

THREATENED TRICHOPTERA (CADDISFLIES) FROM THE TASMANIAN WILDERNESS WORLD HERITAGE AREA

by Jean Jackson

(with one table and two appendices)

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Trichoptera were collected in the Tasmanian Wilderness World Heritage Area (WHA) between November 1998 and February 1999 using automatic UV light traps, sweep nets and aquatic hand-picking. The surveys targeted the four species listed on the Tasmanian *Threatened Species Protection Act* 1995 which had been recorded from the WHA: *Taskiria mccubbini*, *Taskiropsyche lacustris* (both endangered), *Orphnинotrichia maculata* (rare) and *Oxyethira mienica* (rare). In total 88 species were identified, approximately half of the 174 species now known from Tasmania. *Taskiria mccubbini* and *Taskiropsyche lacustris* were recorded for the first time since they were first collected from the original Lake Pedder in 1965. *Orphnинotrichia maculata* was recorded from a new location. *Diplectrona lyella* (rare) was recorded from two widely separated sites and is a new threatened species record for the WHA. One species of Ecnomidae was newly recorded from Tasmania.

Key Words: aquatic insects, Trichoptera, caddisflies, Tasmanian World Heritage Area, threatened species, Tasmania.

INTRODUCTION

Trichoptera (caddisflies) are a diverse group of aquatic insects, with 174 species now known from Tasmania (Neboiss *et al.* 1989, Schmid 1989, Jackson 1998, Wells 1998, S.J. Chilcott, pers. comm., this study). Prior to this study, four species listed on the Tasmanian *Threatened Species Protection Act* 1995 were known to occur in the Tasmanian Wilderness World Heritage Area (WHA). Two of these, the Lake Pedder caddisfly, *Taskiropsyche lacustris*, and McCubbins caddisfly, *Taskiria mccubbini*, are listed as endangered and have not been collected from their only known location at Lake Pedder since it was flooded in 1972. The other threatened species, the spotted microcaddisfly, *Orphnинotrichia maculata*, and the Miena microcaddisfly, *Oxyethira mienica*, are listed as rare. They are known from only a few widely dispersed locations. The aim of the surveys reported here was to assess the distribution and conservation status of the four threatened Trichoptera species from the WHA and to increase knowledge of the distribution of all the species collected.

METHODS

Collections were made at 34 sites in or near the WHA. Sampling areas were along the Lyell Highway, Lake Pedder shore (access by boat), Scotts Peak Dam Road and Gordon Road. Localities and dates of samples are given in table 1. All Trichoptera specimens are lodged in the Museum of Victoria.

A range of sampling methods was used with the aim of collecting a wide range of species. Some species are not attracted to UV light traps (A. Wells, pers. comm.) and identifiable immatures are sometimes collected where no adults are found. At each site, a free-standing automatic UV light trap was run overnight near the stream or lake. These traps used blacklight tubes powered by a 12V gel cell battery and collected specimens into 70% ethanol. Sweep net samples were also taken by sweeping riparian vegetation with a fine mesh net (Australian Entomological Supplies)

for 20 min. Immature stages of Hydroptilidae were targeted by hand-picking from substrates in the water for at least 10 min. If hydroptilids were found, the sample time was usually extended. In addition, opportunistic hand-samples of adults were obtained at a few sites.

Although the aim was to sample most sites twice by all three methods, some were sampled once opportunistically and sampling was limited at times by malfunctioning of light traps or heavy rain preventing sweep netting.

RESULTS

Species Recorded

From more than 4480 adult specimens and several hydroptilid larvae and pupae, 88 species were identified. In addition some specimens (mainly females) were of indeterminate genus or species. Some species were collected in large numbers, others as only single specimens. The species collected are given by site and date in appendices 1 and 2. Full details of sexes, numbers and methods are presented in Jackson (1999).

