Notas

Food consumption rates of *Bufonacris claraziana* adults (Orthoptera: Tristiridae), a grasshopper pest in Patagonia, Argentina

Tasas de consumo de individuos adultos de *Bufonacris claraziana* (Orthoptera: Tristiridae), acridio plaga de la Patagonia Argentina

Micaela A. MANCINI
Instituto Multidisciplinario sobre Ecosistemas y Desarrollo Sustentable (CIC-UNICEN), Argentina
micaela.mancini@ecosistemas.exa.unicen.edu.ar
Carlos E. LANGE
CONICET, Argelia
Comisión de Investigaciones Científicas de la Provincia de Buenos Aires (CICPBA), Argentina
Rosana CEPEDA
Instituto Multidisciplinario sobre Ecosistemas y Desarrollo Sustentable (CIC-UNICEN), Argentina
Yanina MARIOTTINI
Instituto Multidisciplinario sobre Ecosistemas y Desarrollo Sustentable (CIC-UNICEN), Argentina

Revista de la Sociedad Entomológica Argentina vol. 84 núm. 2 e0206 2025

Sociedad Entomológica Argentina
Argentina

Recepción: 21 Diciembre 2024
Aprobación: 09 Abril 2025

Abstract: The tristirid *Bufonacris claraziana* (Saussure, 1884), an endemic grasshopper of Argentinian Patagonia, is considered a pest species. The last registered outbreaks were in different areas of Santa Cruz, Chubut, and Rio Negro provinces from 2016 to 2024. The aim of this work was to evaluate the consumption rates of *Festuca arundinaceae* (Schreber) by adult males and females of B. claraziana under controlled laboratory conditions (30 ºC, 14 L: 10 D, 40 % RH). The consumption observed per sex in the different maturation stages was significantly different. Pre-reproductive females had the highest consumption rate (690.4±21.2 mg/day), followed by pre-reproductive males with an average consumption of 582±27.4 mg/day. A decrease of approximately 50 % in consumption was observed between the pre-reproductive and reproductive stages in both sexes. Pre-reproductive females and males of B. claraziana, consumed daily an amount of food equivalent to their body weight. The results of this study constitute the first contribution to determine the potential feeding impact of B. claraziana which would allow to estimate the degree of damage that it may cause during outbreaks.

Keywords: Acridia, Food consumption, Insect pest, Patagonia steppe, Toad grasshopper.

Resumen: El tristirido *Bufonacris claraziana* (Saussure, 1884), un acridio endémico de la Patagonia Argentina, es considerado una especie plaga. Las últimas explosiones poblacionales de esta especie ocurrieron en distintas áreas de las provincias de Santa Cruz, Chubut y Río Negro, desde el 2016 hasta el 2024. El objetivo de este trabajo fue evaluar las tasas de consumo de *Festuca arundinaceae* (Schreber) por parte de hembras y machos adultos de B. claraziana en condiciones controladas de laboratorio (30 ºC, 14 L: 10 O, 40 % HR). El consumo observado

por sexo en los distintos estados de maduración fue significativamente diferente. Las hembras pre-reproductivas presentaron la tasa de consumo más alta (690,4±21,2 mg/día), seguidas por los machos pre-reproductivos con un consumo promedio de 582±27,4 mg/día. Se observó una disminución en el consumo de alimento de aproximadamente el 50 % entre el estado pre-reproductivo y el reproductivo en ambos sexos. Hembras y machos pre-reproductivos de B. claraziana consumieron una cantidad de alimento diario equivalente a la de su peso corporal. Los resultados de este estudio constituyen una primera contribución para determinar el potencial impacto alimenticio de B. claraziana y podrían permitir la estimación del grado de daño que ocasiona esta especie durante las explosiones poblacionales.
Palabras clave: Acridio, Consumo, Estepa patagónica, Insecto plaga, Tucura sapo.

