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The Trichoptera of Panama. III. Updated species list for caddisflies (Insecta: Trichoptera) in the Republic of Panama

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Abstract. The fauna of Panama is species-rich due to its location and topography, and the resulting diversity of microclimates and habitats. The last summary of information about the caddisfly fauna (Insecta: Trichoptera) of Panama in 1992 noted 168 taxa in 13 families and 39 genera. Since then, and through 2014, a large number of publications, based on work by a dedicated cadre of individuals, have recorded a net gain of 78 species and six genera. In 2015, 17 new species to science and 38 new country records were added, including one new family and two new genera for the country; and, two species were removed. Thus, 299 species of caddisflies are now known from the Republic of Panama and are distributed among 14 families and 47 genera. Given the higher diversity in neighboring Costa Rica (>500 species), we feel certain that there are many more species yet to be discovered.

Key words. Central America, families, genera, species

Introduction

Aguila (1992) published the most recent compilation of caddisflies (Insecta: Trichoptera) known from the Republic of Panama. She listed 168 trichopteran species in 39 genera and 13 families. Through 2014, a large number of papers, dealing either directly or peripherally with Panama, have recorded a net gain of six genera and 78 species to its fauna. The majority of these papers were the result of studies by a dedicated cadre of individuals (e.g., Oliver Flint of the Smithsonian Institution; Ralph Holzenthal, Roger Blahnik, Lourdes Chamorro, Aysha Prather of the University of Minnesota; Fernando Muñoz-Quesada of Universidad de Antioquia, Colombia; Joaquín Bueno-Soria of the Universidad Nacional Autónoma de México; Steven Harris of Clarion University; and, Kjell Arne Johanson of the

Swedish Museum of Natural History, among others). Most recently, Armitage et al. (2015) added 32 new Panamanian species records, including records for one new family (Limnephilidae) and one new genus (*Limnephilus*). Harris and Armitage (2015) described 10 new hydroptilid species, including one genus (*Nothotrichia*) new to Panama. And, Muñoz-Quesada and Holzenthal (2015) added seven new species described from Panama and six new country records in the genus *Wormaldia*. In the latter paper, one species of *Wormaldia* was removed by synonymy, and a second species was determined not to occur in Panama. Thus, the caddisfly fauna of the Republic of Panama now includes 14 families, 47 genera, and 299 species.

Herein, we present an up-to-date list of caddisflies for Panama. We follow the order and hierarchy presented in Holzenthal et al. (2015). Table 1 summarizes the number of genera and species for each family. Table 2 presents all of the species organized by suborder, superfamily, and family, with their

Table 1. Summary of genera and species among Trichopteran families found in the Republic of Panama. Family order follows Holzenthal et al. (2015).

Family	Number of Genera	Number of Species
Philopotamidae	3	48
Ecnomidae	1	4
Polycentropodidae	4	20
Xiphocentronidae	3	6
Hydropsychidae	6	46
Glossosomatidae	3	19
Hydroptilidae	15	92
Hydrobiosidae	1	9
Calamoceratidae	2	7
Leptoceridae	5	28
Odontoceridae	1	1
Helicopsychidae	1	11
Limnephilidae	1	1
Lepidostomatidae	1	7
Totals:	47	299

authorities. The right hand column of Table 2 lists the literature citation in which the species was first assigned to Panama, if different from the original description. The Literature Cited section is organized by family, preceded by a short list of general citations, which could be referenced in two or more family sections in Table 2. We chose to limit the literature cited to publications in which species were originally described or were first recorded from Panama. Other publications, not meeting those criteria (e.g., Prather 2004), will be included in an upcoming book chapter that examines the distribution of caddisfly species in Panama by cuenca (watershed) and province.

Panama reflects a similar frequency of species diversity within genera and families as that found in other parts of the Neotropical Region. The Family Hydroptilidae is by far the most species rich, with twice as many species as the next closest family. Given the recent addition of 10 new hydroptilid species from just a few locations (Harris and Armitage 2015), this dominance is not likely to change. Few of the other families have the potential that Hydroptilidae possesses for adding new, undescribed species. However, we anticipate that many families will increase in size by additions of new country records, derived from those known from both Mexico/Central America and northwestern South America. The eastern areas of Panama, including Darién Province, have been poorly and infrequently collected, due in part to the difficulty of travel there. Increased availability of collections from this part of Panama in the future could generate many new records.

