IDAHO RESPONSE PLAN for INVASIVE INSECT and DISEASE TREE PESTS

A supplement to Idaho's Strategic Action Plan for Invasive Species

Emerald ash borer by Debbie Miller at Bugwood.org

Prepared for Governor
C.L. "Butch" Otter
And the
Idaho Invasive Species
Council

Presented By:

The Idaho Invasive Species Council
and Tree Pest Committee

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Idaho Response Plan for Invasive Insect and Disease Tree Pests

Executive Summary

This is a framework for interagency coordination among Idaho's state agencies, responsible federal agencies, partner institutions, tribes, and community officials to respond to an invasion of exotic tree pests that include insects and diseases. A brief background of the threat and current situation, the Function and Role of the Primary Stakeholders, Incident Command Structure and Procedures, Media and Public Outreach, and Potential Funding are described. Implementation of this framework will improve efficiency of communication, acquiring and disseminating information, organizing a rapid response and coordinating public involvement toward minimizing negative impacts to Idaho's homeowners, landowners, nursery and forestry industry and other stakeholders. This is a working document and an extension of both Idaho's 2005 Invasive Species Plan, and the Idaho 2012-2016 Invasive Species Strategic Plan. The Response Plan is intended to be reviewed and updated every five years, or at shorter intervals, if needed. Detailed information for responding to specific pest species is not discussed as biology, ecology, and method of dispersal will dictate effective eradication or management plans. Options may vary widely depending upon the pest.

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Background

Idaho has diverse forests, but for the purpose of this document we grouped them into two broad categories: Urban and Rural Forests. The trees of these two forests provide benefits to Idaho in numerous ways.

Urban Forest

The urban forest is comprised of public and privately owned trees of many species. Urban trees increase property values, decrease cooling costs and add to the overall aesthetics of a city. For example, within nine Treasure Valley cities, including Boise, public and private trees represent a $3 billion resource providing tangible benefits of $9.6 million per year in energy savings, stormwater removal, better air quality and removal of atmospheric carbon. Add in the value of increased property values and aesthetics and the benefit is far greater. As with other infrastructure in a community, trees require management, care and maintenance to maximize their health and value. With nearly $50 million in domestic and international sales in 2010, Idaho's vibrant landscape and tree care industry is capable of meeting the needs of communities for maintenance, planting and replacement of trees.

Public tree inventories are essential to understanding the resource composition, maintenance needs and potential threats. Of the 200 cites in Idaho, approximately 20 have or are in the process of completing a tree inventory. Most Idaho cities are small and unfortunately do not have the resources or ability to complete tree inventories, which are essential to managing this critical and valuable resource.

Rural Forest

Over 40 percent of Idaho is forested, but has less than 15 native coniferous tree species and several hardwood species. Management responsibility is shared among federal, state, industry, and other private ownership. Idaho's timber products industry annually produces nearly $1 billion in sales and employs nearly 20,000 people. The same forests that support this industry also draw outdoor recreationists from across Idaho and other states that contribute millions of dollars to Idaho's tourism economy.

Photo located at http://www.idl.idaho.gov/forestry/forest-health/GypsyMothCompared0907.pdf

Invasive Tree Pests

Insects and disease organisms can be considered invasive tree pests when those organisms move to areas outside their native range and cause negative impacts. Far from exhaustive, Appendix A provides a list of potentially damaging pests from the www.dontmovefirewood.org. Social, environmental, and economic

impacts caused by such invasive pests can be significant to both urban and rural trees. Introductions of invasive pests in the urban forest occur more often than the rural forest, because movement by people is a primary mode of introduction. Successful eradication is often more likely when the invasive pest is contained in the urban environment, than once it reaches the rural forests. However, there are exceptions. Between 1989 and 1990, the European gypsy moth was successfully eradicated from the urban centers of Coeur d'Alene and Sandpoint, Idaho, and from about 1,000 acres of rural forest surrounding Sandpoint.

Current Situation

Idaho's rural forests are dominated by coniferous tree species, which may limit or eliminate the threat of invasive tree pests transferring from the urban forest that is predominantly hardwoods. When hardwood species are the preferred host, those invasive pests of hardwoods may pose a significant threat to the urban forests. One example is the threat of emerald ash borer (*Agrilus planipennis*). In 2013, the emerald ash borer was found to have established a population in Colorado and cooperators have been evaluating the extent of the infestation to prevent further dissemination from quarantined areas. Twenty-two states and two Providences are currently spending millions of dollars annually to control the spread of this pest and remove killed trees that become hazardous in the urban forest. Emerald ash borer is limited to ash species for feeding and reproduction, and no species of ash is native to Idaho or found in Idaho's rural forests. However, ash is a preferred species in city plantings and yard trees and a significant export tree of Idaho's nursery industry. If such pests become established in Idaho, quarantine restrictions would be required to limit movement to new areas and other states. Quarantine restrictions could negatively impact nursery or wood product industries by limiting markets or adding treatment costs.

By contrast, pests such as the gypsy moths (*Lymantria spp.)* and the European spruce beetle (*Ips typographus*) feed on trees of both rural and urban forests and could have a detrimental impacts on both the urban and rural forests, and Idaho's businesses that export nursery stock. If introduced and populations become established, quarantine restrictions could be imposed and have similar negative impacts by limiting markets or adding treatment costs.