The tristirid *Bufonacris claraziana* (Saussure) (Orthoptera: Tristiridae), an endemic species of Argentinian Patagonia (Cigliano et al., 2014), is considered a pest grasshopper (Mariottini, 2018; Mariottini et al., 2022; Carbonell et al., 2024). Recent registered outbreaks were in different areas of Santa Cruz, Chubut, and Río Negro provinces from 2016 to 2024. Commonly referred to as Toad grasshopper, *B. claraziana* is a large (up to 4.1 cm in length), bulky, apterous species (Cigliano & Lange, 2019). However, both nymphs and adults carry out considerable marching displacements in times of outbreaks. It is a univoltine grasshopper, with a long obligatory embryonic diapause and a polyphagous food regime, consuming almost any plant material that it encounters, from the tender grasses of the "mallines" (low, moist biotopes) where hatchings normally take place to the harder grasses (*Stipa* L., *Festuca* L.)of the arid Patagonian steppe, and even sometimes the lower branches of shrubs (*Berberis* L., *Senecio* L.) (Liebermann, 1958; Cigliano et al., 2014). These characteristics have allowed the development of recurrent outbreaks with devastating effects on the grasslands through which they move, considerably reducing the available forage (Cigliano et al., 2014). Available forage for livestock in the Patagonian rangeland is considerably reduced when outbreaks of the voracious bands of *B. claraziana* occur.

A number of authors have proved that forage loss caused by different species of grasshoppers increased as these insects grow, leading to the highest loss in the adult stage (Putnam, 1962; Hewitt et al., 1976; Hewitt, 1978; Sánchez & De Wysiecki, 1990; Bulacio et al., 2005; Torrusio et al., 2005; Mariottini et al., 2011; Mancini et al., 2023). Although the economic importance of *B. claraziana* has been recognized for decades, there are ecological and biological aspects of this species that are still unknown. One of these is the food consumption rate of adult individuals, which would allow knowing the degree of damage that they can cause during outbreaks. Consequently, the aim of this work was to determine the consumption rates of *Festuca arundinaceae* (Schreber) by adult males and females of *B. claraziana* under controlled laboratory conditions.

Individuals used in this study were collected as young nymphs in September of 2019 at Cushamen (42° 10′ 23″ S 70° 39′ 39″ W), west of Chubut province. Once in the laboratory, they were kept under controlled conditions of photoperiod, temperature, and relative humidity (14 L: 10 D, 28-30 °C during light, 7-10 °C during dark, and 30-40 % RH) as described in Mariottini et al. (2019). The grasshoppers were fed daily with fresh, well-washed lettuce and cabbage leaves and different species of grasses. An estimation of consumption per individual by sex and sexual maturation stage (pre-reproductive and reproductive) was obtained following the methodology used by Mariottini et al. (2011) and Mancini et al. (2023), using 150 individuals in the adult stage, 40 females and 40

males in the pre-reproductive stage, and 35 females and 35 males in the reproductive stage of *B. claraziana* (Fig. 1). Sex determination was performed by observation of the genitalia. Feeding trials in the pre-reproductive stage were performed within the first week after grasshoppers entered adulthood (Sánchez & De Wysiecki, 1990; Mancini et al., 2023), when they began to copulate were considered in the reproductive stage. After 12 h of fasting, each specimen was placed individually in a micro-perforated container (1 l) with a pre-weighed fresh ration of *F. arundinaceae,* a perennial forage grass used in the Patagonia region. After 24 h the remaining unconsumed food in each container was retrieved, and oven-dried at 60 °C for 48 h. Thirty control rations were prepared, weighed, and oven-dried at 60 °C. The average dry weight of control rations was used as a correction factor and applied to the initial fresh weight of each of the offered rations to calculate the dry weight of the food offered. The difference in weight between the rations offered and the remaining material after a trial represented the consumption during the test. Additionally, the average biomass (dry weight) of reproductive adults of both sexes was determined by individually weighting 32 males and 30 females.

