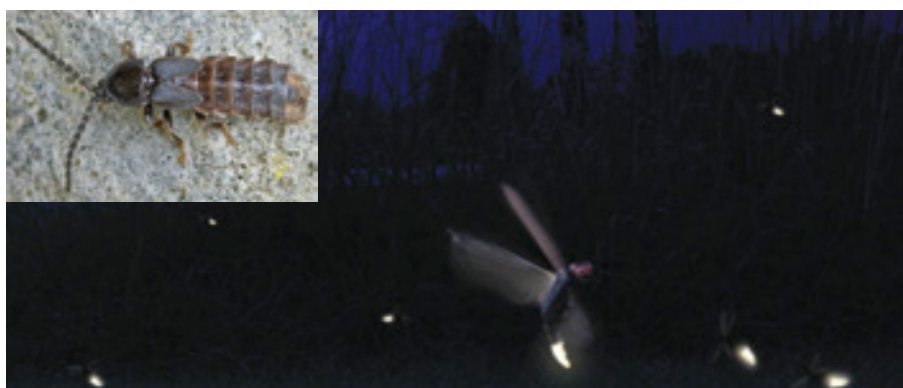


## The Secret Lives of Downtown Fireflies

By Scott MacIvor



Urs Rindlisbacher (inset photo)

*Phosphaneus hemipterus*, chilling on a rock

In 2009 I got to explore insect diversity on green roofs and nearby ground-level green spaces in Halifax. During that time, I came across a fair number of interesting and unique species – a few not previously recorded in Nova Scotia. This may seem strange – to find new insects in human-dominated landscapes – but the reality is that these “urban habitats” have been sorely understudied since they were first recognized a century or so ago. A significant interest in the ecology of urban habitats has developed in recent years and this is leading to new and exciting research and ideas on the planning and design of city spaces.

Another reason I might have been so fortunate to find such a diversity of insects downtown is that Halifax is a port city and gateway to the rest of Canada, serving as a hotspot for all sorts of newly introduced species. Some of these introduced species end up being harmful to other local organisms, while others are more or less harmless. At the end of that summer in 2009, I had recorded over 300 species in just four months of sampling at 10 downtown areas, raising the question: just how biologically diverse is the rest of Nova Scotia?

Dr. Chris Majka might have a good idea. He is a renowned insect taxonomist, with a fondness for beetles, and one of a few documenting the diversity and introductions of invertebrate species found in the Atlantic provinces. Most important to this story, he was key to my project’s most bizarre discovery – a

population of endangered, flightless, day-living fireflies thriving in the heart of downtown Halifax.

The species in question is the lesser glow worm, *Phosphaneus hemipterus*, which is the only firefly (fireflies are beetles) of over 2,000 catalogued species in the world to be introduced into North America from Europe. These glow worms were found in three nearby locations in Halifax: at the Fort Massey Cemetery, the Holy Cross Cemetery and the lawn garden on top of the elevated parking garage at the apartment building across the street. These locations are similar to the species’ native habitats in Germany, Belgium, England and other countries, having disturbed areas of lawn, shrub and hedgerow, dotted with bare soil, concrete, rock and paved areas.

Although red-listed and considered endangered in some areas where the lesser glow worm naturally occurs, the reported scarcity of this species might come from entomologists looking for it in the wrong places. Most search in semi-natural and forested areas, but it is becoming clear that the lesser glow worm prefers disturbed – even human-dominated – habitat, which until only recently has been avoided in many biodiversity investigations.

Exactly how these glow worms made it to Halifax in the first place remains unknown. They’ve possibly been here for a very long time – between 1878 and 1937 over 10,000 seedling trees in soil were imported from Europe and planted

in Point Pleasant Park. Such activities introduced new earthworms to Canada (19 of 25 species in Canada are not native) and could have also served as a vector for associated earthworm predators, such as the larvae of the lesser glow worm. Unlike some other insect species, lesser glow worm adults don’t feed at all!

The lesser glow worm doesn’t fly and its mobility is greatly limited, so this population in Halifax was almost certainly established from a unique introductory event. The lesser glow worm has been collected in Canada from four other localities: in Wolfville, Nova Scotia (80 km from Halifax), Yarmouth, Nova Scotia (220 km), Montréal, Québec (800 km), and Fergus, Ontario (1350 km). So we suspect the glow worm has been introduced to the continent on at least four separate occasions.

Despite their limited dispersal abilities, the distribution of the lesser glow worm in Halifax may be wider than it appears. All three sites where the species was found are close to one another and interestingly, there are many neighbouring private and public gardens (Victoria Park, the Halifax Public Gardens) and cemeteries (Camp Hill Cemetery, the Old Burial Grounds) that could very likely support even greater populations of this distinctive and elusively rare insect. In the summer of 2010, Dr. Majka found it in a garden in peninsular Halifax, 1.6 km west of the previous sites where the species had originally been recorded.

More about this discovery can be found in a freely available research article at:

[http://www.pensoft.net/J\\_FILES/1/articles/279/279-G-1-layout.pdf](http://www.pensoft.net/J_FILES/1/articles/279/279-G-1-layout.pdf).

*Scott is a former chair of the EAC Built Environment Committee and a SMU alumnus. He is currently studying wild bees in the urban landscape while completing a PhD at York University.*