Recent detections of several invasive tree pests renewed a sense of urgency for Idaho to prepare for an accidental introduction of a pest and identify procedures for implementing an organized multi-agency response. During the summer of 2012, elm seed bug (*Arocatus melanocephalus*) was found in the Treasure Valley and was the first report of this pest in North America. This European insect feeds almost exclusively on elm seeds. Fortunately, the impact of this pest has been minimal and Idaho's businesses are not subjected to quarantine requirements for this insect. Also in 2012, routine survey trapping for Japanese beetle (*Popillia japonica*) indicated a population had established in Boise and an eradication program is currently underway.

Japanese beetle by David Cappaert at invasive.org

Purpose

In the event of an established introduction of an invasive forest pest, this document describes the framework for interagency coordination for acquiring and disseminating information, organizing a rapid response, and public involvement that will hopefully minimize negative impacts to Idaho's landowners as well as landscape, nursery, forestry businesses and other stakeholders.

Functions and Roles of Stakeholders

The first and most effective response to the threat of invasive pests is prevention. Idaho State Department of Agriculture (ISDA) manages the Inspection, Export & Phytosanitary Certification processes, manages the boat inspection stations for aquatic invasion prevention, as well as conducts periodic pest surveys and manages detection programs (such as the one that detected Japanese beetle introduction). Idaho Department of Lands (IDL) and ISDA cooperate with the United States Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) and Forest Service for early detection surveys of several major invasive forest pests. Experts with these organizations and the University of Idaho Cooperative Extension Service provide educational training sessions for the public, industry and other agency personnel, in the identification, basic biology and management strategies for tree pests. Idaho also participates in the national "Don't Move Firewood" campaign (http://www.dontmovefirewood.org/) that encourages people to buy and utilize firewood locally.

The above mentioned and additional state agencies have invasive species functions and key responsibilities as outlined in Idaho's Invasive Species Plan (Appendix B). The following is a summary of the agencies and groups located within Idaho that may be involved in a response to a tree pest and their potential roles. Primary contacts for each of the following organizations, as of the date of this document, are provided in Appendix C.

Primary State Agencies

Idaho State Department of Agriculture (ISDA)

- Conduct detection surveys of insects, pathogens and plants
- Implement emergency measures at the state level to prevent spread
- Provide laboratory support
- Provide information to the public and media
- Inspect and regulate movement of nursery stock
- Issue and review interstate plant movement certificates
- Review international and interstate plant and plant pest movement permits issued by APHIS
- Regulate pesticide registration and use
- Provide information to national pest reporting systems

- Administer state rules on intrastate movement of regulated materials
- Collaborate with USDA and other state and local agriculture agencies
- Represent Idaho on national and regional plant boards
- Designate and regulate invasive plant and plant pest species

Idaho Department of Lands (IDL)

- Maintain annual aerial detection survey capability
- Cooperate with state and federal agencies for detection surveys and limiting spread of pests
- Identify and control forest pests on endowment and private lands
- Educate forest industry and state land managers, and landowners about forest pests
- Lead forest management, wood utilization, and restoration activities on state lands
- Seek and apply for special funding assistance through USDA Forest Service for established forest pests
- Collaborate with state and federal agencies to manage established forest pests
- Collaborate with forestry agencies in other states to limit spread and responds to pests
- Assist with planning for solid waste disposal and/or utilization strategies

Idaho Fish and Game

- Assist other agencies with pest surveys on state lands and share information
- Assist with public education about forest pests
- Cooperate with other agencies to manage forest pests on state lands

Other Principal Agencies and Partner Institutions

USDA Animal and Plant Health Inspection Service (APHIS) Plant Protection and Quarantine

- Maintain and fund Cooperative Agricultural Pest Survey (CAPS) program and surveys
- Maintain Memorandum of Understanding with ISDA to effectively cooperate in planning and implementing programs to protect Idaho's plant health.
- Provide final confirmation of pest identifications
- Provide pest traps and lures, if available
- Implement emergency measures at the federal level to prevent spread of pests
- Administer federal quarantines on interstate movement of regulated materials
- Provide international liaison services between individual states and foreign regulatory bodies
- Provide emergency funding for survey and response, as appropriate and available
- Develop and improve survey and control protocols and measures
- Assist ISDA with media contacts
- Provide survey data repository, if appropriate

USDA Forest Service, Forest Health Protection (FHP)

- Provide current information and technical assistance for detection surveys and control activities associated with federal lands.

- Evaluate and develop new technologies for pest management
- Implement detection surveys, evaluation assessments and control measures on federal lands
- Provide information and educational materials
- Coordinate interstate initiatives, as appropriate
- Assist with remote sensing technology use and development
- Provide liaison with the Environmental Protection Agency for environmental assessments
- Provide available funding through Cooperative Forest Health and other programs to state and private organizations

Idaho's University System and Extension Service

- Participate as appropriate in an incident command system
- Share results of relevant research with state agencies
- Conduct research on plant and plant pest biology, ecology, impact and management
- Provide information through Extension, Master Gardener, Master Forest Stewards and other programs

Local Community Representatives and Officials

- Identify the local community or tribal contact, such as a City Forester or Council person to serve as a liaison for the community
- Share tree inventory information, if available
- Cooperate with state agencies for detection surveys and response to pests

Idaho Nursery and Landscape Association, Private Sector Professionals, Businesses, and Groups

