Contributing to the Science of Pesticide Risk Assessments for Pollinators

Environmental Law Institute

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on behalf of the Pollinator Research Task Force

POLLINATOR RESEARCH TASK FORCE

PRTF History and Purpose

- Established in 2015
- To further improve testing and pesticide risk assessment approaches for pollinators as the science continues to evolve
  - Review and summarize existing knowledge
  - Develop new data sets
  - Develop/improve/validate test methods and risk assessment tools
- Prioritize projects through consultation with US EPA and Health Canada PMRA

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PRTF is comprised of 8 member companies

- BASF Corporation
- Bayer CropScience LP
- Corteva Agriscience
- FMC Corporation
- Mitsui Chemicals Agro, Inc.
- Syngenta Crop Protection, LLC
- UPL NA Inc.
- Valent U.S.A. LLC

Projects are highly collaborative among PRTF members and independent laboratories
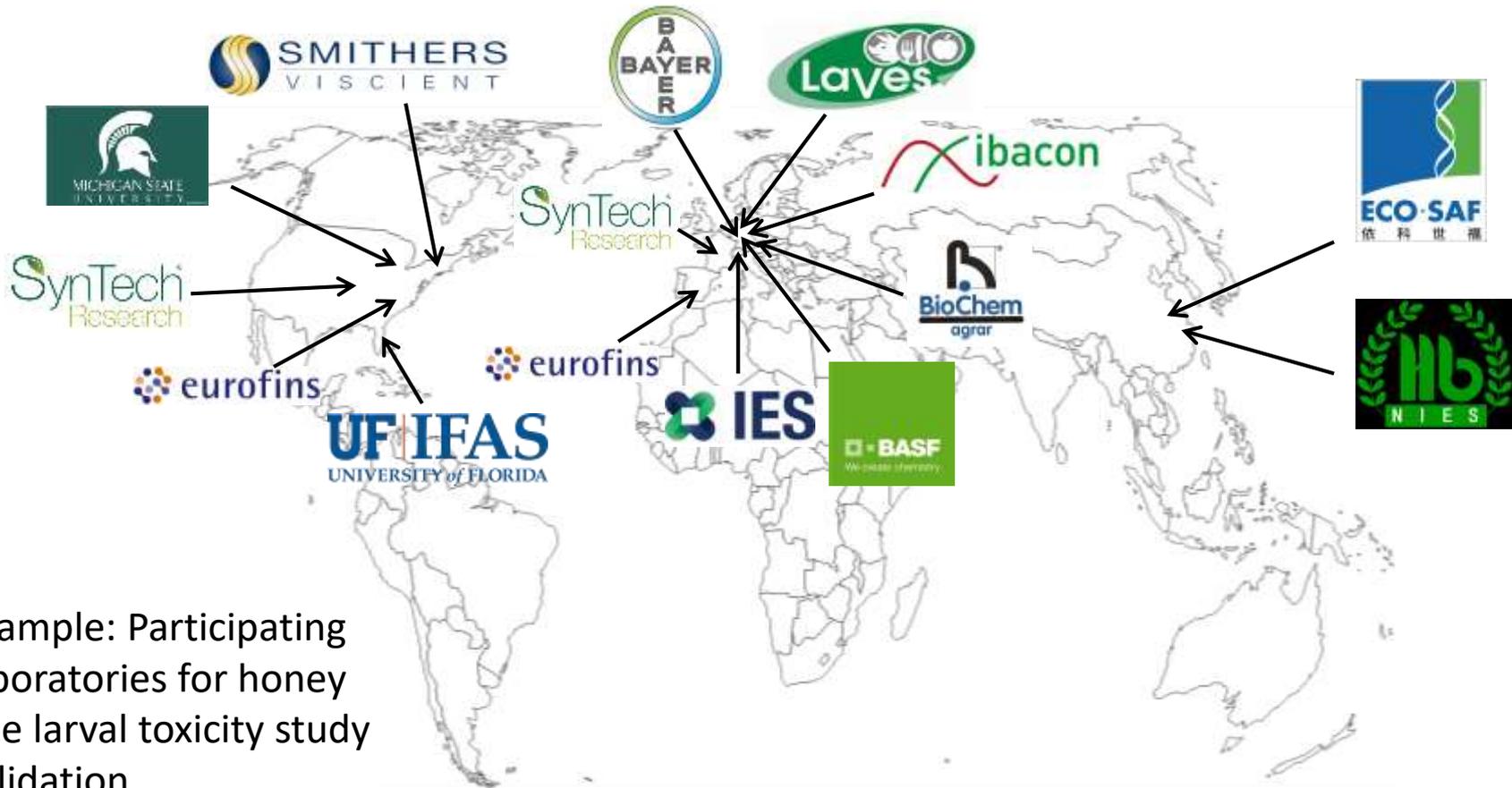
Example: Participating laboratories for honey bee larval toxicity study validation