This publication also serves as a baseline of information for ongoing work by a number of researchers. In addition, the Instituto Conmemorativo Gorgas de Estudios de la Salud (Gorgas Institute), as well as other Panamanian institutions, will employ this information as part of their continuing efforts to characterize the major cuencas (water basins), and evaluate the water quality of same, throughout Panama.

Table 2. Updated list of the Trichoptera of Panama through August, 2015, based on literature records. An asterisk [*] under “First Source for Panamanian Records” indicates species for which Panama was the location of the holotype or paratype; or, in which Panama was in some manner included in the original description. Other citations given as a “First Source” only include those for which the name “Panama” was specifically mentioned in the text; phrases such as “widespread throughout Central America”, for example, were not accepted.

Species	First Source for Panamanian Records
Suborder Annulipalpia Martynov	
Superfamily Philopotamoidea Stephens	
Family Philopotamidae Stephens	
<i>Chimarra (Chimarra) adelphe</i> Blahnik 1998	*
<i>Chimarra (Chimarra) altmani</i> Blahnik 1998	*
<i>Chimarra (Chimarra) caribea</i> Flint 1968	Blahnik 1998
<i>Chimarra (Chimarra) colmillo</i> Blahnik and Holzenthal 1992	Armitage et al. 2015
<i>Chimarra (Chimarra) dentosa</i> Ross 1948	Blahnik 1998
<i>Chimarra (Chimarra) dolabrifera</i> Flint and Reyes A. 1991	Blahnik 1998
<i>Chimarra (Chimarra) duckworthi</i> Flint 1967	Blahnik 1998
<i>Chimarra (Chimarra) dudosa</i> Blahnik 1998	*
<i>Chimarra (Chimarra) emima</i> Ross 1959	*
<i>Chimarra (Chimarra) flinti</i> Bueno-Soria 1985	Blahnik 1998
<i>Chimarra (Chimarra) jemima</i> Blahnik and Holzenthal 1992	Armitage et al. 2015
<i>Chimarra (Chimarra) longiterga</i> Blahnik and Holzenthal 1992	*
<i>Chimarra (Chimarra) munozi</i> Blahnik and Holzenthal 1992	Blahnik 1998
<i>Chimarra (Chimarra) peineta</i> Blahnik and Holzenthal 1992	Blahnik 1998
<i>Chimarra (Chimarra) pollex</i> Blahnik and Holzenthal 1992	Blahnik 1998
<i>Chimarra (Chimarra) spangleri</i> Bueno-Soria 1985	Blahnik 1998
<i>Chimarra (Chimarra) villalobosi</i> Bueno-Soria 1985	Blahnik 1998

Table 2. Updated list of the Trichoptera of Panama through August, 2015, continued.