Daily food consumption and the relative consumption rate by sex and stage of sexual maturation were compared using a non-parametric Kruskal Wallis test followed by a mean pair comparison between treatments. The body weight of females and males was compared by one-way ANOVA. Both tests were made using the statistical software InfoStat (Di Rienzo et al., 2011).

Figure 1.
Male adult of Bufonacris claraziana.

The results obtained indicate that the consumption observed per sex in the different maturation stages (pre-reproductive and reproductive) was significantly different (Kruskal-Wallis test, H= 88.40; p< 0.0001).Pre-reproductive females had the highest consumption rate (690.4±21.2 mg/day) (p< 0.05), followed by pre-reproductive males with an average consumption of 582±27.4 mg/day. In the reproductive stage the consumption rate of the females was higher than males, but the difference was not significant (Fig. 2). A decrease of approximately 50 % was observed between the consumption of pre-reproductive and reproductive stages in both sexes.

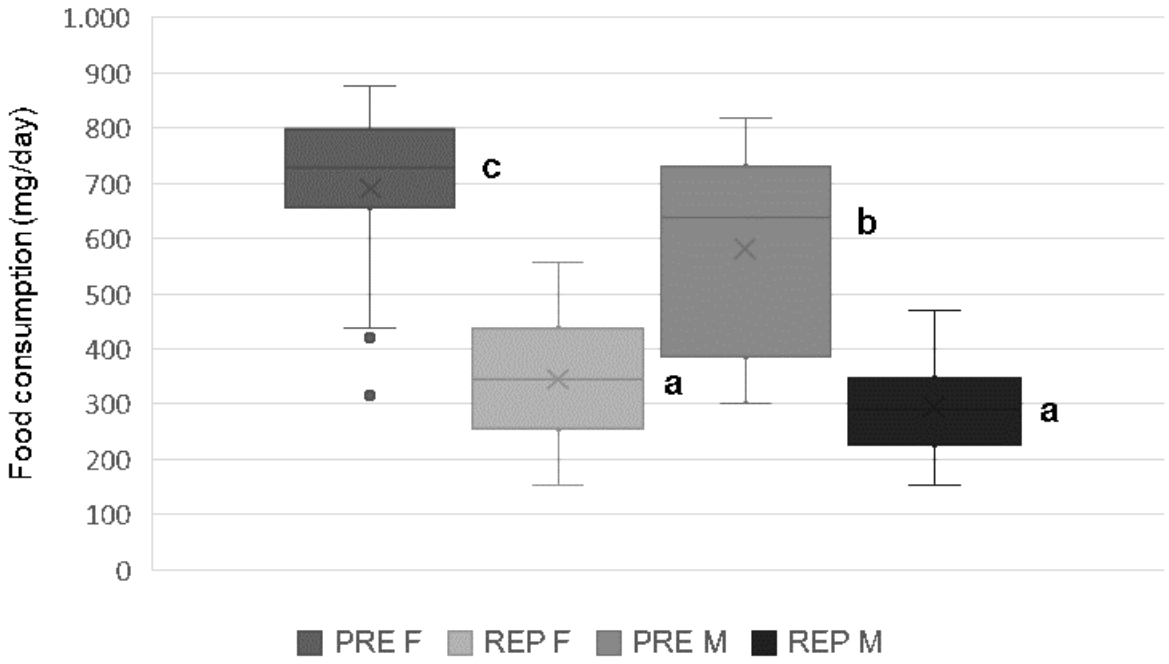

Figure 2.

Food consumption by sex and sexual maturation stage (pre-reproductive and reproductive) of Bufonacris claraziana.

Different letters indicate significant differences (Kruskal Wallis $p < 0.05$). References= PRE F: Pre-reproductive females, REP F: Reproductive females, PRE M: Pre-reproductive males, REP M: Reproductive males.

