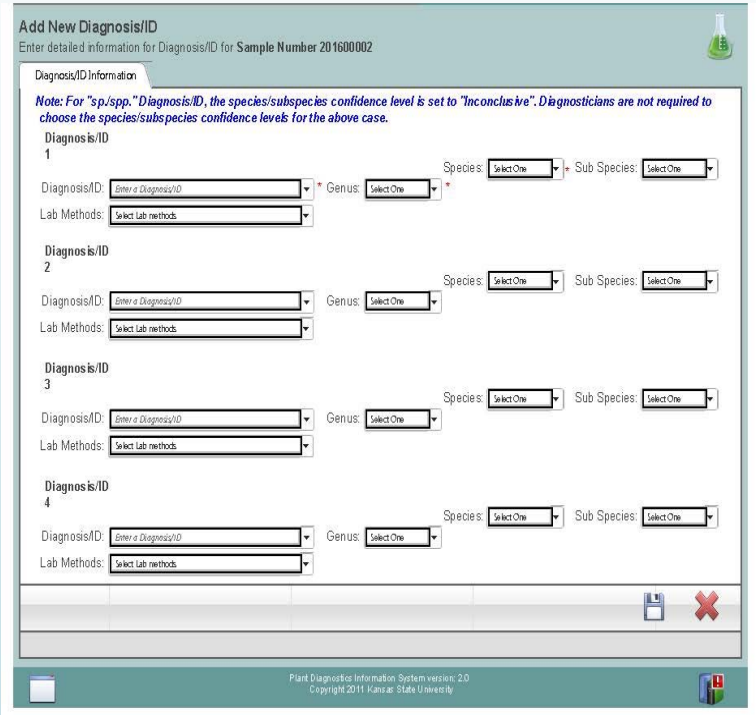
A Conversation on NPDN Diagnostic Confidence Levels and Reporting

The NPDN Diagnostics & National Database Program Area Committees

March 9, 2016 – Arlington, VA

NPDN data management systems

- 3 primary data management systems (DDDI, P-Clinic, and PDIS) and several custom systems
- Select a diagnosis from the national pest list
- Assign confirmation levels using drop down menus in Genus, Species and Sub Species



2015 NPDN IT/Diagnosticians meeting Revelations:

- Interpretation of confidence level definitions varies among NPDN diagnosticians
- Few able to locate definitions on the NPDN website
- Definitions don't apply to all situations encountered by diagnosticians
- Poor understanding of how confidence codes are interpreted by the national repository
- Dissatisfaction with National Repository pest/pathogen mapping data

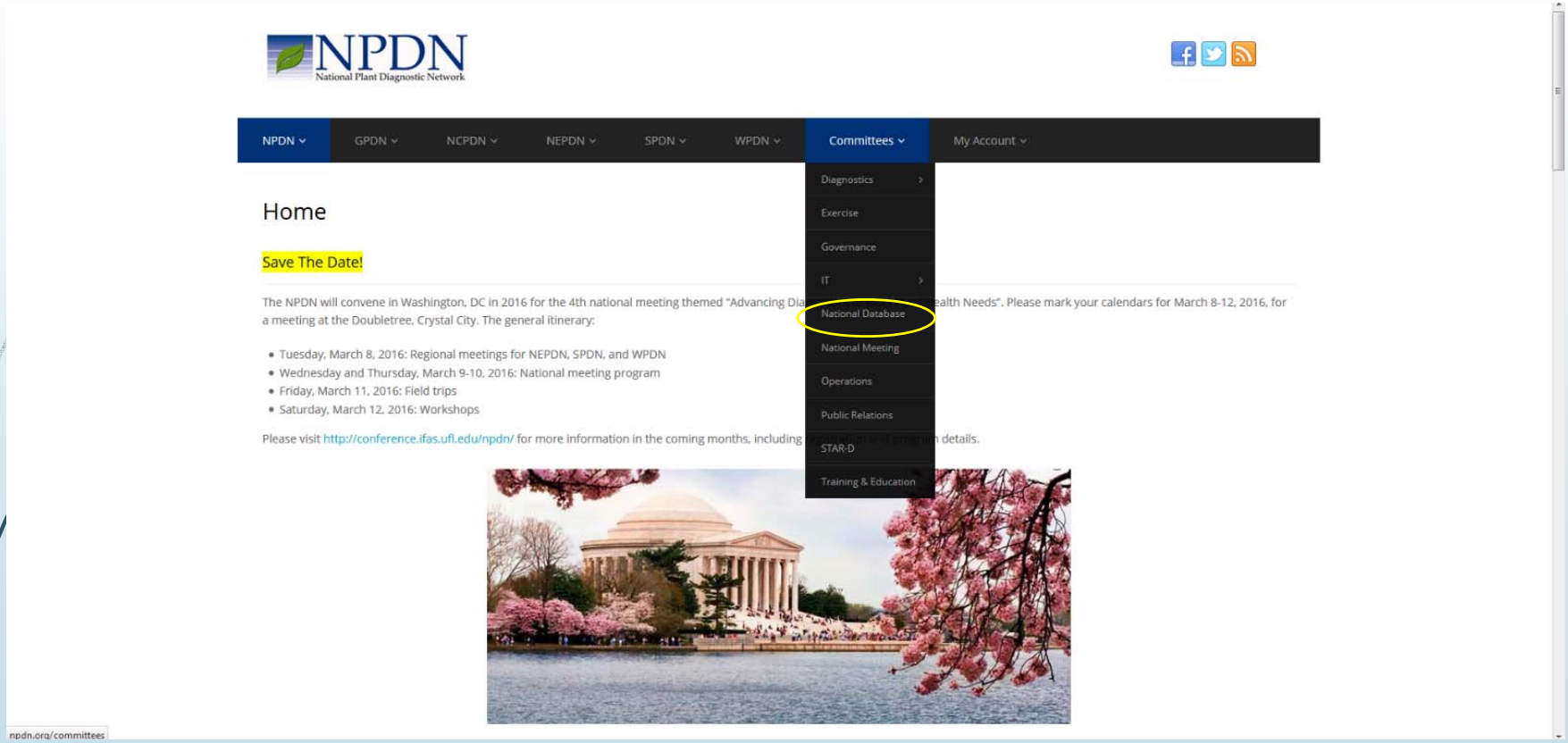
Webinar with NPDN Diagnostics PAC and NPDN National Repository PAC

