the Miridae of the world. Part II. Arquivos do Museu Nacional, Rio de Janeiro, 45, 1-216.

Carpintero, J.C.M., & Alfonso, C.D.S. (1977) Mirides Neotropicais, CCXVIII: Sobre una colección enviada para estudio pela academia de ciências da California (Hemiptera). Revista Brasileira de Biologia, 37, 7-16.

Carvalho, J.C.M., & Fiuza Ferreira, P.S. (1972) Mirides Neotropicais, CXV. Estudo de duas Coleoces da Republica do Peru (Hemiptera). Revista Brasileira de Biologia, 32, 177-183.

Catalano, M.I., Paradelli, S.L., & Remes Lenicov, A.M.M. de (2009) Consideraciones taxonómicas y biológicas sobre Edwardsiana foggetti (Baker), la chicharrita amarilla del manzano (Hemiptera-Auchenorrhyncha- Cicadellidae). Intericiencia, 34(6), 424-427.

Chocorosqui, V.R., & Panizzi, A.R. (2004) Impact of cultivation systems on Dichelops melacanthus (Dallas) (Heteroptera: Pentatomidae) population and damage and its chemical control on wheat. Neotropical Entomology, 32(4), 487-492.

Cordo, H.A., Logarzo, G., Braun, K., & Di Iorio, O.R. (2004) Catálogo de insectos fitófagos de la Argentina y sus plantas asociadas. South American Biological Control Laboratory, USDA-ARS, Buenos Aires, Argentina.

Cornelis, M., & Coscarón, M.C. (2013) The Nabidae (Insecta, Hemiptera, Heteroptera) of Argentina. Zookeys, 333, 1-30.

Costilla, M.A., Basco, H.J., & Osores, V.M. (1972) Primera cita para Tucumán del bicho llovedor de la caña Tapajosa rubromarginata (Signoret) (Homoptera- Cicadellidae), en cultivos de caña de azúcar. Revista de Investigaciones Agropecuarias, 28, 126-129.

Creamer, R., Carpenter, J., & Rascon, J. (2003) Incidence of the beet leafhopper, Circulifer tenellus (Homoptera: Cicadellidae) in New Mexico. Southwestern Entomologist, 28(3), 177-182.

Dalmazzzo, M., González Vaquero, R.A., Debandi, G., & Roig Alsina, A. (2014) Halictidae. Biodiversidad de Artrópodos (Coleoptera: Curculionidae) perjudiciales para “frutos rojos” en la Argentina. Revista Natural, 17(1), 27-32.

Dapoto, G.A., & Giganti, H. (1994) Bioecología de Nematus desatisi Smith (Hymenoptera: Tenthredinidae: Nematinae) en las provincias de Río Negro y Neuquén (Argentina). Bosque, 15(1), 1-26.

Dapoto, G.A., Giganti, H., Bondoni, M., & Olave, A. (2010) Primer registro de Hypercompe inedica (Lepidoptera: Noctuidae: Arctiinae) en perales y álamos en la Patagonia. Revista de la Sociedad Entomológica Argentina, 69(1-2), 137-139.

De Leijster, V., Santos, M.J., Wassen, M.J., Robles, A.B., Díaz, M., Staal, M., & Verweij, P.A. (2019) Agroecological management improves ecosystem services in almond orchards within one year. Ecosystem Services, 38(38), 1-12.

Defea, B. (2018) Biodiversidad de Cicadellidae en las regiones norte y centro de la Argentina (Insecta-Hemiptera- Cicadellidae). Tesis Doctoral. Facultad de Ciencias Naturales y Museo. Universidad Nacional de La Plata.

del Rio, M.G., Klasmer, P., & Lanteri, A.A. (2010) Gorgojos (Coleoptera: Curculionidae) perjudiciales para “frutos rojos” en la Argentina. Revista de la Sociedad Entomológica Argentina, 69(1-2), 101-110.
ÁLVAREZ, L.J. et al. New records from Río Negro and Neuquén provinces.