Threatened Species

Four threatened species were collected (*Taskiria mccubbini*, *Taskiropsyche lacustris*, *Orphnинotrichia maculata*, *Diplectrona lyella*) with another being tentatively identified (*Hydrobiosella armata*). There were very few specimens of these threatened species. It is noteworthy that *O. maculata* was not collected from the Wedge River, where it had previously been recorded several times (Neboiss *et al.* 1989); the new record is from a new site. The other rare species previously known from the WHA, *Oxyethira mienica*, was not collected as adult males or developed male pupae, which are required for identification. *Oxyethira* sp. larvae and adult females were collected at five sites, but these cannot be identified to species (Wells 1997). Unfortunately, the exact site of the

TABLE 1
Localities and dates of samples taken for Trichoptera

Site-date no.	Date	Site name	Easting*	Northing*
1	2-3 Nov 98	Navarre River at Lyell Hwy	430200	5329300
2	16-17 Feb 99	Navarre River at Lyell Hwy	430200	5329300
3	2-3 Nov 98	Franklin River upstream of Lyell Hwy bridge	419000	5325700
4	16 Feb 99	Franklin River upstream of Lyell Hwy bridge	419000	5325700
5	2-3 Nov 98	Collingwood River downstream of Lyell Hwy bridge	411300	5331400
6	16 Feb 99	Collingwood River downstream of Lyell Hwy bridge	411300	5331400
7	2-3 Nov 98	Cardigan River upstream of Lyell Hwy bridge	403400	5335300
8	16-17 Feb 99	Cardigan River upstream of Lyell Hwy bridge	403400	5335300
9	2-3 Nov 98	Nelson River downstream of Lyell Hwy bridge	395300	5337700
10	2-3 Nov 98	Nelson River at base of Nelson Falls	395400	5338200
11	16-17 Feb 99	Nelson River downstream of Raglan Range bridge	395000	5327700
12	11 Nov 98	Broken Leg Creek at Lyell Hwy	440200	5336800
13	24-25 Nov 98	Maria Creek near Lake Pedder	441900	5250400
14	10 Feb 99	Maria Creek near Lake Pedder	441900	5250400
15	24-25 Nov 98	Pebbly Creek about 50 m upstream of Lake Pedder	435300	5239800
16	10 Feb 99	Pebbly Creek about 50 m upstream of Lake Pedder	435300	5239800
17	24-25 Nov 98	Frankland shore stream near Lake Pedder	431400	5241800
18	10 Feb 99	Frankland shore stream near Lake Pedder	431400	5241800
19	24-25 Nov 98	stream south of Timber Creek, Lake Pedder	426600	5245700
20	10 Feb 99	stream south of Timber Creek, Lake Pedder	426600	5245700
21	24-25 Nov 98	Bonner Bay small creek, upstream of Lake Pedder	430200	5249100
22	10 Feb 99	Bonner Bay small creek, upstream of Lake Pedder	430200	5249100
23	21 Jan 99	Bonner Bay large creek, upstream of Lake Pedder	432000	5249100
24	24-25 Nov 98	Lake Pedder shore north of Forest Creek	422100	5249700
25	10 Feb 99	Lake Pedder shore north of Forest Creek	422100	5249700
26	21 Jan 99	Lake Pedder between Strathgordon and Bonnet Bay	—	—
27	26 Nov 98	Lake Pedder shore near Serpentine boat ramp	416900	5264100
28	4 Mar 99	Lake Pedder shore near Serpentine boat ramp	416900	5264100
29	26 Nov 98	Dozer Creek about 100 m downstream of Gordon Rd	430500	5257000
30	4 Mar 99	Dozer Creek about 100 m downstream of Gordon Rd	430500	5257000
31	26 Nov 98	Teds Beach near southern corner, Lake Pedder	423100	5262100
32	4 Mar 99	Teds Beach near southern corner, Lake Pedder	423100	5262100
33	14 Jan 99	small stream about 100 m W of Teds Beach turnoff, Gordon Rd	423200	5262300
34	14 Jan 99	small stream about 300 m E of Teds Beach turnoff, Gordon Rd	423200	5262000
35	13 Jan 99	stream E of Spring St houses, Strathgordon	421800	5264600
36	16 Dec 98	Strathgordon jetty, Lake Pedder	422200	5264300
37	1-2 Dec 98	Little Florentine River upstream of Gordon Rd	452700	5267900
38	26-27 Jan 99	Little Florentine River upstream of Gordon Rd	452700	5267900
39	1-2 Dec 98	unnamed river E of Boyd River, Gordon Rd	445300	5258900
40	26-27 Jan 99	unnamed river E of Boyd River, Gordon Rd	445300	5258900
41	1-2 Dec 98	Wedge River near picnic area	437200	5254400
42	26-27 Jan 99	Wedge River upstream of Gordon Rd, in rainforest	437100	5254400
43	26-27 Jan 99	Wedge River upstream of Gordon Rd, open reach	437000	5254400
44	1-2 Dec 98	Red Tape Creek downstream of Scotts Peak Rd	448200	5236650
45	26-27 Jan 99	Red Tape Creek downstream of Scotts Peak Rd	448200	5236650
46	1-2 Dec 98	unnamed creek 3.8 road km N of Red Tape Creek, Scotts Peak Dam Rd	448600	5239800
47	26-27 Jan 99	unnamed creek 3.8 road km N of Red Tape Creek, Scotts Peak Dam Rd	448600	5239800
48	1-2 Dec 98	Condominium Creek Scotts Peak Dam Rd	447800	5243400
49	26-27 Jan 99	Condominium Creek Scotts Peak Dam Rd	447800	5243400
50	1-2 Dec 98	Gelignite Creek Scotts Peak Dam Rd	449300	5251300
51	26-27 Jan 99	Gelignite Creek Scotts Peak Dam Rd	449300	5251300
52	10 Mar 99	Lake Oberon Western Arthur Range, top of plain	440400	5222500

