Invasive Species Pathways Definition and Prioritization

An Exercise in International Resource Management and Democratic Science Policy Development

Penny Kriesch, Chair, NISC Prevention Committee

Pathways Working Group – Aug 24, 2005

The Assignment

- 17. By January 2002, the Council will implement a process for identifying high priority invasive species that are likely to be introduced unintentionally, e.g., Mediterranean fruit fly and brown tree snake, and for which effective mitigation tools are needed.
- 20. By January 2003, the Council will implement a system for evaluating invasive species pathways and will issue a report identifying, describing in reasonable detail, and ranking those pathways that it believes are the most significant. The report will discuss the most useful tools, methods, and monitoring systems for identifying pathways, including emerging or changing pathways, and for intervening and stopping introductions most efficiently.

The Response

- In response to these challenges, the Invasive Species Pathways Team convened and developed methods for stratifying and evaluating the pathways:
  - Pathway Diagrams (What)
  - Assessment Instrument (Qualitative)
  - Constructed Pathway Databases (Quantitative)

Categorization of Pathways

(for the Pathways Team of the Combined ANSTF/NISC Prevention Committee)

Transportation Related Pathways

This category includes all the various pathways related to the transportation of people and goods. This category includes military travel. Subcategories include:

1) Modes of Transportation
2) Military Travel and Transportation of Military Vehicles
3) Items Used in the Shipping Process
4) Mail/Internet/Overnight Shipping Companies
5) Travel/Tourism/Recreation /Relocation

See Diagram 1 for more details

Living Industry Pathways

This category includes all the various pathways associated with living organisms and/or their by-products. Subcategories include:

1) Plant Pathways
2) Food Pathways (market ready or near market ready - transporting animals for consumption)
3) Non-Food Animal Pathways (transporting animals for reasons other than consumption)
4) Nonliving Animal and Plant Related Pathways (animal and plant products)

- See Diagram 2 for more details

Miscellaneous Pathways

This category includes various pathways that did not fit into the other two categories. Subcategories include:

1) Biocontrol
2) Release of Animals for Religious and Cultural Reasons
3) Other Aquatic Pathways
4) Natural Spread of Established Populations of Invasive Species
5) Ecosystem Disturbance (both long and short term)