The mean body weight of reproductive adult females (690±30 mg) was higher than the average weight of adult males (520±20 mg) ($p < 0.0001$). The relative consumption rate (RCR) was different between sex and maturation stages ($H = 89.83$; $p < 0.0001$). Pre-reproductive stage of both sexes had a higher RCR (Females: 1±0.03 mg consumption/mg individual/day; Males: 1.12±0.052 mg consumption/mg individual/day) than in the reproductive stage (Females: 0.5±0.026 mg consumption/mg individual/day; Males: 0.56±0.025 mg consumption/mg individual/day).

In general, the relationship between food consumption rate and weight of grasshoppers has been a topic of debate among various authors, who have reported significant variations in the amount of food consumed by different species. Some studies indicate that grasshoppers consume an amount of food equivalent to their body weight daily, while other studies argue that their consumption amounts to half of their weight (Liebermann, 1961, 1971; Hewitt, 1977, cited in Capinera & Sechrist, 1982; Genovesio et al., 2011). This variable is directly related to the nutritional requirements of the different developmental stages and in their natural habitat largely, depends on the quantity, quality, and diversity of vegetation (Jonas, 2007; Ebeling et al., 2018). There are several factors that affect food

selectivity in grasshoppers when it comes to consider those related to the plants involved such as quantity and quality of cellulose, water, carbohydrate, and protein content (Ibanez et al., 2013).

The results of the present study indicate that adult individuals of both sexes of *B. claraziana* exhibit higher food consumption during the pre-reproductive stage, ingesting an amount of daily food equivalent to their body weight, in agreement with the findings of Liebermann (1961, 1971). However, during the post-reproductive stage consumption decreases by approximately 50 %. In females, the higher consumption observed during the pre-reproductive stage may be explained by the need to meet increased energy demands for reproduction and egg production (Lockwood et al., 1996; Genovesio et al., 2011). In males, the higher consumption could be because in the pre-reproductive period, they must feed enough to generate reserves that allow them to maintain the requirements for the reproductive stage, where their feeding could be reduced because they remain in copulation with the female. Regarding food consumption by sex, females consume more food than males, which could be attributed to body weight (Table I) and their larger size, which, according to Cigliano et al. (2014) is 32 to 36.5 mm for females and 27 to 41 mm for males.

In Argentina, various studies have assessed the consumption rate of different grasshopper species, with a particular focus on those considered harmful. We have compiled the available knowledge about the consumption of 11 grasshopper species from eight different investigations (Table I). Studies that have evaluated consumption in adult individuals of both sexes, considering the pre-reproductive and reproductive stages, have identified a similar trend: consumption is higher in either sex at the onset of the mating period (Bardi et al., 2011; Mariottini et al., 2011). Furthermore, as observed in the present study, the studies cited in Table I also report higher consumption in females than in males (Sánchez & De Wysiecki, 1983; Capello et al., 2011; Mariottini et al., 2011; Mancini et al., 2023). Although many studies report daily consumption rates similar to the individual's body weight, some others indicate consumption exceeding their own body weight. For instance, the body weight of female and male *Dichroplus elongatus* recorded by Mariottini et al. (2011) is significantly lower than the estimated consumption reported by Bulacio et al. (2005) for adult individuals of the same species (Table I). A trend of reduced consumption is observed when individuals are in groups. For example, in *Dichroplus maculipennis*, one of the main harmful grasshopper species in Argentina (Lange & Cigliano, 2019), the food consumption rate is lower when estimated as groups compared to individual evaluations (Mariottini et al., 2011, 2019). In this regard, Mancini et al. (2023) mentioned that individual consumption assessments might represent the maximum

daily potential consumption for an individual at its specific developmental stage.

The results of this study constitute the first contribution to understanding the feeding impact of *B. claraziana* in a laboratory setting. We consider that this work, along with other research aimed at furthering the limited current knowledge on life cycle, behavior, feeding habits, and other ecological aspects, is essential for assessing the maximum individual damage this species could cause and for contributing to the rational management of this insect pest.

(mg/mg.individual/day) of 11 grasshopper species from eight different investigations.

