

The first record of Dorcas Copper (*Lycaena dorcas*) from Nova Scotia

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Dorcas Copper (Lycaena dorcas W. Kirby) (Lepidoptera: Lycaenidae) is a medium-sized copper (Lycaeninae) known from every Canadian province and territory except Nunavut, Prince Edward Island, and, prior to 2011, Nova Scotia (Layberry et al. 1998). In the Maritime Provinces, the species is rare, previously known only from Carleton and York Counties in western New Brunswick (Maritimes Butterfly Atlas 2011). Throughout its range, Dorcas Copper is typically associated with its larval host plant shrubby cinquefoil (Dasiphora fruticosa ssp. floribunda (Pursh) Kartesz) (Rosaceae)) (Layberry et al. 1998). However, it occurs in Wisconsin peatlands lacking shrubby cinquefoil (Nekola 1998), and has been recorded ovipositing on small cranberry (Vaccinium oxycoccos Turcz. ex Rupr. (Ericaceae)) and sweet gale (Myrica gale L. (Myricaceae)) (Handfield 2011). In the Maritimes, Dorcas Copper is known only from rich fens with shrubby cinquefoil, a habitat type that is rare in the region. On 21 July 2010, C.S. Blaney and D.M. Mazerolle discovered a Dorcas Copper colony while conducting a botanical inventory at the Black River Fen, a large complex of calcareous wetlands east of Lake Ainslie, Inverness County (46.1554°N, 61.2888°W) that includes several patches of calcareous fen. The site is an exceptional one for Nova Scotia, supporting many plant species that are characteristic of highly calcareous fens elsewhere in northeastern North America, but which are very rare in Nova Scotia. These species include Kalm's lobelia (Lobelia kalmii L. (Campanulaceae)), Labrador bedstraw (Galium labradoricum (Wieg.) Wieg. (Rubiaceae)), five-flower spikerush (Eleocharis quinqueflora (F.X. Hartmann) Schwarz (Cyperaceae)), horned beakrush (Rhynchospora capillacea Torr. (Cyperaceae)), sticky false-asphodel (Triantha glutinosa (Michx.) Baker (Liliaceae)), hoary willow (Salix candida Fluegge ex Willd. (Salicaceae)), and the sedge Carex viridula var. elatior (Schlecht.) Crins (Cyperaceae). The latter two taxa are known nowhere else in Nova Scotia. Shrubby cinquefoil is widespread throughout the wetland complex, and is the most abundant shrub over parts of the calcareous fens; an exceptional abundance for the species in Nova Scotia (C.S. Blaney, personal observation). Observations suggest that the site supports an extensive population of Dorcas Copper. Blaney and Mazerolle photographed and collected one individual (Figure 1) and noted nearly 100 adults in flight in patches of calcareous fen spread over 2.5 km x 1.5 km. On an hour long visit to the Black River Fen on 12 August 2011, D.G. Anderson observed 60 adults, and collected numerous specimens. The nearest known Dorcas Copper population is approximately 245 km to the northeast near Port aux Basques, Newfoundland (Layberry et al. 1998). The nearest Maritimes population is approximately 490 km to the west at Charleston, New Brunswick. Layberry et al. (1998) divided Dorcas Copper into four subspecies in Canada: Lycaena dorcas dorcas throughout much of eastern Canada; Lycaena dorcas claytoni A.E. Brower in New Brunswick; Lycaena dorcas florus (W.H. Edwards) throughout much of western Canada; and Lycaena dorcas arcticus (Ferris) in the extreme northwest. Salt Marsh Copper (Lycaena

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Figure 1. Dorcas Copper (*Lycaena dorcas*) nectaring at Shrubby Cinquefoil (*Dasiphora fruticosa ssp. floribunda*) at Black River Fen, 21 July 2010. **Photo credit**: D.M. Mazerolle.



dospassosi McDunnough) was previously considered a subspecies of Dorcas Copper. However, we follow Layberry et al. (1998) who treat it as a distinct species. Knurek (2009) studied the validity of Dorcas Copper subspecies and found that the nominate subspecies and Lycaena dorcas claytoni, the two subspecies thought possible for Nova Scotia, are distinguishable based on morphology but not molecular characters. Knurek (2009) could not rule out an environmental influence as a cause for the different phenotypes and also suggested that Lycaena dorcas claytoni may represent the eastern extreme of a longitudinal cline.

As the delineation of Dorcas Copper subspecies is not entirely clear, we refrain from assigning a trinomial name to the Nova Scotia population. The specimens collected at Black River Fen will be deposited at the Nova Scotia Museum and Canadian National Collection where they will be available to those studying Dorcas Copper systematics.

Highly calcareous fens are rare in North America (Calcareous Fen Technical Committee 1994) and extremely rare in Nova Scotia, with no other sites comparable to the Black River Fen having been documented in the province. In the more settled parts of eastern North America, calcareous fens have greatly declined since European colonization due to drainage and conversion to other uses (Motzkin 1994). Dorcas Copper occurs in the Black River Fen partly on provincial Crown land and partly on private land. The Crown land portion is

currently under review for possible legal protection, but the private land portions, including some of the best calcareous fen communities in the south end of the site, have no specific protection. Our documentation of the provincially unique and highly isolated Dorcas Copper occurrence at the Black River Fen further underscores the high priority that should be placed upon securing the unprotected portions of the site for conservation.

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REFERENCES

Calcareous Fen Technical Committee. 1994. Technical criteria for identifying and delineating calcareous fens in Minnesota. Minnesota Department of Natural Resources, St. Paul, Minnesota, USA. 22 pp.

Handfield, L. 2011. Le guide des papillons du Québec. Broquet, Saint-Constant, Quebec, Canada. 982 pp.

Knurek, E.S. 2009. Taxonomic and population status of the Clayton's copper butterfly (*Lycaena dorcas claytoni*). Unpublished MS thesis, University of Maine, Orono, Maine, USA.

Layberry, R.A., Hall, P.W., and Lafontaine, J.D. 1998. The Butterflies of Canada. University of Toronto Press, Toronto, Ontario, Canada. 280 pp.

Motzkin, G. 1994. Calcareous fens of western New England and adjacent New York State. Rhodora 96: 44–68.

Maritimes Butterfly Atlas. 2011. Available from: http://accdc.com/butterflyatlas.html [accessed 13 September 2011].

Nekola, J.C. 1998. Butterfly (Lepidoptera: Lycaenidae, Nymphalidae, and Satyridae) faunas of three peatland habitat types in the Lake Superior drainage basin of Wisconsin. The Great Lakes Entomologist 31: 27–38.