

Diversity and Scouting Photos:

One generation per year on the Canadian prairies.

Scouting for grasshoppers is a priority across the Canadian prairies with nymphs now active in fields from Manitoba to the Peace River region! Several entomologists have kindly offered photos to aid in-field scouting efforts so take these along and use these important points to more accurately identify grasshopper nymphs and adults:

Traditionally, the economically damaging species of grasshoppers on the Canadian prairies include:

- Migratory (Melanoplus sanguinipes; Figs. 1, 2, 3)
- Clear-winged (Camnula pellucida; Fig. 3, 4, 5)
- Two-striped (Melanoplus bivittatus; Fig. 6, 7, 8)
- Packard's (Melanoplus packardii; Fig. 9)
- And more recently Bruner's grasshopper (Melanoplus bruneri; Fig. 10)

Not everything that hops is a grasshopper! Several species of native slant-faced grasshoppers (normally not causing economic damage; Fig. 11) typically emerge earlier in the spring than economic pest species. Several species of leafhoppers and their closely related froghopper, and treehopper relatives also hop. In fact, early instar grasshopper nymphs are similar in size to leafhopper adults (Fig. 12). Roadside vegetation can be heavily populated by non-damaging leafhoppers and native katydids (Fig. 13) – a sweep-net will allow comparison and improve identification. Katydids resemble grasshoppers in an important way; egg, nymphal instar, and adult stages appear over similar time frames through the growing season.

Monitoring and management of the various pest species of grasshoppers ideally focuses on nymphal instar stages. Compared to adults, early instar grasshopper nymphs are at the beginning of the consumptive portion of life, plus nymphs lack full-sized wings (and have only small wing buds) so they are easier to count and manage. Pest species like the clear-winged grasshopper (*C. pellucida*) develop through five nymphal instar stages then mature to winged adults.



Figure 1. Fifth instar nymph of (tentatively identified) migratory grasshopper (*M. sanguinipes*). Photo: AAFC-Saskatoon - Jonathon Williams. Note: each unit represents 1 mm so nymph is ~16 mm long.





Figure 2. *In situ* photo of nymph of (tentatively identified) migratory grasshopper (*M. sanguinipes*). Photo: John Gavloski.



Figure 3. Adult (tentatively identified as) migratory grasshopper (*M. sanguinipes*). Photo: AAFC-Saskatoon - Jonathon Williams. Note: Wings extend down the length of the abdomen.





Figure 4. Life stages of clear-winged grasshopper (*C. pellucida*) including egg, first-fifth instar nymphs and adult (L-R). Photo: AAFC-Saskatoon-Ralph Underwood.



Figure 5. *In situ* photo of first instar clear-winged grasshopper (*C. pellucida*). Photo: Dan Johnson





Figure 6. Grasshopper eggs (tentatively identified as two-striped or *M. bivattus*) exposed in soil near Carman MB in 2010. Photo: John Gavloski.



Figure 7. Nymph of two-striped grasshopper (*M. bivattus*) resting on peas growing near Carman MB in 2019. Photo: John Gavloski. Note: Wing buds are visible and will be replaced by wings stretching the length of the abdomen when nymph matures to adult.





Figure 8. Various developmental stages of two-striped grasshopper (*M. bivattus*) featuring an early and late instar nymph (top and left, respectively) plus adult (right). Photo: John Gavloski.



AAFC-Saskatoon-J.Williams

Figure 9. Photo features (tentatively identified) third instar nymph of Packard's grasshopper (*Camnulla pellucida*). Photo: AAFC-Saskatoon-Jonathon Williams. Note: Each unit is 1 mm so nymph is ~6 mm long.





Figure 10. Early instar nymph of Bruner's grasshopper (*M. bruneri*). Photo: Dan Johnson.



Figure 11. A slant-faced grasshopper nymph (tentatively identified as a second instar nymph of Chorthippus curtipennis) featuring the characteristically angled head that is the hallmark of several native species of traditionally noneconomically damaging species.





Figure 12. Comparison of early instar grasshopper nymph (left) and adult leafhopper (right) collected in roadside vegetation - both are approximately the same size and both 'hop' when disturbed. Photo: John Gavloski.



Figure 13. Katydid nymph on roadside vegetation near Dauphin MB in 2021. Photo: John Gavloski. Note: Tiny wing buds are visible on anterior end of abdomen.