The Interagency Food Safety Analytics Collaboration (IFSAC): Moving Forward Together

IFSAC Webinar Presented by,

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Food Safety Analytics

- **Large scope of activities, e.g.,**
  - Estimates of the incidence of foodborne illnesses
  - Determining trends in foodborne illnesses or food contamination
  - Economic Analyses
- **Does not include**
  - Outbreak investigation
  - Traditional Risk Assessment
    - Interagency Risk Assessment Consortium
- **According to agency needs, will concentrate on**
  - Attributing illness, hospitalizations and deaths to food commodities

Our Approach

Interagency collaboration which:

- Builds on a history of working together on source attribution
- Applies advances in source attribution methods
- Leverages knowledge, expertise and data among agencies
- Builds an efficient structure guided by strategy
- Prioritizes communications and stakeholder input

Build on a History of Source Attribution

- **Outbreak Investigations**
  - *E. coli* O157 infections from ground beef
  - *Salmonella* Enteritidis infections from eggs
- **Epidemiological studies**
  - Campylobacteriosis from poultry
- **Risk Assessments**
  - Listeriosis from processed meats and cheese

Apply Advances in Source Attribution Methods

- Improved food categories
- Statistical analysis of data from foodborne outbreak surveillance
- Hybrid analysis using outbreak surveillance data and sporadic case-control study data
- The Hald Bayesian model
- Estimates of uncertainty
- Expanded data sources

Leverage Knowledge, Expertise and Data Among Agencies

- Shared environment to develop methodology and conduct analyses
- Apply data from all applicable sources
- Shared results, interpretation and use
- Enhanced policy decisions

Build a Shared Structure and Strategy

- **Steering Committee**
  - 2 members from each agency able to commit resources
  - Annual rotation of chair person among agencies
  - Assess, approve and oversee IFSAC projects
- **Technical Workgroup**
  - Designated group of agency experts and analysts
  - Understand the needs of each agency
  - Develops proposals and plans for IFSAC projects
  - Coordinates IFSAC activities within each agency
- **Project Teams**
  - Assigned agency experts performing specific projects

Planning and Implementation

- **Conducted needs assessment for all three agencies**
  - Responsive to directives, e.g., Food Safety Modernization Act
- **Drafted strategic plan**
  - Short and long term strategy
- **Implementing projects based on plan**
  - Project proposals
  - Project plans
  - Lead agency
- **Existing resources**

Communications and Stakeholder Input

- Series of public meetings, 2010
- Risk Communications Advisory Committee consultation, 2011
- CDC FSMA Surveillance Work Group
- IFSAC public meetings, 2012
- PEW/RWJ Food Safety Forum, 2012
- Web-based information and communications

  www.cdc.gov/foodborneburden/attribution.html
- Stakeholder updates

Select Analytic Projects

- Improving method of classification of foods responsible for outbreaks into food commodities (Spring 2014)
- Shared attribution fractions using tri-agency methodology (updated data, new food categorization) (Spring 2014)
- Strengths and limitations of source attribution estimates calculated from outbreak data (Fall 2013)
- Attribution of *Salmonella* infections to specific food products (Hald model) (Winter 2014)
- Most significant contaminants (FSMA) (TBD)
- Estimating the proportion of *Salmonella* serotype Enteritidis attributable to shell eggs(Summer 2013)

IFSAC Webinars

- Mode of communication with stakeholders
- Today: New food categorization scheme
- Future project updates
- Thank you for your interest!

Improving the Categories Used to Classify Foods Implicated in Outbreaks

An update on a project of the Interagency Food Safety Analytics Collaboration (IFSAC)