* The eastings and northings are Australian Map Grid references, accurate to 100 m.

previous *O. mienica* record from Scotts Peak Dam Road is unknown.

New Records for Tasmania

Ecnomus turgidus was recorded from Tasmania for the first time; this species is widespread in southern Australia (Cartwright 1990).

Undescribed Species

Ecnomina sp. nov. was first collected from the Frankland shore of Lake Pedder in 1988 (Chilcott 1988) and the same species has been found at additional sites in the present study (A. Neboiss, pers. comm.).

Other Significant Records

Cased larvae and pupae of *Maydenoptila explicata* had not been collected before; the larvae are possibly long-lived as their sand-grain cases are covered in filamentous algae (A. Wells, pers. comm.). Four species are new records for the WHA (Neboiss *et al.* 1989): *Diplectrona lyella*, *Hellyethira malleoforma*, *H. basilobata* and *Ulmerochorema lentum*.

DISCUSSION

This study has added significant new records to the Tasmanian and WHA trichopteran fauna. Aspects of special interest are discussed below.

Conservation Status

The conservation status of the threatened species collected was assessed against *Guidelines for the listing of species under the Tasmanian Threatened Species Protection Act 1995* (Tasmanian Government Gazette no. 19 852, March 25, 1998). The kokiriids *Taskiropsyche lacustris* and *Taskiria mccubbini* are each known from a single existing site from this survey, and were not recorded in previous surveys of the area (Chilcott 1988, Neboiss *et al.* 1989). They qualify as endangered due to the estimated small total number of individuals. This estimate is based on the failure to collect the species for over 30 years and the collection of so few specimens in this study (one *Taskiropsyche lacustris* and two *Taskiria mccubbini*). There has been a presumed past population decline with the loss of habitat under the Lake Pedder impoundment and potential threats remain. The *T. mccubbini* site on the shore of the Lake Pedder impoundment may be affected by fluctuating water levels and the impoundment now contains large predatory fish (brown trout, *Salmo trutta*). The *Taskiropsyche lacustris* site near Gordon Road could be affected by any roadworks in the area.

Orphninetrichia maculata is now known from three disjunct sites, of which only one (Gelignite Creek) is fully reserved. Therefore, the species remains subject to potential threats such as vegetation clearing and water pollution. The species meets criteria for classification as rare due to the small number of populations. Interestingly, *O. maculata*

is common and widespread on mainland Australia (A. Wells, pers. comm.) but was not collected by Neboiss (1977). The species may be quite widespread in Tasmania, although not often collected because it is seldom attracted to light. It is most easily collected by sweeping of vegetation near waterfalls and cascades (A. Wells, pers. comm.).

