

**PHOTO
CREDITS**

FRONT COVER

Maple

Steve Eilers

PLANT ID

Apple/Crabapple

A Katrina Mendrey,
Montana State University

B Sarah Eilers, Montana
State University

C Sarah Eilers, Montana
State University

D Richard Krott, Tizer
Botanical Gardens

Arborvitae

A Sarah Eilers, Montana
State University

B Sarah Eilers, Montana
State University

C Sarah Eilers, Montana
State University

Birch

A Sarah Eilers, Montana
State University

B Sarah Eilers, Montana
State University

C Sarah Eilers, Montana
State University

D Sarah Eilers, Montana
State University

Boxelder

A Sarah Eilers, Montana
State University

B Sarah Eilers, Montana
State University

C Sarah Eilers, Montana
State University

Gallery Pear/Bradford Pear

A Sarah Eilers, Montana
State University

B Sarah Eilers, Montana
State University

C Sarah Eilers, Montana
State University

D Sarah Eilers, Montana
State University

Sour Cherry/Pie Cherry/Tart
Cherry

A pixabay.com

B Sarah Eilers, Montana
State University

C Sarah Eilers, Montana
State University

Cotoneaster/Hedge
Cottoneaster

A Sarah Eilers, Montana
State University

B Richard Krott, Tizer
Botanical Gardens

C Sarah Eilers, Montana
State University

D Sarah Eilers, Montana
State University

Douglas-Fir

A Sarah Eilers, Montana
State University

B Mary Ellen (Mel) Harte,
Bugwood.org

C Jim Eilers

D Jim Eilers

Elm

A Sarah Eilers, Montana
State University

B Sarah Eilers, Montana
State University

C Sarah Eilers, Montana
State University

D Sarah Eilers, Montana
State University

Fir

A Sarah Eilers, Montana
State University

B Sarah Eilers, Montana
State University

C Sarah Eilers, Montana
State University

D Dave Powell, USDA Forest
Service (retired),
Bugwood.org

Grape

A Richard Krott, Tizer
Botanical Gardens

B Richard Krott, Tizer
Botanical Gardens

C Richard Krott, Tizer
Botanical Gardens

Green Ash

A Sarah Eilers, Montana
State University

B Sarah Eilers, Montana
State University

C Sarah Eilers, Montana
State University

D Sarah Eilers, Montana
State University

Hackberry

A Sarah Eilers, Montana
State University

B Sarah Eilers, Montana
State University

C Sarah Eilers, Montana
State University

D Sarah Eilers, Montana
State University

Hawthorn

A Sarah Eilers, Montana
State University

B Sarah Eilers, Montana
State University

C Sarah Eilers, Montana
State University

D Carol Zimmer

Thornless Honeylocust

A Sarah Eilers, Montana
State University

B Sarah Eilers, Montana
State University

C Sarah Eilers, Montana
State University

Buckeye and Horsechestnut

A Sarah Eilers, Montana
State University

B Sarah Eilers, Montana
State University

C Sarah Eilers, Montana
State University

D Sarah Eilers, Montana
State University

Juniper

A Sarah Eilers, Montana
State University

B Sarah Eilers, Montana
State University

C Sarah Eilers, Montana

State University	B Sarah Eilers, Montana	B Robert L. Anderson, USDA
Lilac	State University	Forest Service,
A Sarah Eilers, Montana	C Sarah Eilers, Montana	Bugwood.org
State University	State University	C Eva Grimme, Montana
B Sarah Eilers, Montana	D Sarah Eilers, Montana	State University
State University	State University	D Joseph OBrien, USDA
C Sarah Eilers, Montana	Quaking Aspen/Poplar/	Forest Service,
State University	Cottonwood	Bugwood.org
Linden	A John Ruter University of	Apple Scab
A Joseph OBrien, USDA	Georgia, Bugwood.org	A Bruce Watt, University of
Forest Service,	B Sarah Eilers, Montana	Maine, Bugwood.org
Bugwood.org	State University	B Clemson University -
B Richard Webb,	C Sarah Eilers, Montana	USDA Cooperative
Bugwood.org	State University	Extension Slide Series,
C Sarah Eilers, Montana	D Sarah Eilers, Montana	Bugwood.org
State University	State University	C Bruce Watt, University of
D Sarah Eilers, Montana	Colorado Blue Spruce	Maine, Bugwood.org
State University	A Sarah Eilers, Montana	Bacterial Blight of Lilac
Maple	State University	A William Jacobi,
A Sarah Eilers, Montana	B Sarah Eilers, Montana	Colorado State University,
State University	State University	Bugwood.org
B Sarah Eilers, Montana	C Sarah Eilers, Montana	B William Jacobi,
State University	State University	Colorado State University,
C Sarah Eilers, Montana	D Sarah Eilers, Montana	Bugwood.org
State University	State University	C Eva Grimme, Montana
D Richard Krott, Tizer	Virginia Creeper	State University
Botanical Gardens	A Richard Krott, Tizer	D Eva Grimme, Montana
European Mountain Ash	Botanical Gardens	State University
A Pat Breen, Oregon State	B Richard Krott, Tizer	Bacterial Wetwood or
University	Botanical Gardens	Slime-flux
B Sarah Eilers, Montana	C Sarah Eilers, Montana	A Mike Schomaker,
State University	State University	Colorado State Forest
C Richard Krott, Tizer	D Sarah Eilers, Montana	Service, Bugwood.org
Botanical Gardens	State University	B Joseph OBrien, USDA
D Sarah Eilers, Montana	White Willow/Golden Willow	Forest Service,
State University	A Sarah Eilers, Montana	Bugwood.org
Bur Oak	State University	C William Jacobi,
A Sarah Eilers, Montana	B Robert Vidéki, Doronicum	Colorado State University,
State University	Kft., Bugwood.org	Bugwood.org
B Sarah Eilers, Montana	C Sarah Eilers, Montana	Black Canker of Willow
State University	State University	A Patrick Mangan, Montana
C Sarah Eilers, Montana	D Sarah Eilers, Montana	State University
State University	State University	B Sherrie Smith, University
D Sarah Eilers, Montana		of Arkansas
State University		Black Knot
Pine		A Paul A. Mistretta, USDA
A Sarah Eilers, Montana	Anthracnose	Forest Service,
State University	A William M. Brown Jr.,	Bugwood.org
	Bugwood.org	