An IFSAC Webinar Presented By,
Dana Cole
Enteric Diseases Epidemiology Branch

June 18, 2013

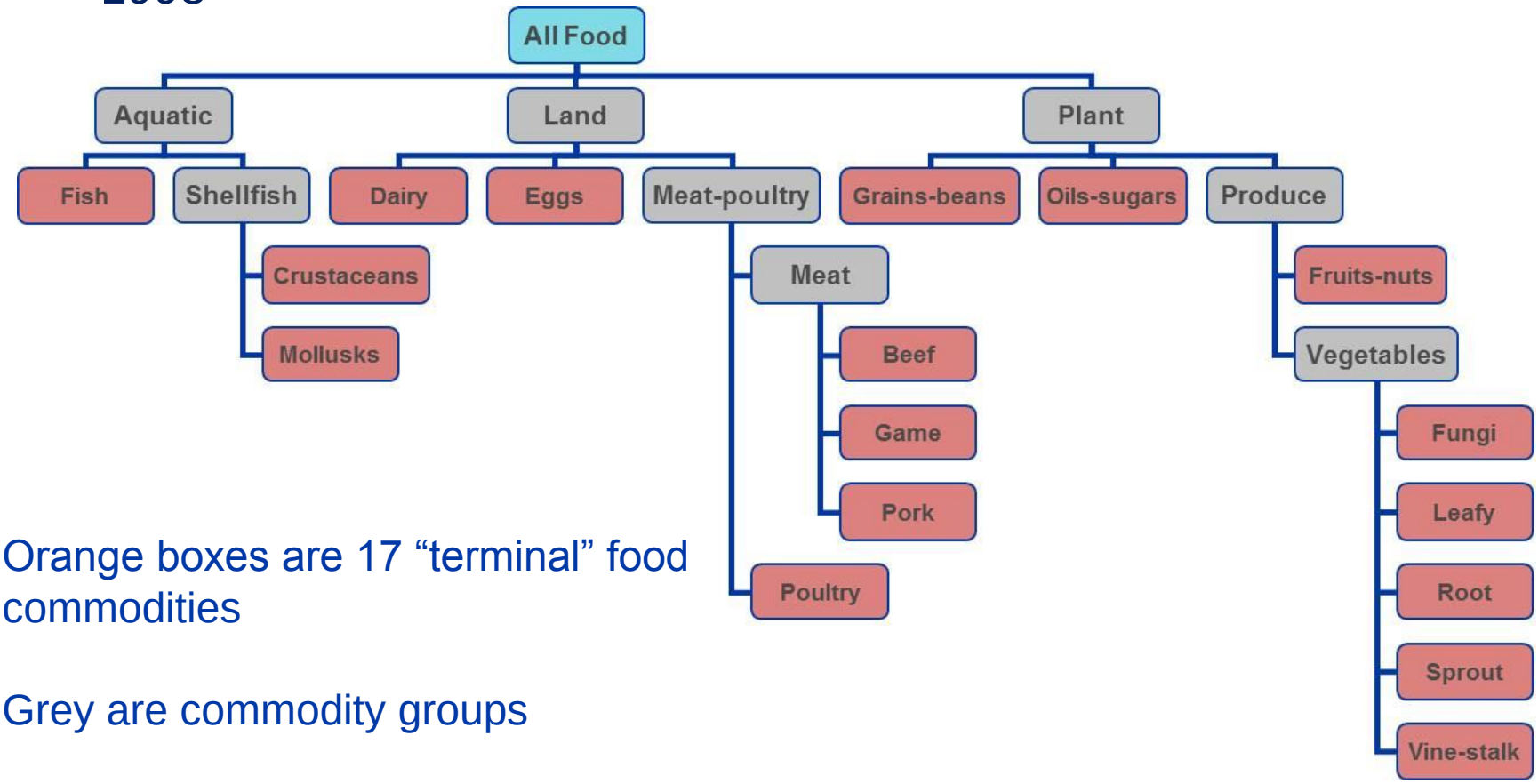
BACKGROUND

- One of the first IFSAC priorities was to improve the way foods implicated in foodborne disease outbreaks are classified
  - Increase the accuracy and utility of food commodities used to generate foodborne illness source attribution estimates used by federal agencies
  - Provide more specific assignments of food vehicles to food commodities
    - Reflect FDA and FSIS' regulatory classifications of food
    - Better reflect production practices and postharvest handling systems
    - Provide more botanically correct categories

IMPROVING THE FOOD CATEGORIZATION SCHEME

Background

- Existing food categorization scheme used since 2009 (Painter et al., 2009)
- These 17 “terminal” commodity categories are used to classify many of the over 2,000 foods that have been implicated in outbreaks since 1998



Orange boxes are 17 “terminal” food commodities

Grey are commodity groups

Role of Foodborne Disease Outbreak Surveillance System in source attribution

- CDC's Foodborne Disease Outbreak Surveillance System (FDOSS) is the only national human surveillance system in the U.S. that directly links foodborne illnesses to their food sources.

- Outbreak data have been systematically collected by FDOSS since 1973.

- Information regarding the foods and settings contributing to foodborne disease outbreaks are used to estimate the sources of foodborne disease in the U.S. (source attribution)

What foods are categorized to a commodity?

- Single ingredient foods or implicated foods with multiple ingredients that all belong to the same food commodity
  - T-bone steak -> Outbreak assigned to beef commodity
  - Milk shake -> Outbreak assigned to dairy commodity

- Single contaminated ingredients, when known
  - Chile Relleno -> contaminated ingredient is undercooked egg -> Outbreak assigned to eggs commodity
  - Vegetarian Sandwich -> contaminated ingredient is mung bean sprouts -> Outbreak assigned to sprout commodity

Why is it important to public health and food safety to classify foods implicated in outbreaks?

