

Wallengrenia egeremet (Hesperiidae): A New Population for Western Canada.

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WALLENGRENIA EGEREMET (HESPERIIDAE): A NEW POPULATION FOR WESTERN CANADA.**Additional key words:** tall grass prairie, range extension

The Northern Broken-Dash, *Wallengrenia egeremet* (Scudder, 1864) is a species of skipper (Hesperiidae) found in open grassy meadows throughout most of the eastern United States (Layberry et al. 1998). The current range of *W. egeremet* extends from the Gulf Coast through Florida and south-eastern Texas, continuing north to central North Dakota and southern Maine (Burns 1985, Opler et al. 2012). The northern periphery of the range extends into eastern Canada, including southern Quebec, south-central Ontario (MacNeill 1975, Layberry et al. 1998), and southern New Brunswick (Macy and Shepard 1941, Duffy and Garland 1978 as cited in Burns 1985). Recently the northern range of *W. egeremet* has extended into western Canada.

Two male *W. egeremet* were first recorded within the Tall Grass Prairie Preserve, located in the Rural Municipality of Stuartburn, Manitoba, Canada (49° 08' N, 96° 40' W) in late June 2006 by Bates (2007). The two males were collected by sweep net at 49° 05' 17.34 N, 96° 45' 31.75 W. Between 17 July and 6 August, 2009, eleven male and six female *W. egeremet* adults were collected within the Tall Grass Prairie Preserve by S. Semmler using pollinator pan traps. Four males were observed between 10 July and 14 July, 2010 and three males and two females were observed between 11 July and 18 July, 2011 by R. Westwood.

Previous reports of *W. egeremet* in Manitoba were based on misidentified specimens, with four female Dunn Skipper (*Euphyes vestris* Boisduval) identified as *W. egeremet* in 1955, and an inaccurate record from 1974 (Burns 1985, Klassen et al. 1989). *Wallengrenia egeremet* was absent in comprehensive annual butterfly surveys in southern Manitoba between 1976 and 1988 (P. Klassen and R. Westwood unpublished) in preparation for the publication of the Butterflies of Manitoba (Klassen et al. 1989). *Wallengrenia egeremet* was also absent in extensive surveys for the Poweshiek Skipperling (*Oarisma poweshiek* Parker) and Dakota Skipper (*Hesperia dacotae* Skinner) in the Tall Grass Prairie Preserve between 1996 and 2006 (R. Westwood unpublished, Webster 2003). A record from the Royal Ontario Museum lists at least one specimen of *W. egeremet* being collected from Echo Valley Provincial Park, Saskatchewan, in 1969, although there have been no subsequent reports of the skipper from Saskatchewan.

The Tall Grass Prairie Preserve is the largest remaining tall grass prairie remnant in Canada, with approximately 5000 ha of native prairie owned and managed by several organizations including Nature Manitoba, The Nature Conservancy of Canada and Manitoba Conservation. The Tall Grass Prairie Preserve is separated into northern and southern blocks of similar size, with blocks being approximately 5 km apart. The southern block is characterized by upland tall grass prairie habitat composed of big bluestem (*Andropogon gerardii* Vitman) and little bluestem (*Schizachyrium scoparium* (Michx.) Nash), while the northern block consists of wetter, low lying areas of sedges (*Carex* spp.) and rushes (*Juncus* spp.) (Henne and Diehl 2002 as cited in Westwood and Borkowsky, 2004, Hamel et al. 2006). Prairie meadows within both blocks are often separated by marshes or stands of oak (*Quercus* spp.), aspen (*Populus* spp.), and willow (*Salix* spp.) (Henne and Diehl 2002 as cited in Westwood and Borkowsky 2004, Hamel et al. 2006). The climate in the Tall Grass Prairie Preserve is continental, with an average of 579.1 mm of precipitation annually, a mean summer temperature of 19.8 °C and a mean winter temperature of -17.1 °C (Environment Canada 2004). The soil is a grey-wooded podzol, having a sandy-loam to clay-loam texture with frequent rock outcrops (Canada Soil Inventory 1989). The shallow slope of the landscape (1–3%), poor drainage and high water table (within 3 m of the surface) generally inhibit agricultural productivity and potential within the Tall Grass Prairie Preserve (Westwood et al. 2011).

The 2009 specimens were collected during pan trapping for the Canadian Pollination Initiative (NSERC-CANPOLIN), a Canadian National Science and Engineering Research Council Strategic Network organizing nationwide surveys of insect pollinators (NSERC-CANPOLIN 2009). Pan traps were set at 10 day intervals along 90 m transects in open tall grass prairie meadows to collect pollinating insects. An alternating colour pattern of yellow, blue, and white pans mimicked the reflectance of various floral species. The majority of *W. egeremet* specimens were collected from blue pans (13 of 17 individuals), with three collected from yellow pans and one individual collected from a white pan. Collection records will be incorporated into the NSERC-CANPOLIN pollinator database, and the

specimens have been deposited at the University of Winnipeg, Manitoba, Canada.

In the 2009 pan trapping surveys *W. egeremet* was found in two locations within the Tall Grass Prairie Preserve. The first location in the south block (49° 04' 28.7 N, 96° 43' 06.1 W) was within upland prairie habitat consisting of dense patches of goldenrod (*Solidago canadensis* L., *Solidago rigida* L.), big bluestem, and shrubby cinquefoil (*Dasiphora fruticosa* (L.) Rydb.). Co-flying skippers in this location included Dun Skipper, Peck's Skipper (*Polites peckius* W. Kirby), Long Dash Skipper (*Polites mystic* W.H. Edwards), and European Skipper (*Thymelicus lineola* Ochsenheimer). The second location in the north block (49° 08' 30.3 N, 96° 40' 21.4 W) consisted of wetter sedge meadow dominated by sedges, rushes, and shrubby cinquefoil. *Polites mystic* was also collected from the second location. In 2009 *W. egeremet* males were trapped approximately two weeks earlier than females, and females were most frequently associated with sedge meadow habitat. Records from 2006, 2010 and 2011 came from similar upland tall grass prairie meadows within several km of the pan trapping sites in the southern block only.