- See Diagram 3 for more details

Diagram 1

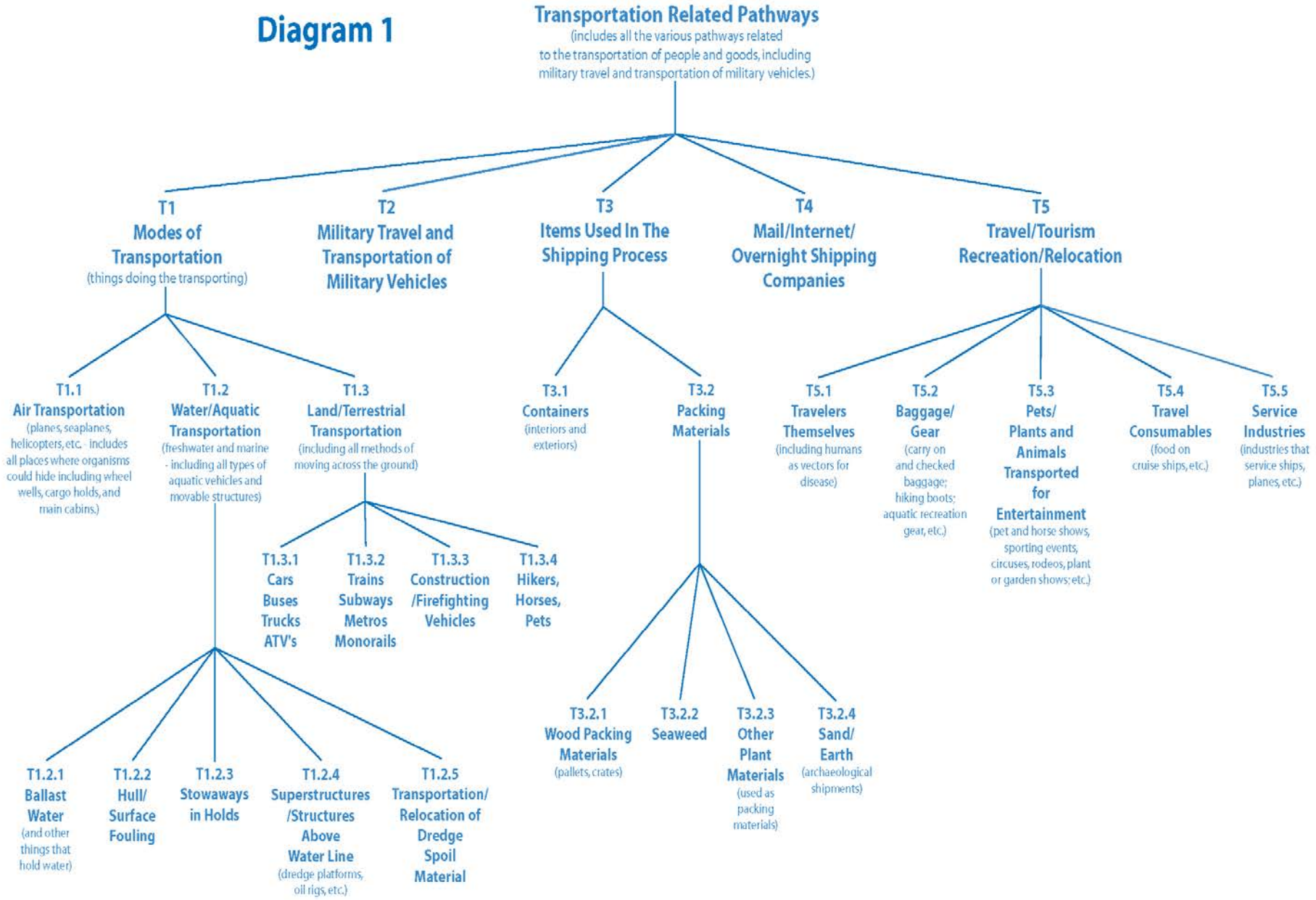
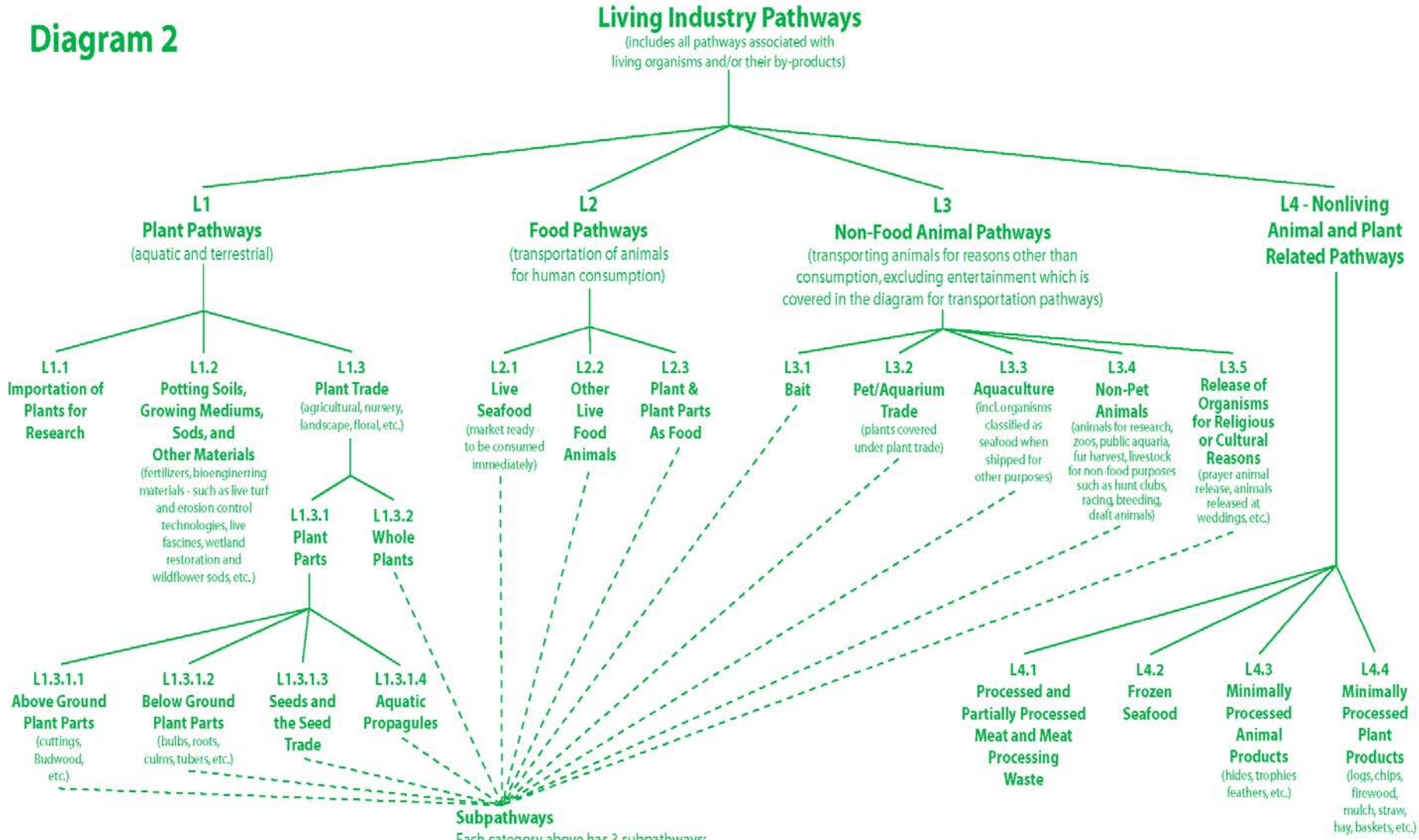

Transportation Related Pathways
(includes all the various pathways related to the transportation of people and goods, including military travel and transportation of military vehicles.)
T1 Modes of Transportation
(things doing the transporting)
T2 Military Travel and Transportation of Military Vehicles
T3 Items Used In The Shipping Process
T4 Mail/Internet/ Overnight Shipping Companies
T5 Travel/Tourism Recreation/Relocation
T1.1 Air Transportation
(planes, seaplanes, helicopters, etc. - includes all places where organisms could hide including wheel wells, cargo holds, and main cabins.)
T1.2 Water/Aquatic Transportation
(freshwater and marine - including all types of aquatic vehicles and movable structures)
T1.3 Land/Terrestrial Transportation
(including all methods of moving across the ground)
T1.3.1 Cars Buses Trucks ATV's
T1.3.2 Trains Subways Metros Monorails
T1.3.3 Construction /Firefighting Vehicles
T1.3.4 Hikers, Horses, Pets
T1.2.1 Ballast Water
(and other things that hold water)
T1.2.2 Hull/ Surface Fouling
T1.2.3 Stowaways in Holds
T1.2.4 Superstructures /Structures Above Water Line
(dredge platforms, oil rigs, etc.)
T1.2.5 Transportation/ Relocation of Dredge Spoil Material
T3.1 Containers
(interiors and exteriors)
T3.2 Packing Materials
T3.2.1 Wood Packing Materials
(pallets, crates)
T3.2.2 Seaweed
T3.2.3 Other Plant Materials
(used as packing materials)
T3.2.4 Sand/ Earth
(archaeological shipments)
T5.1 Travelers Themselves
(including humans as vectors for disease)
T5.2 Baggage/ Gear
(carry on and checked baggage; hiking boots; aquatic recreation gear, etc.)
T5.3 Pets/ Plants and Animals Transported for Entertainment
(pet and horse shows, sporting events, circuses, rodeos, plant or garden shows; etc.)
T5.4 Travel Consumables
(food on cruise ships, etc.)
T5.5 Service Industries
(industries that service ships, planes, etc.)