- Cooperate with state agencies to disseminate information to members and clients about invasive pests and current status
- Help identify businesses that may be directly impacted
- Help identify certified arborists, foresters and state certified pesticide applicators for management actions
- Cooperate with state agencies for detection surveys and response on their property

Gypsy Moth larva by Yuschock at Bugwood.org

Incident Command System and Procedures

Actions Prior to Detection (On-going)

1) Prior to detection of an invasive forest pest, educate professionals and the public to elicit their assistance in early detection.
   a) Develop and provide training opportunities to community forestry staff, arborists, nursery professionals, green industry professionals, public land managers, Idaho Extension, other state agencies.
   b) Educate the general public, campground managers, master gardeners, master forest stewards and others through meetings, events, press releases, social media releases, and other media.
   c) Develop an Idaho Forest Pest First Detectors program to coordinate volunteers and compile statewide observations in one database.
   d) Education campaigns that target out-of-state visitors who may transport pests
2) Continue strategic detection surveys in partnerships with appropriate agencies to survey rural and urban forests of Idaho with the most current technologies.
3) Utilize trained identifiers within Idaho to investigate reports of possible exotic forest pest introductions or infestations.

Actions Upon Detection

Communicate protocols for reporting possible invasive sightings, official confirmation and official announcement of a detection.

1) Reporting Possible Invasive Sightings
   a) Reports of suspect infestations should be submitted to one of the following individuals (See Appendix C for most recent contact information):
      (1) Idaho State Department of Agriculture (Pest Survey and Detection Manager, 208-332-8620)
      (2) USDA-APHIS (State Plant Health Director, 208-373-1600)
      (3) Idaho Department of Lands (Forest Health Program Manager 208-666-8668)
      (4) USDA Forest Service, Forest Health Protection Group Leaders (Boise Field Office: 208-373-4227; Coeur d'Alene Field Office: 208-765-7342)

2) General Guidelines for collecting and submitting specimens, :
   a) Insects should not be squashed or dried. Place insects in vials or other rigid containers. Larvae should be placed in 70% alcohol for identification, if molecular identification is needed place in 90% alcohol. Collect multiple specimens, if available.
   b) For diseases, collect a 12-24 inch long branch preferably with leaves attached. Sample should show transition from healthy to affected tissues.
   c) Record location, collector, date, tree species, etc.

d) Photographs to supplement a physical sample can be very helpful in diagnosis. For example, take a photograph of the entire tree and another of the affected area. E-mail digital images, or put hard copies in with the sample. Care must be taken to place the prints in a separate ziplock-type plastic bag to ensure that they won't get wet or otherwise damaged.
e) Keep sample cool in a dark place, but not frozen and ship overnight.
f) see also http://pnwhandbooks.org/plantdisease/diagnosis-and-testing/testing-services, and http://www.idahoag.us/Categories/Laboratories/Plantpath/pathsubmit.php

3) Suspect samples/specimens should be forwarded to:

Idaho State Department of Agriculture
Division of Plant Industries
P.O. Box 790
Boise, ID 83701
Phone: (208) 332-8640

4) Specimen confirmation protocol
   a) If the specimen is initially identified as a potential threat by ISDA, IDL, USDA APHIS, or USDA Forest Service, the ISDA Plant Regulatory Official and USDA APHIS State Plant Health Director will be advised and the specimen will be sent on to the official USDA APHIS identification specialist for confirmation. **At this time, NO information will be for public dissemination.** This process will be followed each time a threat is found in a new county or community that may invoke new quarantine restrictions.

5) Notification and Official Announcement protocol
   a) Initial communication of official confirmation will go to the USDA APHIS State Plant Health Director and immediately to ISDA Plant Regulatory Official. **Official public announcement of detection will be made by ISDA and/or USDA APHIS**.

Anticipated Sequence of Response Actions

Response to a verified detection of an invasive forest pest will be through a unified incident command system (ICS) shared by ISDA and IDL. The USDA APHIS State Plant Health Director and USDA Forest Service Forest Health Group Leaders will be notified to determine the appropriate federal role. The Incident Commander (IC) provides leadership and coordinates the response. The selection of the IC may depend on the pest detected and logistics of a potential response action. In the case of a federally regulated pest, APHIS may take the lead and work in consultation with state agency leads. If necessary, the IC may convene panels to provide additional technical advice.

1) ISDA and USDA APHIS, with the cooperation of tribes, the local government, IDL, USFS and other stakeholders (see Appendix C), will immediately meet to determine a preliminary plan of action. Dependent upon the pest, APHIS participation may include the APHIS State Plant Health Director, National Policy Manager, National Operations Manager,

Science and Technology and other advisers, as necessary. Topics to be addressed will include:

a) Review details about the detection
b) Review existing information on the pest and identify information gaps
c) Develop plans for delimiting survey
d) Proposals for regulatory activities
e) Quarantine determination and boundaries
    i) Review State and Federal processes and timing
f) Identify staffing and resource needs
g) Finalize Incident Command structure and staffing
    i) Planning and Finance
    ii) Operations
    iii) Communications

2) **Convene Communications Team:** ISDA and/or USDA APHIS will coordinate the release of verified and accurate information to the press through Public Information and Affairs Officers of ISDA, IDL and USDA APHIS. Appendix D, lists additional groups to assist the Officers with dissemination of information. Guidance for developing press releases is provided in Appendix E.
    a) Identify the agency and/or persons who will be the Communications Chief
    b) Develop outreach and educational materials
        i) Training material for arborists and related industries,
        ii) Brochures or informational sheets for public and cities or counties,
        iii) Articles for the media,
        iv) Other technical bulletins and ideas

3) **Coordinate response with affected county and city governments, tribes, landowners and federal land managers:**
    a) Schedule emergency meeting with local and tribal government representatives, landowners, regulated industries, utility companies, recreational areas and others within the affected areas.
    b) Community Checklist (Appendix F) may be useful to discuss possible management actions with community representatives.