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Many of the projects directly relate to the current EPA regulatory assessment framework

EPA BeeREX v.1.0

- Validation of honey bee larval toxicity bioassay

- Increase predictiveness of "residual toxicity of foliage" bioassay

- Contribution of guttation water as an exposure route

- Refinement of nectar consumption estimate of an adult forager

- Default residue estimates in nectar and pollen following a foliar or soil application

The PRTF has conducted diverse projects to fulfill our mission

- Laboratory Studies and Endpoints
  - Investigating alternative agents for chronic honey bee studies
  - Relevance of the weight of emerged bees as a regulatory endpoint in the chronic larval honey bee toxicity study
  - Comparison of larval acute and chronic endpoints for redundancy and relevance to risk assessment
  - Comparison of acute endpoints between formulated products and active ingredients

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The PRTF has conducted diverse projects to fulfill our mission (cont.)

- Population Modeling
  - Conducted model simulations to improve predictions of overwintering colony survival
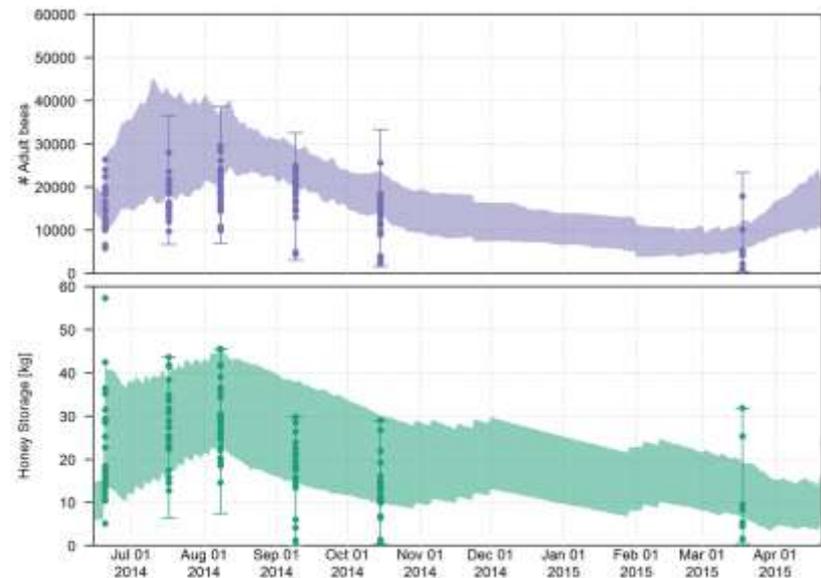
BEEHAVE model: Adaptation to North America and over-wintering

- Calibrated BEEHAVE model with North American specific data sets from field study controls

- Evaluated predictions of over-winter colony survival and strength

- Determined factors affecting predictability

- Considered role of modeling in pesticide risk assessment based on comparisons with field data sets

- Two papers accepted for publication in *Environmental Toxicology and Chemistry*

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The PRTF has conducted diverse projects to fulfill our mission (cont.)

- Exposure Assessment
  - Whole colony consumption of nectar and pollen: lit review
  - Non-*Apis* and native bee exposure workshop

Characterizing how non-*Apis* bee exposure differs from the honey bee

- Workshop hosted by US EPA in January 2017
- PRTF was part of a multi-stakeholder organizing committee and participant
- Goal to understand and identify potential pesticide exposure to native or non-*Apis* bees *vs*. honey bees
- Six resulting publications
  - Environmental Entomology
  - Open Access, Dec. 2018
  - Identified research needs

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Summary and Conclusions

- The PRTF has successfully addressed several areas to improve the North American pesticide risk assessment process for pollinators.

- Consultation with the North American Regulatory Authorities and collaboration with external partners have been essential

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Wisk, J. and D. Schmehl 2021. "Pollinator Research Task Force – Contributing to the Science of Pollinator Risk Assessment for Pesticides" *in* D. E. Barnekow and M. E. Krolski, Eds. Data Generation for Regulatory Agencies: a collaborative approach. ACS Publications.

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