Wireworm distribution and ecology in southern ID

Arash Rashed (arashed@uidaho.edu) UI and Juliet Marshall UI

In recent years, wireworms, the larval stage of click beetles (Coleoptera: Elateridae), have emerged as a major threat to cereal production in the Pacific Northwest (Figures 1 and 2). Historically, wireworm damage was controlled with environmentally persistent insecticides, which are now banned due to environmental and health concerns. Shortly after those chemicals were banned, wireworms resurged. The available registered insecticides for wireworm control in cereals, neonicotinoids, have provided very limited to no protection.

IMPACT

The effectiveness of integrated pest management approaches to controlling wireworms in cereals (and other crops) relies on a clear understanding of the species of wireworm present and their ecology. Such an understanding would lead to the development of more sustainable management practices.

Regardless of the underlying cause of the resurgence, the failure of the new insecticides to provide uniform protection has been attributed to species-dependent susceptibility as well as very high wireworm pressure. Recently, more emphasis has been placed on exploring integrated pest management approaches to achieve sustainable pest control. The effectiveness of such approaches, however, requires a clear knowledge of the present species and their interaction with the environment.

To help develop this knowledge, we started a species survey in central and southern ID. We placed more than 30 traps in different locations across ID, including two traps in Moscow (Figure 3). We started trapping in June 2014, using traps placed below the soil surface. After harvest, in August and September, we continued our surveys at soil depths of 6, 12, and 24 inches. The collected data on numbers and species composition will be evaluated in relation to environmental variables such as temperature and precipitation.

Data collected during the past four months indicate that various wireworm species appear in the solar traps at different times. Multiple species may be present within the same field. Unexpectedly, the solar traps continued to attract wireworms in August and September in central and eastern ID. Our latest data indicate that the prevalent species collected in traps changed toward the end of the season. The majority of the collected species has been from the *Limonius* spp. group. Sample representatives of other species have been sent to Montana State University for species confirmation.

Figure 1. *Click beetle pupae (Coleptera: Elateridae). Photo by Arash Rashed.*

Figure 2. Limonius *spp. wireworm burrowing into the soil. Photo by Arash Rashed.*

This project is anticipated to lead to publishing a visual identification guide to the most common wireworm species as well as a species distribution map for ID. We will be presenting a series of workshops and talks designed to educate wheat and barley producers, county educators, and crop consultants about the pest and available management tools. As a part of our extension and outreach commitment, we are currently in the process of preparing an extension educational video.

Figure 3. *Wireworm chemical trials north of Ririe, ID. Photo by Arash Rashed*

Figure 4. *Wireworm damage in dryland wheat near Geneva, ID. Photo by Arash Rashed.*

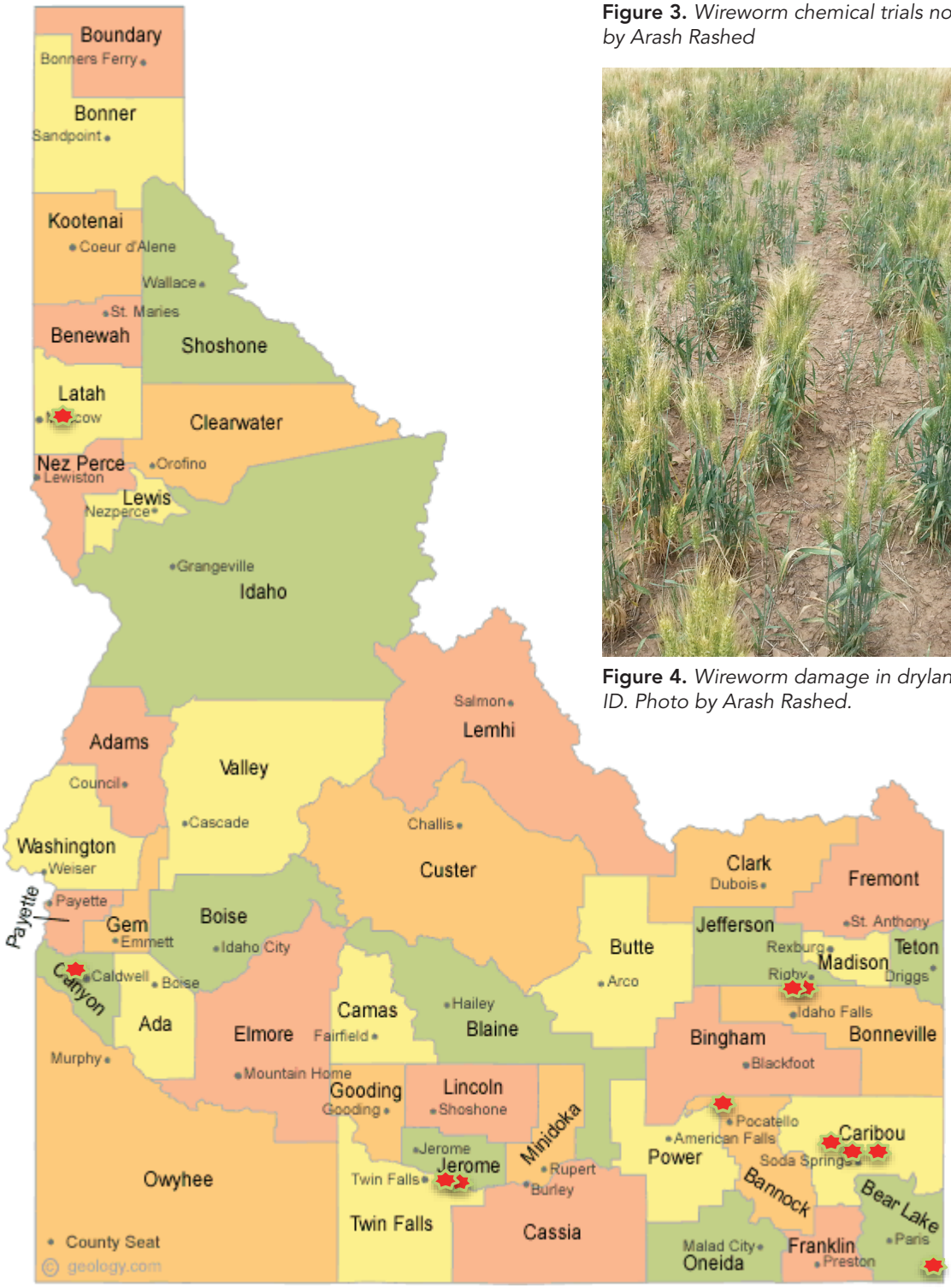

Figure 5. *Current wireworm survey locations in ID, locations indicated with red dots.*