



Utility of black light traps for monitoring spread and population growth of BMSB in NJ

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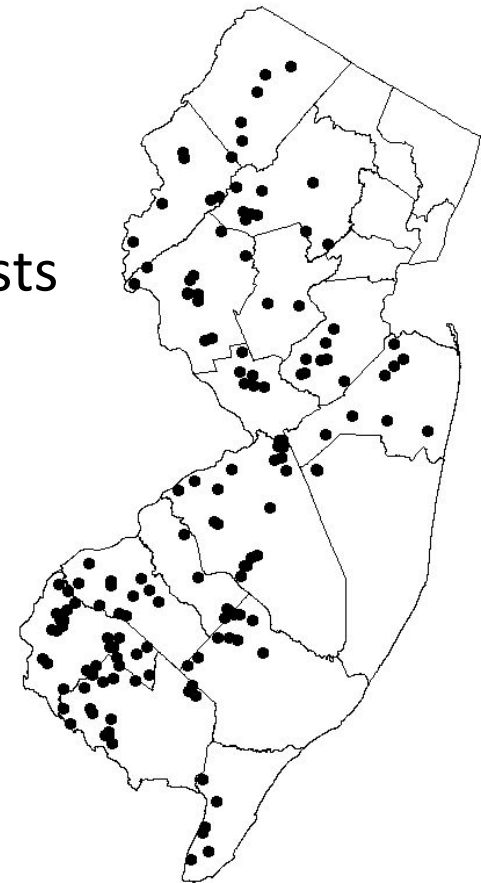
Monitoring Invasive Species

- During early establishment and spread
- Utilize species-specific tools
 - Biology and chemical ecology are understood
 - “Slow the Spread” program
- Utilize non-specific tools
 - Landscape pests
 - Polyphagous pests