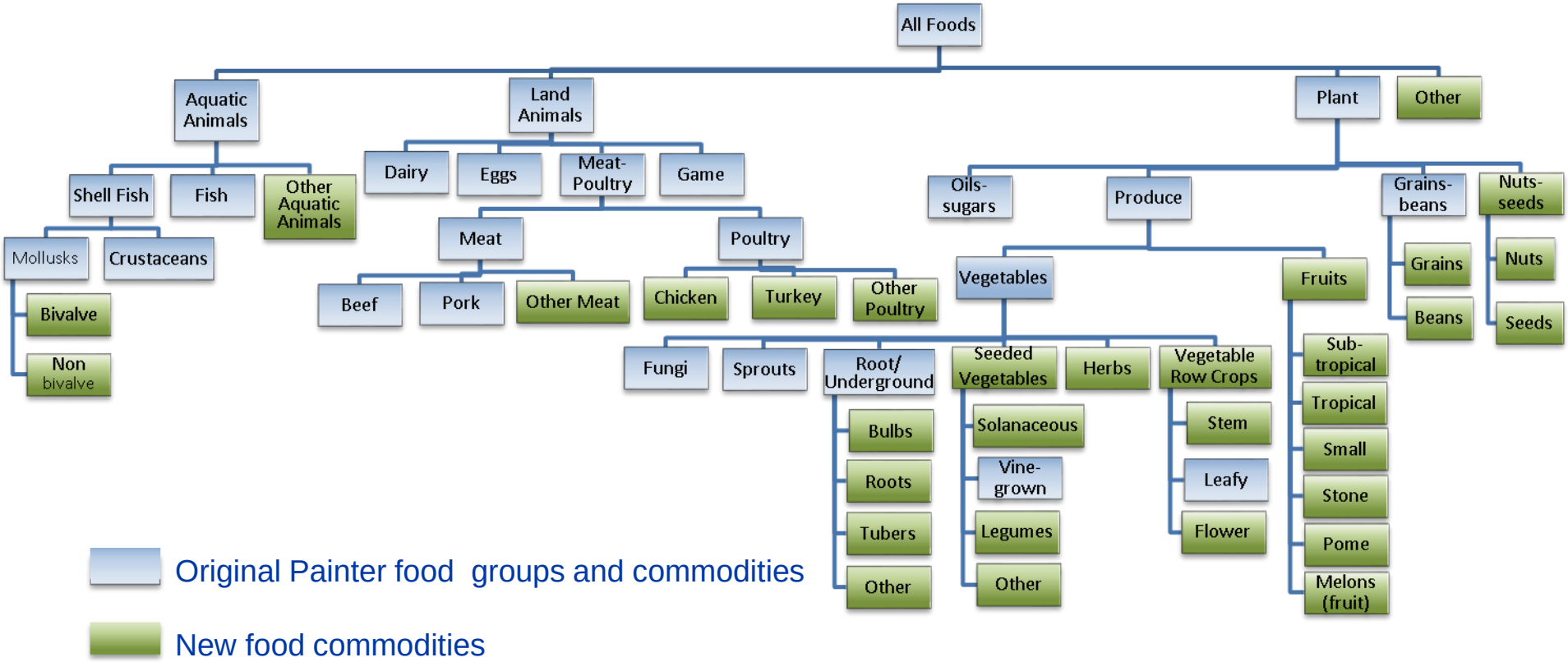
- Information about the food commodities contributing to foodborne illness is needed
  - Public health, food industry professionals, and others need data to target pathogens and food commodities that cause the most foodborne diseases
  - Food safety regulators use source attribution data to inform food safety decision-making:
    - FSIS uses data to set illness reduction goals to achieve Healthy People 2020 pathogen-specific objectives
    - FDA uses data to help determine the “Most Significant Contaminants” in their regulated foods (required by the Food Safety Modernization Act)

What process was used to make changes to the food categorization scheme?

- Feedback provided during 2010 FDA Metrics public meetings, the 2012 IFSAC public meeting, and other stakeholder interactions
- Food categorization scheme built from original Painter scheme
- Project team members consulted with subject matter experts within each regulatory agency
  - Determination of appropriate food categories
  - Classification of specific foods to categories