Authors	Grasshopper species	Development stage (pre o rep)	Food offered	Methodology[a]	Daily consumption[b]	Average body weight (mg)	Relative Consumption Rate (RCR)[c]
Sánchez & De Wysiecki, 1983	*Dichroplus pratensis* Bruner	Adults Female and Male (Average)	Natural grasslands	Groups (n=8-15)	**Pre-reproductive:** 43.94±6.19 **Reproductive:** 7.08±1.21 (mean±SD)	—	—
Bulacio et al., 2005	*Dichroplus. elongatus* Giglio-Tos	Adults Female and Male	*-Sorghum bicolor* (Sorghum) *-Medicago sativa* (Lucerne)	Groups (n=5)	**Sorghum F:** 469.86±144.3 **Lucerne F:** 1311.66±342.5 **Sorghum M:** 292.25±80.2 **Lucerne M:** 755.97±287	—	—
	Orphulella punctate De Geer				**Sorghum F:** 673.43±370.6 **Lucerne F:** 786.31±316.3 **Sorghum M:** 380.61±185.3 **Lucerne M:** 633.31±212.8 (mean±SD)		
Bardi et al., 2011	*Dichroplus exilis* Giglio-Tos	Pre-reproductive and reproductive adults (Female and Male)	*Bromus brevis* Nees (Pampas barley)	Group (n=10)	**Pre F:** 28.09±1.81 **Pre M:** 16.76±1.06 **Rep F:** 13.06±0.71 **Rep M:** 7.71±0.91 (mean±SE)	**F:** 90.74±4.67 **M:** 46.60±1.32 (mean±SE)	**F:** 0.227 **M:** 0.263
Genovesio et al., 2011	*Rhammatocerus pictus* Bruner	Reproductive Adults (Female and Male)	*Medicago sativa* (Lucerne) --*Zea mays* (Corn).	Group (n=5)	**Lucerne F:** 74 **Corn F:** 1390 **Lucerne M:** 64 **Corn M:** 483	**F:** 1250 **M:** 420	**Lucerne F:** 0.06 **Corn F:** 1.11 **Lucerne M:** 0.15 **Corn M:** 1.15
	Aleuas lineatus Stål				**Lucerne F:** 190±12 **Corn F:** 616±4 **Lucerne M:** 86±36 **Corn M:** 331±13	**F:** 920 **M:** 300	**Lucerne F:** 0.21 **Corn F:** 0.67 **Lucerne M:** 0.29 **Corn M:**1.10
	Amblytropidia australis Bruner				**Lucerne F:** 87±22 **Corn F:** 728±3 **Lucerne M:** 147±21 **Corn M:** 219±14	**F:** 800 **M:** 170	**Lucerne F:** 0.11 **Corn F:** 0.91 **Lucerne M:** 0.86 **Corn M:** 1.29
	Dichroplus elongatus Giglio-Tos				**Lucerne F:** 302±19 **Corn F:** 208±7 **Lucerne M:** 233±2 **Corn M:** 154±26	**F:** 390 **M:** 150	**Lucerne F:** 0.77 **Corn F:** 0.53 **Lucerne M:** 1.55 **Corn M:** 1.03
	Dichromorpha australis Bruner				**Lucerne F:** 237±8 **Corn F:** 401±6 **Lucerne M:** 97±1 **Corn M:** 217±7 (mean±SD)	**F:** 290 **M:** 90	**Lucerne F:** 0.82 **Corn F:** 1.38 **Lucerne M:** 1.08 **Corn M:** 2.41
Mariottini et al., 2011	*Dichroplus elongates* Giglio-Tos	Pre-reproductive and reproductive adults (Female and Male)	*Bromus brevis*	Group (n=10)	**Pre F:** 30.6±0.56 **Pre M:** 20.4±0.37 **Rep F:** 19.1±0.05 **Rep M:** 12.9±0.31	**F:** 131.0±6.83 **M:** 72.2±2.55	**Pre F:** 0.23 **Pre M:** 0.28 **Rep F:** 0.15 **Rep M:** 0.18
	Dichroplus maculipennis Blanchard				**Pre F:** 48.7±0.74 **Pre M:** 32.3±0.88 **Rep F:** 18.4±0.79 **Rep M:** 11.7±0.43 (mean±SE)	**F:** 326.5±8.70 **M:** 192.9±5.60 (mean±SE)	**Pre F:** 0.15 **Pre M:** 0.17 **Rep F:** 0.06 **Rep M:** 0.06
Capello et al., 2011	*Cornops aquaticum* Bruner	Adults Female and Male	*Eichhornia crassipes*	Individual	**F:** 127±51 **M:** 60±25 (mean±SE)	**F:** 87±8 **M:** 49±5 (mean±SE)	**F:** 1.462±0.56 **M:** 1.241±0.49 (mean±SE)
Mariottini et al., 2019	*Dichroplus maculipennis* Blanchard	Adults Female and Male	*-Avena sativa* (Oat) *-Zea mays* (Corn) *-Triticum aestivum* (Wheat) *- Glycine max* (Soybean)	Individual	**Oat F:** 322.24±45.50 **Corn F:** 274.81±39.31 **Wheat F:** 222.41±22.73 **Soybean F:** 78.11±11.84 **Oat M:** 221.90±19.09 **Corn M:** 240.71±20.97 **Wheat M:** 64.37±8.63 **Soybean M:** 71.54±3.76 (mean±SE)	—	—
Mancini et al., 2023	*Scotussa lemniscata* Stål	Pre-reproductive adults (Female and Male)	*Festuca arundinaceae*	Individual	**Pre F:** 118.81±9.41 **Pre M:** 86.27±7.09 (mean±SE)	**F:** 101.83±4.58 **M:** 58.81±1.44 (mean±SE)	—
Present study	*Bufonacris claraziana* Saussure	Pre-reproductive and reproductive adults (Female and Male)	*Festuca arundinaceae*	Individual	**Pre F:** 690.4±21.2 **Pre M:** 582±27.4 **Rep F:** 345.4±18.1 **Rep M:** 293.4±13.5 (mean±SE)	**F:** 690±30 **M:** 520±20 (mean±SE)	**Pre F:** 1±0.03 **Pre M:** 1.12±0.05 **Rep F:** 0.5±0.03 **Rep M:** 0.56±0.03 (mean±SE)