Dellapé, G. (2013) Cicadellinos potenciales vectores de patógenos en cultivos citricos del NE argentino. Estudios taxonómicos y moleculares (Insecta: Hemiptera: Cicadellidae). Tesis Doctoral. Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata.

Dellapé, G., Logarzo, G.A., Viría, E.G., & Paradell, S.L. (2011) New records on the geographical distribution of South American Sharpshooters (Cicadellidae: Cicadellinae: Proconiini) and their potential as vectors of Xylella fastidiosa. Florida Entomologist, 94(2), 364-366.

Dellapé, G., Paradell, S., Delfederico, L., & Semorile, L. (2016) The potential vectors of Xylella fastidiosa from Argentina: a study of leafhoppers and treehoppers (Hemiptera: Auchenorrhyncha) on citrus agroecosystems. Entomología Experimentalis et Applicata, 161(2), 92-103.

Dellapé, P.M. (2014) Lygaeoidea. Biodiversidad de Artrópodos Argentinos (Vol. 3) (ed. Roig-Juñent, S., Claps, L.E., & Morrone, J.J.), pp. 421-438. Editorial INSUE - UNT, Argentina.

Dellapé, P.M., & Henry, T.J. (2020) Lygaeoidea Species File. Version 5.0/5.0. [May-2020]. http://Lygaeoidea.SpeciesFile.org

Dellapé, P.M., Melo, M.C., Montemayor, S.I., Dellapé, G., & Braloovsky, H. (2015) Terrestrial Heteroptera (Hemiptera) from Moconá Provincial Park (Misiones, Argentina). Check List, 11(3), 1662.

Dellapé, P.M., Melo, M.C., Dellapé, G. & Olivia, L. (2020) Pentatomomorpha (Hemiptera: Heteroptera) species from Argentina and Uruguay. [December 2020]. https://biodar.unlp.edu.ar/pentatomomorpha/

D’Hervé, F.E., Remes Lenicov, A.M.M. de, & Aquino, D.A. (2017) Neodealaphus fuscomaternata (Hemiptera: Fulgoroidea: Delphacidae) y su enemigo natural Anagrus incarnatosimilis (Hymenoptera: Mymaridae), primer registro sobre frutos de manzano. Revista del Museo Argentino Ciencias Naturales, n.s. 19(1), 85-90.

Di Iorio, O. (2004) Hemiptera. Lygaeoidea. Catálogo de Insectos Fitófagos de la República Argentina y sus Plantas Asociadas (ed. Cordo, H.A., Logarzo, G., Braun, K., & Di Iorio, O.), 249-253. South American Biological Control Asociadas (ed. Cordo, H.A., Logarzo, G., Braun, K., & Di Iorio, O.), 249-253. South American Biological Control Laboratory, USDA-ARS, Buenos Aires, Argentina.

Diekötter, T., Billetter, R., Thomas, O., & Crist, T.O. (2008) Effects of landscape connectivity on the spatial distribution of insect diversity in agricultural mosaic landscapes. Basic and Applied Ecology, 9(3), 298-307.

Dughetti, A.C., Zárate, A.O., & Rivas, J.C. (2015) La chinche diminuta Nysius simulans: plaga emergente en quina y otros cultivos en el valle bonaerense del Río Colorado. Informe Técnico de la E.E.A. Hilario Ascasubi Nro 46.

Elgueta, M. (1993) Las especies de Cicurionoidea (Insecta: Coleoptera) de interés agrícola en Chile. Santiago, Chile. Museo Nacional de Historia Natural; Publicación Ocasional, 48, 1-79.

FAO (2015a) Horticultura y otros cultivos en la Provincia de Río Negro. Informe de diagnóstico de los principales valles y áreas con potencial agrícola en la provincia de Río Negro. Documento de Trabajo N°6. Proyecto FAO UTF ARG 017. Desarrollo Institucional para la Inversión. Organización de las Naciones Unidas para la Alimentación y la Agricultura.