- Invited Matt Bertone (NC State University entomologist) to participate
- Reviewed current confidence level definitions
- Mike Hill explained how confidence levels are interpreted at the National Repository
- An ad-hoc committee was formed to survey the NPDN membership to determine use, understanding, and satisfaction with the current system from assigning confidence levels to using data generated by the national repository.
- 53 members participated in the survey

What the survey revealed

- NPDN members need more training/education
- Guidelines need to be more obvious on the website
- Improvements to National Data Repository query results

Guidelines on the NPDN website?



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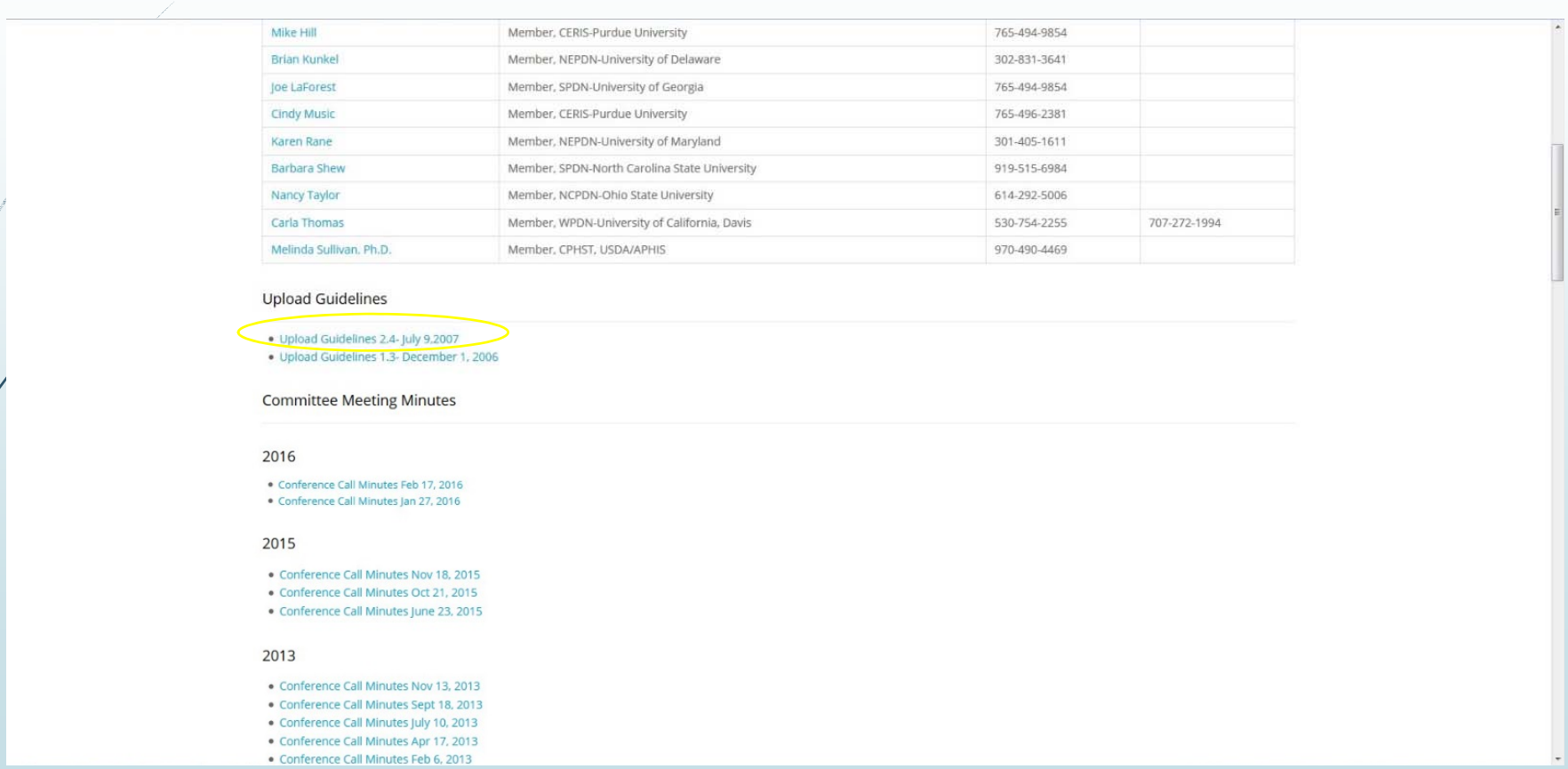

