The Status of Classical Biological Control of Weeds: One Step Forward and Two Steps Back

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Ghosts of Biocontrol Past!

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Face flies vs. shrimp – what did you think we'd eat?

Ghosts of Biocontrol Past!

Created negative perceptions about the safety of releasing biocontrol agents!

Ghosts of Biocontrol Present!

Fear no weevil!

Ghosts of Biocontrol Present!

Ghosts of Biocontrol Present!

Strange Days on Planet Earth!

How do we ensure that our biocontrol agents are safe for release?

TAG - The Technical Advisory Group for Biological Control Agents of Weeds

- **Provides guidelines for the host-specificity testing of phytophagous biocontrol agents**
- **Reviews petitions for the field release of biocontrol agents and makes a recommendation to APHIS-PPQ**

Seed head weevil on musk thistle

Non-target impacts on native *Cirsium spp.*

Non-target impacts of the seed head weevil, *Rhinocyllus conicus* on native *Cirsium* species – Conservation Biologists and Environmentalist beat up on us in the literature for awhile (even though native *Cirsium* spp. were identified in original petition for field release as being potential hosts! This slowed number of permits submitted and approved)!☹

Strong (1997) – Fear no weevil?
Louda (2000) - Predicting non-target ecological effects of BC agents: evidence from *R. conicus*
Howarth (2000) – Non-target effects of BC agents

Heightened Concerns for Ag. Bioterrorism and Biosecurity

Following 911, APHIS-PPQ invoked a prohibition on hand-carrying biological control organism.

- Devastating to some biocontrol organism (especially small, fragile BC agents that needed to be hand-carried).

- After pressure from Federal agencies, LGU scientists, professional societies, and others, APHIS-PPQ rescinded the prohibition on hand-carrying.

Recommendations: Internal Management Review of APHIS-PPQ Permitting Process (Feb. 9, 2006)

- Rescission of prohibition on hand-carrying and bonded carrier requirement
- Establish a Permitting Board of Advisors
- Improve customer service
- Regulatory reform

- **BOA Regulatory Change Working Group (RCWG)**

  - **We recommended changes to Plant Protection Act of 2000**
  - **Incorporated more BC language**
  - **Recommended a more risk-based regulatory system, with more regulatory oversight for new BC agents that we know little about, and less oversight for those already established with a proven record of safety.**

APHIS proposed changes to the regulatory process in a Proposed Rule in 2009: Environmental Impact Statement; Movement of Plant Pests, Biological Control Organisms, and Associated Articles

Following the Proposed Rule, Public Comment, input from RCWG, and Review by OGC - Resulted in some semblance of a risk-based system for BC agents, which is in place today!

Other Issues:

- Shipping Labels - problematic for natural enemies; read: "Live Plant Pests and Pathogens"
- Caused angst with commercial carriers!

- As a BOA member, I recommended to APHIS that they change the shipping label to something more benign: It was changed to "Living Regulated Organisms"

- Access and Benefits Sharing – some countries are reluctant to let natural enemies leave their country (e.g., Argentina; sometimes China and India).

Section 7 Consultations

- Use to be invoked only when an endangered species or its critical habitat was potentially affected
- Now, all new BC agents go through Section 7 Consultations

For many years, Section 7 Consultations were handled masterfully by John Fay with USFWS, who was an expert on the Endangered Species Act (ESA) and the Sect. 7 Consultation Process

Following his retirement, the Section 7 Consultation process ground to a halt and petitions for new BC agents of weeds stalled in USFWS, as the expertise and knowledge to make informed decisions about new BC agents of weeds was not available in USFWS.

Lawsuit filed against USDA and APHIS-PPQ from Center for Biological Diversity and the Mericopa Audubon Society regarding the Impact of the *Diorhabda* beetles on saltcedar and potential non-target impacts on the southwestern willow fly catcher in 2013

As a result APHIS-PPQ invoked an Injunction against the inter-state movement of the *Diorhabda* beetles.

