National Invasive Species Council
established via
Executive Order 13112
February 3, 1999

- FICMNEW
- ANSTF
- ITAP

28 Federal agencies!

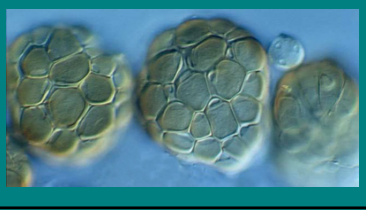
What is ITAP?

Invasive Terrestrial Animals and Pathogens

- **Plant Pathogens**
- **Invertebrates**
- **Vertebrates**
- **Animal pathogens**
- **Systematics**
- **Cross-cutting issues / Protocols / Outreach**

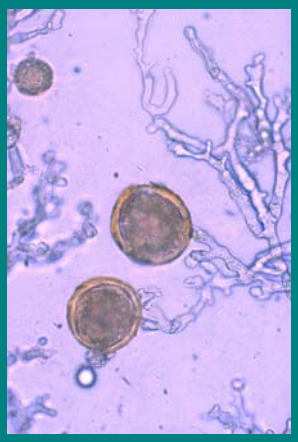
MISSION

The ITAP provides a forum to facilitate communication, collaboration, and efficient resource allocation for Federal agencies with differing roles and responsibilities for protection from invasive species.



Facilitate communication

- **Across agencies**
  - **Articulate agency roles**
  - **Identify key contacts & subject matter experts**
- **Gap analysis**
  - **Expertise**
  - **Knowledge**
  - **Response**
- **Linkages between agencies**
  - **Avoid duplication**
  - **Shared access to expertise**
  - **Catalyze opportunities**



Plant Pathology ITAP Committee Goals

- Expand and mobilize science, technical capabilities, and technology transfer.
- Promote the development and integration of an information network infrastructure for plant pathogens.
- Invigorate communications and public awareness of plant pathogens.
- Catalyze connection, coordination and participation in national and international partnerships.
- Identify and define appropriate human and fiscal resources to address plant pathogen issues.

APHIS Regulated Plant Pest List (RPPL)

52 species of fungi included in RPPL

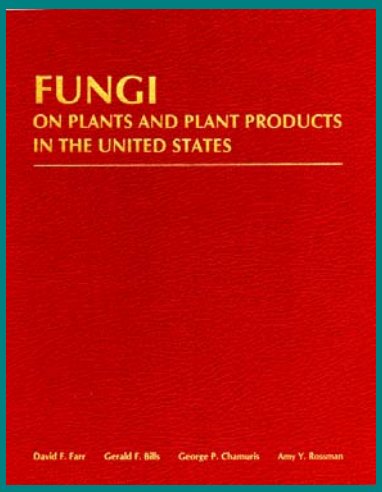
Each species was evaluated for:

1) nomenclature including accurate scientific name and alternate state,
2) host range,
3) geographic distribution, and
4) current state of knowledge.

Resources Used to Evaluate Fungi on APHIS RPPL

- Host range and geographic distribution based on literature reports and specimens
- Nomenclature essential – accurate scientific name and phylogeny

FOPP ca. 12,000 species of fungi in U.S., now 23,163 reported. This and worldwide reports available on-line at:
www.ars.usda.gov/ba/psi/sbml



Thekopsora areolata

Note: Listed by APHIS as *Pucciniastrum areolatum*; Alternate State (Anamorph): *Aecidium strobilinum*
Geographic Distribution: Europe, Asia, Caribbean (Dominican Republic).
Substrate: Aecia on spruce cone scales; telia on leaves of *Prunus* spp..
Disease Note: Heteroecious rust (Fig. 9).
Host Range: Aecial host *Picea* spp. (Pinaceae; telial host *Prunus* spp. (Rosaceae).
Fungal Order: Uredinales
Plant Health Progress 5 May 2006

Fig. 9. *Thekopsora areolata* (left) aeciospores and (right) aecia on a *Picea* sp. cone (photocredit J. Hernandez).

Nomenclator for:

***Thekopsora areolata* (Fr.:Fr.) Magnus 1875**
≡*Xyloma areolatum* Fr.:Fr. 1817
≡*Melampsora areolata* (Fr.:Fr.) Fr. 1849
≡*Pucciniastrum areolatum* (Fr.:Fr.) G.H. Otth 1863
≡*Sclerotium areolatum* (Fr.:Fr.) Fr. 1822
= *Uredo padi* Kunze & J.C. Schmidt 1817 Note: This is presumably a description of the teleomorph; the name is based on the telial host *Prunus padus*.
≡ *Pucciniastrum padi* (Kunze & J.C. Schmidt) Dietel 1897
≡ *Melampsora padi* (Kunze & J.C. Schmidt) G. Winter 1884
≡ *Thekopsora padi* (Kunze & J.C. Schmidt) Kleb. 1900
= *Uredo porphyrogenita* Link 1826 Note: Description on telial host, therefore presumably a teleomorph in an anamorphic genus.
= *Pucciniastrum strobilinum* Liro 1908 Note: Based on *Licea strobilina* Alb. & Schwein. 1805 (anamorph, with a description of the teleomorph added).
≡ *Thekopsora strobilina* (Liro) Jorst. 1925 Note: This name was published as (Albertini & Schweinitz) Jorst. but it was based on an anamorph.
Notes: The epithet "*areolatum*" was sanctioned by Fries; it therefore has priority over the epithet "*padi*". *Uredo padi* Kunze & Schmidt 1817 was based on description of the fungus on the telial host (a holomorphic name in an anamorphic genus, see ICBN Art. 59.6, Ex. 4,5,7). *Licea strobilina* Alb. & Schwein. 1805 was originally classified as a myxomycete, but was based on a description of this fungus on the aecial host. Past authors have asserted that "*strobilina*", the oldest epithet, should be applied to the holomorph (see Liro 1908), however, this is counter to the current Code (ICBN Art. 59.1).

