

Dragonflies (Odonata) Emerging from Brackish Pools in Saltmarshes of Gaspé, Quebec

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Enallagma hageni, *Lestes disjunctus*, *Sympetrum costiferum*, *Sympetrum danae*, *Sympetrum internum*, and *Sympetrum obtrusum* were observed emerging from brackish pools with an overall salinity range of 6.0–17.3 ppt in three saltmarshes in Gaspé, Quebec. *Lestes congener*, *Libellula quadrimaculata*, and species of *Sympetrum* were prominent among the larvae in these pools.

Key Words: *Lestes congener*, *Libellula quadrimaculata*, *Sympetrum danae*, Odonata, dragonflies, saltmarsh, salinity, Gaspé, Baie des Chaleurs, Quebec.

A recent study (Catling et al. 2006) has shown that saltmarshes are used much more extensively by dragonflies than was previously thought and that the saltmarshes of the Baie des Chaleurs region of Quebec and New Brunswick possess a diverse and distinctive dragonfly fauna. The locations and dominance of restricted saltmarsh flora at the sites included in that study left no doubt that the habitat was brackish, and the observations of emergence, presence of larvae, and large numbers of adults left no doubt as to the utilization of this brackish habitat. However, two of the predominant species, *Lestes congener* and *Sympetrum danae*, were not shown definitely to develop in brackish pools. Here presence of larvae and emergence of these and other species from pools of measured salinity are reported.

Methods

Observations of emergence were made and larvae were collected from saltmarsh pools at three sites (Table 1) in the Gaspé from 16 to 18 July 2009. At all of the sites, the pools were mostly less than 10 cm deep but up to 30 cm in the deepest parts and had surrounding and emergent vegetation dominated by *Carex paleacea* Schreber ex Wahlenb., *Juncus* spp., and *Scirpus* spp. The bottoms were organic with an incomplete cover of *Chara* sp., *Ruppia maritima* L., and *Potamogeton pectinatus* L., all of which were confined to patches of deeper water. Salinity was measured with a Pinpoint salinity monitor based on electronic conductance, and the values were converted to

TABLE 2. Species of dragonflies emerging and recorded as larvae from saltmarsh pools at three saltmarshes in the Gaspé.

Species	Site		
	1	2	3
Emerging			
<i>Enallagma hageni</i> (Walsh)	1	–	2
<i>Lestes disjunctus</i> Sélys	1	–	–
<i>Sympetrum costiferum</i> (Hagen)	–	1	–
<i>Sympetrum danae</i> (Sulzer)	2	13	–
<i>Sympetrum internum</i> Montgomery	5	7	3
<i>Sympetrum obtrusum</i> (Hagen)	1	5	–
Larvae and Exuviae			
<i>Aeshna</i> cf. <i>interrupta</i> Walker	1	–	–
<i>Aeshna</i> cf. <i>umbrosa</i> Walker	1	–	–
<i>Enallagma</i> sp.	1	–	–
<i>Lestes congener</i> Hagen	6	–	–
<i>Lestes</i> sp.	1	–	–
<i>Libellula quadrimaculata</i> Linnaeus	12	3	–
<i>Sympetrum</i> sp. (cf. <i>danae</i> or <i>internum</i>)	11	9	9

ppt. Identifications of Odonata were made using Walker (1953, 1958) and Walker and Corbet (1975). Voucher specimens are deposited in National Collection at Agriculture and Agri-Food Canada in Ottawa (CNC).

Results and Discussion

Six species, including *Enallagma hageni*, *Lestes disjunctus*, *Sympetrum costiferum*, *Sympetrum danae*, *Sympetrum internum*, and *Sympetrum obtrusum*, were observed emerging from brackish pools with an overall salinity range of 6.0–17.3 ppt (Tables 1 and 2). *Libel-*

TABLE 1. Names, locations, and salinity range of pools examined in four saltmarshes on the coast of Gaspé.

No.	Name	Location	Salinity range (ppt)
1	Barachois de Malbaie saltmarsh	48.5829 N, –64.3015 W	8.1–11.0
2	Baie au Chêne saltmarsh	48.0508 N, –66.6512 W	6.0–8.8
3	Pointe-à-la-Garde saltmarsh	48.0754 N, –66.5430 W	16.3–17.3



FIGURE 1. Shallow brackish (8.1–11.0 ppt) pools with water to 5 cm deep and lacking submerged vegetation in the Barchois de Malbaie saltmarsh, where *Sympetrum danae* and *S. internum* were emerging and larvae of *Lestes congener* were present in the pool in the foreground on 17 July 2008. Photo by P. M. Catling.

lula quadrimaculata and *Sympetrum* sp. were well represented among the larvae from the three sites (Table 2). Larvae of *Sympetrum* could not be determined with confidence, but most appeared referable to *S. danae* or *S. internum*. Several larvae of *Lestes congener* found in ponds with salinity ranging from 8.1 to 11.0 ppt were notable and provide support for the suggestion that this species is a resident of saltmarshes in the area (Catling et al. 2006). Other larvae found in the brackish pools included *Aeshna* cf. *interrupta* Walker, *Aeshna* cf. *umbrosa* Walker, *Enallagma* sp., and *Lestes* sp. (Table 1).

All of the species noted above were expected, based on abundance of adults in saltmarshes in the region (Catling et al. 2006), but these observations are of particular interest because they confirm that *Lestes congener*, *L. disjunctus*, *Libellula quadrimaculata*, *Sympetrum danae*, and *S. obtusum* develop in brackish ponds. The observations also provide additional support for use of brackish ponds by the species for which larval records already exist.

Although a comparison of the habitats within pools was beyond the scope of this study, it was noticed that *Libellula quadrimaculata* larvae were confined to deep-

er pools with more submerged vegetation, whereas larvae of *Sympetrum* and especially emerging *Sympetrum danae* came from pools less than 10 cm deep with emergent but no submerged vegetation (e.g., Figure 1).

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Literature Cited

- Catling, P. M., R. Hutchinson, and P. M. Brunelle. 2006. Use of salt marsh by dragonflies (Odonata) in the Baie des Chaleurs region of Quebec and New Brunswick in late summer and autumn. *Canadian Field-Naturalist* 120: 413–420.
- Walker, E. M. 1953. The Odonata of Canada and Alaska. Volume 1, Part I: General. Part 2: The Zygoptera—damselflies. University of Toronto Press, Toronto. 292 pages.
- Walker, E. M. 1958. The Odonata of Canada and Alaska. Volume 2, Part III: The Anisoptera—four families. University of Toronto Press, Toronto. 318 pages.
- Walker, E. M., and P. S. Corbet. 1975. The Odonata of Canada and Alaska. Volume 3: The Anisoptera—three families. University of Toronto Press, Toronto. 308 pages.

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