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Source: Florida Entomologist, 97(3) : 1226-1231

Published By: Florida Entomological Society

URL: https://doi.org/10.1653/024.097.0330

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MONOPELOPIA CARAGUATA (CHIRONOMIDAE: TANYPODINAE: PENTANEURINI) AND *PHYTOTELMATOCLADIUS DELAROSAI* (CHIRONOMIDAE: ORTHOCLADIINAE): TWO PHYTOTELMATOUS CHIRONOMIDS DISTRIBUTED FROM FLORIDA TO ARGENTINA

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Phytotelmata are structures present in terrestrial plants such as modified leaves, leafaxils, flowers, stem holes or depressions, open fruits and fallen leaves. These structures allow water to impound and are more common in tropical areas where plant diversity and rainfall are higher (Fish 1983). The phytotelmata provide a suitable habitat where immature chironomids are common inhabitants.

In this contribution, the occurrence of the chironomid species *Monopelopia caraguata* Mendes et al. (Chironomidae: Tanypodinae: Pentaneurini) and *Phytotelmatocladius delarosai* Epler (Chironomidae: Orthocladiinae) are reported in Argentina for the first time. A list of the American phytotelmatous chironomids (except for species inhabiting tree holes and bamboo internodes) with the host plant and references is presented in Table 1.

Immatures stages of *Monopelopia* Fittkau (Chironomidae: Tanypodinae) have been found living in small bodies of water such as ponds, marshes and streams or phytotelmata. Of the phytotelmatous species, *M. tillandsia* Beck et Beck, *M. mikeschwartzi* Epler, *M. gesta* (Roback), *M. caraguata* Mendez et al. and an undescribed *Monopelopia* species were reported living in the impounded water of bromeliads (Poales: Bromeliaceae) (Cranston 2007; Cranston & Epler 2013). *Monopelopia tillandsia* was reported living in *Tillandsia*, *Catopsis* and *Hohenbergia* in Florida and Cuba (Beck & Beck 1966; Roback 1987; Bello et al. 2011). *Monopelopia mikeschwartzi* and *M. gesta* were reported living in *Aechmea paniculigera* (Swartz) Grisebach (Bromeliaceae) in Jamaica (Epler & Janetzky 1999; Cranston & Epler 2013), whereas the undescribed species of Cranston (2007) was reported living in *Guzmania* in Puerto Rico. *Monopelopia caraguata* was reported developing in species of *Vriesea*, *Nidularium, Hohenbergia* and *Aechmea* in southern Brazil (Mendez et al. 2003) and in solution holes in the Everglades National Park, Florida, USA (Jacobsen 2008). Up to present, this species was not found developing in bromeliads in Florida (R. Jacobsen, J. H. Epler and J. H. Frank, personal communication).

The cosmopolitan *Eryngium* L. (Apiales: Apiaceae) includes more than 200 species distributed in temperate and tropical areas, but these species develop phytotelmata only in southern Brazil and Argentina (Campos 2010). Plants of this genus grow on the ground and have a simple structure and are annuals, differing from bromeliads, which comprise mainly perennial epiphytic plants with a complex structure.

Larvae of *Monopelopia caraguata* were collected from *Eryngium* plants and reared in the laboratory. This is the first report of this chironomid species associated with the terrestrial *Eryngium* plants in a temperate region. *Monopelopia caraguata* co-occurred in some *Eryngium* plants with *Polypedilum parthenogeneticum* Donato et Paggi (Chironomidae: Chironominae) and *Metriocnemus eryngiotelmatus* Donato et Paggi (Chironomidae: Orthocladiinae), which are common inhabitants of *Eryngium* in Argentina.

Phytotelmatocladius (Chironomidae: Orthocladiinae) is a monospecific genus described from bromeliad phytotelmata in southern Florida and Brazil (Epler 2010). Because only female adults and pupae have been collected or reared, this author postulated that this taxon could be parthenogenetic. Immatures of *P. delarosai* were recently collected from the impounded water of *Bromelia balansae* Mez (Bromeliaceae) in a botanical garden at FCAyF-UNLP (Facultad de Ciencias Agrarias y Forestales- Universidad Nacional de La Plata, Buenos Aires, Argentina). This bromeliad species is exotic to this region, being native to Paraguay, Brazil and the northeast of Argentina (Zuloaga et al. 2008). Of the reared *P. delarosai*, only female adults emerged, which were maintained in separate vials containing little water. The females laid their eggs which hatched 7 days later; therefore, we confirm the assumption of Epler (2010) that *P. delarosai* could be parthenogenetic.

In the sampling of *Eryngium* plants in FCAyF-UNLP close to *B. balansae* plants, *P. delarosai* was not collected. Besides, *Monopelopia caraguata*, *Metriocnemus eryngiotelmatus* and *Polypedilum parthenogeneticum* were not collected from *B. balansae*, suggesting a possible specificity or preference of those chironomids for each plant species.

Material Examined

Monopelopia caraguata: ARGENTINA, Buenos Aires Province, Punta Lara, ex *Eryngium* sp.