Note: a= individual/group, b= mg/ind/day, c= mg/mg.individual/day, F= Females; M= Males; Pre F= Pre-reproductive females; Pre M= Pre-reproductive males; Rep F= Reproductive females; Rep M= Reproductive males.

Table I.

Mean values of daily feed consumption data (mg/ind/day), body weight (mg) and Relative Consumption Rate (RCR) (mg/mg.individual/day) of 11 grasshopper species from eight different investigations.

Note: a= individual/group, b= mg/ind/day, c= mg/mg.individual/day, F= Females; M= Males; Pre F= Pre-reproductive females; Pre M= Pre-reproductive males; Rep F= Reproductive females; Rep M= Reproductive males.

REFERENCES

Bardi, C., Mariottini, Y., De Wysiecki, M. L., & Lange, C. E. (2011). Desarrollo post-embrionario, fecundidad y consumo de alimento de *Dichroplus exilis* (Orthoptera: Acrididae) bajo condiciones controladas. *Revista de biología tropical,* ***59***(4), 1579-1587.

Bulacio, N., Luiselli, S., & Salto, C. (2005). Cuantificación del daño potencial de *Dichroplus elongatus* y *Orphulella punctata* (Orthoptera: Acrididae) en sorgo y alfalfa. *Revista de la Facultad de Agronomía Universidad de Buenos Aires,* ***25***(3), 199-206.

Capello, S., De Wysiecki, M. L., & Marchese, M. (2011). Feeding patterns of the aquatic grasshopper *Cornops aquaticum* (Bruner) (Orthoptera: Acrididae) in the middle Paraná River, Argentina. *Neotropical Entomology,* ***40***(2), 170-175.