Diagram 2



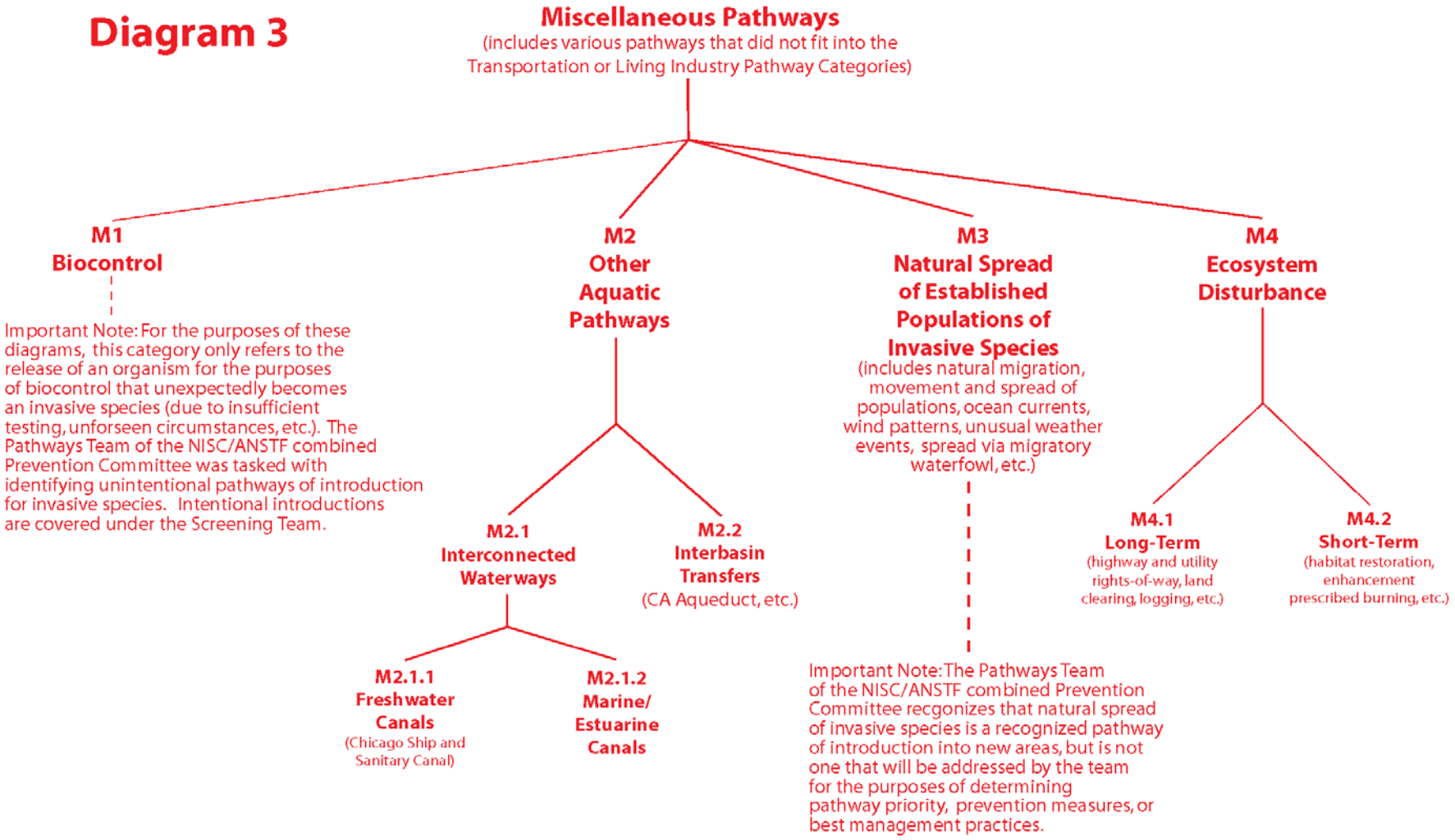
Subpathways

Each category above has 3 subpathways:

1) The organism "in trade" itself - whether intentionally released (authorized or unauthorized) or escaped
2) Hitchhikers on or in the organism in trade
3) Hitchhikers in water, food, nesting/bedding, or growingmedium

Note: Hitchhikers can include plants, animals, invertebrates, parasites, diseases, and pathogens