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TABLE 1. LIST OF THE PHYTOTELMATOUS CHIRONOMIDS IN THE AMERICAS.

	Taxa	Host plant	Country	References
Orthocladiinae	*Antilocladius antecalvus*	*Nidularium innocentii*	Brazil	Pinho et al. 2005
	Cricotopus sp	*Eryngium elegans*	Argentina	Campos 2010
		Nidularium innocentii	Brazil	Pinho et al. 2005
	Limnophyes sp	*Nidularium innocentii*	Brazil	Pinho et al. 2005
		Tillandsia guatemalensis	Honduras	Mendez et al. 2011
	Mesosmittia patrihortae	*Nidularium innocentii*	Brazil	Pinho et al. 2005
	Metriocnemus abdominoflavatus	*Tillandsia, Billbergia, Catopsis*	Costa Rica	Picado 1913
		Tillandsia utriculata	USA	Fish 1976
	Metriocnemus edwarsi	*Darlingtonia*	USA	Jones 1916
	Metriocnemus eryngiotelmatus	*Eryngium horridum; E. stenophyllum, E.* aff. *serra, E. elegans, E. cabrerae, Dipsacus fullonum*	Argentina	Donato & Paggi 2005, Siri et al. 2008a,b, Campos 2010
	Metriocnemus knabi	*Sarracenia purpurea*	USA to Canada	Bradshaw 1983, Nastase et al. 1995
	Metriocnemus sp	*Tillandsia turneri*	Colombia	Ospina et al. 2004
		Tillandsia guatemalensis	Honduras	Mendez et al. 2011
		Bromeliads, *Dipsacus*	USA	Epler 2001, Frank & Fish 2008, Miller 1971 Baumgartner 1986
		Heliamphora spp	Venezuela	Jaffe et al. 1992
	Orthocladius sp	Bromeliads	Costa Rica	Picado 1913
	Orthocladiinae sp	*Aechmea nudicaulis, Neoregelia concentrica*	Brazil	Sodré et al. 2010
	Phytotelmatocladius delarosai	*Bromelia balansae*	Argentina	present study
		Bromeliads	Brazil	Epler 2010
		Bromeliads	USA	Epler 2010
Tanypodinae	*Ablabesmyia costaricensis*	*Aechmea, Vriesea, Billbergia*	Costa Rica	Picado 1913
	Larsia sp	*Eryngium* aff. *serra, E. elegans, Aechmea distichantha*	Argentina	Campos 2010, pers. obs.
		Vriesea splitgerberi	Brazil	Torreias 2008
	Monopelopia caraguata	*Eryngium* spp	Argentina	present study
		Aechmea nudicaulis, Hohenbergia augusta, Nidularium innocentii, Vriesea gigantea, V. philippocoburgii, V. vagans	Brazil	Mendes et al. 2003, Pinho et al. 2005
		Solution holes	USA	Jacobsen 2008, Frank & Fish 2008, Cranston & Epler 2013

*As reported by Epler & Janetzky (1999); due to taxonomic changes and the general difficulty involved in identifying Chironomidae, the preceding names from Laessle (1961) must be viewed with skepticism until the material is re-examined. **Nomina dubia (Sæther et al. 2010).

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TABLE 1. (CONTINUED) LIST OF THE PHYTOTELMATOUS CHIRONOMIDS IN THE AMERICAS.

	Taxa	Host plant	Country	References
	Monopelopia gesta	*Aechmea paniculigera*	Jamaica	Epler & Janetzky 1999, Cranston & Epler 2013
	Monopelopia mickeschwartzi	*Aechmea paniculigera*	Jamaica	Epler & Janetzky 1999
	Monopelopia tillandsia	*Tillandsia, Catopsis, Hohenbergia*	Cuba	Bello et al. 2011
		Tillandsia utriculata, Tillandsia spp	USA	Beck & Beck 1966, Fish 1976, Frank & Fish 2008
	Monopelopia sp	Bromeliads, *Aechmea nudicaulis, Neoregelia concentrica*	Brazil	Winder 1977, Sodré et al. 2010
		Catopsis nitida	Puerto Rico	Cranston 2007
	Pentaneura sp	Bromeliads	Brazil	Winder & Silva 1972
		Helicornia	Costa Rica	Naeem 1990
		Bromeliads	Jamaica	Laessle 1961 (*)
		Bromeliads	US Virgin Islands	Miller 1971
	Tanypodinae spp	*Aechmea fendleri, Hohenbergia stellata*	Venezuela	Liria 2007
Chironominae	Chironominae sp	*Aechmea fendleri, Hohenbergia stellata*	Venezuela	Liria 2007
	Chironomus anonymus	*Aechmea paniculigera*	Jamaica	Epler & Janetzky 1999
	Chironomus sp	Bromeliads	Costa Rica	Picado 1913
		Bromeliads	Jamaica	Laessle 1961 (*)
	Corynoneura sp	*Vriesea splitgerberi*	Brazil	Torreias 2008
	Cryptochironomus sp	Bromeliads	Jamaica	Laessle 1961 (*)
	Polypedilum kaingangi	*Aechmea lindeni, Canistrum lindenii, Neoregelia laevis, Nidularium innocentii, Vriesea philippocoburgii, V. vagans*	Brazil	Pinho et al. 2013
	Polypedilum marcondesi	*Nidularium innocentii, Vriesea vagans*	Brazil	Saether et al. 2010
	Polypedilum panacu	*Tillandsia guatemalensis*	Honduras	Mendes et al. 2011
	Polypedilum parthenogeneticum	*Eryngium pandanifolium*	Argentina	Donato & Paggi 2008
	*Polypedilum pedipalpus***	Bromeliads	Costa Rica	Picado 1913, Spies et al. 2009
	Polypedilum solimoes	*Aechmea lindeni, Canistrum lindenii, Neoregelia laevis, Nidularium innocentii, Vriesea philippocoburgii, V. vagans*	Brazil	Pinho et al. 2013
	Polypedilum cf *tritum*	*Aechmea paniculigera*	Jamaica	Epler & Janetzky 1999
	Polypedilum spp	*Eryngium horridum; E. stenophyllum, E.* aff. *serra, E. elegans, E. cabrerae*	Argentina	Siri et al. 2008b, Campos 2010