Capinera, J. L., & Sechrist, T. S. (1982). *Grasshoppers (Acrididae) of Colorado: Identification, Biology and Management*. Colorado State University.

Carbonell, C. S., Cigliano, M. M., & Lange, C. E. (2024). *Acridomorph (Orthoptera) species from Argentina and Uruguay* (Version II).

Cigliano, M. M., & Lange, C. E. (2019). Toad grasshopper, *Bufonacris claraziana* (Saussure, 1884). (Orthoptera: Tristiridae). *Encyclopedia of Pest Orthoptera of the World* (eds. Lecoq, M. & Zhang, L.), pp. 235-238. China Agricultural University Publisher.

Cigliano, M. M., Pocco, M. E., & Lange, C. E. (2014). Acridoideos (Orthoptera) de importancia agroeconómica en la República Argentina. *Biodiversidad de Artrópodos Argentinos,* ***3***, 1-36.

Di Rienzo, J. A., Casanoves, F., Balzarini, M. G., González, L., Tablada, M., & Robledo, C. W. (2011). InfoStat, version 2011. *Grupo InfoStat, FCA, Universidad Nacional de Córdoba, Argentina*. http://www.infostat.com.ar/

Ebeling, A., Hines, J., Hertzog, L. R., Lange, M., Meyer, S. T., Simons, N. K., & Weisser, W. W. (2018). Plant diversity effects on arthropods and arthropod-dependent ecosystem functions in a biodiversity experiment. *Basic and Applied Ecology,* ***26***, 50-63. https://doi.org/10.1016/j.baae.2017.09.014

Genovesio, R., Luiselli, S., & Salto, C. (2011). Ingesta de adultos de cinco especies de tucuras (Orthoptera: Acrididae) en condiciones semicontroladas. *Fave. Sección ciencias agrarias,* ***10***(1-2), 35-43.

Hewitt, G. B. (1977). *Review of forage losses caused by rangeland grasshoppers* (No. 1348). Department of Agriculture, Agricultural Research Service.

Hewitt, G. B. (1978). Reduction of western wheatgrass by the feeding of two rangeland grasshoppers, *Aulocara elliotti* and *Melanoplus infantilis*. *Journal of Economic Entomology,* ***71***(3), 419-421.

Hewitt, G. B., Burleson, W. H., & Onsager, J. A. (1976). Forage losses caused by the grasshopper *Aulocara elliotti* on shortgrass rangeland. *Journal of Range Management,* ***29***(5), 376-380.

Ibanez, S., Lavorel, S., Puijalon, S., & Moretti, M. (2013). Herbivory mediated by coupling between biomechanical traits of plants and grasshoppers. *Functional Ecology,* ***27***(2), 479-489.

Jonas, J. L. (2007). *Nutrient resources and stoichiometry affect the ecology of above-and belowground invertebrate consumers* [Doctoral dissertation, Kansas State University].

Lange, C. E., & Cigliano, M. M. (2019). Spotted-winged grasshopper, *Dichroplus maculipennis* (Blanchard, 1851) (Orthoptera: Acrididae). *Encyclopedia of Pest Orthoptera of the World*. (eds. Lecoq, M. & Zhang, L.), pp. 83-86. China Agricultural University Publisher.

Liebermann, J. (1958). Zoogeografía, sistemática y economía de los acridoideos de la Patagonia. *Publicación Técnica del Instituto de Patología Vegetal de Buenos Aires,* ***1***(6), 60.

Liebermann, J. (1961). Notas sobre *Rhammatocerus pictus* (Bruner) con nuevos datos sobre su gregarización y distribución geográfica (Orthoptera: Acridinae). *IDIA,* ***167***, 1-6.

Liebermann, J. (1971). Las tucuras de Salta. *IDIA,* ***278***, 10-14.