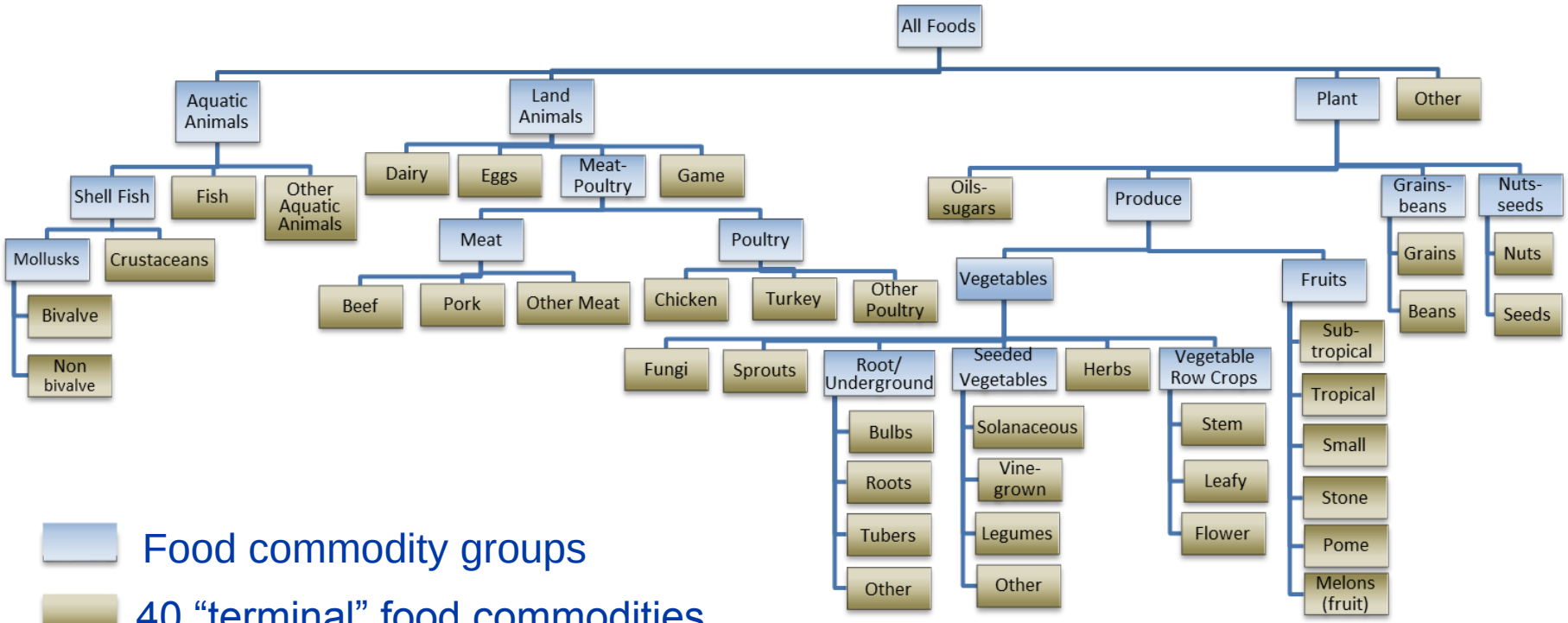
FOOD CATEGORIZATION SCHEME

New food categorization scheme: Food commodities



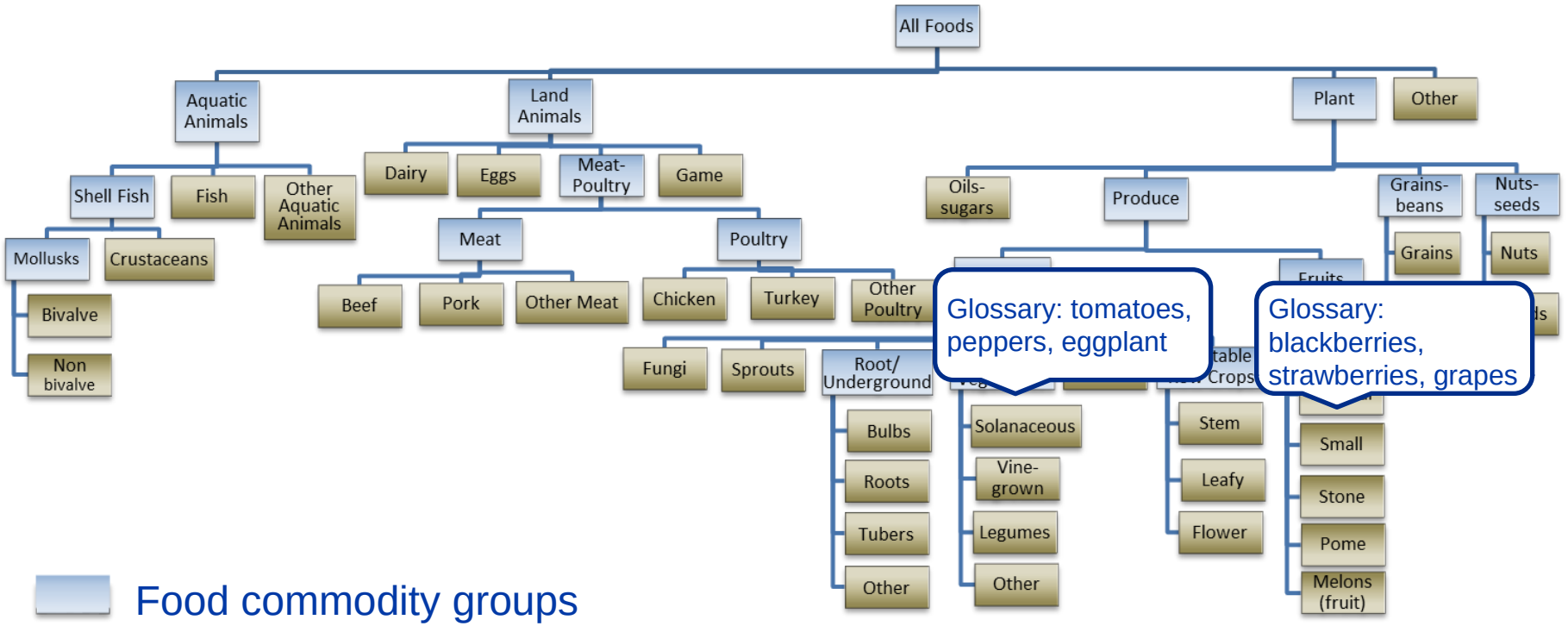
32 new food commodities added to the categorization scheme