FAO (2015b) Horticultura y otros cultivos Provincia de Neuquén. Informe de diagnóstico de los principales valles y áreas con potencial agrícola en la provincia de Neuquén. Documento de Trabajo N°12. Proyecto FAO UTF ARG 017. Desarrollo Institucional para la Inversión. Organización de las Naciones Unidas para la Alimentación y la Agricultura.

Fernández Lozano, J. (2012) La producción de hortalizas en Argentina. Mercado Central de Buenos Aires.

Fiúza Ferreira, P.S., & Henry, T.J. (2011) Synopsis and keys to the tribes, genera, and species of Miridae (Hemiptera: Heteroptera) of Minas Gerais, Brazil Part I: Byr crops. Zootaxa, 2920(1), 1-41.

Fiúza Ferreira, P.S., da Silva, E.R., & Coelho, L.B. (2001) Miridae (Heteroptera) fitofagos e predadores de Minas Gerais, Brasil, com ênfase em espécies com potencial econômico. Iheringia, Série Zoológica, 91, 159-169.

Forman, R.T.T., & Godron, M. (1986) Landscape ecology. Wiley, New York.

Garrido, S., Cichón, L., & Fernández, D. (2007) Control biológico de Carapocapsa. Revista Fruticultura y Diversificación, 54, 26-33.

Garrido, S.A., Cichón, L.I., Lago, J.D., Aquino, D.A., Vallina, C., & Luna, M.G. (2017) Primer registro de Pseudapanteles dignus (Hymenoptera: Braconidae) como parasitoide de Tuta absoluta (Lepidoptera: Gelechiidae) en el Alto Valle de Río Negro, Argentina. Revista de la Sociedad Entomológica Argentina, 76(1-2), 46-49.

Giganti, H.E., Dapoto, G.L., & Delfino, M.A. (2004) Chaitophorus leucomelas Koch hemiptera, aphid(idae) in Río Negro and Neuquén (Argentina). Características morfológicas y biológicas. Revista de Investigaciones Agropecuarias, 33(2), 27-39.

Gili, P., Marando, G., Iirisari, J., & Sagardoy, M. (2004) Efecto de las técnicas de lavado y fertilización sobre la salinidad en suelos del Alto Valle de Río Negro y Neuquén, Argentina. Agricultura Técnica, 64(3), 295-304.

Göllner-Scheiding, U. (1978) Revision der Gattung Harmostes Burr., 1835 (Heteroptera, Rhopalidae) und einige bemerkungen zu den Rhopalinae. Mitteilungen aus dem Zoologischen Museum in Berlin, 54(2), 257-311.

Göllner-Scheiding, U. (1983) General-Katalog der Familie Rhopalidae (Heteroptera). Mitteilungen aus dem Zoologischen Museum in Berlin, 59(1), 37-189.

González, E.V., Heredia, J.F., Cichón, L., & Fernández, D. (2011) Crispípodos (Insecta: Neuróptera) asociados a frutales de pepita en el Alto Valle de Río Negro y Neuquén (región Patagonia Norte Argentina). Horticultura Argentina. Revista Asociación Argentina de Horticultura, 30(73), 5-8.

Goodall, D.W. (1952) Some considerations in the use of point quadrats for the analysis of vegetation. Australian Journal of Scientific Research (Series B: Biol. Sciences), 5(1), 1-41.

Grazia, J., & Schwertner, C.F. (2008) Pentatomidae e Cyrtoctoridae. Biodiversidad de Artrópodos Argentinos (Vol. 2) (ed. Claps, L.E., Debandi, G., & Roig-Juñent, S.), pp. 223-234. Sociedad Entomológica Argentina, Tucumán, Argentina.

Harpaz, I. (1972) Maize Rough Dwarf. A planthopper virus disease affecting maize, rice, small grains and grasses. Israel Universities Press, Jerusalem.