4) **Conduct Delimiting Survey:** Determine extent of the infestation to provide information necessary to make quarantine determinations and establish quarantine boundaries. ISDA and USDA APHIS will take the lead with support from IDL, USDA Forest Service and possibly U of I Cooperative Extension, tribal and local government/community staff.

5) **Investigate potential origin and dissemination:** Mobilize an investigation to determine potential source(s) of the infestation and likelihood that additional introductions could occur through the same path, or may already have spread. Follow up with trace forward and trace back information as required.

6) **Determination of quarantine action**: ISDA and USDA APHIS (Idaho Plant Pest Act of 2002 and Plant Protection Act of 2000, respectively) with input from the local and tribal authorities and all other stakeholders will meet to determine quarantine actions. Quarantines may be temporary or longer-term depending on the pest and situation.

7) **Implement communication plan for quarantine information and advise all affected parties of the quarantine requirements to foster support and compliance.** ISDA and USDA APHIS websites will be the official and only location for quarantine information.

8) **Implement regulatory compliance plan:** A regulatory compliance plan will be developed that describes acceptable treatments. The plan may allow movement of regulated articles out of the quarantine area while minimizing the spread potential. ISDA and USDA APHIS are responsible for regulatory compliance activities. Parties who are able to satisfy the treatment requirements will be placed under compliance agreements with ISDA and/or USDA APHIS.

Ips typographus by William Ciesla at Bugwood.org

9) **Participate in a wood disposal/utilization taskforce**. IDL and USDA APHIS will participate in a wood disposal/utilization taskforce convened by local and tribal government(s) and industry representatives to facilitate and assure that wood transport, treatment, disposal, and/or utilization comply with quarantine requirement s. Recommendations for infested wood collection and disposal yards are provided in Appendix G.

10) **Municipalities and landowners shall be allowed to act under their own local authorities** when local ordinances are applicable and consistent with the ISDA and USDA APHIS quarantine requirements.

Potential Funding for Eradication and Control

Eradication and program expenses are often covered by the state with funding through cooperative agreements with USDA APHIS and/or USDA Forest Service. These agencies may provide emergency funds for selected pest management activities and/or for restoration, above any base-level funding for pest detection and surveys. State emergency funds can also be requested by the responsible state agencies. If eradication efforts fail and the pest becomes well established annual costs for control will likely be incurred by the towns, cities, communities and landowners. Sources of federal and state funds for control of established populations are uncertain and may be partially dependent on the pest of concern.

Appendix A. List of Invasive Pests from www.dontmovefirewood.org

The following table was constructed from *http://www.dontmovefirewood.org/*. It lists the known invasive pests that may stow away in firewood and wood products and the status of their establishment in North America and Idaho. Organisms that may impact Idaho's rural or urban forests are based on the authors' opinions. Y=Yes; N=No; E= Eradication in progress or has been successful. Insects that vector a disease and the corresponding pathogen have the same superscript.

INSECTS				
Common Name	Scientific Name	Established in North America?	Established in Idaho?	Could Impact Idaho Forests?
Ambrosia beetle[1]	*Xyleborus glabratus*	Y	N	N
Asian Gypsy Moth	*Lymantria dispar asiatica* and *L. dispar japonica*	N	N	Y
Asian Longhorned Beetle	*Anoplophora glabripennis*	E	N	Y
Balsam Woolly Adelgid	*Adelges piceae*	Y	Y	Y
Banded Elm Bark Beetle[2]	*Scolytus schevrewi*	Y	Y	Y
Bromeliad Weevil	*Metamasius callizona*	Y	N	N
Brown Spruce Longhorned Beetle	*Tetropium fuscum*	N	N	Y
Cactus Moth	*Cactoblastis cactorum*	Y	N	N
Chestnut Gall Wasp	*Dryocosmus kuriphilus*	Y	N	Y
Citrus Longhorned Beetle	*Anoplophora chinensis*	E	N	Y
Cycad Aulacaspis Scale	*Aulacaspis yasumatsui*	N	N	N
Emerald Ash Borer	*Agrilus planipennis*	Y	N	Y
Erythrina Gall Wasp	*Quadrastichus erythrinae*	N	N	Y
Eurasian Nun Moth	*Lymantria monacha*	N	N	Y
European Gypsy Moth	*Lymantria dispar*	Y	N	Y
European Oak Bark Beetle	*Scolytus intricatus*	N	N	Y
European Spruce Beetle	*Ips typographus*	E	N	Y
Goldspotted oak borer	*Agrilus auroguttatus* (formerly *A. coxalis*)	Y	N	Y
Harrisia cactus mealybug	*Hypogeococcus pungens*	Y	N	N

