Abstracts: Theme 4 – Pre-release Specificity and Efficacy Testing

Impact of *Ischnodemus variegatus* (Hemiptera: Blissidae) on the invasive grass *Hymenachne amplexicaulis* in Florida

R. Diaz, W.A. Overholt, J.P. Cuda and P.D. Pratt

1Biological Control Research and Containment Laboratory, Fort Pierce, FL 34945, USA
2University of Florida, Department of Entomology and Nematology, Gainesville, FL 32611, USA
3USDA, Invasive Plant Research Laboratory, Fort Lauderdale, FL 32608, USA

Invasions of exotic grasses constitute a major threat to aquatic ecosystems. West Indian Marsh Grass, *Hymenachne amplexicaulis* (Rudge) Nees, which is native to South America, is considered a major environmental weed in southeastern USA and Australia. In Florida, an adventive insect was recently found causing severe damage to *H. amplexicaulis*. This insect was identified as *Ischnodemus variegatus* (Hemiptera: Blissidae) and is considered native to South America. The host range of this herbivore and its potential to control *H. amplexicaulis* were evaluated under laboratory, greenhouse and field conditions. We tested 60 plants under no-choice conditions for development and five plants for oviposition of the insect. *I. variegatus* had higher survival from nymph to adult on *H. amplexicaulis* than on other tested plants. Development to the adult stage also occurred on *Panicum hemitomon*, *Panicum anceps*, *Paspalum urvellei* (all Poaceae) and *Thalia geniculata* (Marantaceae). Oviposition choice tests demonstrated that *I. variegatus* females will lay eggs on several non-target grasses. Greenhouse experiments demonstrated that feeding damage of *I. variegatus* reduces the growth rate, chlorophyll levels and biomass of *H. amplexicaulis* seedlings. Field sampling of naturally occurring populations in Florida indicated that *I. variegatus* density, under favourable climatic conditions, increase during the summer and can experience outbreaks that severely reduce *H. amplexicaulis* survival and reproduction.

Ecological basis for biological control of *Arundo donax* in California

T.L. Dudley, A. Lambert and A. Kirk

1University of California, Marine Science Institute, Santa Barbara, CA, USA
2USDA–ARS European Biological Control Lab, Montpellier, France

*Arundo donax* invades California riparian areas and is a target for biological control. Candidate agents have been identified, but their eventual release will depend upon evidence that damage is substantial and novel. As part of a program comparing *Arundo* growth traits and damage in California and the Mediterranean region (its presumed origin), we documented the presence in southern California of *Tetramesa romana* (Walker) (Hymenoptera: Eurytomidae), the same stem-boring sawfly being tested in quarantine laboratories for future introduction. Primary or secondary shoots <10 cm diameter are occupied, with densities up to 34 larvae per 100 cm of culm and mortality of secondary shoots is common. The wasp has been shown to infect new hosts under experimental field conditions, so we have an opportunity to test its efficacy and host range without the artefacts that plague standard quarantine testing. Field studies continue on both continents to document life cycles and impacts and determine whether this insect can utilize alternative hosts such as *Phragmites australis* and other native or economic grasses. If safety can be shown, this wasp may be amenable to re-distribution to other infested ecosystems in the western USA.