DISEASES

- B Mike Schomaker,
Colorado State Forest
Service, Bugwood.org
- C Joseph OBrien, USDA
Forest Service,
Bugwood.org
- Cedar-Apple Rust
- A Gerald Holmes, California
Polytechnic State
University at San Luis
Obispo, Bugwood.org
- B Brian Olson, Oklahoma
State University,
Bugwood.org
- C John Hartman,
University of Kentucky,
Bugwood.org
- D Elizabeth Bush,
Virginia Polytechnic
Institute and State
University,
Bugwood.org
- Cedar-Hawthorn Rust
- A John Hartman,
University of Kentucky,
Bugwood.org
- B Robert L. Anderson, USDA
Forest Service,
Bugwood.org
- C Daniel H. Brown, USDA
Forest Service,
Bugwood.org
- D Ward Upham, Kansas
State University,
Bugwood.org
- Crown Gall
- A Lesley Ingram,
Bugwood.org
- B Edward L. Barnard,
Florida Department of
Agriculture and
Consumer Services,
Bugwood.org
- C Eva Grimme, Montana
State University
- Cytospora Canker
- A Joseph OBrien, USDA
Forest Service,
Bugwood.org
- B Eva Grimme, Montana
State University
- Diplodia Tip Blight
- A Linda Haugen, USDA
Forest Service,
Bugwood.org
- B Susan K. Hagle, USDA
Forest Service,
Bugwood.org
- C Ronald S. Kelley, Vermont
Department of
Forests, Parks and
Recreation,
Bugwood.org
- D Joseph OBrien, USDA
Forest Service,
Bugwood.org
- Dothistroma Needle Blight
- A Steven Munson, USDA
Forest Service,
Bugwood.org
- B USDA Forest Service,
Northern and
Intermountain Region,
USDA Forest
Service, Bugwood.org
- C Eva Grimme, Montana
State University
- D Petr Kapitola, Central
Institute for Supervising
and Testing in Agricul-
ture, Bugwood.org
- Dutch Elm Disease
- A Joseph OBrien, USDA
Forest Service,
Bugwood.org
- B Minnesota Department
of Natural Resources ,
Minnesota Department
of Natural Resources,
Bugwood.org
- Bugwood.org
- C George Hudler, Cornell
University, Bugwood.org
- D William M. Brown Jr.,
Bugwood.org
- Fire Blight
- A P.G. Psallidas, Benaki
Institute, Athens,
Bugwood.org
- B Elizabeth Bush, Virginia
Polytechnic Institute
and State University,
Bugwood.org
- C William Jacobi,
Colorado State University,
Bugwood.org
- D Rebekah D. Wallace,
University of Georgia,
Bugwood.org
- Kabatina Tip Blight
- A Bruce Watt, University of
Maine, Bugwood.org
- B Penn State Department of
Plant Pathology & Envi-
ronmental Microbiology
Archives, Penn State
University, Bugwood.org
- C Bruce Watt, University of
Maine, Bugwood.org
- Marssonina Leaf Blight
- A William Jacobi,
Colorado State University,
Bugwood.org
- B Manfred Mielke,
USDA Forest Service,
Bugwood.org
- C William Jacobi,
Colorado State University,
Bugwood.org
- D Eva Grimme, Montana
State University
- Nectria Canker
- A John Hartman, University
of Kentucky, Bugwood.org
- B Ansel Oommen,
Bugwood.org
- C Andrej Kunca, National
Forest Centre - Slovakia,