 - Biology and chemical ecology are NOT understood
 - Ethanol traps for bark beetles
 - Black light traps for Lepidoptera



Potential Use of Black Light Traps

- Non-specific monitoring tool
- Documented attractiveness to pentatomids and BMSB
 - 45-70 traps throughout NJ
 - Monitored May – October for key pests



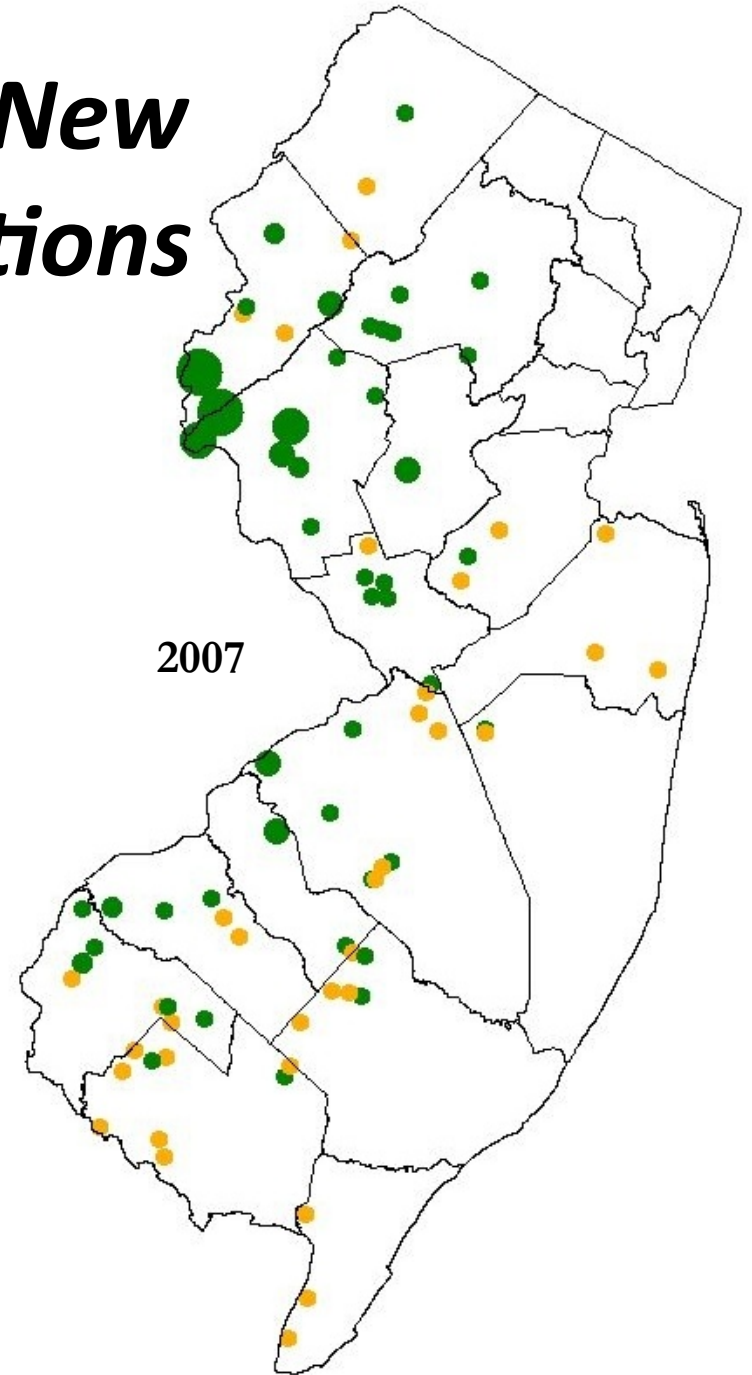
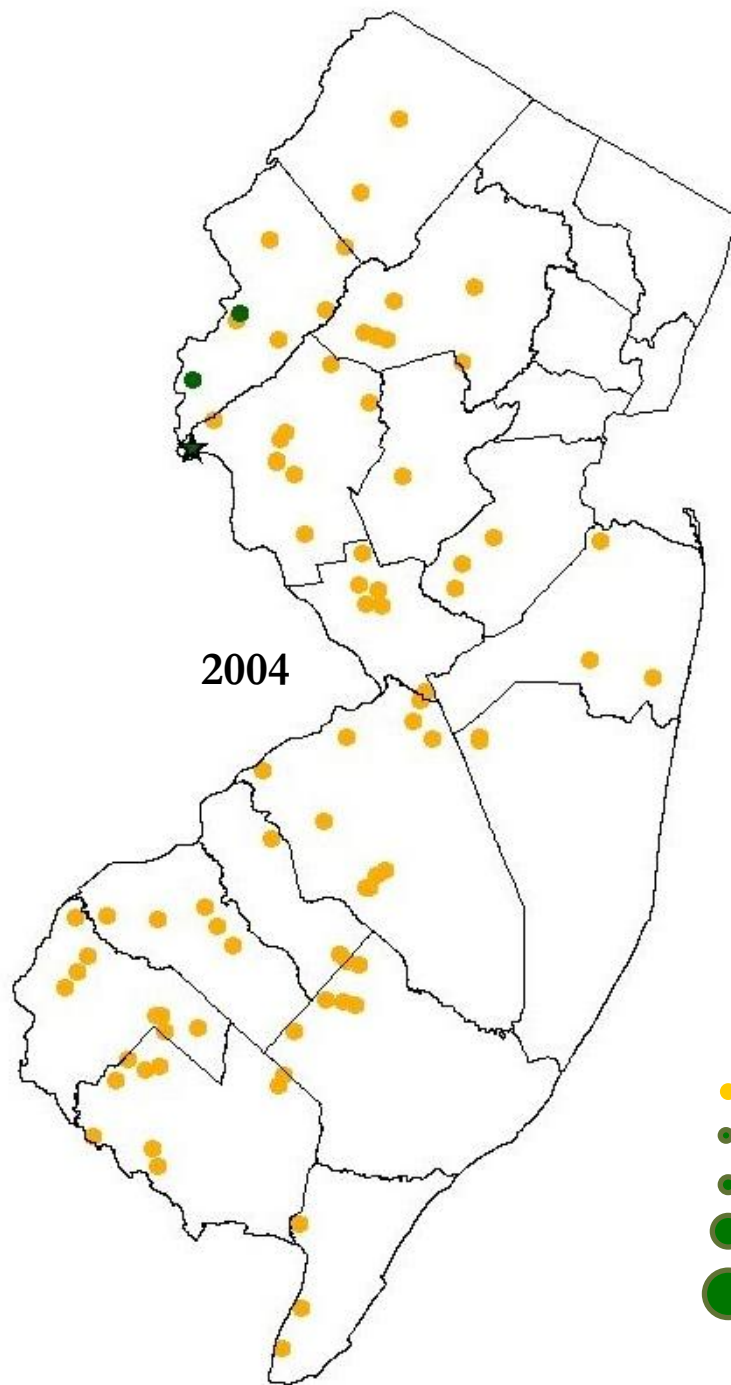
Black Light versus Pheromone