Diagram 3


Miscellaneous Pathways
(includes various pathways that did not fit into the Transportation or Living Industry Pathway Categories)
M1
Biocontrol
Important Note: For the purposes of these diagrams, this category only refers to the release of an organism for the purposes of biocontrol that unexpectedly becomes an invasive species (due to insufficient testing, unforseen circumstances, etc.). The Pathways Team of the NISC/ANSTF combined Prevention Committee was tasked with identifying unintentional pathways of introduction for invasive species. Intentional introductions are covered under the Screening Team.
M2
Other Aquatic Pathways
M2.1
Interconnected Waterways
M2.1.1
Freshwater Canals
(Chicago Ship and Sanitary Canal)
M2.1.2
Marine/ Estuarine Canals
M2.2
Interbasin Transfers
(CA Aqueduct, etc.)
M3
Natural Spread of Established Populations of Invasive Species
(includes natural migration, movement and spread of populations, ocean currents, wind patterns, unusual weather events, spread via migratory waterfowl, etc.)
Important Note: The Pathways Team of the NISC/ANSTF combined Prevention Committee recgonizes that natural spread of invasive species is a recognized pathway of introduction into new areas, but is not one that will be addressed by the team for the purposes of determining pathway priority, prevention measures, or best management practices.
M4
Ecosystem Disturbance
M4.1
Long-Term
(highway and utility rights-of-way, land clearing, logging, etc.)
M4.2
Short-Term
(habitat restoration, enhancement prescribed burning, etc.)

Qualitative and Quantitative Analyses

Qualitative Analysis

Cross-agency and industry scientific expertise that will be guided through series of analytical evaluative questions.

(See Assessment Tool)

Quantitative Analysis

Cross-agency and industry database mining for extrapolation of current trends and incidences of Invasive Species interceptions and incurred risks. Once data mining matrix is developed, will be able to collect benchmark/trend data for predictive analyses.

-A Need for Continual Data Building

-Will evaluate current situation, now

- Future goal: Predictive Analysis

Qualitative Assessment

Assessment Instrument for
Qualitative Assessment of
Priority of an Invasive Species Pathway **(5/2005 version)**

Background: The Invasive Species Council's Pathways Task Team was asked by the National invasive Species Council, to implement the pathway related actions of the National Invasive Species Management Plan. Specifically, the team was assigned Action 20 of the plan whose charge is to "implement a system for evaluating invasive species pathways." This assessment tool is designed to guide a focus group of pathway experts through a 'think-tank' process, using their collective knowledge base and varying scientific perspectives to determine the relative priority of various identified pathways. Outcomes of the process (which also includes quantitative data sets to augment qualitative assessment) will be critical information and collaboration points for government, industry, academia, decision-makers, et al.

[**Note:** This Invasive Species Assessment instrument uses the same definitions from Invasive Species Executive Order 13112 (February 3, 1999). For more information on the National Invasive Species Council, the Management Plan or Executive Order 13112, please visit the Council's web site www.invasivespecies.gov.]

Important Notes for Using This Assessment Tool:

- **This Assessment Tool consists of three parts.**
  - **Section 1 is for recording the user's contact information and the information on the pathway being assessed.**
  - **Section 2 is the list of questions used to assess a pathway's priority.**
  - **Section 3 is the scoring and evaluation section.**
- **More detailed instructions are located in each section.**
- **Please answer all questions and provide as much information as you can under the justification section of each question.**

Section One
Assessment Information

1A - Assessor's Contact Information

Instructions: Please fill out all the blanks in this section.

Name: _____ Date: _____

Association: _____ Specialty/Expertise: _____

Address: _____

Phone Number: _____ Fax Number _____ E-mail:_____

May we add your name to our database of pathway experts? Yes_____ No _____

1B – Pathway and Organisms Assessed

Instructions: When designating the pathway assessed, please use the pathway terms from the accompanying pathway diagrams (see figures 1 – 3 at the end of this document). When designating the organisms being considered, please use the blank at the bottom of this section to be more specific or to add a group not covered in the choices below.

Pathway Assessed (number and name from enclosed pathway chart(s)):
_____

Geographic Scale of Assessment: The scale on which this pathway is being assessed is: Entire Pathway National Regional Local

Additional detail on scale: _____

Organisms/Hitchhikers being considered for this pathway:

____ All "hitchhiking" organisms

____ All aquatic organisms

____ Fouling organisms (e.g. organisms that attach to boats, pilings, platforms, etc.)

____ Arthropods (e.g. insects, arachnids, crustaceans, etc.)

____ Mollusks (e.g. giant African snails, zebra mussels, etc.)

____ Plants and plant propagules (e.g. water hyacinth, Russian knapweed, etc.)

____ Plant pathogens (e.g. sudden oak death, etc.)

____ Phytoplankton (e.g. Amphidinium, dinoflagellates, etc.)

____ Vertebrates (e.g. snakeheads, gavials, rats, brown tree snakes, etc.)

____ Human & animal parasites (e.g. liver flukes, etc.)

____ Human & animal pathogens (e.g. salmonella, west nile virus, foot and mouth disease, SARS, etc.)

Other Organisms/
More Specificity: _____

Note: Although the question above asks the user to identify the organisms being considered within the pathway, it is important to remind the user that they are assessing the pathway itself, not the organisms carried along that pathway.

Assessment of Current or Future Conditions: This assessment tool can be used to assess a pathway's priority based on current conditions or to assess the priority of a pathway in the future (i.e. its potential). The questions in the assessment section are written to reflect both current and future conditions; however, the assessment should not be used to assess both conditions at once. In other words assessing a pathway for both its current and future potential would require two separate uses of this tool. To be clear which state is being assessed, please answer the following question:

This pathway is being assessed based on: Current Conditions or Future Conditions

1C - Review Ranking System

The following numbers and corresponding terms are used to answer the questions in the next step.