Hemlock Woolly Adelgid (Asian Orgin)	*Adelges tsugae*	Y	N	Unknown
Larch Casebearer	*Coleophora laricella*	Y	Y	Y
Larger/Common Pine Shoot Beetle	*Tomicus piniperda*	Y	N	Y
Lobate Lac Scale	*Paratachardina pseudolobata*	Y	N	N
Mediterranean Pine Engraver Beetle	*Orthotomicus erosus*	Y	N	Y
Pine Flat Bug	*Aradus cinnamomeus*	N	N	Y
Polyphagous shot hole borer[3]	*Euwallacea spp*	Y	N	Y
Golden- or Red-Haired Pine Bark Beetle	*Hylurus ligniperda*	Y	N	Y
Sirex Woodwasp[4]	*Sirex noctillo*	Y	N	Y
Soapberry Borer	*Agrilius prionurus*	Y	N	N
Spruce Aphid	*Elatobium abietinum*	Y	N	Y
Viburnum leaf beetle	*Pyrrhalta viburni*	Y	N	Y
Walnut Twig Beetle[5]	*Pityophthorus juglandis*	Y	Y	Y

PATHOGENS				
Common Name	Scientific Name	Established in North America?	Established in Idaho?	Could Impact Idaho's forests?
'Ohi'a Rust	*Puccinia psidii*	Y	N	N
Alder Dieback	*Phytophthora alni*	Y	N	Y
Amylostereum complex[4]	*Amylostereum areolatum*	N	N	Y
Beech Bark Disease	*Nectria coccinea* var. *faginata*	N	N	N
Butternut Canker	*Ophiognomonia clavigignenti - juglandacearum*	Y	N	Y
Chestnut Blight	*Cryphonectria parasitica*	Y	N	Y
Dogwood Anthracnose Disease	*Discula destructiva*	Y	N	Y
Dutch Elm Disease[2]	*Ophiostoma ulmi* and *O. novo-ulmi*	Y	Y	Y
European Larch Canker	*Lachnellula (Dasyscypha) willkommii*	Y	N	Y
Fusarium fungus, unnamed[3]	*Fusarium* sp	Y	N	N
Laurel Wilt[1]	*Raffaelea lauricola*	Y	N	N
Oak Dieback	*Phytophthora quercina*	Y	N	Y
Phytophthora kernoviae	*Phytophthora kernoviae*	N	N	Y
Phytophthora Root Rot	Phytophthora cinnamomi	Y	N	Y
Pine Pitch Canker	*Fusarium circinatum*	Y	N	Y
Port-Orford-Cedar Root Disease	*Phytophthora lateralis*	Y	N	N
Sudden Oak Death Syndrome	*Phytophthora ramorum*	Y	N	Y
Thousand Canker Disease[5]	*Geosmithia mrobida*	Y	Y	Y
White Pine Blister Rust	*Cronartium ribicola*	Y	Y	Y

Insects that vector a disease and the corresponding pathogen have the same superscript.

Appendix B. State and Federal Authorities

State and Federal Authorities excerpt from IDAHO INVASIVE SPECIES STRATEGIC PLAN 2012-2016

State Agency	Invasive Species Function	Authorities and Guidance	Key Responsibilities
Idaho Dept. of Fish and Game	Prevent importation or transport of animals and fish that might harm native wildlife populations.	Sec. 36-104, I.C., gives the Fish and Game Commission authority to develop rules regulating all wildlife, native and exotic.	Govern the import, transport, release, possession and sale of native and exotic wildlife and fish through permits.
Idaho Dept. of Lands	Manage weed and insect infestations on state endowment lands and restore lands damaged by weeds. Prevent or detect and manage forest pests and pathogens on state and private lands	Sec. 38-600, I.C., provides authority for the detection and management of forest pests. 58-100, I.C., gives the Land Board the authority to manage pests and weeds on endowment lands and reseed areas.	Detect, prevent, eradicate and manage forest insects and diseases, on state and private lands. Much of this is done cooperatively with the Forest Service. Control insects and weeds on endowment lands.
Idaho Dept. of Agriculture	Prevent, detect, respond to or manage: (1) all insects and diseases that threaten agricultural products, (2) all noxious weeds, (3) deleterious or exotic animals that threaten agricultural crops, livestock, wildlife or the environment, and, (4) threats to nursery stock. The Department also regulates additives to animal feeds.	Sec. 22-2000, I.C., the Plant Pest Act, provides authority to regulate plant pests. 22-2400 is the Idaho Noxious Weed Act, while Ch. 4 is the Pure Seed Act, and Ch. 23 is the Nurseries and Florists Act. Section 25-3900 regulates deleterious and exotic animals, and Ch. 27 allows the regulation of adulterants to animal feeds.	Maintain regular surveys of various agricultural pests and diseases that threaten agricultural products or livestock. Implement actions to control or manage harmful species. Cooperate with the Dept. of Fish and Game in detecting and preventing threats to wildlife and the Dept. of Lands in surveys for such forest pests as gypsy moths. Control commercial fish raising facilities and ponds.
University of Idaho and the Cooperative Extension Service	Conduct research on various invasive species and help build public understanding.	Sec. 33-2800, I.C., plus federal statutes that govern land grant institutions provide broad research and extension authorities.	The College of Agriculture conducts a variety of research and extension programs for agricultural pests, including noxious weeds. The College also helps track noxious weed and other invasive pests. The College of Natural Resources fulfills a similar role for forest pests and those that effect wildlife or the environment.