- 2004
 - Low populations of BMSB in NJ
 - 2,4,6 EEZ methyl decatrienoate (2.5mg lures)
 - Black light traps detected BMSB 2 years before kairomone
- 2012
 - High populations of BMSB in mid-Atlantic
 - 2,4,6 EEZ methyl decatrienoate (50mg+ lures) are not attractive in the early season
 - #10 compound
 - Effective at low population densities?

Use of Blacklight Traps

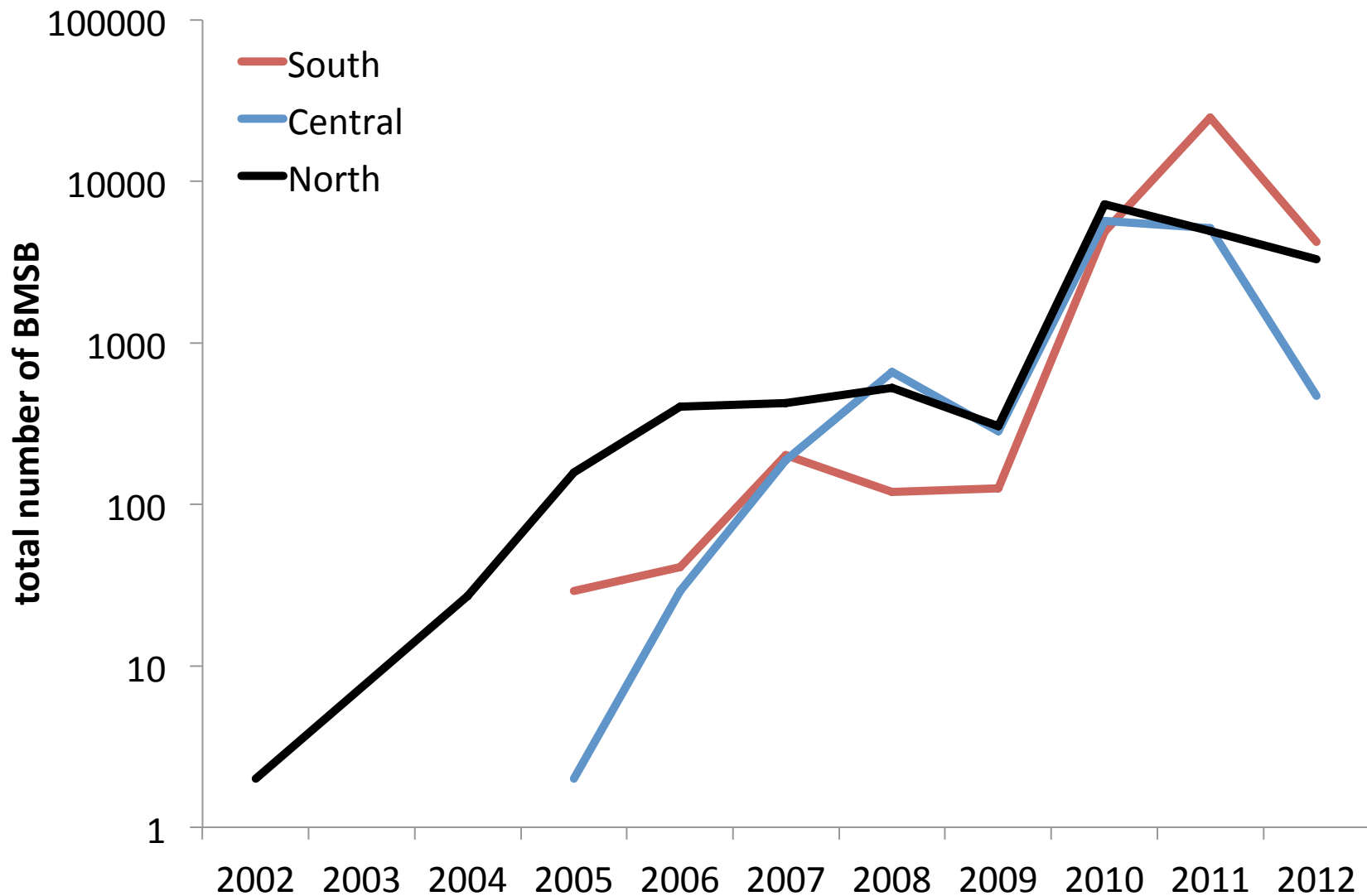
- Detect new populations
- Rate of spread
- Ecological impact
- IPM tool
 - Identify movement into crops
 - Early season monitoring
 - Identify background population pressure