New food categorization scheme: Food commodities



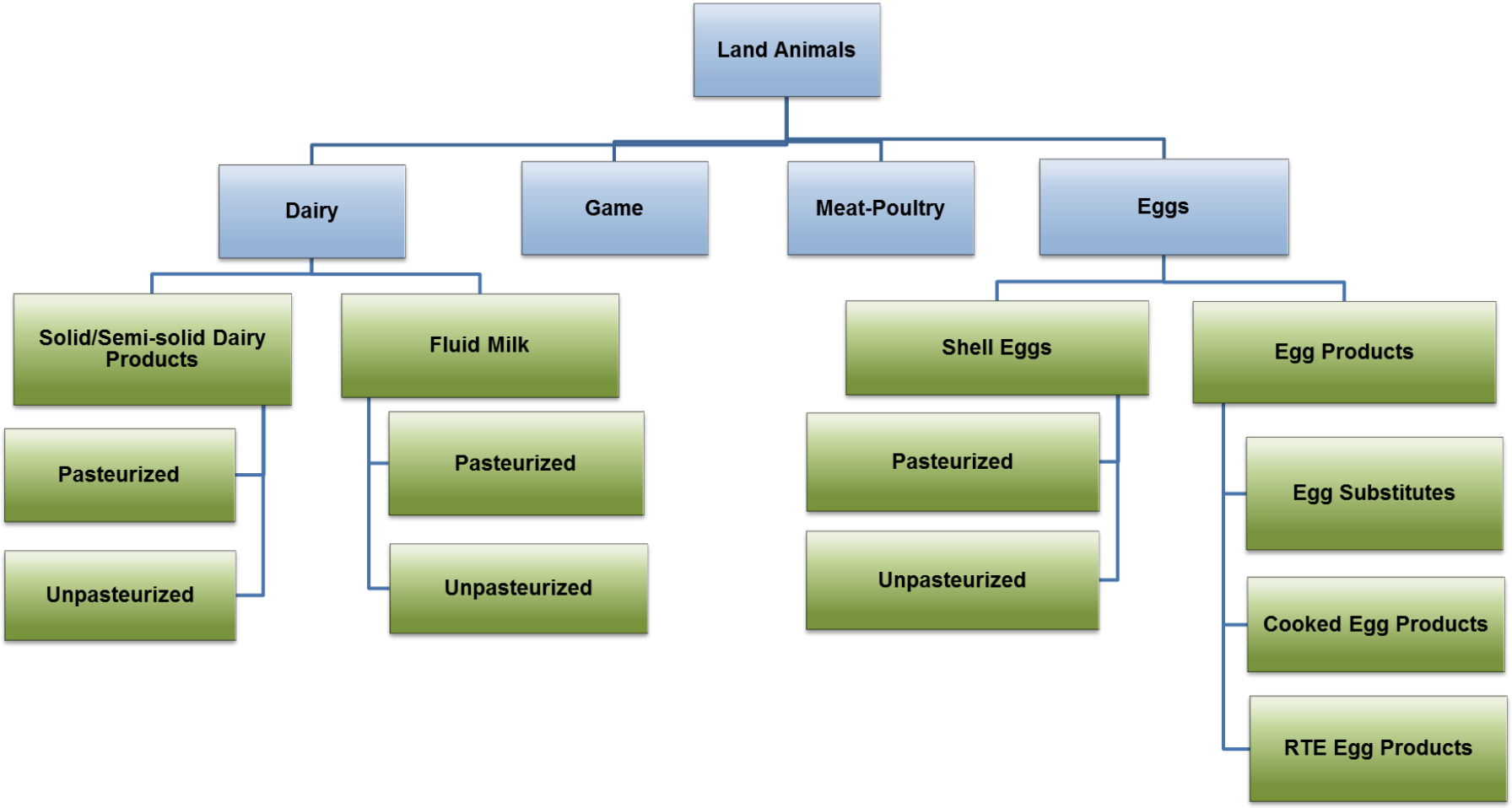
Increased from 17 “terminal” food commodities used in Painter scheme to 40 terminal food commodities