5 = Very Likely/High; 4 = Somewhat Likely/Somewhat High; 3 = Equally likely or unlikely/Medium; 2 = Somewhat Unlikely/Somewhat Low; 1 = Very Unlikely/Very Low

Uncertain = If you do not feel that you have enough information to answer a question, do NOT just choose a "3" as your answer. Instead, you should circle the word "uncertain." If a pathway receives a certain number of uncertain answers, then the pathway may require further consideration before a priority can be determined. If available, please provide information under the section 'justification' as to reasons why uncertainty exists, including such factors as lack of research, insufficient data on new pest, lack of documentation, etc.)

Section Two
Pathway Assessment

Instructions:
1) Please answer all the questions, giving each a rank of 1 through 5 (based on the ranking system above) or "uncertain." For each question, circle only a number OR the "uncertain." Do not circle both.
2) For the justification section of each question, please provide any information you can to explain or substantiate your answers. Please add references whenever possible.

Note: Throughout the assessment questions, the user will notice terms of scale such as "high density" or large number." Although the designers of the assessment tool realized that these terms are subjective, it was impossible for the designers to try and define these terms and still keep the assessment tool generic enough to be useful for assessing all pathways. Users of this tool are encouraged to define these terms themselves within the context of the pathway they are assessing and include this information as part of their assessment of a pathway.

2A – Probability of Introduction (Questions 1-6)

(circle answer)

1) Does the pathway transport a high diversity of species or does it have the potential to do so in the future? 5 4 3 2 1 Uncertain
Justification: _____
_____
_____

2) Does the pathway transport large numbers of <u>individuals of one or more</u> species or does it have the potential to do so in the future? (i.e. is it a "good" pathway for one or more species?) 5 4 3 2 1 Uncertain
Justification: _____
_____
_____

3) Does the pathway have a high <u>frequency</u> of potential entry/introduction or does it have the potential to have a high frequency in the future? 5 4 3 2 1 Uncertain
Justification: _____
_____
_____

4) Does the Pathway have a high volume of incoming material (pathway substrate, trade material, or cargo) during each occurrence of potential entry/introduction (i.e. each individual shipment) or does it have the potential to have a high volume in the future? 5 4 3 2 1 Uncertain

Justification: _____

5) Does the Pathway have a large number of potential entry points (i.e. arrival locations) or does it have the potential to have a large number in the future? (e.g. having single versus multiple entry points – one port, or all the ports!) 5 4 3 2 1 Uncertain

Justification: _____

6) Is the pathway hospitable to organisms (i.e. do the organisms remain healthy in transit or storage and arrive healthy and alive?) 5 4 3 2 1 Uncertain

Justification: _____

2B – Probability of Establishment (Questions 7-13)

7) Does the pathway provide opportunities for/facilitate spread to uncontaminated shipments during transport or during storage before or after transport? (e.g. are shipments co-mingled and is cross-contamination a possibility during transport?). 5 4 3 2 1 Uncertain

Justification: _____

8) Does the pathway transport organisms that are difficult to detect before or during transportation or does it have the potential to do so in the future? 5 4 3 2 1 Uncertain

Justification: _____

9) Does the pathway transport organisms that are difficult to detect once introduced or does it have the potential to do so in the future? 5 4 3 2 1 Uncertain

Justification: _____

10) Does the pathway introduce organisms into hospitable environments? 5 4 3 2 1 Uncertain

Justification: _____

11) Does the pathway transport or have the potential to transport organisms that are generalists and can survive in many habitats? *Justification:* _____	5 4 3 2 1	Uncertain
12) Does the pathway transport organisms that spread easily by natural means (e.g. fast reproduction; large numbers of young; highly mobile; spread by wind or water, etc.) or does it have the potential to do so in the future? *Justification:* _____	5 4 3 2 1	Uncertain
13) Does the pathway transport organisms that are easily spread by human activities or does it have the potential to do so in the future? *Justification:* _____	5 4 3 2 1	Uncertain
2C History of Invasiveness (Questions 14-19)		
14) Does the pathway transport organisms that are <u>already in the U.S.</u> and known to be invasive or does the pathway have the potential to transport such organisms in the future? *Justification:* _____	5 4 3 2 1	Uncertain
15) Does the pathway transport organisms that are <u>not yet in the U.S.</u> and known to be invasive and or does the pathway have the potential to transport such organisms in the future? *Justification:* _____	5 4 3 2 1	Uncertain
16) Does the pathway transport <u>known</u> invasive organisms that have proven difficult to control or for which control options are not available/unknown or does the pathway have the potential to transport such organisms in the future? *Justification:* _____	5 4 3 2 1	Uncertain
17) Does the pathway transport <u>known</u> invasive organisms for which control options are known, but for which those control options are very expensive or does the pathway have the potential to transport such organisms in the future? *Justification:* _____	5 4 3 2 1	Uncertain

18) Does the pathway transport organisms that are already in the U.S. and have the potential to be highly invasive (i.e. known to be invasive in similar climates or habitats in other countries) or does the pathway have the potential to transport such organisms in the future? 5 4 3 2 1 Uncertain

Justification: _____

19) Does the pathway transport organisms that are not yet in the U.S. and have the potential to be invasive or does the pathway have the potential to transport such organisms in the future? 5 4 3 2 1 Uncertain

Justification: _____

2D- Mitigation Methods (Questions 20-23)

20) Does the pathway transport potential invasive organisms that have proven difficult to control or for which control options are not available/unknown or does the pathway have the potential to transport such organisms in the future? 5 4 3 2 1 Uncertain

Justification: _____

21) Does the pathway transport potential invasive organisms for which control options are known, but for which those control options are very expensive or does the pathway have the potential to transport such organisms in the future? 5 4 3 2 1 Uncertain

