

Notes on occurrence of Odonata in Canterbury and Westland (New Zealand)

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Observations on the larval habitats of Odonata in lowland Canterbury and Westland, and in the high country between latitudes 42° 30' and 43° 30'S, were made in preparation for an ecological comparison of the two Zygoptera species *Xanthocnemis zealandica* and *Austrolestes colenisonis*. A survey was made between March 1969 and January 1970, the results of which are shown in Table 1. Values of pH are given for most waters. Where years are shown, the collections were made by Dr V. M. Stout and others from the Department of Zoology at the University of Canterbury. As these earlier collections were not made especially to collect Odonata, they are less likely to contain all the Odonata species present at the habitat than are the author's collections.

Odonata larvae, especially Anisoptera, were more common in Westland than in lowland Canterbury or the high country; there are larger numbers of breeding habitats in Westland. The zygopterans *Xanthocnemis zealandica* and *Austrolestes colenisonis* were more widely distributed than any of the anisopteran species in the habitats examined. Both species were found together in most permanent ponds and swamps, and at the edges of lakes where there were plant species suitable for oviposition (Crumpton 1975). *X. zealandica* larvae, like other coenagrIID species, tend to cling to aquatic vegetation and move only slowly when in search of prey. These larvae were found in streams such as Governor's Bay Stream, Cass Stream, and Sawyer's Creek where the water flow was fairly slow; and around the edges of high country lakes such as L. Georgina, L. Grasmere, and L. Pearson where there can be considerable wave action. *A. colenisonis* larvae do not cling closely to vegetation and they move quickly. They were not found in habitats where there was significant water movement or wave action.

Both zygopteran species, as is typical of Odonata (Fischer 1961), tolerated a wide range of chemical conditions in water, as illustrated by values for pH (Table 1). For example, *X. zealandica* larvae were found in L. Ellesmere, where the salinity varies between 20 - 56% sea water (Hughes, McColl & Rawlence 1974) and also in Arthur's Pass Tarn, which was extremely poor in mineral ions (Crumpton in press).

The highest altitude at which *A. colenisonis* was found was 610 m (L. Sarah), although no potential habitats were examined at higher altitudes. *X. zealandica* was present at Margaret's Tarn and Arthur's Pass Tarn, which are at altitudes 915 and 924 m respectively.

Unlike *X. zealandica*, *A. colenisonis* can inhabit very shallow and temporary pools, ponds, and ditches, such as the ditch at Rutherglen (Table 1) which was only 100 mm deep, and Marley's bottom pond (Stout 1964). Armstrong (1975) found that *A. colenisonis* was common in small pools, swamps, and pits in native bush in the Taupo area of the North Island; he considered this species to be associated with rotting vegetation.

Among the Anisoptera, *Procordulia grayi* was a fairly widespread species in ponds and lakes both in the Canterbury high country, and in lowland areas of Canterbury and Westland. Both *P. grayi* and *P. smithii* were always collected as

Table 1. Occurrence of Odonata in certain habitats in Canterbury and Westland.

1 Zygoptera: A = *Austrolestes colenisonis* White, X = *Xanthocnemis zealandica* McLachlan;
 2 Anisoptera: Ab = *Aeshna brevistyla* Rambur, D = *Diplacodes bipunctata* Brauer, Pg = *Procordulia grayi* Selys, Ps = *Procordulia smithii* White, U = *Uropetala carovei* White; 3 Crumpton (in press);
 4 Johnson (1969); 5 Stout (1969).