Igarzábal, D., Fichetti, P., Gámez, M.C., M. Laguzzi, M.A., Lábarque, M. & Weissbein, A. (2009) Reconocimiento y Manejo Práctico de Plagas. Manual de manejo del cultivo de Soja. 1ra ed. (ed. García, F., Ciampitti, I., & Baigorri, H.), pp. 129-150. IPNI, Buenos Aires.
Jones, J., & Deitz, L. (2009) Phylogeny and systematics of the leafhopper subfamily Ledrinae (Hemiptera: Cicadellidae). *Zoothera*, 2186(1), 1-120.

Jörgensen, P. (1909) Beobachtungen über Blütenbesuch, Biologie, Verbreitung usw. dier Bienen von Mendoza (Hymenoptera). *Deutsch Entomologisch Zeitschrift*, 53(1), 53-65.

Jörgensen, P. (1912) Los crisídidos y los himenópteros aculeatos de la Provincia de Mendoza. *Anales del Museo Nacional de Historia Natural de Buenos Aires*, 22, 267-338.

Kelton, L.A. (1980) Lectotype designation for *Idolocoris agilis*, and descriptions of three new species of *Dicyphus* Fieber from North America (Heteroptera: Miridae). *Canadian Entomologist*, 112(4), 387-392.

Kennedy, K.A., & Addison, P.A. (1987) Some considerations for the use of visual estimates of plant cover in biomonitoring. *Journal of Ecology*, 75(1), 151-157.

Kremen, C., Colwell, R.K., Erwin, T.L., Murphy, D.D., Noss, R.F., & Sanjayan, M.A. (1993) Terrestrial arthropod assemblages: Their use in conservation planning. *Conservation Biology*, 7(4), 796-809.

Lanteri, A.A., & del Río, M.G. (2020) Naupactini (Coleoptera: Curculionidae) species from Argentina and Uruguay. [May 2020]. https://biodar.unlp.edu.ar/naupactin/

Lanteri, A.A., Marvaldi, A.E., & Suárez, S.M. (2002) Gorgojos de Argentina y sus plantas huéspedes. *Tomo I: Apionidae y Curculionidae*. Sociedad Entomológica Argentina. La Plata, Argentina.

Lavin, J.D. (1989) Bionomics of the Nabidae. *Annual Review of Entomology*, 34, 383-440.

Lee, I-M., Bottner, K.D., Munyaneza, J.E., Crosslin, J.M., du Toit, L.J., & Crosby, T. (2006) Carrot purple leaf: Incidence of the beet leafhopper-transmitted virusence agent phytoplasma in local populations of the beet leafhopper. *Circulifer tenellus*, in Washington State. *Journal of Insect Science*, 10(7), 18.

Melo, M.C., Dellapé, P.M. (2020) *Cimicomorpha* (Hemiptera: Heteroptera) species from Argentina and Uruguay. [December 2020]. https://biodar.unlp.edu.ar/cimicomorpha/

Michener, C.D. (2007) *The Bees of the World*, 2nd ed. Johns Hopkins University Press, Baltimore.

Molnari, A.M., & Gamboni, J.C. (2010) La “chinchina diminuta” *Nysius similans* en soja. *Para Mejorar la Producción* 45 (ed. INTA Olivos), pp. 117-119. Argentina.

Moure, J.S. (2007) Augochlorini. *Catalogue of Bees (Hymenoptera, Apoidea) in the Neotropical Region* (ed. Moure, J.S., Urban, D., & Melo, G.A.R.), pp. 677-691. Sociedade Brasileira de Entomologia, Curitiba.

Munyanaza, J.E., Crosslin, J.M., Upton, J.E., & Buchman, J.L. (2010) Incidence of the beet leafhopper-transmitted virusence agent phytoplasma in local populations of the beet leafhopper. *Circulifer tenellus*, in Washington State. *Journal of Insect Science*, 10(7), 18.