Wallengrenia egeremet is generally described as a brownish skipper with a wingspan of 24–29 mm (Layberry et al. 1998). A primary diagnostic feature of *W. egeremet* is the broken stigma surrounded by pale orange/brown markings on the male forewings (Layberry et al. 1998). Forewings of the female have prominent cream coloured markings that are also visible on the underside of the wing (Layberry et al. 1998, Opler et al. 2012). The undersides of the hindwings are marked by a faint medial crescent in both sexes (Layberry et al. 1998, Opler et al. 2012). A similar species, *E. vestris*, shares comparable habitat and adult food plants (Layberry et al. 1998, Opler et al. 2012a). Females of *E. vestris* lack the medial crescent under the hind wings, but can be difficult to differentiate from *W. egeremet*, requiring examination of scaled spurs on the tibia of the midlegs (MacNeill 1975, Layberry et al. 1998). However, male *E. vestris* are distinct in that they lack the broken stigma (Layberry et al. 1988).

Wallengrenia egeremet is univoltine in the northern areas of its range, with adults reported to be on the wing from June or July through August (MacNeill 1975, Burns 1985, Layberry et al. 1998, Wagner 2005, Opler et al. 2012). In the United States larvae overwinter in protective cases of silk and grass blades or leaves, emerging in early spring to pupate (MacNeill 1975, Wagner 2005).

Larval food plants include western needlegrass (*Achnatherum occidentale* Thurb. ex S. Wats.) Barkworth (MacNeill 1975), deertongue or panic grass

(*Dichanthelium clandestinum* (L.) Gould, and *Dichanthelium dichotomum* (L.) Gould) and crab grass (*Digitaria sanguinalis* (L.) Scop.) (Layberry et al. 1998, Wagner 2005, Opler et al. 2012). Adults are reported to nectar on a variety of flower species; examples from the United States include red clover (*Trifolium pretense* L.), dogbane (*Apocynum* spp.), New Jersey tea (*Ceanothus americanus* L.) and sweet pepperbush (*Clethra alnifolia* L.) (Opler et al. 2012). The Tall Grass Prairie Preserve supports similar larval food species such as porcupine grass (*Hesperostipa spartea* (Trin.) Barkworth) and panic grass (*Dichanthelium acuminatum* (Sw.) Gould & C. A. Clark), and *Dichanthelium leibergii* (Vasey) Freckmann), as well as a variety of nectar sources within Asteraceae, Fabaceae, and Apocynaceae.

The most recent published records from North Dakota include the Grand Forks Air Force Base and south-east of Arthur (Opler et al. 2012), North Dakota, approximately 150 and 200 km south of the Tall Grass Prairie Preserve, respectively. Minnesota is the probable source of skippers to Manitoba, with the nearest recent published observations south-east of Crookston and north-west of Fertile (Opler et al. 2012), Minnesota (approximately 180 km from the Tall Grass Prairie Preserve).

There are older reports of *W. egeremet* in Minnesota from Roseau (Flagstad Jr. 1970) and Minnesota Hill (Cuthrell 1991), Roseau Co., approximately 70 km south east of the Tall Grass Prairie Preserve (R. Huber unpublished, R. Dana, pers. comm.). There are 1991 Minnesota records from Kittson Co. which include Devil's Playground Wildlife Management Area, Norway 8, and the Caribou Wildlife Management Area, with the Caribou WMA being approximately 15 to 20 km south of the Tall Grass Prairie Preserve (Cuthrell 1991, R. Dana, pers. comm.). Between 1996 and 2011 there are only three reports of *W. egeremet* in Minnesota in the Season Summary Reports (Lepidopterists Society 1996–2011). In 1998 *W. egeremet* was reported from Roseau and Bemidji, Minnesota, approximately 75 to 120 km southeast of the Tall Grass Prairie Preserve, respectively, and in 2006 in Hubbard, Minnesota, over 200 km southeast of the Tall Grass Prairie Preserve.

Although the records from Minnesota suggest that populations of *W. egeremet* have existed in proximity to the Canadian/U.S. border for several decades, *W. egeremet* had not been observed in southern Manitoba until 2006. Extensive monitoring of butterfly populations in the region leave little possibility that this species was present in Manitoba prior to 2006 thus the appearance of this species in the region appears to be fairly recent. The Tall Grass Prairie Preserve provides habitat suitable for the propagation of *W. egeremet* and the population

appears to be well established. Unlike several other butterfly species which have sporadically been reported in southern Manitoba (Taylor et al. 2008), there are no known records of *W. egeremet* entering Manitoba during the last 75 years. It is unknown if *W. egeremet* will remain confined to the Tall Grass Prairie Preserve in Canada or if it will continue to move northward into central Manitoba and eastern Saskatchewan.

Taylor et al. (2008), Taylor and Westwood (2010) and Westwood and Blair (2010) have recently reported other species of butterflies that have extended their ranges into Manitoba from the north central United States over the past decade. Kerr (2001) reported expanded ranges of several butterflies in eastern Canada and others have reported North American butterfly range extensions in relation to climate warming (Crozier 2003, Hellmann et al. 2008). The recent expansion of the range of *W. egeremet* into Manitoba may be part of a trend northward for butterfly species previously absent from the region.

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