Species	First Source for Panamanian Records
<i>Chimarra (Chimarra) woldai</i> Blahnik 1998	*
<i>Chimarra (Curgia) aureopunctata</i> Flint 1967	Flint 1998
<i>Chimarra (Curgia) banksi</i> (Ulmer 1907)	Flint 1998
<i>Chimarra (Curgia) barrettiae</i> (Banks 1900)	McElvray 1981
<i>Chimarra (Curgia) bisectilis</i> Flint 1998	*
<i>Chimarra (Curgia) centralis</i> Ross 1959	*
<i>Chimarra (Curgia) costaricensis</i> Flint 1998	Armitage et al. 2015
<i>Chimarra (Curgia) didyma</i> Flint 1998	*
<i>Chimarra (Curgia) lobata</i> Flint 1967	*
<i>Chimarra (Curgia) pablito</i> Flint 1998	*
<i>Chimarra (Curgia) persimilis</i> Banks 1920	Flint 1998
<i>Chimarra (Curgia) purisca</i> Flint 1998	Armitage et al. 2015
<i>Chimarra (Curgia) sarophora</i> Flint 1998	*
<i>Chimarra (Curgia) spatulata</i> Ross 1959	McElvray 1981
<i>Chimarra (Curgia) wilsoni</i> Flint 1967	McElvray 1981
<i>Chimarra (Otarra) rossi</i> Bueno-Soria 1985	Blahnik 1998
<i>Chimarrhodelia ulmeri</i> (Ross 1956)	Blahnik and Holzenthal 1992
<i>Wormaldia anhelitus</i> Muñoz-Quesada and Holzenthal 2015	*
<i>Wormaldia chrismark</i> Muñoz-Quesada and Holzenthal 2015	*
<i>Wormaldia contrerasi</i> Muñoz-Quesada and Holzenthal 2015	*
<i>Wormaldia eberhardi</i> Muñoz-Quesada and Holzenthal 2015	*
<i>Wormaldia flinti</i> Muñoz-Quesada and Holzenthal 2015	*
<i>Wormaldia francovilla</i> Muñoz-Quesada and Holzenthal 2015	*
<i>Wormaldia fredycarol</i> Muñoz-Quesada and Holzenthal 2015	*
<i>Wormaldia gallardoi</i> Muñoz-Quesada and Holzenthal 2015	*
<i>Wormaldia lauglo</i> Muñoz-Quesada and Holzenthal 2015	*
<i>Wormaldia machodorum</i> Muñoz-Quesada and Holzenthal 2015	*
<i>Wormaldia planae</i> Ross and King [in Ross 1956]	Flint 1981
<i>Wormaldia savoriorum</i> Muñoz-Quesada and Holzenthal 2015	*
<i>Wormaldia trondi</i> Muñoz-Quesada and Holzenthal 2015	*
<i>Wormaldia zunigarceorum</i> Muñoz-Quesada and Holzenthal 2015	*
Superfamily Psychomyioidea Walker	
Family Ecnomidae Ulmer	
<i>Austrotinodes contubernalis</i> Flint and Denning 1989	*
<i>Austrotinodes fortunata</i> Flint and Denning 1989	*
<i>Austrotinodes panamensis</i> Flint 1973	*
<i>Austrotinodes sedmani</i> Flint 1973	Flint and Denning 1989
Family Polycentropodidae Ulmer	
<i>Cernotina uncifera</i> Ross 1951	Bueno-Soria and Flint 1978
<i>Cyrnellus fraternus</i> (Banks 1905)	Bueno-Soria and Flint 1978
<i>Polycentropus acanthogaster</i> Flint 1980	*
<i>Polycentropus altmani</i> Yamamoto 1967	*
<i>Polycentropus dentoides</i> Yamamoto 1967	*
<i>Polycentropus digitus</i> Yamamoto 1967	*
<i>Polycentropus fortunus</i> Flint 1980	*
<i>Polycentropus lingulatus</i> Flint 1980	*
<i>Polycentropus spicatus</i> Yamamoto 1967	*
<i>Polyplectropus charlesi</i> (Ross 1941)	Bueno-Soria 1990
<i>Polyplectropus clauseni</i> Chamorro-Lacayo and Holzenthal 2004	*
<i>Polyplectropus deltoides</i> (Yamamoto 1967)	*
<i>Polyplectropus insularis</i> Chamorro and Holzenthal 2010	*
<i>Polyplectropus laminatus</i> (Yamamoto 1966)	Bueno-Soria 1990
<i>Polyplectropus maesi</i> Chamorro-Lacayo 2003	Chamorro and Holzenthal 2010
<i>Polyplectropus mathisi</i> Bueno-Soria 1990	*

Table 2. Updated list of the Trichoptera of Panama through August, 2015, continued.