Ortiz-Muñoz, A.C., Velásquez, V.V., & López, S.N. (2012) Desarrollo de *Tupiocoris cucurbitaceus* (Hemiptera: Miridae) sobre *Bemisia tabaci* (Hemiptera: Aleyrodidae) en diversas hortalizas. *Fitosanidad*, 16(3), 147-153.

Pall, J.L., Kihn, R.G., Diez, F., & Coscarón, M. del C. (2016) A review of genus *Nysius* Dallas in Argentina (Hemiptera: Heteroptera: Orsillidae). *Zoothera*, 4132(2), 221-234.

Pancini, A.R., Agostinetto, A., Lucini, T., & Pereira, P.R.D.S. (2016) Effect of green-belly stink bug, *Dichelops furcatus* (F.) on wheat yield and development. *Crop Protection*, 79, 20-25.

Pancini, A.R., Lucini, T., & Possobom, T. (2018) Development of *Dichelops furcatus* (Hemiptera: Heteroptera: Pentatomidae) reared on spring cereals versus soybean. *Journal of Insect Science*, 18(5), 17.

Paradell, S. (1995) Especies argentinas de homópteros Cicadellidos asociados al cultivo de maíz Zea mays L. *Revista de la Facultad de Agronomía, La Plata*, 71(2), 213-234.

Paradell, S., & Dellapé, G. (2015) The Idiocerinae in Argentina (Hemiptera: Cicadellidae). Characters for easy identification of *Rhytidodius decimusquartus* and new records. *Revista de la Sociedad Entomológica Argentina*, 74(1-2), 61-66.

Paradell, S., Virla, E., & Toledo, A. (2001) Leafhoppers species richness and abundance on crops in Argentina (Insecta-Hemiptera-Cicadellidae). *Boletín Sanidad Vegetal Plagas*, 27, 465-475.

Paradell, S.L., Virla, E.G., Logarzo, G.A., & Dellapé, G. (2012) Protononini Sharphoooters of Argentina, with notes on its distribution, host plants, and natural enemies. *Journal of Insect Science*, 12(1), 116.

Paradell, S., Defea, B., Dughetti, A., Zárate, A., & Remes Lenicov, A.M.M. de (2014) Diversity of Auchenorrhyncha (Hemiptera: Cicadellidae: Delphacidae) associated with *Vicia villosa* in southern Buenos Aires province, Argentina. *Florida Entomologist*, 97(2), 674-684.

Polack, L.A., López, S.N., Silvestre, C., Viscarret, M., Andorno, A., del Pino, M., Peruzzi, G., Gomez, J., & Izzi, A. (2017) Control biológico en tomate con el mirido *Tupiocoris cucurbitaceus*. *Comunicación INTA*.

Potts, S.G., Vulliamy, B., Dafni, A., Ne’eman, G., & Willmer P. (2003) Linking bees and flowers: how do floral communities structure pollinator communities? *Ecology*, 84(10), 2628-2642.
Remes Lenicov, A.M.M. de (1973) Contribución al estudio de los membráciados neotropicales I. Revisión del género Ceresa Arny et Serville. Acta Zoologica Lilloana, 30, 53-134.

Remes Lenicov, A.M.M. de (1996) El género Dicranotropis Fieber, 1866, en la República Argentina y Chile (Insecta-Homoptera-Delphacidae). Acta Entomológica Chilena, 20, 123-128.

Remes Lenicov, A.M.M. de & Brentasai, E. (2017) New taxa and combinations in Neotropical Delphacini (Hemiptera: Fulgoroidea). Zootaxa, 4281(1), 280-290.

Remes Lenicov, A.M.M. de, & Paradell, S. (2012) Morfología y biología de especies vectoras de virus y mollicutes al maíz en la Argentina (Insecta-Hemiptera-Cicadomorpha-Fulgormorpha). Enfermedades del maíz producidas por virus y mollicutes en Argentina. (ed. Giménez Pecci, M.P., Laguna, I.G., & Lenardón, S.L.), pp. 125-152. Ediciones INTA, Buenos Aires.