Diplectrona lyella was previously known from Hellyer Gorge and an unspecified site on the King River (Neboiss 1977) which may have been inundated by Lake Burbury. One of the two sites recorded in this study (Little Florentine River) is unreserved. The species qualifies as rare due to the small number of known populations.

Collecting Methods

By far the majority of species and specimens were collected in the light traps. However, valuable additions to the species list were made by sweep netting and collecting larvae, demonstrating the importance of including these methods in surveys. The rare *D. lyella* occurred only in sweep samples. An additional nine species were collected only by sweeping, hand-collecting or picking aquatic immatures: *Hellyethira basilobata*, *H. exserta*, *Maydenoptila explicata*, *O. maculata*, *O. acta*, *Agapetus laparus*, *Tamasia variegata*, *Hydrobiosella cognata* and *Liapota lavara*. Two new Tasmanian species which were also collected only in sweep nets have recently been described by Wells (1998).

Patchiness of Species Records and Potential Seasonal Effects

There appears to be a large element of chance in the recording of many species. Twenty-one species were recorded from only a single specimen. At least two of these (*Costora seposita* and *Conoesucus fromus*) are known from larval studies to be abundant at some sites (Jackson 1991). The threatened species were very uncommon in samples. For example, only two males of *Taskiria mccubbini* were collected from about 950 caddis specimens from the site. *O. maculata* was not re-collected from a previously known site (Wedge River) but it is not possible to say whether the species no longer occurs there or whether more intensive effort is needed to find it.

It is possible that we did not sample during times of peak adult abundance of the species which were rare in samples, despite sampling being timed to coincide with previous collection dates of the threatened species (Neboiss 1977, Wells 1980). The length of adult flight period is unknown for most species, and their rareness could be a sampling artefact. Resolution of this uncertainty requires increased frequency of sampling throughout the likely adult period (spring to autumn).

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APPENDIX 1

Trichoptera species recorded in 1998–99 surveys, site-date nos. 1 to 26

Appendix 1 cont.

Species recorded*	Site-date no. (x = record; ? = tentative identification)																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Hydropsychidae																										
<i>Smicrophytix creaktona</i>																										
<i>Smicrophytix simplex</i>																										
* <i>Diplectrona lyella</i>																x										
Plectrotarsidae																										
<i>Plectrotarsus</i> sp.																			x							
<i>Liapota lavara</i>																				x						
Limnephilidae																										
<i>Archaeophylax ochreus</i>					?	x				x			x			x										
<i>Archaeophylax vernalis</i>																										
Kokiriidae																										
<i>Taskiria austera</i>																										
* <i>Taskiria mccubbini</i>																								x		
* <i>Taskiropsyche lacustris</i>																										
Oeconesidae																										
<i>Tascuna ignota</i>										x							x					x				
Calocidae																										
<i>Caenota plicata</i>																										
<i>Tamasia variegata</i>											x															
Helicopidae																										
<i>Helicopha astia</i>																										
<i>Allocella grisea</i>								x								x			x							
<i>Alloecella longispina</i>																										
<i>Alloecella pilosa</i>																										
Conoesucidae																										
<i>Hampa patona</i>																	x	x								
<i>Costora ebenina</i>																		x								
<i>Costora ramosa</i>																	x	x								
<i>Costora krene</i>																		x								
<i>Costora seposita</i>																			x							
<i>Costora</i> sp.																	x									
<i>Conoesucus fromus</i>																		x	x							
<i>Conoesucus nepotulus</i>																		x	x							
<i>Conoesucus</i> sp.					x																					
Conoesucidae sp.																										
Atriplectididae																	x	x	x	x	x	x	x	x		
<i>Atriplectides dubius</i>																	x	x	x	x	x	x	x	x		
Philorheithridae																										
<i>Austrorheithrus glymma</i>																	x	x	x	x	x	x	x	x		
<i>Aphilorheithrus decoratus</i>	x																x	x	x	x	x	x	x	x		
<i>Aphilorheithrus luteolus</i>					x																					
Leptoceridae																										
<i>Triplectides similis</i>																x										
<i>Triplectides bilobus</i>									x							x				x						
<i>Triplectides</i> sp.										x								x	x							
<i>Notoperata sparsa</i>											x						x	x								
<i>Notoperata maculata</i>					?				x							x			x							
<i>Notoperata</i> sp.										x								x			x					
<i>Lectrides varians</i>											x						x									
<i>Notalina fulva</i>											x				x		x		x		x					
<i>Notalina</i> sp.	x		x																	x						
<i>Condocerus paludosus</i>																	x									
<i>Leptorussa darlingtoni</i>																x										
<i>Oecetis pechana</i>																			x							
<i>Oecetis australis</i>											x				x		x		x		x					
<i>Oecetis minasata</i>										?	x						x									
<i>Oecetis laustra</i>										x				x		x		x		x						
<i>Oecetis arcada</i>									x	x							?									
<i>Oecetis scirpicula</i>										x			x		x		x		x		x					
<i>Oecetis</i> sp.									x							x			x		x					