Nomenclator (continued)

Alternate State (Anamorph):
***Aecidium strobilinum* (Alb. & Schwein.:Fr.) Reess 1869**
Note: First author to classify this fungus as a rust.
≡*Licea strobilina* Alb. & Schwein.:Fr. 1805 Note: Originally misclassified as a myxomycete, but the type specimen contains aecial structures.
≡*Perichaena strobilina* (Alb. & Schwein.:Fr.) Fr. 1842 Note: Sanctioned by Fries (misapplied).
≡*Phelonitis strobilina* (Alb. & Schwein.:Fr.) Fr. 1849 Misapplied. Originally published as "*Phelonites*".
≡*Pleosporopsis strobilina* (Alb. & Schwein.:Fr.) Oerst. 1865 Note: Misapplied. Type of *Pleosporopsis*, listed as a dubious genus by Sacc. (III:693). Possibly confused with *Pleosporopsis strobilorum* Oerst. 1865 (not a synonym of *Licea strobilina*).
≡ *Pomatomyces strobilina* (Alb. & Schwein.:Fr.) Oerst. 1864 Note: Type of the monotypic genus *Pomatomyces*.
≡*Rosellinia strobilina* (Alb. & Schwein.:Fr.) Arx & E. Mull. 1954 Note: Misapplied.

Evaluating the Threat Posed by Fungi on the APHIS Regulated Plant Pest List

Divided into Five Groups:

1. Threat to Major Crops Plants and Forest Trees
2. Threat to Horticultural or Crop Plants of Minor Economic Importance
3. Already Established in the U.S.
4. Threat to Crops Not Grown in the U.S.
5. Not Enough Known to Determine Threat

Threat to Major Crop Plants and Forest Trees

Chrysomyxa abietis on *Picea*; Europe, Asia
Chrysomyxa himalensis on *Picea* and *Rhododendron*; Asia
Chrysomyxa rhododendri on *Picea* and *Rhododendron* (telial state already in North America); Europe, Asia
**Cronartium flaccidum* (*Peridermium cornui*) on *Pinus* and alternative hosts; Europe, Asia
**Elsinoë australis* on citrus; South America
Lachnellula willkommii on larch (eradicated from North America); Asia, Europe
**Monilinia fructigena* on apples, pears, and peaches; Europe, Asia, South America
Peronosclerospora maydis on corn; Asia, Australia, South America
**Peronosclerospora sacchari* on sugarcane; Asia, Australia, Central America
Peronosclerospora philippinensis on corn and other grasses (select agent), Asia, Africa
Sclerophthora rayssiae var. *zeae* on corn (select agent), Asia
***Synchytrium endobioticum* on potato (eradicated from US, select agent); Europe, Asia, Africa, North America (Canada)
**Thekopsora areolata* on spruce and *Prunus*; Europe, Asia, Caribbean
Urocystis agropyri on wheat (possibly in US); Europe, Asia, Africa, South America, Australia

*Being considered for NPDRS **Already considered for NPDRS

Threat to Horticultural or Crop Plants of Minor Economic Importance

***Aecidium hydrangeae-paniculatae* (*Puccinia glyceriae*) on *Hydrangea* and *Glycinia*; Asia**

***Aecidium mori* on mulberry; Asia**

***Elsinoe batatas* on sweetpotato; Asia, Australia, Pacific Islands, Caribbean, South America**

***Phialophora cinerescens* on carnation (reports in Canada, OR and CO questionable); Europe, Asia, South America, New Zealand**

***Pseudocercospora timorensis* on sweetpotato; Asia, Australia, South America, Africa**

***Puccinia gladioli* on gladiolus and *Valerianella* (aecial state in western US); Europe, Asia, Africa (Libya)**

***Puccinia horiana* on chysanthemum (outbreaks in US greenhouses eradicated); Europe, Asia, Australia, South America, Africa**

***Pucciniastrum actinidiae* on kiwi; Asia**

***Uromyces gladioli* on gladiolus and other Iridacaeae; Africa, South America**

***Uromyces transversalis* on gladiolus and other Iridaceae; Africa, Australia, South America, North America (Mexico), New Zealand (now in U.S.)**

***Uromycladium tepperianum* on acacia**

Evaluating the Threat Posed by Fungi on the APHIS List of Regulated Plant Pests

Already Established in the U.S.
7 species

Threat to Crops Not Grown in the U.S.
6 species on cacao, coffee & yam

Not Enough Known to Determine Threat
14 species, six known only from type specimen, seven confused, possible synonyms, one not a fungus

APHIS Regulated Plant Pathogens List Summary

Out of the 52 species of fungi listed, 25 should be considered a threat to American major crop plants and forest trees or to horticultural plants or crops of minor economic importance.

Out of the 25 threatening species, almost 60% are rust fungi.

Most of the 25 threatening species occur in Asia and elsewhere (except the two species of *Uromyces* on *Gladiolus;* one now in U.S.)

How to get ahead of the plant pathogens?

- **Need more knowledge of the many pathogens that outside of the U.S.**
- **Need to know more about the pathogens that already occur inside the U.S.**
- **Need accurate knowledge to evaluate the threat posed by pathogens.**
- **Need systematic knowledge for the identification of pathogens including accurate scientific names, host range and geographic distribution.**