Remes Lenicov, A.M.M. de, & Tesón, A. (1978) Contribución al estudio de los fulgorídeos argentinos I (Homoptera-Fulgoroidea-Delphacidae). Revista de la Sociedad Entomológica Argentina, 37(1-4), 17-22.

Remes Lenicov, A.M.M. de, & Tesón, A. (1989) Contribución al estudio de los fulgorídeos argentinos IV (Homoptera-Fulgoroidea). Observaciones sobre tres especies halladas en cultivos de maíz (Zea mays L.). Revista de la Sociedad Entomológica Argentina, 47(1-4), 101-107.

Remes Lenicov, A.M.M. de, & Virila, E.G. (1999) Delfáciados asociados al cultivo de maíz en la República Argentina (Insecta-Hemiptera-Delphacidae). Revista Facultad Agronomía, La Plata, 104(1), 1-15.

Remes Lenicov, A.M.M. de, Tesón, A., Dagoberto, E., & Huguet, N. (1985) Hallazgo de uno de los vectores del “Mal de Río Cuarto” del maiz. Gaceta Agronómica, 5, 251-258.

Remes Lenicov, A.M.M. de, Virila, E.G., & Manca, M.E. (1998) Difusión de Tapajos rubromarginata (Homoptera: Cicadellidae) sobre cultivos cereales de la Argentina. Revista de la Sociedad Entomológica Argentina, 57(1-4), 18.

Remes Lenicov, A.M.M. de, Paradell, S., & Catalano, M.I. (2006) Hemípteros auquenorrincos perjudiciales al cultivo de sorgo en la Argentina (Insecta-Hemiptera-Heliothidae). Revista de Investigaciones Agropecuarias, 35, 3-20.

Renti Pugni, J.P., Reinoso, O.J., Bruna, M., Vasiciek, J.P., Ávalos, M., Ozquen, A., & Cantamuto, M.A. (2015) Impacto de la “chinche diminuta” (Nysius sp.) sobre el cultivo de girasol del valle bonaerense del Río Colorado 2014/15. Informe Técnico E.E.A. INTA Aiscasubli Nro. 43.

Rivas, J.C., & Dugheitti, A.C. (2015) Incidencia de la chinche diminuta Nysius simulans Stål (Hemiptera: Lygaeidae) en la calidad de la semilla de tres cultivares de quinua, en el valle bonaerense del Río Colorado. Informe Técnico de la E.E.A. Hilario Aiscasubli Nro. 47.

Roulston, T.H., & Goodell, K. (2011) The role of resources and risks in regulating wild bee populations. Annual Review of Entomology, 56, 293-312.

Roza-Gomes, M.F., Salvadori, J.R., Pereira, P.R.V.D.S., & Panizz, A.R. (2011) Injúrias de quatro espécies de percevejos pentatômidos em plântulas de milho. Ciência Rural, 41(7), 1115-1119.

Salas Gervassio, N.G., Luna, M.G., Minardi, G.M., & Sánchez, N.E. (2019) Assessing inoculative releases of Pseudapanteles dignus (Hymenoptera: Braconidae) for the biological control of Tuta absoluta (Lepidoptera: Gelechiidae). Crop Protection, 124, 1-5.

Santadino, M.V., Riquelme Virgala, M.B., Ansia, M.A., Bruno, M., Di Silvestro, G., & Lunazzi, E.O. (2015) Primer registro de Drosophila suzuki (Diptera: Drosophilidae) asociado al cultivo de arándanos (Vaccinium spp.) de Argentina. Revista de la Sociedad Entomológica Argentina, 74(3-4), 183-185.

Schu, R.T., & Weirach, C. (2020) True Bugs of the World (Hemiptera: Heteroptera): Classification and Natural History. Monograph Series Vol 8. Siri Scientific Press, UK.

Sola, F.J., Valenzuela, A.E., Anderson, C.B., Martinez Pastur, G., & Lencinas, M.V. (2015) Reciente invasión del Archipiélago de Tierra del Fuego por la avispula Vespula germanica (Hymenoptera: Vespidae). Revista de la Sociedad Entomológica Argentina, 74(3-4), 197-202.