Detect New Populations

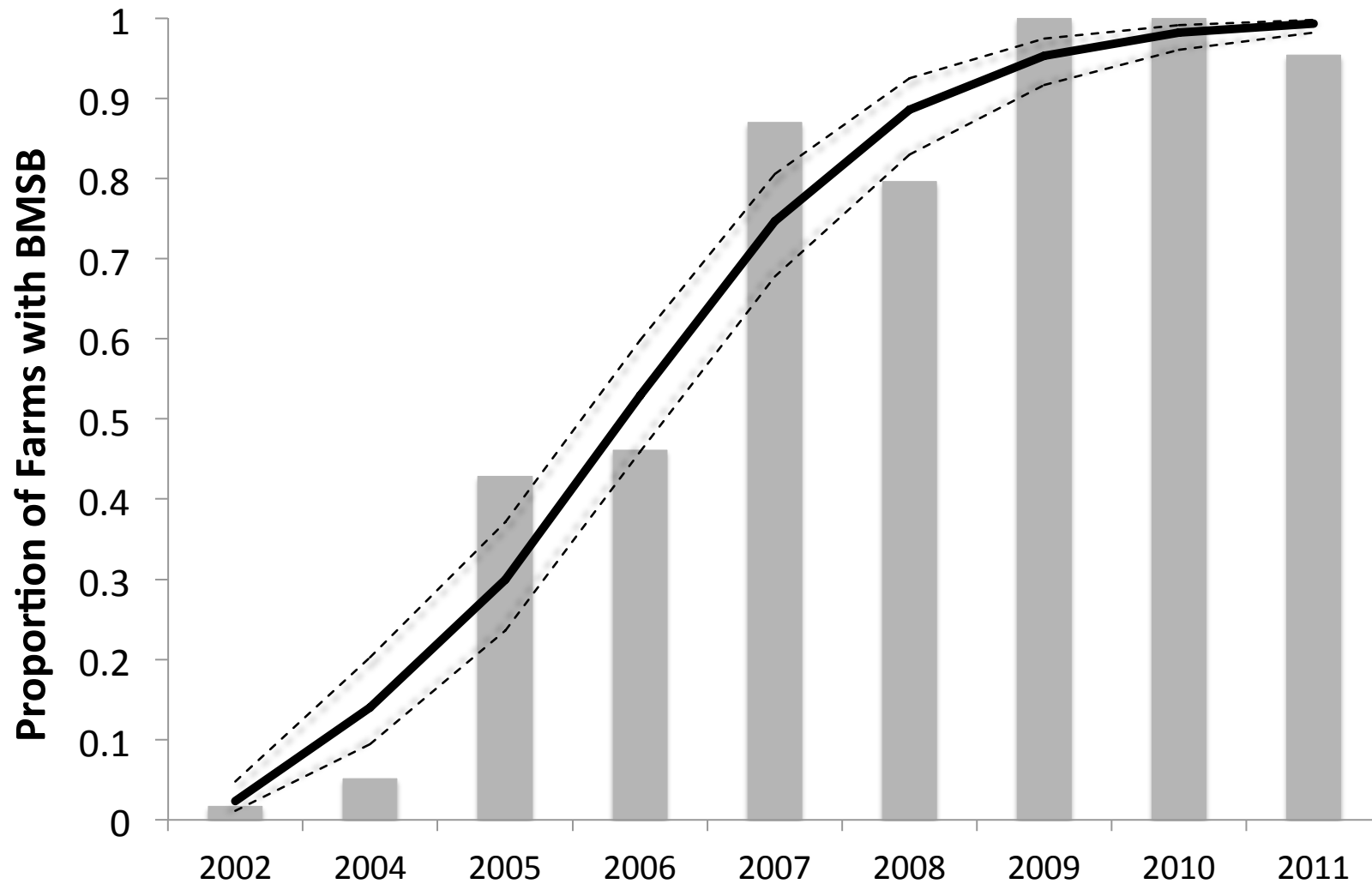


- Undetected
- 1-20 Detected
- 21-50 Detected
- 51-100 Detected
- ≥ 100 Detected

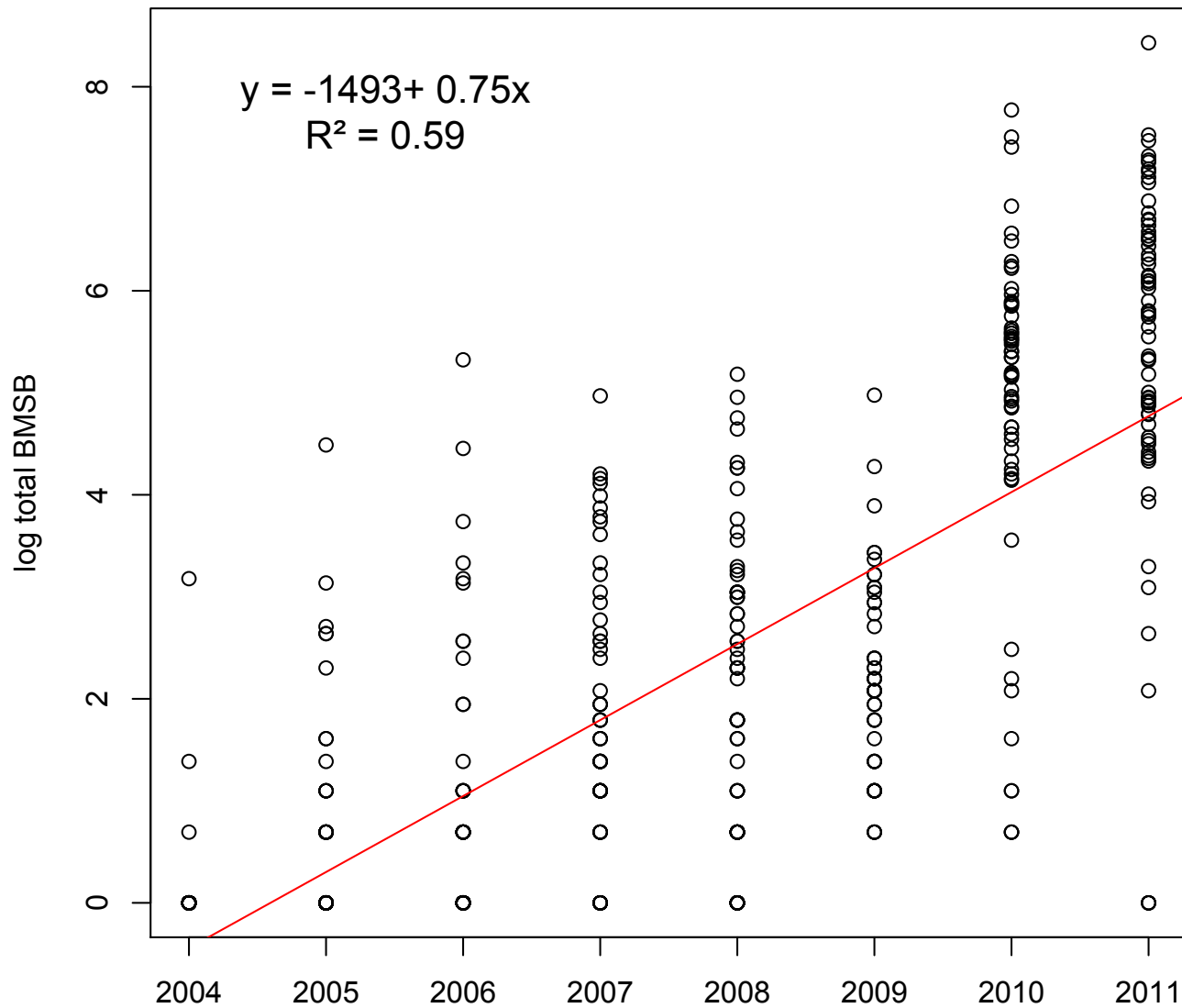
State-wide BMSB Population



BMSB Rate of Spread

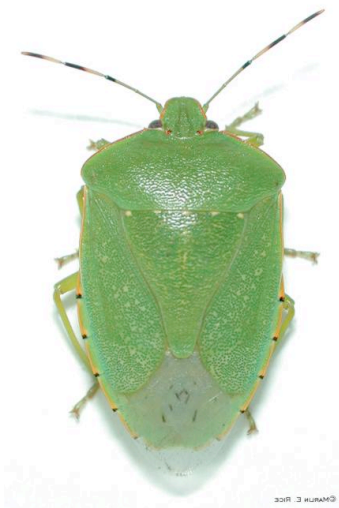


Rate of Population Increase

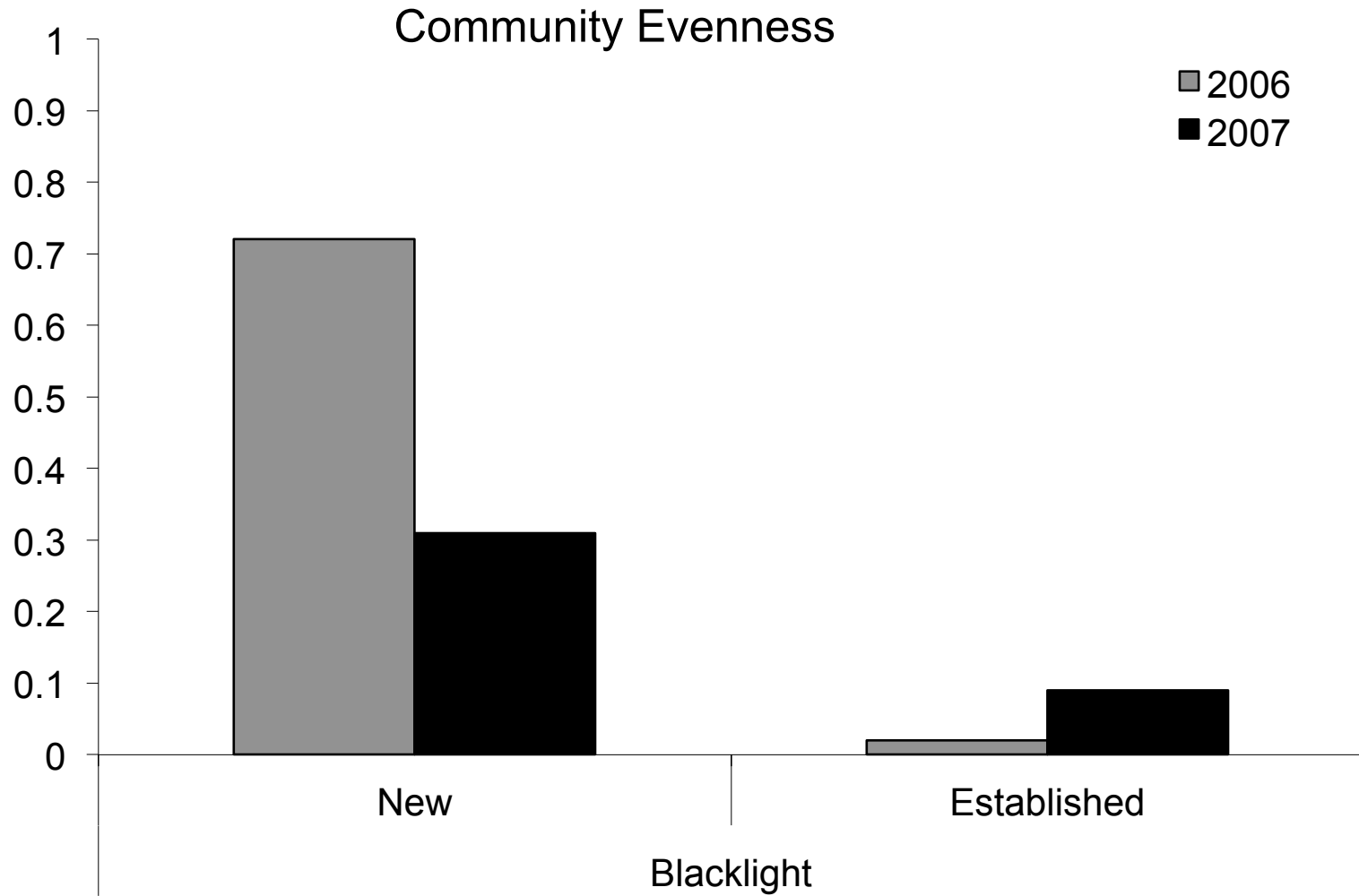


Native Stink Bug Species

- Green stink bug (*Acrosternum hilare*)
- Brown stink bugs (*Euschistus servus*, *E. tristigma*, *E. variolarius*)
- Predatory stink bugs (*Podisus* spp.)
- Other (*Brochymena* sp. *O. pugnax*, *Meneclis insertus*, *Holcostethus*, *Murgantia histrionica*, *Banasa* sp., *Thyanta* sp.)
- Previously shown that evenness and richness decline within one year of BMSB introduction