Negatively affected the rate at which BC of weed agents were processed and approved for field release (e.g. no petitions submitted in 2017)

Pressure from the BC Community (3 BC Multistate Committees – Submitted letters of concern to USFWS and APHIS-PPQ Administrators), Resolutions, white papers and refereed journal articles from ISAC helped encourage USFWS and APHIS-PPQ to streamline the permitting process

Positive Developments:

- **APHIS-PPQ just hired Jeff Herod ¾ time to focus on Section 7 Consultations for BC agents of weeds.**

- **Just met with APHIS-PPQ BC/Permitting Leadership, and ARS leadership; Discussed the negative consequences of lack of decision-making from APHIS-PPQ and USFWS; offered to help with the decision-making process by providing information and expertise from the LGU System and ARS if needed.**

Stakeholder Feedback - *Consequences of Delayed or No Regulatory Action on New Biocontrol of Weed Agents*:

- **Negative effects on the next generation of scientists (why work on biocontrol when you'll never get approval for your new biocontrol of weed agent(s))?**
- **Biocontrol programs languishing due to the lack of decisions on the new agents.**
- **Biocontrol project sponsors bailing from lack of progress on the permits.**
- **Increased economic, ecological, and sometimes human health impacts from the weeds, due to lack of approval of biocontrol agents.**
- **The crippling effects on the practice of biocontrol of weeds as one of the most effective, environmentally friendly, and sustainable approaches to the management of invasive weeds.**
- **Delayed action in the approval process affects other people (e.g., the Forest Service may be reassigning a very prominent biocontrol of weed researcher in Montana to work on bark beetles, if the person can't demonstrate that research on new weed biocontrol agents is a viable pursuit).**

- **Delayed action contributes unnecessary risks to human health and other non-target organisms associated with ineffective but repeated widespread herbicide applications for weed targets with inadequate or no biocontrol options.**
- **Delayed action contributes unnecessary nonpoint source pollution from herbicides and associated impacts on non-target terrestrial and aquatic organisms with inadequate or no biocontrol options.**
- **Continued spread of weeds that potentially could have been controlled by the biocontrol agents.**
- **Increased impacts on threatened and endangered species by not approving biocontrol of weed agents.**
- **As a consequence of lack of decision-making on pathogen biocontrol agents of weeds, ARS has redirected research away microbial control agents of weeds.**

Positive Developments (cont.):

APHIS-PPQ mentioned that they have dramatically improved the permitting process by attempting to keep each element of the permitting process on a time-table

- **Briefing the decision-makers on new BC agents**
- **Setting a time-table for Biological Assessments (BAs) for Endangered Species Act compliance and Environmental Assessments (EAs) for NEPA compliance.**
- **The dam is about to break for new BC agents of weeds!**

Status of New BC Agents on Weeds – from Jeff Herod USFWS

Projects:

· **Field release of the psyllid, *Aphalara itadori* (Hemiptera: Psyllidae) for control of Japanese, giant, and Bohemian knotweeds, *Fallopia japonica*, *F. sachalinensis*, and *F. x bohemica*, (Polygonaceae)**

******BA received**

******RO/ FO review complete**

******Letter drafted**

******in HQ review**

Status of New BC Agents on Weeds

- **Field release of a leaf-galling psyllid, *Calophya latiforceps* (Hemiptera: Calophyidae) for control of Brazilian peppertree, *Schinus terebinthifolia*, (Anacardiaceae)**

****BA received

****RO/ FO review complete

****Letter drafted

****in HQ review

Status of New BC Agents on Weeds

- Field release of the thrips, *Pseudophilothrips ichini* (Thysanoptera: Phlaeothripidae) for control of Brazilian peppertree, *Schinus terebinthifolia*, (Anacardiaceae)

****BA received

****RO/ FO review complete

****Letter drafted

****in HQ review

Status of New BC Agents on Weeds

- Field release of the hoverfly *Cheilosia urbana* (Diptera: Syrphidae) for biological control of invasive hawkweeds, *Pilosella species* (Asteraceae)

****BA received

****RO/ FO review complete

****Letter drafting

- Field release of the thrips, *Sericothrips staphylinus* (Thysanoptera: Thripidae) for classical biological control of gorse, *Ulex europaeus*, (Fabaceae)

****BA received

****RO/ FO review complete

****Letter drafting

Status of New BC Agents on Weeds

- (Proposed: start Dec) Field release of *Ramularia crupinae* Dianese, Hasan & Sobhian (Deuteromycotina) for biological control of common crupina, *Crupina vulgaris* (Asteraceae)

  **** Waiting on BA

- (Proposed: start Jan 2018) Field release of a flea beetle, *Bikasha collaris* (Coleoptera: Chrysomelidae), for classical biological control of Chinese tallow, *Triadica sebifera* (Euphorbiaceae)

  **** Waiting on BA

Hence, with these new BC agents likely to be approved, I will have to rename my talk "Two Steps Forward and One Step Back!"

Thank You!