

- *Simulium arcticum* Malloch
 12 (10') Mature larvae large (many 7 mm long); antenna extended as far as distal end of stalk of cephalic fan; postgenal cleft slightly longer than wide (Fig. 43)
- *Simulium decorum* Walker
 12' Mature larvae smaller (many 6 to 6.5 mm long); tip of antenna extended beyond distal end of stalk of cephalic fan; postgenal cleft about as long as wide (Figs. 44, 45)
- *Simulium venustum* Say and *Simulium verecundum* Stone and Jamnback³

NOTES ABOUT SPECIES

1. *Ectemnia taeniatifrons* (Enderlein) (Figs. 1, 2, 6, 14, 28, 29)

Thirty years ago larvae and pupae of this species were widely distributed throughout the north, south, and main branches of the Saskatchewan River in Saskatchewan; none were found in tributaries. In recent years fewer specimens have been collected and those mainly near the confluence of the north and south branches near Prince Albert, the Red Deer River near Estuary and the South Saskatchewan River near Pike Lake.

Ectemnia taeniatifrons is univoltine. Eggs laid in April and May hatch in late summer. At fall freeze-up, some larvae are almost half grown. Larvae are notable in that many are found attached to the tips of slender stalks up to 15 mm long, built from threads of salivary secretions and debris and attached with broad bases to substrates. If undisturbed, a larva attaches its cocoon on or near the tip of its stalk. Larvae continue growth under the ice and adults commence emerging three to five weeks after ice break-up. Adults commonly feed on sap seeping from the bruised bark of birch trees. Mating occurs in flight in thinly dispersed swarms in clearings and thereafter, the females seek blood from humans and other animals. Because of its rarity the species was not considered to be economically important.

2. *Metacnephia saskatchewanana* Shewell and Fredeen (Figs. 4, 7, 15, 30-32)

Larvae and pupae occur regularly on water weeds collected in the spring from the Shell and Battle Rivers in Saskatchewan and occasionally from the North Saskatchewan River as far as about 50 km downstream from the outlets of those small tributaries. I believe that the species is not native to the Saskatchewan River, but that larvae appear there only after accidentally drifting in from tributaries. The cocoons possess the same shape as those of *S. arcticum*, but are loosely constructed and the pupa possesses 17 to 19 respiratory filaments instead of 12.

Only one generation per year is known. Adults emerge four to eight weeks after ice break-up suggesting that the species overwinters as larvae under the ice of permanently flowing rivers. Feeding habits of adults are not known.

Type specimens for this species were collected from the Shell River (Shewell and Fredeen, 1958) and since then it has been shown to be widely distributed in western Canada.

3. *Simulium (Eusimulium) euryadminiculum* Davies (Figs. 17 and 39)

This species breeds abundantly in the Battle and Shell Rivers. Larvae occasionally drift into the North Saskatchewan River and have been collected as far as about 60 km downstream from those tributaries. There, adults are sometimes produced judging by empty pupal cases, but there is no evidence of permanent establishment in the Saskatchewan River. *S. euryadminiculum* is univoltine with adults emerging in May about three to five weeks after ice break-up. Blood-fed females have been taken from a dead common loon (Davies *et al.*, 1962) and have driven chickens indoors in Saskatchewan, without causing losses. The most severe attack on chickens occurred May 16 to 18, 1981, near Prongua, Saskatchewan.

4. *Simulium (Eusimulium) duplex* Shewell and Fredeen (Figs. 3, 5, 16 and 40).

Larvae and pupae of this species occur regularly in the Battle and Shell Rivers, the source of type specimens (Shewell and Fredeen, 1958) and in small numbers in the Saskatchewan River below their outlets. They were collected once from the Red Deer River immediately above its confluence with the South Saskatchewan River in southwestern Saskatchewan. *S. duplex* is univoltine, with pupation usually occurring in late May. Feeding habits of adults are not known.

5. *Simulium (Byssodon) meridionale* Riley (Figs. 8, 27 and 36).

S. meridionale is widely distributed throughout many rivers and streams in Saskatchewan. Recently, larvae have become relatively abundant in the North Saskatchewan River, especially in the vicinities of the Wingard and Cecil ferries. They also occur in the Red Deer and South Saskatchewan Rivers in southwest Saskatchewan and occasionally downstream from Tobin Lake on the main Saskatchewan.

Eggs overwinter in river bed sand and commence hatching within a month after ice break-up in the spring. The species is multivoltine. Larval populations often peak in May and June in the South Saskatchewan and in July in the north branch. It is sometimes abundant enough to be a pest of humans and other animals. In some localities such as Melville, Saskatchewan, it has been a pest of poultry and implicated indirectly in fatal proven *Leucocytozoon* infections in flocks of domestic poultry. Those outbreaks originated in small local streams not connected with the Saskatchewan River. Possibly sibling species of *S. meridionale* possessing different host preferences are involved. Surprisingly, summer-long emergences of relatively large numbers of *S. meridionale* in recent years from the North Saskatchewan River did not result in poultry losses until early July 1981, when six farmers in a 100,000 ha area near Nipawin, Saskatchewan reported losses. Veterinarians considered those fatalities due to exsanguination rather than disease. *S. meridionale* females were abundant inside chicken house windows. Deaths occurred too rapidly to allow collection of blood smears. Until more information is available poultry producers should avoid establishing new flocks out-of-doors near the North Saskatchewan River. Swarms of *S. meridionale* have been bothersome as far as 15 km from that river in recent years. Poultry producers already established should report immediately any massive illnesses in their flocks to the Western College of Veterinary Medicine at Saskatoon. Blood is required from living birds for diagnosis.

³*S. venustum* and *S. verecundum* may be reliably separated in the pupal and adult stages only.