Justification: _____

22) Does the pathway transport organisms that are known to cause economic impacts to biologic/primary productivity/living industries (e.g. agriculture, fisheries, aquaculture, forestry, ranching, aquatic recreation, ecotourism, birding, etc.) or does the pathway have the potential to transport such organisms in the future? 5 4 3 2 1 Uncertain

Justification: _____

23) Does the pathway transport organisms that are known to cause economic impacts to human infrastructure (e.g. termites, zebra mussels, plants that can lower property values, etc.) or does the pathway have the potential to transport such organisms in the future? 5 4 3 2 1 Uncertain

Justification: _____

2 E – Invasive Impact (Question 24-27)		
24) Does the pathway transport organisms that are known to cause economic impacts to intra-national and international trade (e.g. ballast water, pest infestations that result in export markets refusing our products, etc.) or does the pathway have the potential to transport such organisms in the future? *Justification:* _____ _____ _____	5 4 3 2 1	Uncertain
25) Does the pathway transport organisms that are known to cause impacts to human health or does the pathway have the potential to transport such organisms in the future? *Justification:* _____ _____ _____	5 4 3 2 1	Uncertain
26) Does the pathway transport organisms that are known to cause impacts to natural resources (ecosystems, habitats, native wildlife and plants, etc.) or does the pathway have the potential to transport such organisms in the future? *Justification:* _____ _____ _____	5 4 3 2 1	Uncertain
27) Does the pathway transport invasive organisms that are known to have political or public sensitivity or does the pathway have the potential to transport such organisms in the future (e.g. endangered species, “sensational”, unusual or unknown organisms, those known to impact pets or endangered species, or those that impact our quality of life)? *Justification:* _____ _____ _____	5 4 3 2 1	Uncertain

Section Three
Pathway Scoring and Evaluation

3A – Scoring, Uncertainty Factor, and Regulation Modifier

Step E - Preliminary Overall Priority
To determine a pathway's priority, one must add up the total numerical score for the questionnaire and count the number of questions used to determine that score (i.e. **the number of questions that one did <u>not</u> answer with "uncertain**"). Dividing the total score by the number of questions answered will give you a number between one and five as follows:

Total Score
For **All Questions** = _____

Total Number of
Questions Answered = _____

Total Score / Total Number of Questions = _____

Score of 1.0 - 1.7 = Low Priority
Score of 1.8 – 2.5 =Medium-Low Priority
Score of 2.6 – 3.4 =Medium Priority
Score of 3.5 – 4.2 =Medium-High Priority
Score of 4.3 – 5.0 =High Priority

Pathway Priority (circle one)

Very Likely/High

Somewhat Likely or Somewhat High

Equally likely or Unlikely/Medium

Somewhat Unlikely or Low

Very Unlikely or Low

Step F - Uncertainty Factor
The uncertainty factor is the number of questions for which the term "uncertain" has been circled. Please remember, for each question, one should circle only a number OR the term "uncertain." Do not circle both. **If the assessor feels they lack the information to answer more than half of the questions resulting in an uncertainty factor of 13 or more, then the pathway probably requires further consideration before a priority can be established.**

Uncertainty Factor

_____

Step G - Regulation Modifier
If the pathway is currently NOT regulated for invasive species in any way, or if regulation is insufficient, please indicate the degree of gaps or other weaknesses **limiting** the efficacy of the regulation.
Justification: _____
_____

5 4 3 2 1 Uncertain

3B – Final Assessment of Pathway
Priority Summary Overall Rank of Pathway Is (circle one): **High** **Medium-High** **Medium** **Medium-Low** **Low** Uncertainty Factor: _____ **A score greater than 13 indicates a pathway for which additional information is needed and whose ranking may require further consideration** Regulation Modifier: _____ **A score of 3-5 indicates a pathway that is not well-regulated and whose priority level may require further consideration.**
Notes **(Additional assumptions, references, reasons why you feel that the priority should be different, other pertinent notes, etc.)**

DATA MINING AREAS

- Inventory list of all pathway-specific, potential invasive species
- Risk-Based Geographical List of Hosts/Habitats Conductive to Invasive Establishment
- Invasive Species Port of Entry Locations and Detections
- Invasive origination points (i.e., preclearance/screening)
- Trade databases for prediction of potential invasive trends
- Official Control/Regulatory Event databases

Exemplar databases include NISC Non-indigenous, Species, Offshore Pest Information System, Commodities Database, etc.