New Food Categorization Scheme: Food Glossary



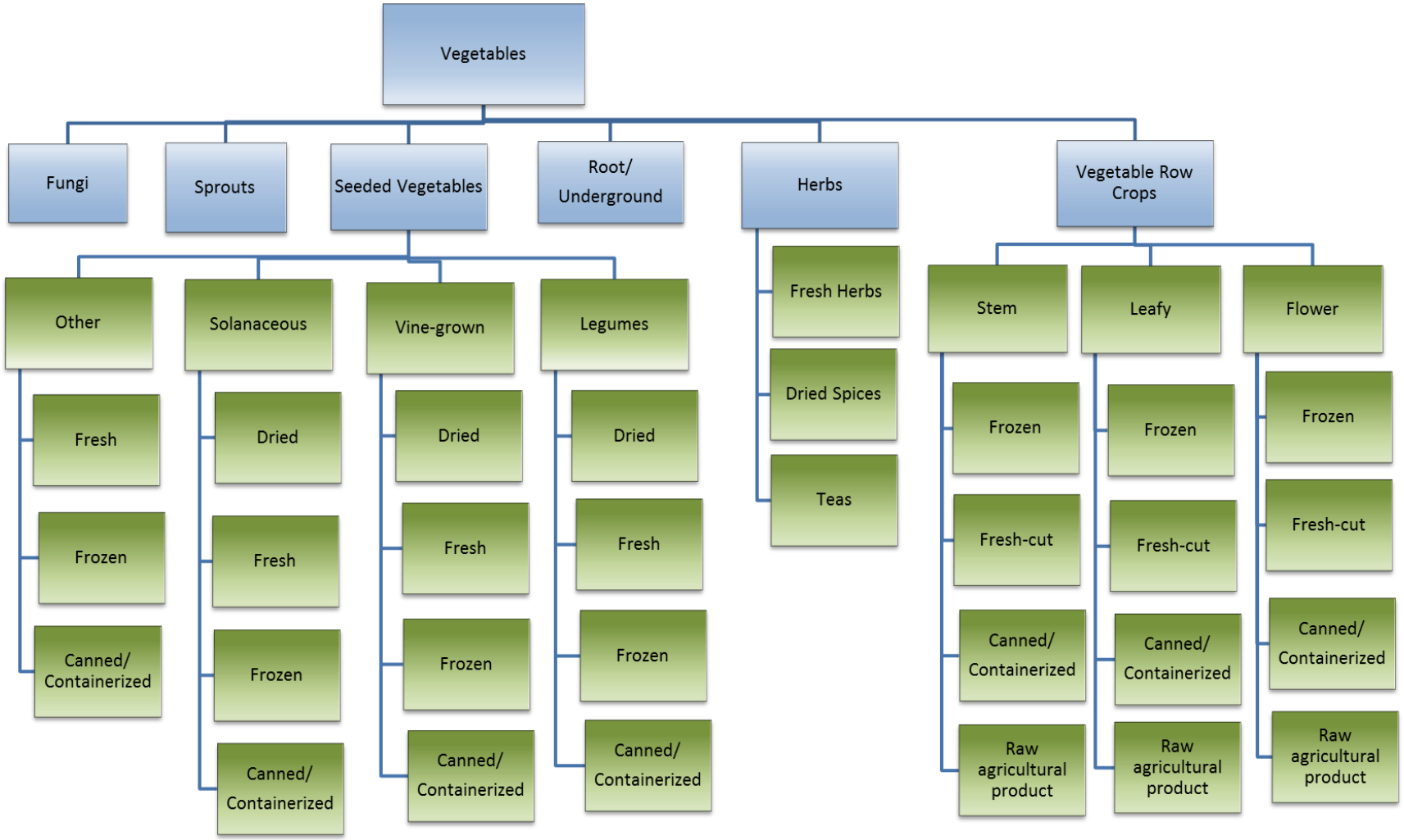
Supplemental food glossary developed to provide examples of foods in each food commodity