Species	First Source for Panamanian Records
<i>Polyplectropus panamensis</i> Bueno-Soria 1990	*
<i>Polyplectropus santiago</i> (Ross 1947)	Bueno-Soria 1990
<i>Polyplectropus woldai</i> Chamorro and Holzenthal 2010	*
<i>Polyplectropus yolandae</i> Chamorro-Lacayo and Holzenthal 2004	Chamorro and Holzenthal 2010
Family Xiphocentronidae Ross	
<i>Cnodocentron</i> (<i>Caenocentron</i>) <i>galesus</i> Schmid 1982	*
<i>Cnodocentron</i> (<i>Caenocentron</i>) <i>pallas</i> Schmid 1982	*
<i>Machairocentron ascanius</i> Schmid 1982	*
<i>Machairocentron teucus</i> Schmid 1982	*
<i>Xiphocentron</i> (<i>Xiphocentron</i>) <i>aureum</i> Flint 1967	Schmid 1982
<i>Xiphocentron</i> (<i>Sphagocentron</i>) <i>evandrus</i> Schmid 1982	Armitage et al. 2015
Superfamily Hydropsychoidea Curtis	
Family Hydropsychidae Curtis	
<i>Calosopsyche ardisia</i> Flint and Bueno-Soria 1987	Armitage et al. 2015
<i>Calosopsyche bicuspis</i> Flint and Bueno-Soria 1987	Armitage et al. 2015
<i>Calosopsyche continentalis</i> Flint and Bueno-Soria 1987	*
<i>Calosopsyche elachista</i> Flint and Bueno-Soria 1987	*
<i>Centromacronema auripenne</i> (Rambur 1842)	Holzenthal 1988
<i>Leptonema albobirens</i> (Walker 1852)	Flint et al. 1987
<i>Leptonema campanum</i> Flint, McAlpine, and Ross 1987	*
<i>Leptonema cheesmanae</i> Mosely 1933	Flint et al. 1987
<i>Leptonema complexum</i> Mosely 1933	*
<i>Leptonema crassum</i> Ulmer 1905	Flint et al. 1987
<i>Leptonema ekisi</i> Flint, McAlpine, and Ross 1987	*
<i>Leptonema forficulum</i> Mosely 1933	Flint et al. 1987
<i>Leptonema fortunum</i> Flint, McAlpine, and Ross 1987	*
<i>Leptonema hamuli</i> Flint, McAlpine, and Ross 1987	*
<i>Leptonema intermedium</i> Mosely 1933	Flint et al. 1987
<i>Leptonema rafita</i> Muñoz-Quesada 1997	Armitage et al. 2015
<i>Leptonema salvini</i> Mosely 1933	Flint et al. 1987
<i>Leptonema simulans</i> Mosely 1933	Flint et al. 1987
<i>Leptonema sinuatum</i> Mosely 1933	Flint et al. 1987
<i>Leptonema sparsum</i> (Ulmer 1905)	Flint et al. 1987
<i>Leptonema tapanti</i> Muñoz-Quesada 1997	*
<i>Leptonema woldianum</i> Flint, McAlpine, and Ross 1987	*
<i>Macronema burmeisteri</i> Banks 1924	Flint and Bueno 1979
<i>Macronema luteipenne</i> Flint and Bueno-Soria 1979	*
<i>Macronema variipenne</i> Flint and Bueno-Soria 1979	*
<i>Macrostemum ulmeri</i> (Banks 1913)	Flint 1991
<i>Smicridea</i> (<i>Smicridea</i>) <i>bivittata</i> (Hagen 1861)	*
<i>Smicridea</i> (<i>Smicridea</i>) <i>breviuncata</i> Flint 1974	*
<i>Smicridea</i> (<i>Smicridea</i>) <i>campana</i> Flint 1974	*
<i>Smicridea</i> (<i>Smicridea</i>) <i>cartiensis</i> Flint and Denning 1989	*
<i>Smicridea</i> (<i>Smicridea</i>) <i>catherinae</i> Blahnik 1995	*
<i>Smicridea</i> (<i>Smicridea</i>) <i>circinata</i> Flint and Denning 1989	*
<i>Smicridea</i> (<i>Smicridea</i>) <i>cuna</i> Flint 1974	*
<i>Smicridea</i> (<i>Smicridea</i>) <i>filicata</i> Flint and Denning 1989	McElravy et al. 1981
<i>Smicridea</i> (<i>Smicridea</i>) <i>gemina</i> Blahnik 1995	*
<i>Smicridea</i> (<i>Smicridea</i>) <i>hybrida</i> Blahnik 1995	*
<i>Smicridea</i> (<i>Smicridea</i>) <i>latipala</i> Flint and Denning 1989	*
<i>Smicridea</i> (<i>Smicridea</i>) <i>matagalpa</i> Flint 1974	*
<i>Smicridea</i> (<i>Smicridea</i>) <i>mirama</i> Flint and Denning 1989	*
<i>Smicridea</i> (<i>Smicridea</i>) <i>multidens</i> Flint and Denning 1989	*
<i>Smicridea</i> (<i>Rhyacophylax</i>) <i>murina</i> McLachlan 1871	Flint 1974

Table 2. Updated list of the Trichoptera of Panama through August, 2015, continued.