Quantitative –Constructed Data

- PIN309 Ad-hoc Report Results
  airport interceptions July 1, 2003
- PEST HOST IntDate PORT TOTAL
- ---------- ---------- ------- ----------
- ACUTASPIS UMBONIFERA ORCHIDACEAE (LEAF) 2003/07 SAN JUAN PR 1
- AGROMYZIDAE, SPECIES OF ALLIUM SP. (LEAF) 2003/07 MIAMI FL 3
- AGROMYZIDAE, SPECIES OF CAPSICUM SP. 2003/07 ATLANTA GA 1
- AGROMYZIDAE, SPECIES OF CARGO 2003/07 ATLANTA GA 1
- AGROMYZIDAE, SPECIES OF MORINGA OLEIFERA 2003/07 HONOLULU HI 1
- AGROMYZIDAE, SPECIES OF OCIMUM BASILICUM 2003/07 SAN FRANCISCO CA 2
- AGROMYZIDAE, SPECIES OF OCIMUM SP. 2003/07 JFKIA NY 1
- AGROMYZIDAE, SPECIES OF ORIGANUM MAJORANA (LEAF) 2003/07 JFKIA NY 1
- AGROMYZIDAE, SPECIES OF PETIVERIA ALLIACEA 2003/07 SAN JUAN PR 1
- AGROMYZIDAE, SPECIES OF PETROSELINUM CRISPUM 2003/07 JFKIA NY 1
- ALEURODICUS DISPERSUS PSIDIUM GUAJAVA (LEAF) 2003/07 HONOLULU HI 1
- ALEUROLOBUS MARLATTI MURRAYA KOENIGII 2003/07 CHICAGO IL 1
- ALEYRODIDAE, SPECIES OF JASMINUM SP. 2003/07 HONOLULU HI 1
- ANASTREPHA SP. AVERRHOA CARAMBOLA 2003/07 LOS ANGELES CA 1
- ANASTREPHA SP. MANGIFERA INDICA (FRUIT) 2003/07 CHICAGO IL 1
- ANASTREPHA SP. MANGIFERA INDICA (FRUIT) 2003/07 LOS ANGELES CA 1
- ANASTREPHA SP. MANGIFERA INDICA (FRUIT) 2003/07 MIAMI FL 4
- ANASTREPHA SP. MANGIFERA INDICA (FRUIT) 2003/07 SAN JUAN PR 1
- ANASTREPHA SP. MANGIFERA INDICA 2003/07 HOUSTON TX 2
- ANASTREPHA SP. MANGIFERA INDICA 2003/07 LOS ANGELES CA 1
- ANASTREPHA SP. MANGIFERA INDICA 2003/07 MIAMI FL 1
- ANASTREPHA SP. MANGIFERA SP. 2003/07 LOS ANGELES CA 1
- ANASTREPHA SP. PSIDIUM GUAJAVA (FRUIT) 2003/07 SAN JUAN PR 2
- ANASTREPHA SP. SPONDIAS SP. (FRUIT) 2003/07 LOS ANGELES CA 2
- ANASTREPHA SP. SYZYGIUM MALACCENSE 2003/07 LOS ANGELES CA 1
- ANASTREPHA SP. SYZYGIUM SP. (FRUIT) 2003/07 LOS ANGELES CA 1
- AONIDIELLA INORNATA CITRUS AURANTIUM (LEAF) 2003/07 SAN JUAN PR 1
- APHIDIDAE, SPECIES OF FERNALDIA SP. (FLOWER) 2003/07 DALLAS TX 1
- APHIDIDAE, SPECIES OF OCIMUM BASILICUM 2003/07 MIAMI FL 1
- ASPIDIELLA HARTII DIOSCOREA SP. (ROOT) 2003/07 CHICAGO IL 2
- ASPIDIELLA HARTII DIOSCOREA SP. (ROOT) 2003/07 DALLAS TX 1
- AULACASPIS TUBERCULARIS MANGIFERA INDICA (FRUIT) 2003/07 MAYAGUEZ PR 1
- AULACASPIS TUBERCULARIS MANGIFERA INDICA (FRUIT) 2003/07 MIAMI FL 2
- AULACASPIS TUBERCULARIS MANGIFERA INDICA (FRUIT) 2003/07 SAN JUAN PR 4
- AULACASPIS TUBERCULARIS MANGIFERA INDICA 2003/07 HOUSTON TX 1
- AULACASPIS TUBERCULARIS MANGIFERA INDICA 2003/07 SAN JUAN PR 6

Reports

United States Department of Agriculture

Animal and Plant Health Inspection Service

April 2004

Quantitative analysis of inspections for hitchhiking insect pests on cargo aircraft from targeted countries at Miami International Airport

Plant Protection and Quarantine

Center for Plant Health Science and Technology

Plant Epidemiology and Risk Analysis Laboratory

1730 Varsity Drive, Suite 300

Raleigh, NC 27606

Charted Processes

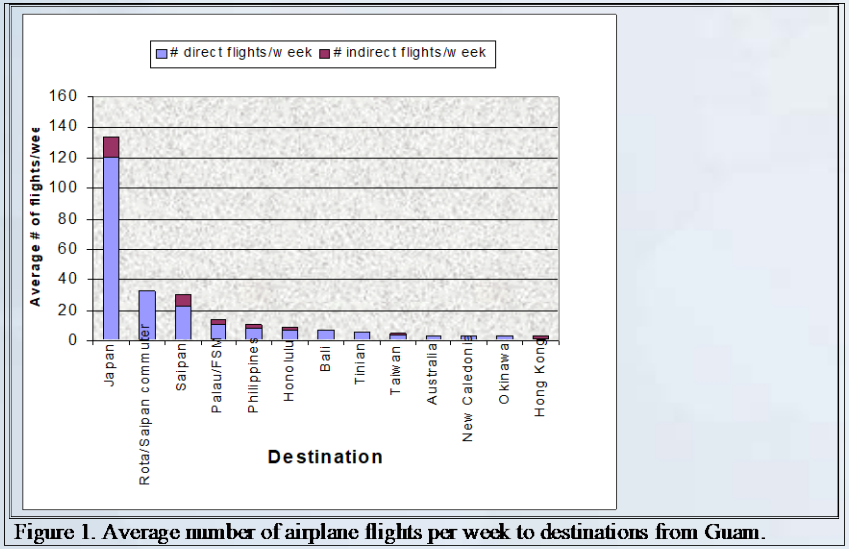


Figure 1. Average number of airplane flights per week to destinations from Guam.