Locality	NZMS 1 Grid Reference	pH	Zygoptera ¹	Anisoptera ²
Lowland Canterbury:				
Isaac's Pond (Swan Lake)	S76 915637	6.7	A, X	
Shipley's Small Pond	S76 941646	6.0	A, X	
Shipley's Backwater	S76 940647	6.7	A, X	
Shipley's Large Pond ³	S76 931644	6.4	A, X	Ab, Pg
Groynes	S76 978958	7.3	A, X	Pg
Horseshoe Lake, Burwood	S76 040605	6.4	A	
Prebbleton Pond	S83 891490		X	
Lincoln Golf Course Pond	S83 870440		X	
Lake Ellesmere (1965)	S83 796316		X	
Menzies Bay Bull Pond (1957)	S84 287413		X	
Governor's Bay Stream	S84 011437		X	
Marley's Bottom Pond ⁴	S84 977497	6.3	A	
Leithfield Lagoon	S68-69 115952	9.6	A, X	Ab, Pg
High Country:				
Lake Camp (Lake Howard) (1964)	S81 601469	6.6-7.1 ⁵	A	
Lake Selfe (1965)	S66 023914	6.7-7.4 ⁵		Ps
Lake Evelyn (1964)	S66 033907	6.7-7.2 ⁵	X	Ps
Lake Coleridge (1962)	S74 021860			Ps
Lake Georgina	S74 060826	6.6	X	
Small Spectacles	S74 054853	9.3	X	Pg
Coleridge Kettle Hole	S74 044847	9.3	A, X	Pg
Kaka Swamp Pond	S74 069814		A, X	
Lake Ida	S66 037927	6.7		Pg
Lake Sarah	S66 245158	6.6-7.6 ⁵	A, X	Pg, U
Cass Stream	S66 233165		A, X	Ps, Pg
Lake Grasmere	S66 240140	6.7-8.3 ⁵	A, X	Pg
Lake Pearson	S66 252102	6.4-7.2 ⁵	A, X	Pg
Botanist's Kettle, Cass (1964)	S66 256147	7.0	A, X	
Arthur's Pass Tarn ³	S59 052325	6.4	X	
Margaret's Tarn	S59 046315		X	
Westland:				
Lake Haupiri (1965)	S52 183733	7.1	X	
Lake Mudgie (1965)	S51 707548	7.0	X	
Dead Man's Creek, Westport (Wet Lead Pond) (1964)	S23-24 161745	6.8	X	
Collin's Dam, Carter's Beach (1964)	S23-24 034721	6.0	X	
Turawhati Swamp	S50-51 776544		A, X	
Lake Mahinapua	S57 465460	6.7-7.2	A, X	Pg
Sawyer's Creek, Greymouth	S44 738872	7.3	X	
Swamp below Greymouth Cemetery	S44 718858			U
Clough Road Dredge Hole	S44 708823		A	Pg
Rutherglen; ditch	S50-51 723775		A	
Welshman's Mill Pond ³	S50-51 745769	8.5	A, X	Ab, Pg
Kumara Straight Pond ³	S50-51 688693	5.1	A, X	Ab, D, Pg
Hukarere Pond ³	S38 178134	6.7	A, X	Ab, Ps

a component of bottom samples. *P. smithii* was not, as Penniket (1966) suggested, found mainly in flowing water habitats, but was also common in lentic habitats such as Hukarere Pond (Crumpton in press) and high country lakes (Table 1). I found *P. grayi* at the shallow edges of L. Sarah, behind stands of *Typha muelleri*, and Mr K. J. Deacon (pers. comm. 1976) has found *P. smithii* in other parts of this lake.

Aeshna brevistyla was found in lowland permanent ponds and lakes amongst aquatic macrophytes, and was associated with its potential prey of dense populations of invertebrates.

Diplacodes bipunctata, which has formerly been recorded only from the North Island, was found in Westland at Kumara Straight Pond (Table 1), and Welshman's Mill Pond, where an adult was seen (Crumpton in press). Armstrong (1975) also identified some specimens of *D. bipunctata* from Westport.

Uropetala carovei larvae were found in boggy areas by L. Sarah, in the study habitat of Wolfe (1953), and also in a bog adjacent to the beach by the Greymouth cemetery.

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REFERENCES

- ARMSTRONG, J. S. 1975: Conversations about New Zealand dragonflies. Unpublished transcript of discussion with P. S. Corbet, Department of Zoology, University of Canterbury, 65 p.
- CRUMPTON, W. J. 1975: Adult behaviour of *Xanthocnemis zealandica* McLachlan and *Austrolestes colenisonis* White at selected South Island (New Zealand) habitats (Zygoptera: Coenagrionidae, Lestid: e). *Odonatologica* 4(3): 149-68.
- in press: A description of six South Island ponds. *Journal of the Royal Society of New Zealand*.
- FISCHER, Z. 1961: Some data on the Odonata larvae of small pools. *Internationale Revue der gesamten Hydrobiologie und Hydrographie* 46(2): 269-75.
- HUGHES, H. R.; MCCOLL, R. H. S.; RAWLENCE, D. J. 1974: Lake Ellesmere, Canterbury, New Zealand. A review of the lake and its catchment. *New Zealand Department of Scientific and Industrial Research, Information Series No. 99*. 27 p.
- JOHNSON, J. R. 1969: An ecological study of temporary ponds in Canterbury, New Zealand. Unpublished B.Sc. (Hons) project, Department of Zoology, University of Canterbury.
- PENNIKET, J. G. 1966: Keys to the nymphs and adults of the New Zealand Odonata. *Records of the Canterbury Museum* 8: 87-92.
- STOUT, V. M. 1964: Studies on temporary ponds in Canterbury, New Zealand. *Verhandlungen der Internationalen Vereinigung für theoretische und angewandte Limnologie* 15: 209-14.
- 1969: Lakes in the mountain region of Canterbury, New Zealand. *Verhandlungen der Internationalen Vereinigung für theoretische und angewandte Limnologie* 17: 404-13.
- WOLFE, L. S. 1953: A study of the genus *Uropetala* Selys (Order Odonata) from New Zealand. *Transactions of the Royal Society of New Zealand* 80: 245-75.