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<i>Smicridea (Rhyacophylax) radula</i> Flint 1974	*
<i>Smicridea (Rhyacophylax) signata</i> (Banks 1903)	Flint 1974
<i>Smicridea (Rhyacophylax) talamanca</i> Flint 1974	McElravy et al. 1981
<i>Smicridea (Smicridea) turrialbana</i> Flint 1974	Flint and Denning 1989
<i>Smicridea (Smicridea) varia</i> (Banks 1913)	Flint 1974
Suborder Integripalpia Martynov	
Superfamily Glossosomatoidea Wallengren	
Family Glossosomatidae Wallengren	
<i>Culoptila unispina</i> Blahnik and Holzenthal 2006	*
<i>Mortoniella anakantha</i> Blahnik and Holzenthal 2008	*
<i>Mortoniella aviceps</i> Blahnik and Holzenthal 2008	*
<i>Mortoniella munozi</i> Blahnik and Holzenthal 2008	*
<i>Mortoniella panamensis</i> Blahnik and Holzenthal 2008	*
<i>Mortoniella pectinella</i> Blahnik and Holzenthal 2008	*
<i>Mortoniella redunca</i> Blahnik and Holzenthal 2008	Armitage et al. 2015
<i>Mortoniella rovira</i> (Flint 1974)	*
<i>Mortoniella tapanti</i> Blahnik and Holzenthal 2008	*
<i>Mortoniella taurina</i> Blahnik and Holzenthal 2008	*
<i>Mortoniella umbonata</i> Blahnik and Holzenthal 2008	*
<i>Protoptila altura</i> Holzenthal and Blahnik 2006	Armitage et al. 2015
<i>Protoptila cana</i> Flint 1974	*
<i>Protoptila chitaria</i> Holzenthal and Blahnik 2006	Armitage et al. 2015
<i>Protoptila laterospina</i> Flint 1967	Flint et al. 1999
<i>Protoptila orotina</i> Flint 1974	*
<i>Protoptila perdita</i> Bueno-Soria, Santiago-Fragosa, and Barba-Alvarez	*
<i>Protoptila tojana</i> Mosely 1954	Holzenthal and Blahnik 2006
<i>Protoptila trichoglossa</i> Holzenthal and Blahnik 2006	Armitage et al. 2015
Superfamily Hydroptiloidea Stephens	
Family Hydroptilidae Stephens	
<i>Acostatrichia topora</i> Oláh and Flint 2012	*
<i>Alisotrichia asta</i> Harris and Flint 2002	*
<i>Alisotrichia cuernita</i> Harris and Flint 2002	*
<i>Alisotrichia linterna</i> Harris and Flint 2002	*
<i>Alisotrichia panamensis</i> Harris and Flint 2002	*
<i>Alisotrichia woldai</i> Harris and Flint 2002	*
<i>Anchitrichia spangleri</i> Flint 1970	*
<i>Bredinia costaricensis</i> (Flint 1967)	Harris, Holzenthal, and Flint 2002
<i>Bredinia dominicensis</i> Flint 1968	Flint 1996
<i>Ceratotrichia fairchildi</i> Flint 1992	*
<i>Costatrichia panamensis</i> Flint 1967	*
<i>Costatrichia spinifera</i> Flint 1970	*
<i>Costatrichia tripartita</i> Flint 1970	*
<i>Flintiella panamensis</i> Harris, Flint, and Holzenthal 2002	*
<i>Flintiella pizotensis</i> Harris, Flint, and Holzenthal 2002	*
<i>Hydroptila flinti</i> Bueno-Soria 1984	Armitage et al. 2015
<i>Hydroptila grenadensis</i> Flint 1968	Flint 1996
<i>Hydroptila nusagandia</i> Harris and Holzenthal 1999	*
<i>Hydroptila rastrilla</i> Harris and Holzenthal 1999	*
<i>Hydroptila veracruzensis</i> Flint 1967	Armitage et al. 2015
<i>Leucotrichia chiriquiensis</i> Flint 1970	*
<i>Leucotrichia fairchildi</i> Flint 1970	*
<i>Leucotrichia viridis</i> Flint 1967	Flint 1970

Table 2. Updated list of the Trichoptera of Panama through August, 2015, continued.