Lockwood, J. A., Astruttmann, J. M., & Miller, C. (1996). Temporal patterns in feeding of grasshoppers (Orthoptera: Acrididae): Importance of nocturnal feeding. *Environmental Entomology,* ***25***(3), 570-581.

Mancini, M. A., De Wysiecki, M. L., Lange, C. E., & Mariottini, Y. (2023). Tasas de consumo en *Scotussa lemniscata* (Orthoptera: Acrididae: Melanoplinae) bajo condiciones controladas. *Revista de la Sociedad Entomológica Argentina,* ***82***(2), 54-57. https://doi.org/10.25085/rsea.820207

Mariottini, Y. (2018). Bio-ecological studies on *Bufonacris claraziana* (Acridoidea: Tristiridae) and susceptibility to the biocontrol agents *Paranosema locustae* and *Beauveria bassiana*. *Metaleptea,* ***38***(2), 11-14.

Mariottini, Y., De Wysiecki, M. L., & Lange, C. E. (2011). Postembryonic development and food consumption of *Dichroplus elongatus* Giglio-Tos and *Dichroplus maculipennis* (Blanchard) (Orhtoptera: Acrididae: Melanoplinae) under laboratory conditions. *Neotropical Entomology,* ***40***(2), 190-196. https://doi.org/10.1590/S1519-566X2011000200006

Mariottini, Y., Lange, C. E., Cepeda, R., & De Wysiecki, M. L. (2019). Efficiency of food utilization by *Dichroplus maculipennis* (Orthoptera: Acrididae: Melanoplinae) on four crop plants under controlled conditions. *Studies on Neotropical Fauna and Environment,* ***54***(3), 206-216. https://doi.org/10.1080/01650521.2019.1621001

Mariottini, Y., Lange, C. E., & Pelizza, S. E. (2022). Laboratory test of *Beauveria bassiana* (Balsamo-Crivelli) Vuillemin sl (Hypocreales: Clavicipitaceae) baits for the biocontrol of the Toad grasshopper pest, *Bufonacris claraziana* (Saussure) (Orthoptera: Tristiridae). *Egyptian Journal of Biological Pest Control,* ***32***(1), 110.

Putnam, L. G. (1962). The damage potential of some grasshoppers on the Native Grassland of British Columbia. *Canadian Journal of Plant Science,* ***42***, 596-601.

Sánchez, N. E., & De Wysiecki, M. L. (1983). Estimación del daño causado por acridios en pasturas naturales. I. Reducción de forraje debida a *Dichroplus pratensis* Bruner. *Revista de la Sociedad Entomológica Argentina,* ***42***(1-4), 243-250.

Sánchez, N. E., & De Wysiecki, M. L. (1990). A quantitative evaluation of feeding activity of the grasshopper *Dichroplus pratensis* Bruner (Orthoptera: Acrididae), in a natural grassland. *Environmental Entomology,* ***19***(5), 1392-1395.

Torrusio, S., De Wysiecki, M. L., & Otero, J. (2005). Estimación de daño causado por *Dichroplus elongatus* Giglio-Tos (Orthoptera: Acrididae) en cultivos de soja en siembra directa, en la provincia de Buenos Aires. *RIA. Revista de Investigaciones Agropecuarias,* ***34***(3), 59-72.

Notas de autor

micaela.mancini@ecosistemas.exa.unicen.edu.ar

Información adicional

redalyc-journal-id: 3220

Micaela A. MANCINI, Carlos E. LANGE, Rosana CEPEDA, Yanina MARIOTTINI

Food consumption rates of *Bufonacris claraziana* adults (Orthoptera: Tristiridae), a grasshopper pest in Patagonia, Argentina

Tasas de consumo de individuos adultos de *Bufonacris claraziana* (Orthoptera: Tristiridae), acridio plaga de la Patagonia Argentina

Revista de la Sociedad Entomológica Argentina
vol. 84, núm. 2, e0206, 2025
Sociedad Entomológica Argentina, Argentina
gsanblas@mendoza-conicet.gob.ar

ISSN-E: 1851-7471