USDA APHIS: The Plant Protection Act of 2000 (7 U.S.C. 7701 et seq) as amended by the Noxious Weed Control and Eradication Act of 2004 (P.L. 108-412). Among other provisions, the Plant Protection Act authorizes the Secretary of Agriculture to prohibit or restrict the importation, entry, exportation, or movement in interstate commerce of any plant, plant product, biological control organism, noxious weed, article, or means of conveyance, if the Secretary determines that the prohibition or restriction is necessary to prevent the introduction into the United States or the dissemination of a plant pest or noxious weed within the United States. The Act defines the term "Noxious Weed".

USDA Forest Service: Wyden Amendment (P.L. 109-54, Section 434) authorizes the Forest Service to enter into cooperative agreements to benefit resources within watersheds on National Forest System lands. Agreements may be with willing federal, tribal, state, and local governments, private and nongovernment entities, and landowners to conduct activities on public or private lands. Under this authority, the Forest Service may enter into agreements to support or conduct invasive species management activities on aquatic and terrestrial areas owned by local and state governments, tribes, other federal agencies, and private individuals or organizations.

USDA APHIS and Forest Service: Executive Order 13112 issued February 3, 1999 (E.O. 13112) directs federal agencies to: (1) identify actions that may affect status of an invasive species; (2)(a) prevent introduction of such species; (b) detect and control such species; (c) monitor population of such species; (d) provide for restoration of native species; (e) conduct research on invasive species and develop technologies to prevent introduction of such species; (f) promote public education of such species; and (3) not authorize, fund or carry out actions likely to cause the introduction or spread of invasive species in the United States or elsewhere unless the benefits of the action clearly outweigh the harm and the agencies take steps to minimize the harm.

Appendix C. List of Primary Contacts for City Managers/Officials

Idaho State Department of Agriculture: http://www.agri.state.id.us/

- Ag Section Manager, Jared Stuart, 208-332-8620, jared.stuart@agri.idaho.gov
- Ag Program Manager-, Paul Castrovillo, 208-332-8620, paul.castrovillo@agri.idaho.gov

Idaho Department of Lands: http://www.idl.idaho.gov/forestry/forest-health/index.html

- Forest Health & Stewardship Program Manager, Gina Davis, 208-769-1525, gdavis@idl.idaho.gov
- Urban Interface & Planning Program Manager, Dave Stephenson, 208-769-1525, dstephenson@idl.idaho.gov
- Public Information Officer, Emily Callihan, 208-334-0200, ecallihan@idl.idaho.gov

USDA-APHIS: http://www.aphis.usda.gov/

- State Plant Health Director, Brian Marschman, 208-373-1600, Brian.L.Marschman@aphis.usda.gov

USDA-Forest Service, Forest Health Protection: http://www.fs.usda.gov/main/r4/forest-grasslandhealth

- Boise Field Office Group Leader, Joel McMillin, 208-373-4227, jmcmillin@fs.fed.us
- Coeur d'Alene Office Group Leader, Von Helmuth, 208-765-7342, vhelmuth@fs.fed.us

City and Community Foresters

- City Forester, Brian Jorgenson, 208.608.7700, bjorgenson@cityofboise.org
- South Idaho Community Forestry Assistant, Gerry Bates, 208-681-5964, plantingidaho@gmail.com
- Boundary, Bonner, Kootenai, Benewah & Shoshone Counties, Stephen Drinkard, 208-610-999, drunkard.s@gmail.com
- Latah, Clearwater, Lewis, Nez Perce & Idaho Counties, Philip Shinn, 208-790-7402, forestryaide@gmail.com
- Treasure Valley Canopy Project, Lance Davisson, 208/994/1135, Lance.Davisson@gmail.com 2013 List can be found at http://www.idahoforests.org/img/pdf/CityForesters2013.pdf

University of Idaho, Extension Forestry: http://www.uidaho.edu/extension/forestry/directory

- Extension Forestry Specialist, Randy Brooks, 208-885-6356, rbrooks@uidaho.edu

Idaho Nursery and Landscape Association: http://www.inlagrow.org/

- Executive Director, Ann Bates, 208-681-4769, abates@inlagrow.org
- Industry Representative, Matt Wolff, Baxter Wholesale Nursery, 208-365-6011

Idaho Forest Products Commission: http://www.idahoforests.org/

- Director, Betty Munis, 208-334-3292, ifpc@idahoforests.org

Tribal Contacts:

- Coeur d'Alene, Kurt Mettler, Forester,208-686-1315, kmettler@cdatribe-nsn.gov
- NezPerce, John DeGroot, Director, Forestry & Fire Management, jdegroot@nezperce.org
- Kalispel, Dean Osterman, Executive Director of Natural Resources, dosterman@knrd.org
- Shoshone-Bannock, Executive Office, 208-478-3721; Extension, 208-236-1044
- Kootenai Tribe of Idaho, Bonners Ferry Office, 208-267-3519
- Intertribal Timber Council: http://www.itcnet.org/resources/directory

Appendix D. Outreach Groups and Opportunities

INDUSTRY
- GROUPS
  - SPECIFIC OPPORTUNITY/SUBGROUP

Nursery Industry
- Idaho Nursery & Landscape Association
  - INLA newsletter
  - INLA Expo Conference
  - Summer Field Day
- Inland Empire Christmas Tree Association
- University of Idaho Arboretum
  - Arboretum Publications
- Idaho Botanical Garden
  - Trainings
  - Plant sales
- Landscape Architects
- University/Extension Educators
  - University classes
  - Master Gardeners
  - Master Foresters
- National Arbor Day Foundation
  - National Arbor Day Foundation Newsletter
  - Plant List/Plant sales packets