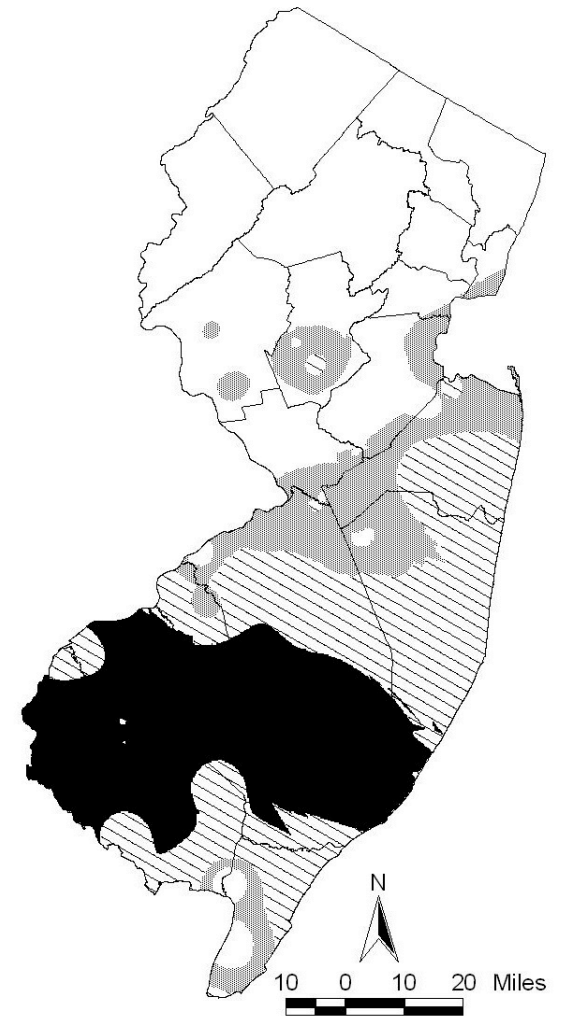
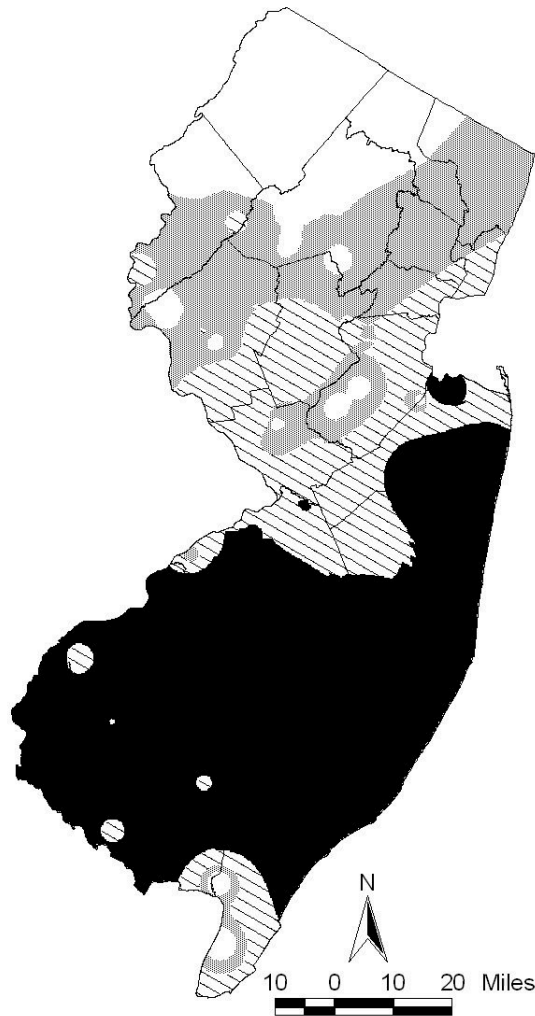
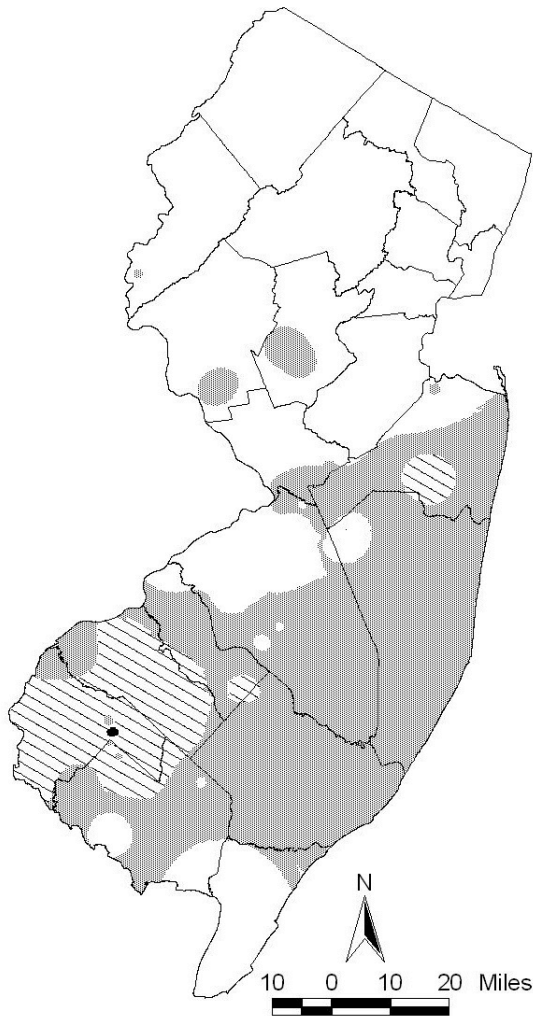
Ecological Index