Species	First Source for Panamanian Records
<i>Metrichia biungulata</i> (Flint 1972)	*
<i>Metrichia brevitars</i> Bueno-Soria and Santiago-Fragoso 2002	*
<i>Metrichia continentalis</i> (Flint 1972)	*
<i>Metrichia difusa</i> Bueno-Soria and Santiago-Fragoso 2002	*
<i>Metrichia enigmatica</i> Bueno-Soria and Santiago-Fragoso 2002	*
<i>Metrichia lemniscata</i> (Flint 1972)	*
<i>Metrichia nigrilla</i> (Banks 1907)	Bueno-Soria and Santiago-Fragoso 2002
<i>Metrichia nowaczyki</i> Harris and Armitage 2015	*
<i>Metrichia palida</i> Bueno-Soria and Santiago-Fragoso 2002	*
<i>Metrichia penicillata</i> (Flint 1972)	Bueno-Soria and Santiago-Fragoso 2002
<i>Metrichia pseudopatagonica</i> Bueno-Soria and Holzenthal 2003	Bueno-Soria and Santiago-Fragoso 2002
<i>Metrichia sencilla</i> Harris and Armitage 2015	*
<i>Metrichia sesquipedalis</i> Bueno-Soria and Holzenthal 2003	Bueno-Soria and Santiago-Fragoso 2002
<i>Metrichia triangula</i> Bueno-Soria and Santiago-Fragoso 2002	*
<i>Metrichia triquetra</i> Bueno-Soria and Holzenthal 2003	Bueno-Soria and Santiago-Fragoso 2002
<i>Neotrichia canixa</i> (Mosely 1937)	Armitage et al. 2015
<i>Neotrichia flowersi</i> Harris 1990	*
<i>Neotrichia malickyi</i> Harris [in Harris and Tiemann 1993]	*
<i>Neotrichia pamela</i> Harris and Armitage 2015	*
<i>Neotrichia parabullata</i> Harris and Armitage 2015	*
<i>Neotrichia tauricornis</i> Malicky 1980	Harris and Tiemann 1993
<i>Nothotrichia panama</i> Harris and Armitage 2015	*
<i>Ochrotrichia abrelata</i> Harris and Armitage 2015	*
<i>Ochrotrichia anomala</i> Bueno-Soria and Santiago-Fragoso 1997	*
<i>Ochrotrichia arriba</i> Bueno-Soria and Santiago-Fragoso 1997	*
<i>Ochrotrichia assita</i> Bueno-Soria and Holzenthal 2004	*
<i>Ochrotrichia bicaudata</i> Bueno-Soria and Santiago-Fragoso 1997	*
<i>Ochrotrichia caimita</i> Flint 1972	*
<i>Ochrotrichia corneolus</i> Bueno-Soria and Santiago-Fragoso 1997	*
<i>Ochrotrichia crucecita</i> Bueno-Soria and Santiago-Fragoso 1997	*
<i>Ochrotrichia curvata</i> Bueno-Soria and Holzenthal 2004	*
<i>Ochrotrichia flagellata</i> Flint 1972	*
<i>Ochrotrichia glabra</i> Bueno-Soria and Santiago-Fragoso 1997	*
<i>Ochrotrichia longispina</i> Bueno-Soria and Holzenthal 2004	*
<i>Ochrotrichia lupita</i> Bueno-Soria and Santiago-Fragoso 1997	*
<i>Ochrotrichia nimmoi</i> Harris and Armitage 2015	*
<i>Ochrotrichia pacifica</i> Flint 1972	Flint et al. 1999
<i>Ochrotrichia panamensis</i> Flint 1972	*
<i>Ochrotrichia paraldama</i> Bueno-Soria 2009	*
<i>Ochrotrichia pulgara</i> Harris and Armitage 2015	*
<i>Ochrotrichia regina</i> Bueno-Soria and Santiago-Fragoso 1997	*
<i>Ochrotrichia tenanga</i> (Mosely 1937)	Flint 1972
<i>Oxyethira (Dampftrichia) arizona</i> Ross 1948	Armitage et al. 2015
<i>Oxyethira (Loxotrichia) azteca</i> (Mosely 1937)	Flint 1996
<i>Oxyethira (Dampftrichia) circaverna</i> Kelley 1983	*
<i>Oxyethira (Argyrobothrus) glasa</i> (Ross 1941)	Armitage et al. 2015
<i>Oxyethira (Tanytrichia) hilosa</i> Holzenthal and Harris 1992	*
<i>Oxyethira (Dampftrichia) maya</i> Denning 1947	Flint and Englund 2003
<i>Oxyethira (Loxotrichia) parce</i> (Edwards and Arnold 1961)	Flint 1996
<i>Oxyethira sierruca</i> Holzenthal and Harris 1992	Armitage et al. 2015
<i>Oxyethira (Dampftrichia) simulatrix</i> Flint 1968	Armitage et al. 2015
<i>Oxyethira (Loxotrichia) tica</i> Holzenthal and Harris 1992	Flint 1996
<i>Zumatrichia angulata</i> Flint 1970	*
<i>Zumatrichia antillensis</i> Flint 1968	Oláh and Flint 2012
<i>Zumatrichia attenuata</i> Flint 1970	Armitage et al. 2015