Arboriculture/Forestry
- Idaho Department of Lands
  - Tree Care Workshop
  - Insect & Disease Trainings (cooperative with USFS and/or UI Extension Forestry)
  - Annual Family Forestland Owner & Managers Conference
  - Annual Field Days
  - IDL External Newsletter
- International Society of Arboriculture, Pacific Northwest Chapter
- Pacific Northwest Arborists Association
  - ISA Newsletter
  - Winter meeting
  - Summer Field Day
- Idaho Forestland Owners Association
  - Quarterly Newsletter
- Intertribal Timber Council: http://www.itcnet.org/resources/directory.
- Idaho Tree Farm Committee
  - Quarterly Newsletter

- Society of American Foresters
  - Local branch meetings
  - Annual Foresters Forum
  - Listserve
- Association of Consulting Foresters
  - Annual meeting

Land Management Agencies and Property Managers

- USDA, Forest Service
- Corp of Engineers
- Bureau of Reclamation
- Bureau of Land Management
- Bureau of Indian Affairs
- Idaho Fish and Game
- Idaho Department of Transportation
- Idaho Department of Environmental Quality
- Mayors/City Councils
  - Council meetings
- Idaho's Municipalities Council
- Tree Boards/Municipalities
  - Board meetings
- Utility Companies (Idaho Power)
  - Public meetings
  - Bill inserts
  - Tree trimming door hangers

Parks/Recreation/Nature Groups

- Idaho's Parks and Recreation Commission
  - Naturalist talks
  - Radio & television shows
  - Campground message boards
  - Park bulletin boards
  - Park/hunting license information
  - Campground reservations
  - Campground stewards
  - Visitor centers
- Private RV/Campgrounds
  - Message boards
  - Reservation systems
  - Camp Away
- Public Campgrounds
  - Message boards
  - Reservation systems
- National Park Service
  - Camping reservation systems
- Idaho Recreation Association
  - Newsletter

- Corps of Engineers
- Friends of Parks Groups
  - Newsletter
  - Club meetings
- Audubon Society
- Nature/Bird watching groups
- Sierra Club
- Idaho Conservation League
- Nature Conservancy
  - Newsletters
  - Club meetings
- Idaho Department of Travel & Tourism
- Municipal Parks & Recreation Departments
- Miscellaneous outreach opportunities
- Target outreach for firewood users (e.g. food vendors)

Nature Centers/Science Education

- Idaho's Discovery Center Children's
- Idaho Botanical Garden
  - Naturalist talks
  - Boise Bug Day
- Science Teachers
- Project Learning Tree
- U of I Extension Educators
- Clubs (Scouts, FFA, 4-H, Campfire kids, science groups)
  - Meetings
- Zoos

Agriculture

- Idaho State Department of Agriculture
- Natural Resource Conservation Service
- Western Idaho State Fair
- Eastern Idaho State Fair
- Idaho Beekeepers
- USDA, APHIS
  - Local USDA offices
  - Other, unspecified
- Ag Commodity newsletters
- Idaho Resource Conservation and Development (RC&D)

Pest Control

- Idaho Pest Control Association
- Environmental Care Association

Appendix E. Guidance for Developing Press Releases

Another good resource for how to develop a media plan is at http://www.engaginglandowners.org/.

Begin working early with your Public Affairs Officer or Public Information Officer to convey a consistent and clear message. Here is a general outline to consider when developing a media release or giving presentations to the community.

1) List 1 to 3 objectives for your work with the media. Examples are:
   a) To describe the pest so others will report observations to an authority
   b) To highlight the risk of this pest to resources
2) Identify the target audience(s). Appendix C has a list of potential groups that may be interested and whom could help the outreach effort. If needed, asking the follow questions of a target audience may help to better understand how to reach them effectively:
   a) Why do we want them?
      i) Common answers are: They have the power to make work easier, expand surveys, educate their neighbors, etc.
   b) What do we want them to do?
      i) Common answers would be: "To Commit to" something such as checking the trees in their neighborhood or not importing firewood from out of state.
   c) What do they care about (values, vulnerabilities)?
      i) Common answers could be: reducing costs, preventing additional costs or being environmental stewards.
   d) What/whom do they read, watch, listen to?
      i) Identify the larger media in the area such as TV stations, newspapers, radio, internet, social media (Facebook, Twitter, etc).
      ii) Identify the specialty or professional publications.
3) Identify the counter-messages and list the arguments of the opposition.
4) Write-out your 30-word (maximum) statement that will get the point across to communicate your idea. This will be the overall theme of the communication.
5) Identify good images that are legally available to use for conveying the message.
6) Identify good spokespeople to convey or accentuate the message.
7) Develop two soundbites that convey the message and address the important issues raised by the opposition.
8) Identify the best media to convey the message to each of the targets.
9) Deliver the message.
10) Identify any additional opportunities, such as other events or products, to piggyback the message.
11) Organize and prioritize these additional opportunities.