Mike Hill	Member, CERIS-Purdue University	765-494-9854	
Brian Kunkel	Member, NEPDN-University of Delaware	302-831-3641	
Joe LaForest	Member, SPDN-University of Georgia	765-494-9854	
Cindy Music	Member, CERIS-Purdue University	765-496-2381	
Karen Rane	Member, NEPDN-University of Maryland	301-405-1611	
Barbara Shew	Member, SPDN-North Carolina State University	919-515-6984	
Nancy Taylor	Member, NCPDN-Ohio State University	614-292-5006	
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Melinda Sullivan, Ph.D.	Member, CPHST, USDA/APHIS	970-490-4469	

Upload Guidelines

- Upload Guidelines 2.4- July 9,2007
- Upload Guidelines 1.3- December 1, 2006

Committee Meeting Minutes

2016

- Conference Call Minutes Feb 17, 2016
- Conference Call Minutes Jan 27, 2016

2015

- Conference Call Minutes Nov 18, 2015
- Conference Call Minutes Oct 21, 2015
- Conference Call Minutes June 23, 2015

2013

- Conference Call Minutes Nov 13, 2013
- Conference Call Minutes Sept 18, 2013
- Conference Call Minutes July 10, 2013
- Conference Call Minutes Apr 17, 2013
- Conference Call Minutes Feb 6, 2013

NPDN Confidence Levels

- **Confirmed** The diagnosis was derived using approved molecular technologies, serological testing and/or morphological observations which allowed for the **confirmation** of the organism to Genus, species and/or race or pathovar level.

- **Not Detected** The sample was submitted as a suspect sample or as part of survey project. The pathogen was not detected on this sample at this time using approved molecular technologies, serological testing and/or morphological observations.

- **Suspected** Diagnostic symptoms of the pathogen were present but evidence of the pathogen could not be confirmed at this time. This term may also be used at the species level if confirmations can not be made. This term may also be used with abiotic entries.

- **Inconclusive** Although a suitable sample was received, a reliable result could not be achieved. For example, the test kit may have not worked correctly and there was no sample material remaining to perform the test again. Or, no DNA was detected in a PCR analysis. Inhibitors may have been present in the sample. A second attempt may have been made with the same results. The only conclusion is to label the sample as inconclusive.