New Sub-categories Added to Reflect Processing*



*Examples provided, all sub-categories are not shown

New Sub-categories Added to Reflect Processing*

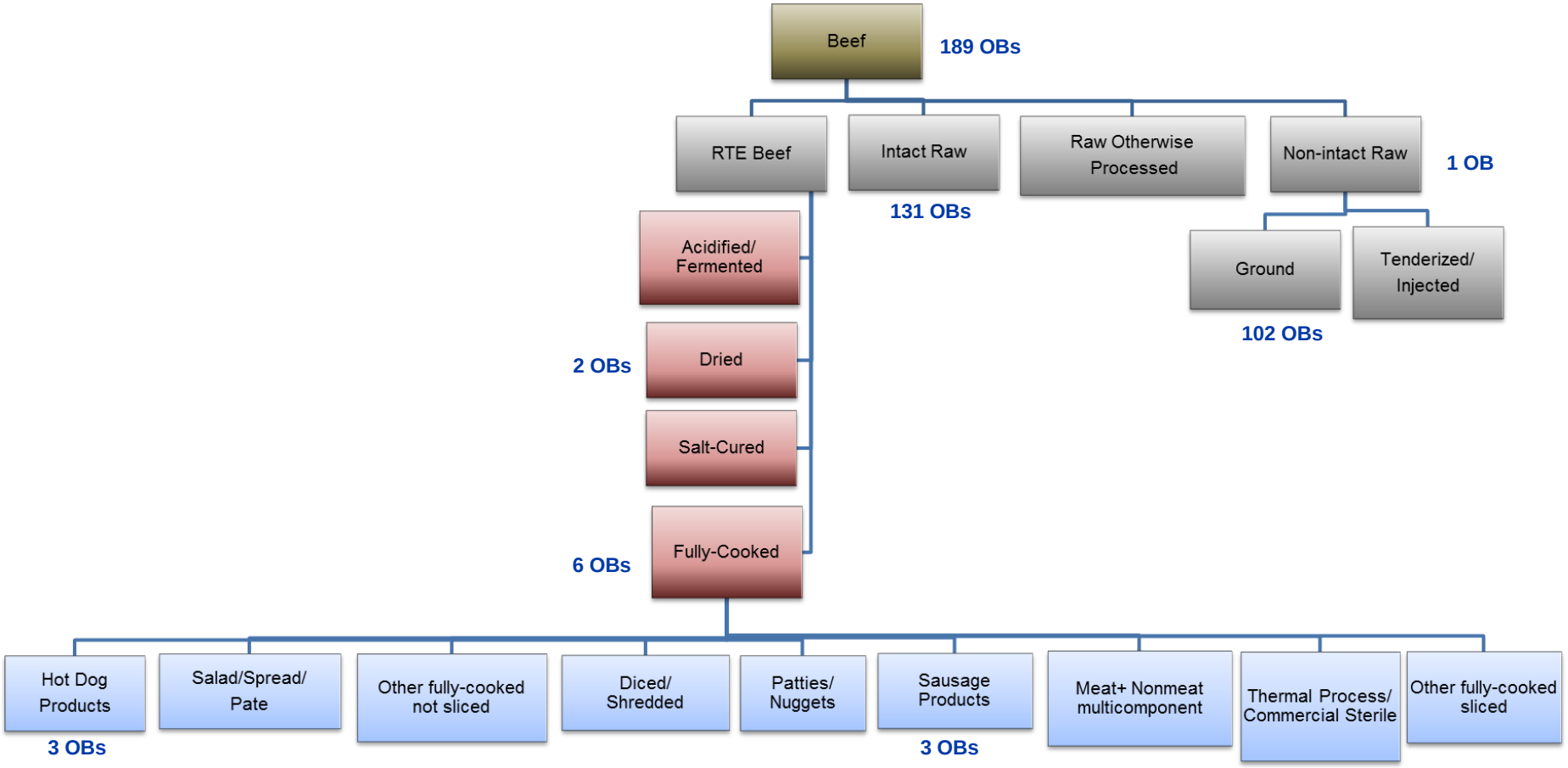


*Examples provided, all sub-categories are not shown

Number of outbreaks attributed to each food commodity category: Painter vs. new scheme

Painter scheme: 437 total outbreaks attributed to Beef

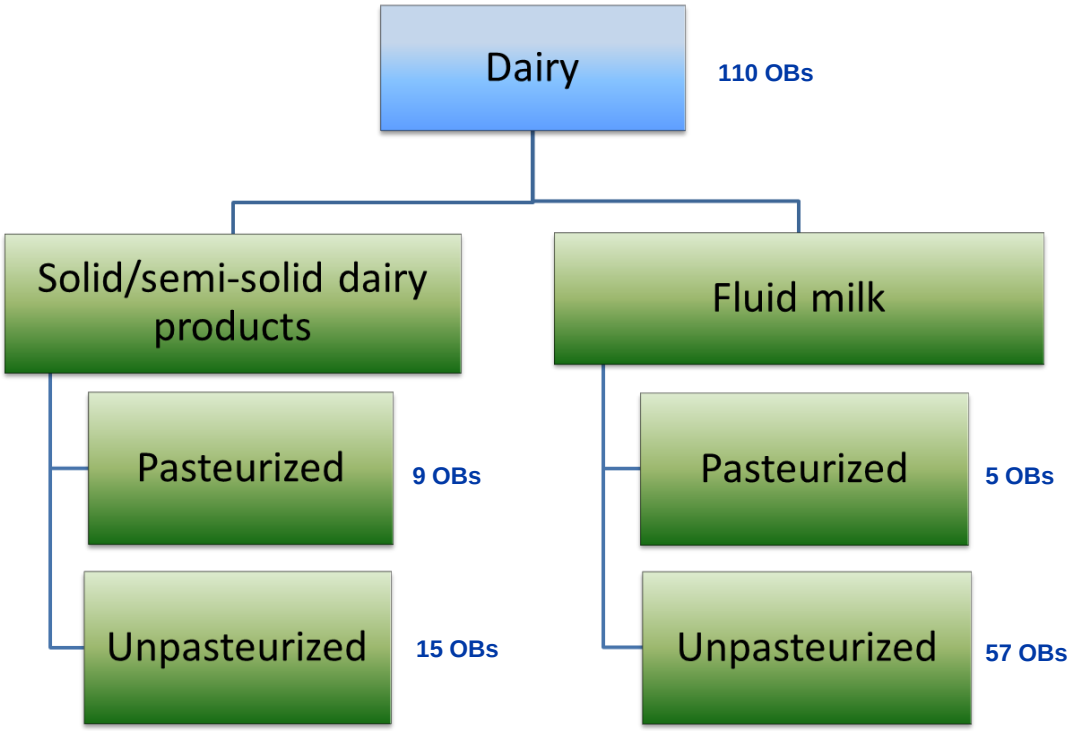
New scheme: 248 of the 437 outbreaks can now be assigned to more specific sub-categories



Number of outbreaks attributed to each food commodity category: Painter vs. new scheme

Painter scheme: 199 outbreaks attributed to Dairy

New scheme: 86 of the 199 dairy outbreaks can now be assigned to more specific sub-categories



Note: "Cream filling" was originally assigned to Dairy but is now considered a Multiple Commodity food, resulting in 3 outbreaks that are no longer considered to be Dairy-associated

New food categorization scheme cross-compatibility with other schemes

- New food commodities reflect many of the food product definitions used by FDA and FSIS
- Compatible with many categories used by others
  - Batz, Hoffman, Morris. 2012. Ranking the Disease Burden of 14 Pathogens in Food Sources in the United States Using Attribution Data from Outbreak Investigations and Expert Elicitation. *J of Food Protect.* 75:1278-1291
  - Smith DeWaal, Glassman. 2013. Outbreak Alert! 2001-2010: A Review of Foodborne Illness in America. White Paper of The Center for Science in the Public Interest.