Table 2. Updated list of the Trichoptera of Panama through August, 2015, continued.

Species	First Source for Panamanian Records
<i>Zumatrichia bifida</i> Flint 1970	*
<i>Zumatrichia caudifera</i> Flint 1970	*
<i>Zumatrichia chiriquiensis</i> Flint 1970	*
<i>Zumatrichia dereka</i> Oláh and Flint 2012	*
<i>Zumatrichia galtena</i> Mosely 1937	Armitage et al. 2015
<i>Zumatrichia maskara</i> Oláh and Flint 2012	*
<i>Zumatrichia nelkula</i> Oláh and Flint 2012	*
<i>Zumatrichia palmara</i> Flint 1970	Flint and Reyes 1991
<i>Zumatrichia rhamphiodes</i> Flint 1970	*
<i>Zumatrichia saluda</i> Flint 1970	*
<i>Zumatrichia sortetla</i> Oláh and Flint 2012	*
<i>Zumatrichia teribe</i> Harris and Armitage 2015	*
<i>Zumatrichia turuda</i> Oláh and Flint 2012	*
<i>Zumatrichia zegla</i> Harris and Armitage 2015	*
Superfamily Rhyacophiloidea Stephens	
Family Hydrobiosidae Ulmer	
<i>Atopsyche callosa</i> (Navás 1924)	McElravy et al. 1981
<i>Atopsyche chimpuoclo</i> Schmid 1989	Armitage et al. 2015
<i>Atopsyche cira</i> (Mosely 1949)	Armitage et al. 2015
<i>Atopsyche dampfi</i> Ross and King 1952	McElravy et al. 1981
<i>Atopsyche erigia</i> Ross 1947	Bueno-Soria and Flint 1978
<i>Atopsyche huainacapac</i> Schmid 1989	Armitage et al. 2015
<i>Atopsyche implexa</i> (Navás 1924)	McElravy et al. 1981
<i>Atopsyche jaba</i> Blahnik and Gottschalk 1997	Armitage et al. 2015
<i>Atopsyche majada</i> Ross 1947	McElravy et al. 1981
Superfamily Leptoceroidea Leach	
Family Calamoceratidae Ulmer	
<i>Banyallarga fortuna</i> (Resh) [in Denning et al. 1983]	*
<i>Phylloicus aeneus</i> (Hagen 1861)	McElravy et al. 1981
<i>Phylloicus blahniki</i> Prather 2003	*
<i>Phylloicus elegans</i> Hogue and Denning [in Denning et al. 1983]	*
<i>Phylloicus lituratus</i> Banks 1920	Denning et al. 1983
<i>Phylloicus munozi</i> Prather 2003	*
<i>Phylloicus panamensis</i> Prather 2003	*
Family Leptoceridae Leach	
<i>Atanatolica panamensis</i> Holzenthal 1988a	*
<i>Nectopsyche dorsalis</i> (Banks 1901)	Haddock 1977
<i>Nectopsyche gemma</i> (Müller 1880)	Flint 1991
<i>Nectopsyche gemmoides</i> Flint 1981	*
<i>Nectopsyche ortizi</i> Holzenthal 1995	*
<i>Nectopsyche pavida</i> (Hagen 1861)	Haddock 1977
<i>Nectopsyche punctata</i> (Ulmer 1905)	Flint 1991
<i>Nectopsyche spiloma</i> (Ross 1944)	Flint and Reyes 1991
<i>Oecetis acciptrina</i> Blahnik and Holzenthal 2014	*
<i>Oecetis avara</i> (Banks 1895)	Bueno-Soria and Flint 1978
<i>Oecetis constricta</i> Blahnik and Holzenthal 2014	*
<i>Oecetis falicia</i> Denning [in Denning and Sykora 1966]	*
<i>Oecetis inconspicua</i> (Walker 1852)	Bueno-Soria and Flint 1978
<i>Oecetis knutsoni</i> Flint 1981	Armitage et al. 2015
<i>Oecetis mexicana</i> Blahnik and Holzenthal 2014	*
<i>Oecetis protrusa</i> Blahnik and Holzenthal 2014	*
<i>Oecetis pseudoinconspicua</i> Bueno-Soria 1981	*
<i>Oecetis punctipennis</i> (Ulmer 1905)	Maes and Flint 1988