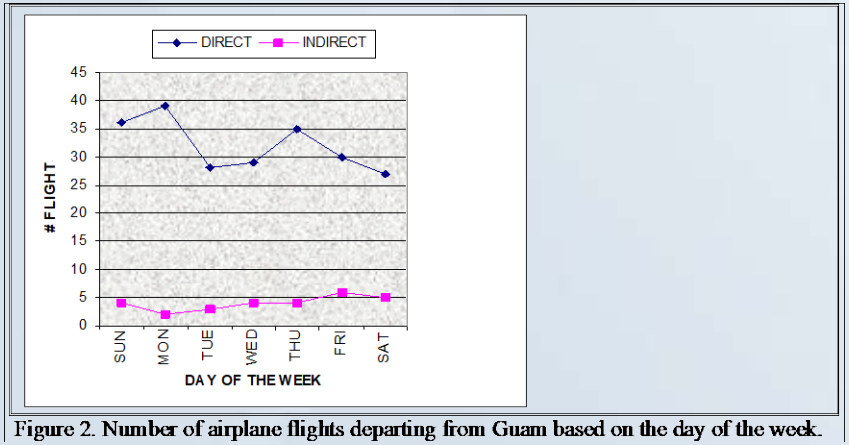
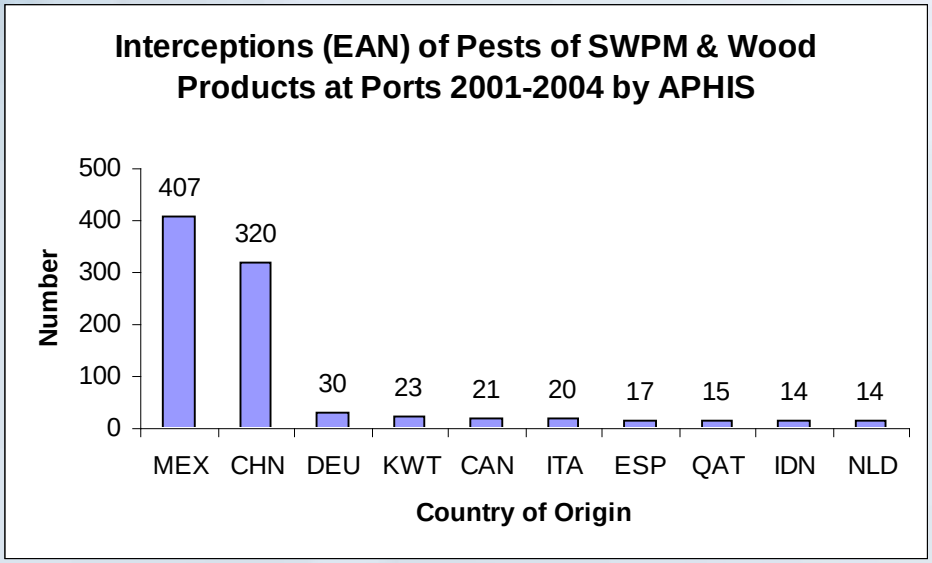


Figure 2. Number of airplane flights departing from Guam based on the day of the week.

Emergency Action Notices

Analysis of Emergency Action Notification (EAN) Interceptions of pests in SWPM & wood products by APHIS 2001-2005 at Ports

Analysis of Fig. 1--- Interceptions of pests in SWPM and wood products are mainly from two countries of origin---China and Mexico.



Analysis of Fig. 2— The interceptions from China and Mexico are mainly of two kinds of pests---Scolytidae beetles from Mexico and Cerambycidae beetles from China.

Process for Progress

- Formulate Expert Focus Groups of all Vested Parties for Each Pathway
- Use Pathway-Based Risk Factors for Qualitative Evaluation (Likert Scale)
- Supplement Expertise via most current research available
- Augment research and expertise with succinct pathway data sets (quantitative assessment)
- Experts, via facilitated, face-to-face meetings, will analyze relative risk
- Jointly prepare recommendations for decision-makers regarding the pathway risks, including points of integration, cooperation, gaps, etc.
- “Open Democratic System” wherein new pathways and pathway evaluation factors may be continually added or revisited based upon current needs, trends, research

Validity/Reliability Conference

- June 21-22, 2005 conducted validity reliability focus group for instruments.
- The intent of the conference was two-fold: (1) to provide an avenue for federal and state governments, industry and academia to jointly analyze three specific pathways that unintentionally introduce invasive species into U.S. ecosystems; and (2) to receive evaluative feedback on the validity and efficacy of proposed pathway risk assessment methodologies.

Let's Practice

- Let's split the group to work on the following two pathways using the assessment tool (know that you won't get finished):

  L.3.2 – Pet/Aquarium Trade

  L.4.2 – Frozen Seafood

- Look for issues such as: (1) is pathway appropriately defined; (2) are questions pertinent; (3) is there a way to sufficiently distinguish high/medium/low severity; (4) what databases are available to support the assessment?

Preliminary Unpublished Results- For your further thought and input

- Preliminary Responses – is great first product
- Tweaking question language (separating present from future)
- Developing a glossary of terms
- Re-defining major question categories

ADDITIONAL QUESTION FOR YOU

- **Should groupings be based on risk process, or on political issues such as human health, trade impact, environment/eco-system impact?**
- **How can questions be weighted**
- **What is best process for stakeholder involvement?**
- **What are your ideas for creating a scale of severity? (i.e., distinguish high/medium/low risk across pathways?)**

Next Edition

- Surveys and Reports from June Focus Groups will be published in September 2005
- Report with risk methods/revisions will be reviewed for acceptance by NISC
- Two off-shoot programs: (a) prioritization of all pathways; (b) the development of nationwide stakeholder expert listings; (c) ‘matrixed’ database of pertinent data elements for each pathway analysis