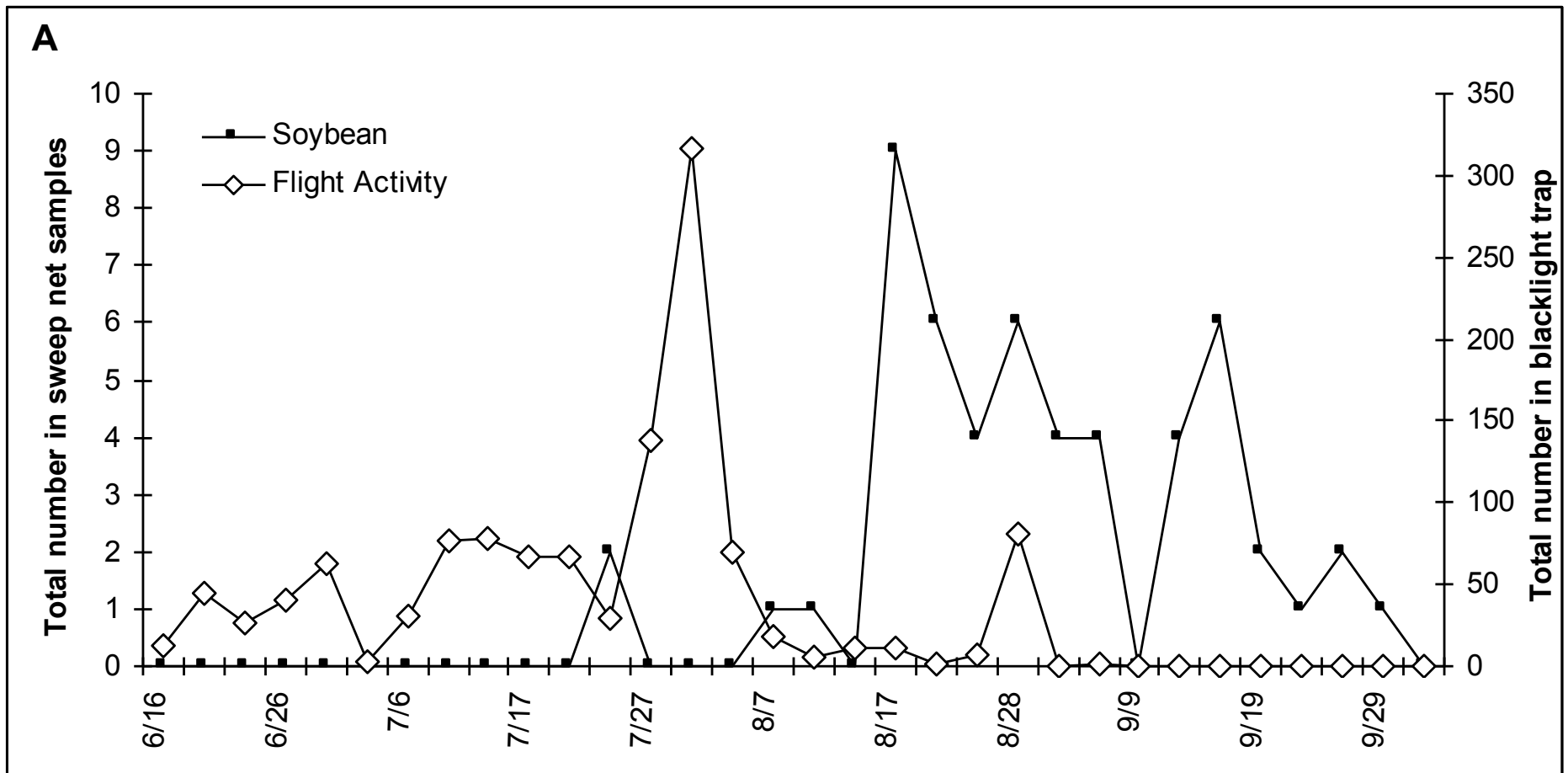
Use of Blacklight Traps

- ✓ Detect new populations
- ✓ Rate of spread
- ✓ Ecological impact
- IPM tool
 - Identify background population pressure
 - Identify movement into crops
 - Early season monitoring