*As reported by Epler & Janetzky (1999); due to taxonomic changes and the general difficulty involved in identifying Chironomidae, the preceding names from Laessle (1961) must be viewed with skepticism until the material is re-examined. **Nomina dubia (Sæther et al. 2010).

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TABLE 1. (CONTINUED) LIST OF THE PHYTOTELMATOUS CHIRONOMIDS IN THE AMERICAS.

Taxa	Host plant	Country	References
	Nidularium innocentii, Vriesea vagans, V. splitgerberi, Aechmea nudicaulis, Neoregelia concentrica	Brazil	Pinho et al. 2005, Torreias 2008, Sodré et al. 2010
	Musa	Costa Rica	Lichtwardt 1994
Rheocricotopus sp	*Tillandsia turneri*	Colombia	Ospina et al. 2004
Stenochironomus atlanticus	*Canistrum lindenii, Neoregelia laevis, Nidularium innocentii, Vriesea philippocoburgii, V. vagans*	Brazil	Pinho et al. 2005
Tanytarsini sp	*Nidularium innocentii*	Brazil	Pinho et al. 2005
	Tillandsia utriculata	USA	Fish 1976
Tanytarsus bromelicola	*Guzmania berteroniana*	Puerto Rico	Cranston 2007
	Tillandsia	USA	Cranston 2007
Tanytarsus sp. nr *confusa*	Bromeliads	US Virgin Islands	Miller 1971
Tanytarsus sp	*Vriesea splitgerberi*	Brazil	Torreias 2008

*As reported by Epler & Janetzky (1999); due to taxonomic changes and the general difficulty involved in identifying Chironomidae, the preceding names from Laessle (1961) must be viewed with skepticism until the material is re-examined. **Nomina dubia (Sæther et al. 2010).

S 34° 51´ 10´´ W 57° 57´ 33´´, 7 m asl, adult male reared from larva, 4-VIII-2004, Donato col.; Adult female reared from larva, same data except for Jan 2008; ARGENTINA, Buenos Aires province, Punta Lara, ex *Eryngium* sp. S 34° 54´ 37´´ W 57° 55´ 34´´, 14 m asl, adult male reared from larva, 10-IX-2013, Donato & Siri cols.

Phytotelmatocladius delarosai: ARGENTINA, Buenos Aires province, La Plata, ex *Bromelia balansae* Mez at the Jardín Botánico y Arboretum, Facultad de Ciencias Agrarias y Forestales (FCAyF) (UNLP), S 34.912881° W 57.9332227°, adult female reared from larva, collected 9-VIII-2012, emerged 18-VIII-2012, laid their eggs which hatched on 25/26-VIII-2012, Donato & Siri cols.

The authors thank Mónica Caviglia for the proof reading. The paper is Scientific Contribution Nº 943 of the ILPLA.

Summary

The geographic distribution of the 2 phytotelmatous chironomids *Monopelopia caraguata* and *Phytotelmatocladius delarosai* is found to extend southward into Argentina, and the occurrence of parthenogenesis in the latter species is corroborated under laboratory conditions.

Key Words: Apiaceae, Bromeliaceae, *Catopsis*, *Eryngium*, *Hohenbergia, Tillandsia*, parthenogenesis

Resumen

Se extiende la distribución geográfica de las especies fitotelmáticas *Monopelopia caraguata* y *Phytotelmatocladius delarosai* hacia el sur en Argentina, y se corrobora bajo condiciones de laboratorio la ocurrencia de partenogénesis en esta última especie.

Palabras Clave: Apiaceae, Bromeliaceae, *Catopsis*, *Eryngium*, *Hohenbergia, Tillandsia*, partenogénesis

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