Appendix F. Checklist for Communities

- Educate yourself, community staff, and community volunteers on the pest and its potential effects. Go to ISDA (http://www.agri.idaho.gov/) and USDA (www.aphis.usda.gov/) official websites and contact professionals for the most up to date information. While the general internet is a valuable resource, many websites contain false or misleading information and caution should be urged.
- Convene a Task Force of community decision makers, community volunteers and agency individuals that can help evaluate potential decisions.
- Gather pertinent street tree and community owned tree documents:
  - Inventory –What kind of trees are in the community? (IDL Urban Interface/Program Manager may provide assistance if community tree inventory is lacking.)
  - Maps of trees in your community (where are those trees?)
  - Ordinances (do you have them, do they need to be revised?)
- Determine your level of risk:
  - How many susceptible trees do you have?
    - And, who is responsible for their management?
    - What is their condition?
- Determine your management strategies:
  - Remove
  - Remove and replace
  - Treat with pesticides
  - Combination of actions.
- Determine your timeline for implementing management.
- Evaluate your budget for conducting management and identify other possible funding sources.
- Determine who will be executing the management.
  - Community staff/employees?
  - Contracted arborists and pesticide companies?
- Create a plan for dealing with/capitalizing on the waste wood.
- Determine whether your community will assist with privately owned trees.
- Develop a dissemination plan for community residents and businesses concerning the pest and your decisions.
- Monitor public and private trees for signs and symptoms of infestation.

Appendix G. Recommendation for Infested Wood Collection and Disposal Yards

Wood collection or marshaling yards have proven to be an effective way to collect infested wood harvested by various groups into one accessible location where it can be sorted, processed, treated and merchandised. These yards will also play a regulatory role by enabling state and local officials to contain large amounts of affected material and inspect finished products efficiently.

A marshaling yard is a disposal site whose purpose is to help prevent wood that could potentially house invasive species from being transported out of a known infested area. It can be used for wood processing, such as chipping, grinding, debarking, sawing and heat treatment or other related marketing activities. The yard also serves as a temporary or emergency storage site when trees are removed.

Marshaling yards are set up with utilization in mind and are used to merchandise or dispose of wood materials which may or may not be infested. They allow municipalities, tree service companies, utilities, and individuals to drop off wood material for processing and disposal in a manner to prevent human assisted spread. Marshaling yards or wood recycling centers may accept various species of trees and can make wood disposal more efficient and economical.

Approval of wood storage site and facilities

The company or municipality responsible for the site must enter into a compliance agreement with ISDA in order to be an "Approved Wood Storage Site"

- Cost may include:
  - 2 inspections per year verifying criteria listed below
  - Certificate or permit to store infested wood

Site Requirements

- Location of site can be on public or private land.
- Size of site will be dependent on potential wood volume, proximity to other yards and merchandizing activities that will take place.
  - 3 – 5 acres for small volume and one utilization objective
  - 10 acres for large volume, multiple utilization objectives
- Fenced

Specifications for the material accepted at approved wood storage sites

- Woody debris from trees only will be accepted
- Construction debris and mixed waste WILL NOT be accepted

Examples of approved treatments

Processing (These options dictated by pest biology)

- Chipping – wood, brush and stump grindings must be chipped or ground down to a size of no more than 1" in two dimensions (two of the three measurements- length, width, depth- must be 1" or smaller). The typical chipper used in tree care operations will not

reliably create chips that meet this specification. Chippers equipped with a 1" screen will assure compliance.

- Debarking – according to established pest or disease specific Best Management Practices BMPs (at minimum complete removal of bark). Note that the removed bark and wood must be chipped down to a maximum size of 1" by 1" in 2 dimensions.
- Heat treatment- wood must be heated according to established pest or disease specific BMPs (for regulated pests and diseases the wood temperature must reach 160 degrees F for 75 minutes in the center of the piece).
- Composting – to compost bark and the additional one-half inch wood, temperatures must reach at least 140 degrees F for four days and the compost pile must be turned after 4 days.
- Fumigation – use labeled fumigants by a process approved by state or federal agencies.
- Burning- wood, brush or chips may be burned prior to pest emergence as per specific life cycle.
- Aging – wood material that is aged for 2 years after tree death will be free of most pests. The wood will have dried to the point that the pest can no longer survive in it and a pest present when the tree died or that infested the wood shortly after cutting will have emerged during the 2 year period. If this processing method is used, it should be understood that the average pest will continue to emerge during the 2 year aging period and this wood poses a risk of infestation to living tree species in the area where it is being aged. This wood must not be moved out of the infested area during the aging period.

Storage options until processing (These options dictated by pest biology)

Invaders may emerge from infested wood. Infested wood should be processed in the spring or as dictated by pest flight season to avoid risk of emergence and additional attacks.

Utilization options (These options dictated by pest biology)

The following is a list of the options recommended in order for utilizing properly treated wood waste:

- Use as **lumber** (with no bark present) to produce value added products.
- Use as **chipped material** for landscaping, trail surfaces and bedding material for farmers.
- Use chipped material as a **carbon source** for compost piles.
- Use as **boiler fuel** in a boiler equipped with the appropriate air pollution control equipment. This generally means industrial and utility boilers approved to burn wood. Consult individual boiler owners for required fuel specifications.
- Use as **firewood** for wood burning stove and outdoor camp fires. Residential outdoor wood fired boilers are not recommended due to their heavy release of fine particulate matter pollution.

Disposal options (These options dictated by pest biology)

- Disposal in a **landfill.**
- Non-landfill **burial.**
- Burn in an **Air Curtain Destructor** or incinerator.