* Threatened species.

APPENDIX 2

Trichoptera species recorded in 1998–99 surveys, site-date nos. 27 to 52

Appendix 2 cont.

Species recorded*	Site-date no. (x = record; ? = tentative identification)																								
	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
Hydropsychidae																									
<i>Smicrophylax creaktona</i>																	x	x							
<i>Smicrophylax simplex</i>																x									
* <i>Diplectrona lyella</i>															x										
Plectrotarsidae																									
<i>Plectrotarsus</i> sp.																									
<i>Liapota lavara</i>																						x			
Limnephilidae																									
<i>Archaeophylax ochreus</i>												x	x			x						x	x		
<i>Archaeophylax vernalis</i>						x																			
Kokiriidae																									
<i>Taskiria austera</i>																								x	
* <i>Taskiria mccubbini</i>																									
* <i>Taskiropsyche lacustris</i>							x																		
Oeconesidae																									
<i>Tascuna ignota</i>															x		x	x	x	x					
Calocidae																x		x							
<i>Caenota plicata</i>												x													
<i>Tamasia variegata</i>															x										
Helicopidae																	x	x	x	x	x				
<i>Helicopha astia</i>	x																								
<i>Allocella grisea</i>																x		x	x	x					
<i>Allocella longispina</i>										x					x	x	x	x	x				x		
<i>Allocella pilosa</i>	x															x									
Conoesucidae																									
<i>Hampa patona</i>														x											
<i>Costora ebenina</i>													x				x								
<i>Costora ramosa</i>														x	x		x		x						
<i>Costora krene</i>														x											
<i>Costora seposita</i>											x														
<i>Costora</i> sp.	x																								
<i>Conoesucus fromus</i>														x			x								
<i>Conoesucus nepotulus</i>													x			x						x			
<i>Conoesucus</i> sp.																x	x	x	x	x	x	x	x	x	
Conoesucidae sp.		x														x	x	x	x	x	x	x	x	x	
Atriplectididae																									
<i>Atriplectides dubius</i>			x																						
Philarheithridae																									
<i>Austrheithrus glymma</i>															x										
<i>Aphilorheithrus decoratus</i>	x	x	x		x		x		x		x		x		x	x	x	x	x	x	x	x	x	x	
<i>Aphilorheithrus luteolus</i>																									
Leptoceridae																									
<i>Triplectides similis</i>		x					x		x						x			x		x		x		x	
<i>Triplectides bilobus</i>			x					x							x			x		x		x		x	
<i>Triplectides</i> sp.				x										x				x			x		x		x
<i>Notoperata sparsa</i>					x									x											
<i>Notoperata maculata</i>						x			x					x									x		
<i>Notoperata</i> sp.							x							x								x			
<i>Lectrides varians</i>								x						x											
<i>Notalina fulva</i>								x																	
<i>Notalina</i> sp.	x							x									x								
<i>Condocerus paludosus</i>						x																			
<i>Leptorus darlingtoni</i>																									
<i>Oecetis pechana</i>																									
<i>Oecetis australis</i>	x	x	x		x														x			x			
<i>Oecetis minasata</i>																									
<i>Oecetis laustra</i>							x																		
<i>Oecetis arcada</i>						x											x		x		x		x		
<i>Oecetis scirpicula</i>	x					x			x																
<i>Oecetis</i> sp.									x																
Leptoceridae sp.																						x			

* Threatened species.