Table 2. Updated list of the Trichoptera of Panama through August, 2015, continued.

Species	First Source for Panamanian Records
<i>Trienodes anomalous</i> Flint 1967	Armitage et al. 2015
<i>Trienodes clauseni</i> Holzenthal and Andersen 2004	*
<i>Trienodes delicatus</i> Navás 1924	Holzenthal and Andersen 2004
<i>Trienodes guadaloupe</i> Holzenthal and Andersen 2004	*
<i>Trienodes hornitos</i> Holzenthal and Andersen 2004	*
<i>Trienodes talamanca</i> Holzenthal and Andersen 2004	Armitage et al. 2015
<i>Trienodes tapanti</i> Holzenthal and Andersen 2004	*
<i>Trienodes tico</i> Holzenthal and Andersen 2004	*
<i>Trienodes woldai</i> Holzenthal and Andersen 2004	*
<i>Triplectides flintorum</i> Holzenthal 1988b	*
Family Odontoceridae Wallengren	
<i>Marilia flexuosa</i> Ulmer 1905	Bueno-Soria and Flint 1978
Superfamily Sericostomatoidea Stephens	
Family Helicopsychidae Ulmer	
<i>Helicopsyche blantonii</i> Johanson and Malm 2006	*
<i>Helicopsyche borealis</i> (Hagen 1861)	Bueno-Soria and Flint 1978
<i>Helicopsyche chiriquensis</i> Johanson and Malm 2006	*
<i>Helicopsyche fridae</i> Johanson 2003	*
<i>Helicopsyche incisa</i> Ross 1956	McElravy et al. 1981
<i>Helicopsyche linguata</i> Johanson and Malm 2006	*
<i>Helicopsyche sanblasensis</i> Johanson and Malm 2006	*
<i>Helicopsyche truncata</i> Ross 1956	McElravy et al. 1981
<i>Helicopsyche tuxtlenensis</i> Bueno-Soria 1983	Johanson 2003
<i>Helicopsyche vergelana</i> Ross 1956	Flint 1991
<i>Helicopsyche woldai</i> Johanson 2003	*
Superfamily Limnephiloidea Kolenati	
Family Limnephilidae Kolenati	
<i>Limnephilus hamifer</i> Flint 1963	Armitage et al. 2015
Superfamily Phryganeoidea Leach	
Family Lepidostomatidae Ulmer	
<i>Lepidostoma chiriquiensis</i> Holzenthal and Strand 1992	*
<i>Lepidostoma ectopium</i> Holzenthal and Strand 1992	*
<i>Lepidostoma griseum</i> (Banks 1911)	Armitage et al. 2015
<i>Lepidostoma mexicanum</i> (Banks 1901)	Flint and Bueno-Soria 1977
<i>Lepidostoma polylepidum</i> Holzenthal and Strand 1992	Armitage et al. 2015
<i>Lepidostoma reimoseri</i> Flint and Bueno-Soria 1977	Armitage et al. 2015
<i>Lepidostoma tapanti</i> Holzenthal and Strand 1992	Flint et al. 1999

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