Spinola, M. (1852) Hemípteros. Historia física y política de Chile, Vol. 7 (ed. Gay, C.), pp. 113-320. Zoología, París.

Steffan-Dewenter, I., & Tscharntke, T. (2002) Insect communities and biotic interactions on fragmented calcareous grasslands - A mini review. Biological Conservation, 104(3), 275-284.

Stupino, S., Iermano, M.J., Gargoloff, N.A., & Bonicatto, M.M. (2014) La biodiversidad en los agroecosistemas. Agroecología: bases teóricas para el diseño y manejo de agroecosistemas sustentables. Colección libros de cátedra (ed. Sarandón S.J., & Flores, C.C.), pp. 131-158. Ed. UNLP, La Plata.

Thomas, C.D. (2000) Dispersal and extinction in fragmented landscapes. Proceedings of the Royal Society of London Series B - Biological Sciences, 267(1439), 139-145.

Torres, B.A. (1946) Hemípteros (Auchenorrhincos) perjudiciales en nuestro país. Boletín de Laboratorio de Zoología Agrícola, Facultad de Ciencias Agrarias, La Plata, 9, 1-38.

Tscharntke, T., Klein, A.M., Kruess, A., Steffan-Dewenter, I., & Theis, C. (2005) Landscape perspectives on agricultural intensification and biodiversity-ecosystem service management. Ecology Letters, 8(8), 857-874.

Velazquez, P.D., Remes Lenicov, A.M.M. de, & Truel G.A. (2017) Caenodelphax teapae (Fowler) (Hemiptera: Delphacidae): nuevo vector natural del Mal de Río Cuarto virus (MRCV, Fijivirus) en Argentina. Agriscientia, 34(1), 39-45.

Vera, D., Garrido, S., Amún, E., Lago, J., & Cichón, L. (2012) Determinación del umbral de detección de Pseudococcus viburni (Hemiptera: Pseudococcidae) por PCR. Revista de la Sociedad Entomológica Argentina, 71(1-2), 151-154.

Virila, E.G., Cangemi, L.C., & Logarzo, G.A. (2007) Suitability of different host plants for nymphs of the sharpshooter Tapajos rubromarginata (Hemiptera: Cicadellidae): nuevo vector natural del Mal de Río Cuarto virus (MRCV, Fijivirus) en Argentina. Agriscientia, 34(1), 39-45.

Vera, D., Garrido, S., Amún, E., Lago, J., & Cichón, L. (2012) Determinación del umbral de detección de Pseudococcus viburni (Hemiptera: Pseudococcidae) por PCR. Revista de la Sociedad Entomológica Argentina, 71(1-2), 151-154.

Weintraub, P.G., & Beanland, L. (2006) Insect vectors of phytoplasmas. Annual Review of Entomology, 51(1), 91-111.

Willink, A. (1980) Sobre la presencia de Vespula germanica (Fabricius) en la Argentina (Hymenoptera: Vespidae). Neotropica, 26, 205-206.

Young, D.A. (1969) Taxonomic study of the Cicadellinae (Homoptera: Cicadellidae), Part 1, Proconini. Bulletin of the United States National Museum, 261, 1-287.

Young, D. (1977) Taxonomic study of the Cicadellinae (Homoptera: Cicadellidae), Part 2, New World Cicadellini and the genus Cicadella. Technical Bulletin of the North Carolina Agricultural Experiment Station, 239.
Zanol, K. (2006) Catalogue of the neotropical (including north of Mexico) Deltoccephalinae (Hemiptera, Cicadellidae). Part I Athysanini and Deltoccephalini excluded. *Acta Biológica Paraense, 35*, 89-161.

Zanol, K., & Menezes, M. (1982) Lista preliminar dos cicadeloideos (Homoptera: Cicadellidae) do Brasil. *Iheringia, Serie Zoologica, 61*, 9-65.