CISAC Invasive Shot hole Borer Subcommittee
March 18th, 2025 Meeting Minutes

ISHB Members Present:

Bea Nobua-Behrmann	Shannon Lynch	Tom Smith
Tim Crothers		

Guests:

Ameer Atrash	Linda Haque	Ramona Robinson
Claire Aicken	Lindsey Hack	Paul Rugman-Jones
Jonathan Babineau	Heather Healy	Ambika Saini
Nara Baker	Janell Hillman	Dave Sanford
Emmett Brady	Ricky Lara	Cherie Shook
Keri Brumfield	Tanner Mar	Stephanie Stark
Rachel Burnap	Walter Mayeda	Abigail Stokes
Julie Clark	Alyssa Morgan	Leo Tuchman
Kim Corella	Randall Oliver	Eduardo Ventura
Melissa Cregan	David Pegos	Jeremy Wagner
Sara Davis	Drew Raymond	Koren Widdel
Akif Eskalen	Cathy Roache	Brian Woodward
Curtis Ewing		

Opening:
The California Invasive Species Advisory Committee (CISAC) Invasive Shothole Borer (ISHB) Subcommittee meeting was called to order at 1:30 p.m. on March 18th, 2025. Dr. Shannon Lynch welcomed committee members, guests, and staff.

Survey, Detection and Rapid Response Subcommittee and Outreach and Education Subcommittee Reports
Summary of the Survey, Detection, Rapid Response and Outreach, and Education subcommittee needs assessment results.

- Survey, Detection, and Rapid Response estimated cost is estimated to be $8.7,000,000-$9.7,000,000 per year.
- Outreach and Education estimated cost is $1,000,000-$2,000,000 per year.

Summary of previous work on ISHB Research and Technology.

Working groups in charge of research and creating questions provided justification for questions and estimated budgets for those projects. The questions were ranked in order of priority of funding, and the top six questions were voted on to be projects to be funded.

The research projects funded by AB 2470 included:

1. Biological control of the Polyphagous and Kuroshio shothole borers in California
2. Optimization of trapping for Invasive shothole borers
3. Mechanical control of the beetle by chipping, pruning and removing trees

4. Epidemiology of Fusarium dieback
5. Biological control of Fusarium dieback – Greenhouse and field testing of endophytes to control FD-ISHB in California
6. Integrated pest management techniques for the control of invasive shothole borers and Fusarium dieback
7. Bioeconomic Modeling of Invasive Species Management in Urban Forests

Research and Technology Development Needs Assessment

Epidemiology

1. Refine risk model to include landscape parameters and dispersal factors (Shannon).
    a. Expand the monitoring plot network to include sites in Northern California.
2. Develop a model to assess the impacts of FD-ISHB over time (SEIR Framework) (Shannon).
    a. Revisiting plot network over time.

Biology

1. Effect of nutrients and water on FD-ISHB severity (Shannon).
    a. Quantify ISHB beetle fecundity, development, and emergence within artificial sawdust media of different hosts under different nutrient conditions;
    b. Quantify beetle fecundity, development, and emergence within different ISHB hosts under various nutrient and watering conditions in the greenhouse;
    c. Determine whether soil nutrient conditions and distance to water predict ISHB attack severity using data from 15,000 trees in 260 0.25 quarter hectare monitoring plots across Southern California.
2. Agricultural crop screening - will they become reproductive hosts in California? (Shannon and Akif)
    a. Test susceptibility to beetle's fungal symbiont colonization.
    b. Test susceptibility to beetle probing.
3. Host preference testing: rear beetles in host sawdust media and switch the media after several generations (Shannon).
4. Identification and interactions of bacteria with mycangial fungi (Shannon and Akif).
5. Host range testing for Greater Shothole Borer (GSHB) (Shannon).

Control

Biocontrol

1. Identify endophytes in native environments (e.g., Japan, Thailand, Taiwan, Vietnam) that inhibit colonization of ISHB symbionts (Shannon and Akif).
2. Assess the role of rhizosphere microbiota in controlling FD-ISHB (Shannon and Akif).
    a. Collect rhizosphere samples from diseased and non-diseased trees in monitoring plots.

    b. Test the efficacy of soil amendments in reducing pathogen colonization in a greenhouse and field experiment.
3. Field testing of native endophytes on native plant species (Shannon).
4. Biocontrol of the beetle (Paul).
    a. The majority of the previous money was returned because of COVID.
    b. Current federal funding situation tenuous.

Chemical

1. Testing locally systemic fungicides using an in vitro spiral plater, and in the field (Akif) (for PSHB/KSHB and GSHB).
2. Nutrient enrichment trials (Shannon).
3. Plant-based/bio-pesticides.

Mechanical

1. Push-pull control studies using sticky traps versus trap logs (Akif).

Monitoring

1. Trap Counting AI Tool (Bea).
2. Develop and validate a LAMP (loop-mediated isothermal amplification) based assay for the rapid, in-field, early detection and identification *Fusarium euwallaceae* and *F. kuroshium*, F. *floridanum*, as well as PSHB, KSHB, and GSHB (Shannon).
3. Trap optimization for GSHB (Shannon).
4. Hanging logs - what do we bait logs with? (Paul)
    a. Trap logs - soak in water for 1 week and hang.
5. Expanded tree inventories (Jon Dedka, Matt Ritter, Jennifer Yost).
    a. Drone and machine learning.

IPM

Does treating only moderately and heavily infested high-value trees sufficiently control beetle populations? (Bea)

Social

1. Expand economic proof of concept statewide (Karen Jetter).

Adjournment

The meeting was adjourned at 3:28 p.m. The next scheduled California Invasive Species Advisory Committee ISHB meeting is scheduled for March 18th, 2025, at 1:30 pm.