National Repository

Pest Genus	Genus Confidence	Pest Species	Species Confidence	Overall Confidence	Comments
Phythophthora	Confirmed	sp./spp.	Confirmed	**Confirmed**	When species is sp./sp
Phythophthora	Suspected	sp./spp.	Confirmed	**Suspected**	When species is sp./spp. confirmation only reported to genus level!
Phythophthora	Not Detected	sp./spp.	Confirmed	**Not Detected**	When species is sp./spp. confirmation only reported to genus level!
Phythophthora	Inconclusive	sp./spp.	Confirmed	**Inconclusive**	When species is sp./spp. confirmation only reported to genus level!
Phythophthora	Not Detected	ramorum	Confirmed	**Not Detected**	If genus is "Not Detected" t
Phythophthora	Not Detected	ramorum	Suspected	**Not Detected**	If genus is "Not Detected" t
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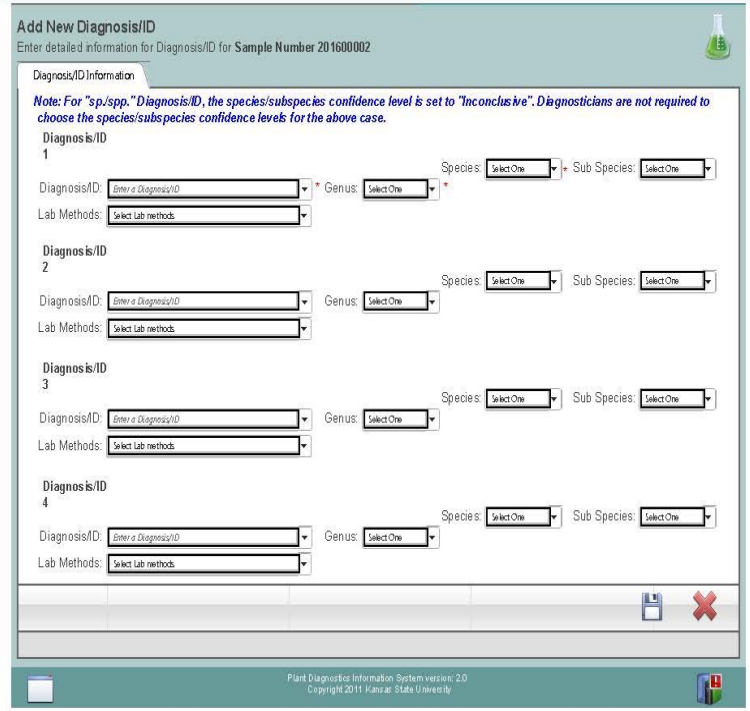
Phythophthora	Confirmed	ramorum	Confirmed	**Confirmed**	Report to lowest level (species, sub-species if populated)
Phythophthora	Confirmed	ramorum	Suspected	**Suspected**	Report to lowest level (species, sub-species if populated)
Phythophthora	Confirmed	ramorum	Not Detected	**Not Detected**	Report to lowest level (species, sub-species if populated)
Phythophthora	Confirmed	ramorum	Inconclusive	**Inconclusive**	Report to lowest level (species, sub-species if populated)

When there is no species (species ID is sp./spp.) then the confirmation level assigned to the diagnosis is what was reported at the genus level.

When confirmation levels are assigned to both genus and species, then the diagnosis is reported at the lowest confirmation level assigned.

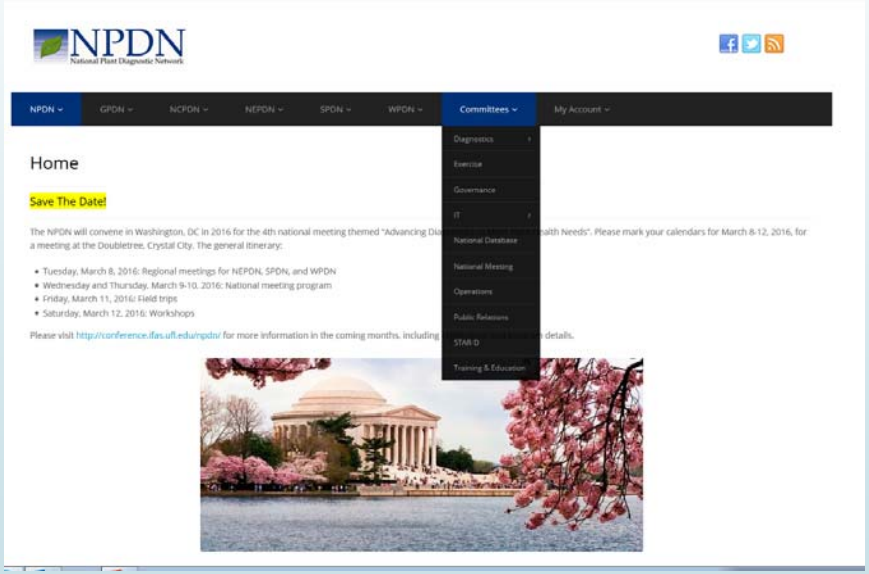
What if the identification is only to family or order?

- The Diagnosis/ID will be *Latin*Family
- Confirmation level for Family or Order is accomplished by selecting a level for the Genus field.



Suggestions from the Diagnostics and National Repository PACs

- Diagnostician's Toolbox
  - Make available on the NPDN Member's only homepage
- Contents
  - Upload guidelines
  - Training resources
- Challenge
  - Volunteers to develop training resources



Suggestions from the Diagnostics and National Repository PACs

- Confusion over assigning confidence level to Family/Order
  - Education
  - Instructions that appear when cursor is hovered over Genus box during data entry
- Improvements to National Repository query system (all raw diagnostic data is in the system)

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Changes?

- The current definition focuses only on test results.
- What about abiotic issues when there isn't enough information to warrant a confirmation level of Suspected?

Inconclusive

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Undetermined

- Education?
- Create a new definition?
  - When NPDN started there were 6 confidence level definitions, including Undetermined. Currently there are 4 definitions – Undetermined is not one of them.

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