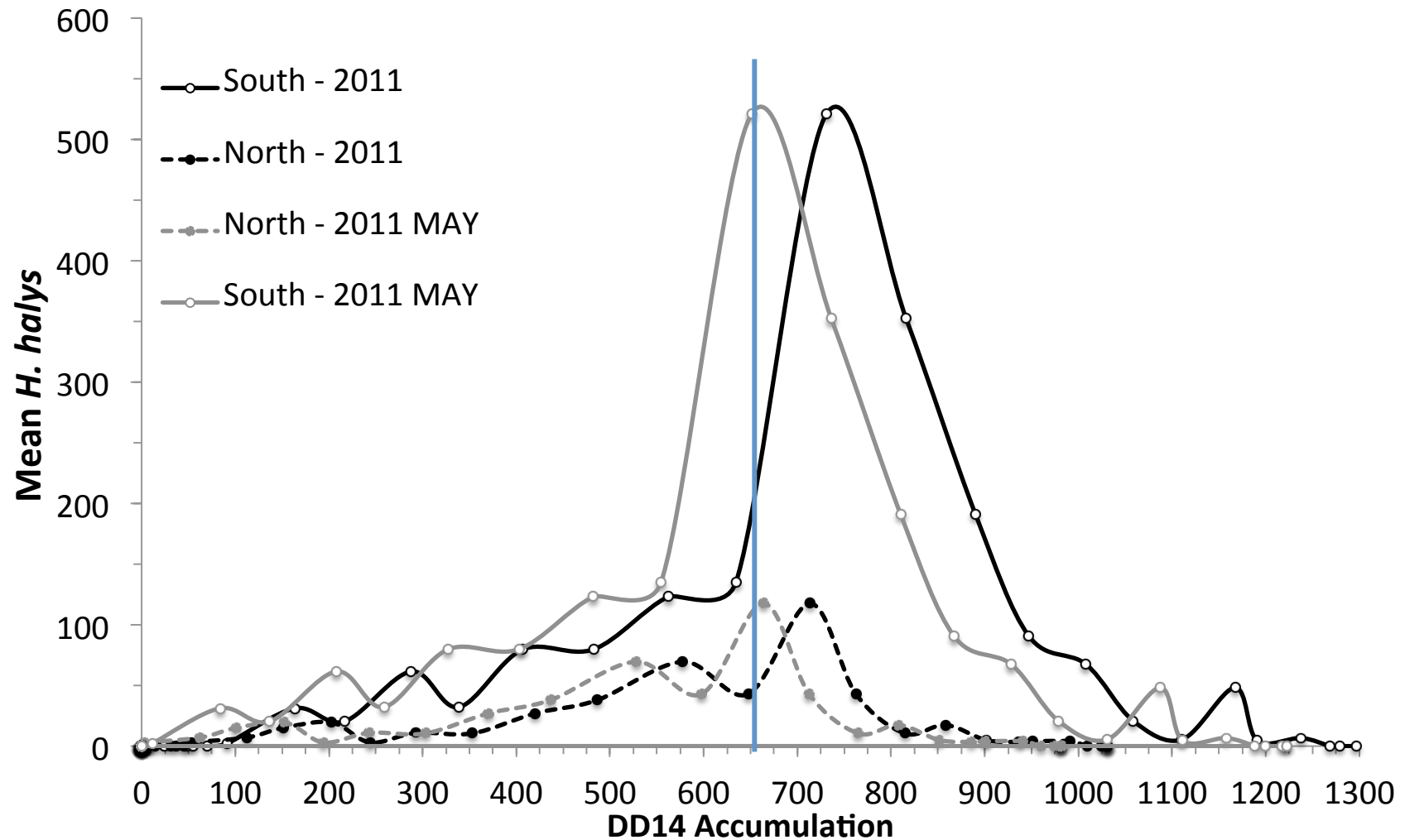
Mean Nightly Catch



Movement Into Crops

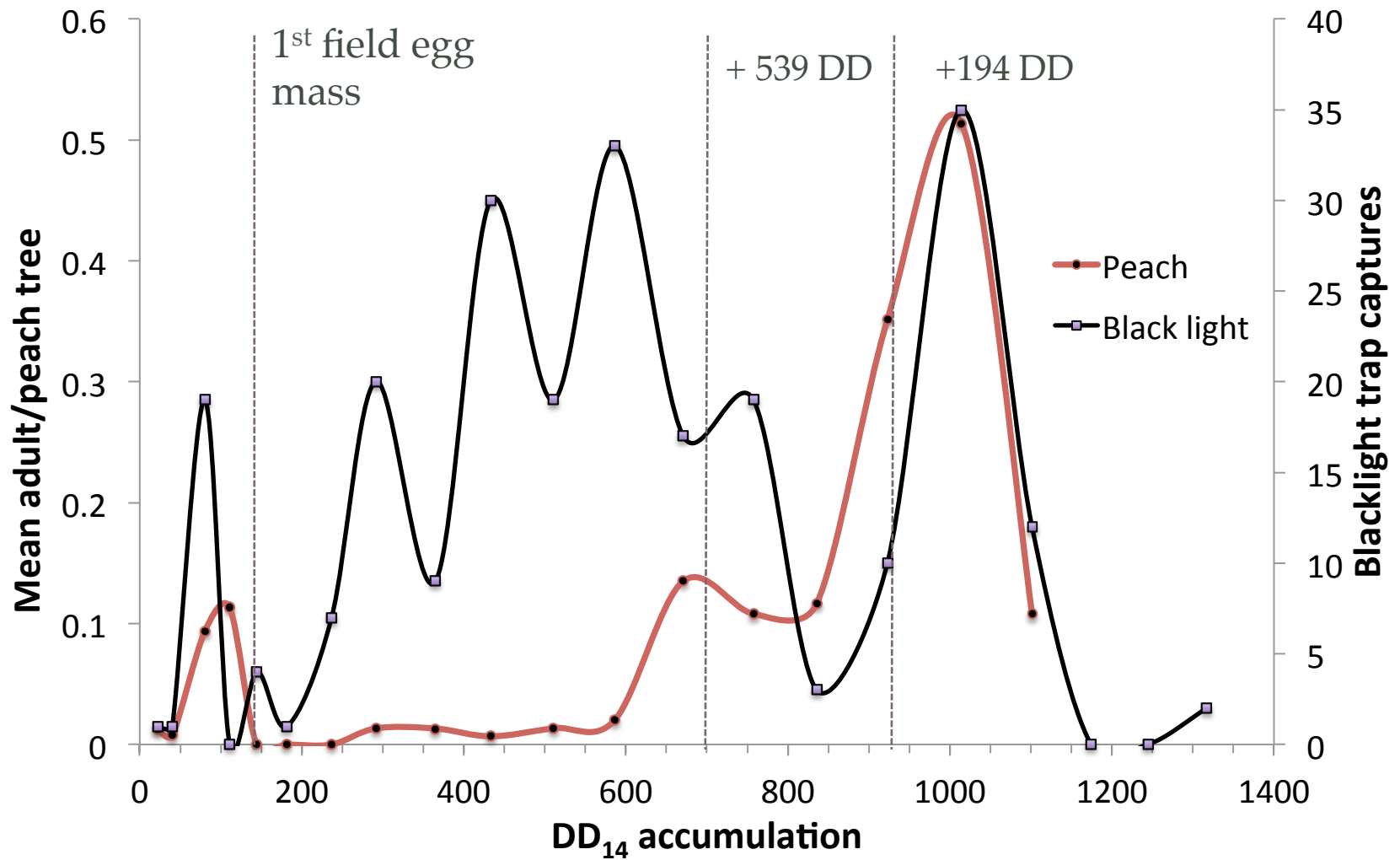


Identifying Biofix



Nielsen and Hamilton. 2009 *Ann. ESA* 102; Nielsen et al. submitted

Phenological Model



Use of Blacklight Traps

- ✓ Detect new populations
- ✓ Track Spread
- ✓ Ecological impact
- ✓ IPM tool
 - ✓ Identify background population pressure
 - ✓ Identify movement into crops – peak populations in tree fruit; movement into soybean after population peak
 - ✓ Early season monitoring – early trap captures coincide with first adults in orchard; biofix of Jan 1

- Kris Holmstrom
- Joe Ingerson-Mahar
- Dan Ward
- Amy Willmott