NEXT STEPS

Next Steps

- Continue to categorize the more than 2,000 foods in outbreak database using new scheme
  - As before, multi-ingredient foods, will be assigned when possible
    - Refining rules used to define types of foods
    - Incorporating processing information, when provided
  - Foods with multiple ingredients that don't belong to a single commodity will be categorized as a "multiple commodity" food
- Finalize new method designed to obtain food information in outbreak reports
  - Incorporates information included in free text fields
  - Includes additional information about processing, when available

Next Steps

- Post complete food categorization scheme and food glossary online (http://wwwn.cdc.gov/foodborneoutbreaks/)
- Update electronic National Outbreak Reporting System to include new food categories

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  - Chris Alvares (FSIS)
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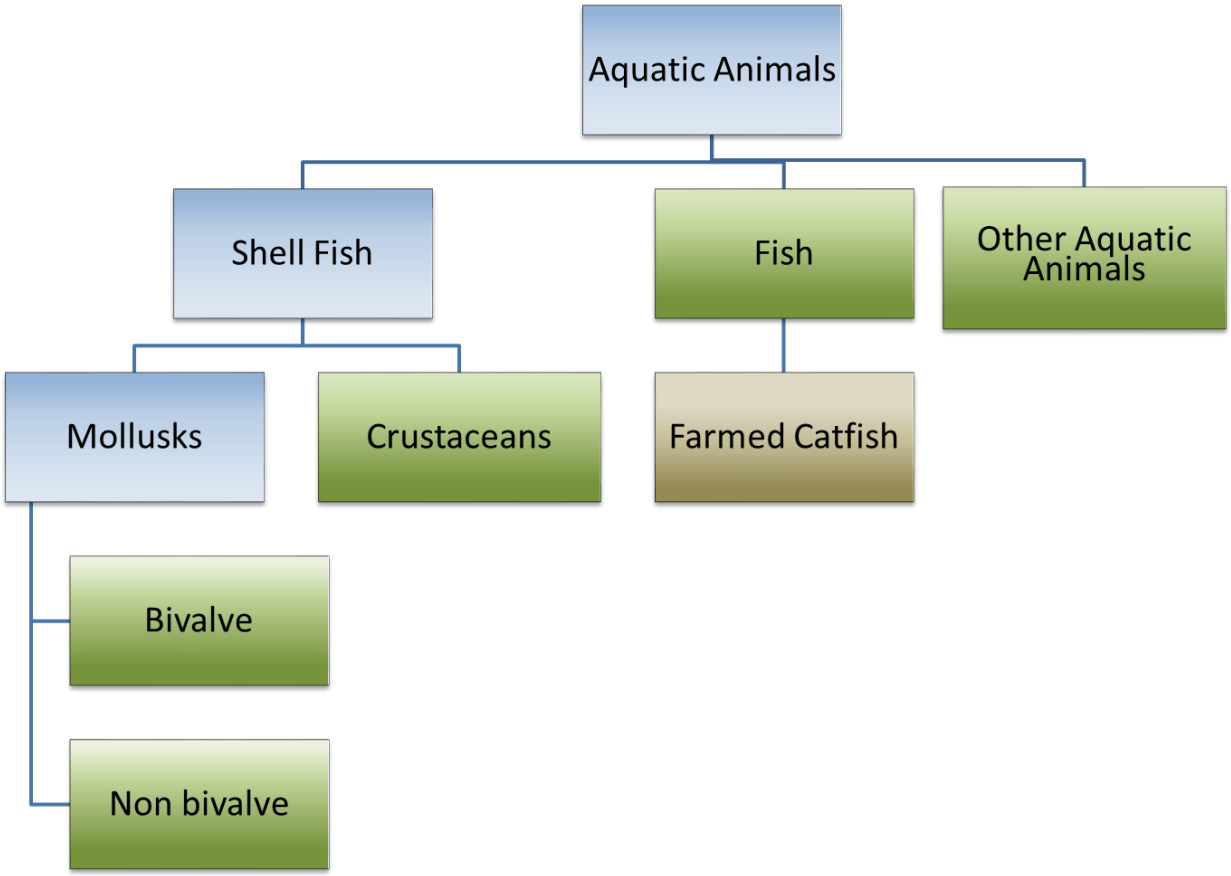
- **IFSAC Technical Workgroup**

Question & Answer Session

Thank you for attending IFSAC's webinar!

- **More questions?** Please send an email to the IFSAC inbox: IFSAC@fda.hhs.gov
- **Recording:** A recording of this webinar will be posted online in the near future.
- **Interested in more IFSAC projects?** We're hosting a symposium at the IAFP Conference in Charlotte, NC. Tuesday July 30, 2013 at 8:30 AM – "*U.S. Interagency Collaboration on Foodborne Illness Source Attribution*"

Aquatic Animals



Additional Processing Categories