- Bugwood.org
- D USDA Forest Service
- Ogden, USDA Forest Service, Bugwood.org
- Oak Leaf Blister
- A Penn State Department of Plant Pathology & Environmental Microbiology Archives, Penn State University, Bugwood.org
- B Michael Kangas, NDSU
- North Dakota Forest Service, Bugwood.org
- C Bruce Watt, University of Maine, Bugwood.org
- D Bruce Watt, University of Maine, Bugwood.org
- Phomopsis Tip Blight
- A Robert L. Anderson, USDA Forest Service, Bugwood.org
- B Robert L. Anderson, USDA Forest Service, Bugwood.org
- C Bruce Watt, University of Maine, Bugwood.org
- D Bruce Watt, University of Maine, Bugwood.org
- Powdery Mildew
- A Andrej Kunca, National Forest Centre - Slovakia, Bugwood.org
- B Petr Kapitola, Central Institute for Supervising and Testing in Agriculture, Bugwood.org
- C Bruce Watt, University of Maine, Bugwood.org
- D Clemson University
- USDA Cooperative Extension Slide Series, Bugwood.org
- Rhabdocline Needle Cast
- A John W. Schwandt, USDA Forest Service, Bugwood.org
- B Dawn Dailey O'Brien, Cornell University, Bugwood.org
- C Andrej Kunca, National Forest Centre - Slovakia, Bugwood.org
- D John W. Schwandt, USDA Forest Service, Bugwood.org
- Rhizosphaera Needle Cast
- A Joseph OBrien, USDA Forest Service, Bugwood.org
- B USDA Forest Service - North Central Research Station, USDA Forest Service, Bugwood.org
- C Bruce Watt, University of Maine, Bugwood.org
- D Sandra Jensen, Cornell University, Bugwood.org
- Shothole Blight
- A Andrej Kunca, National Forest Centre - Slovakia, Bugwood.org
- B Whitney Cranshaw, Colorado State University, Bugwood.org
- C William M. Brown Jr., Bugwood.org
- D William M. Brown Jr., Bugwood.org
- Stigmina Needle Cast
- A Bruce Watt, University of Maine, Bugwood.org
- B Joseph OBrien, USDA Forest Service, Bugwood.org
- C Bruce Watt, University of Maine, Bugwood.org
- Sudden Needle Drop
- A USDA Forest Service - North Central Research Station, USDA Forest Service, Bugwood.org
- B Eva Grimme, Montana State University
- C Eva Grimme, Montana State University
- Swiss Needle Cast
- A USDA Forest Service - North Central Research Station, USDA Forest Service, Bugwood.org
- B Joseph OBrien, USDA Forest Service, Bugwood.org
- D Susan K. Hagle, USDA Forest Service, Bugwood.org
- Venturia Leaf and Shoot Blight
- A William Jacobi, Colorado State University, Bugwood.org
- B Minnesota Department of Natural Resources, Minnesota Department of Natural Resources, Bugwood.org
- Western Gallrust
- A USDA Forest Service - Ogden, USDA Forest Service, Bugwood.org
- B James W. Byler, USDA Forest Service, Bugwood.org
- C Rocky Mountain Research Station - Forest Pathology, USDA Forest Service, Bugwood.org

INSECTS

Aphids

- A G. Csoka, HFRI, Bugwood.org #5371398
- B D. Cappaert, Bugwood.org #5422731
- C Cranshaw, CSU, Bugwood.org #2200050
- Ash Bark Beetles
- A J. Solomon, USFS, Bugwood.org #3067012
- B W. Cranshaw, CSU,

- Bugwood.org #5506335
- C D. Cappaert, Bugwood.org #5371044
- Ash Flower Gall Mite
- A S. Katovich, Bugwood.org #5202097
- B D. O'Brien, Cornell University, Bugwood.org #5458338
- C A. Munson, USFS, Bugwood.org #1470186
- Ash Plant Bug
- A S. Katovich, Bugwood.org #1398085
- Aspen Blotch Leafminer
- A S. Katovich, Bugwood.org #5443552
- Blister Mites
- A W. Cranshaw, CSU, Bugwood.org #1325070
- Bronze Birch Borer
- A S. Valley, ODA, Bugwood.org #545856
- B S. Katovich, Bugwood.org #1457024
- Codling moth
- A Clemson University -USDA Cooperative Extension Slide Series, Bugwood.org #1435202
- B G. Csoka, HFRI, Bugwood.org #5429090
- C M. Louadfel, Bugwood.org #5556837
- Cooley Spruce Gall Adelgid
- A W. Cranshaw, CSU, Bugwood.org #5445209
- B Pennsylvania DCNR-Forestry, Bugwood.org #5018062
- C W. Ciesla, FHML, Bugwood.org #758020
- Cottony Maple Scale
- A E. Nelson, Bugwood.org #5360709
- B D. Blackford, USFS, Bugwood.org #2181096
- Douglas-fir Tussock Moth
- A W. Guy, Bugwood.org #1587117
- B D. Powell, USFS, Bugwood.org #1212015
- C USFS-Region 2, Bugwood.org #1441052
- D W. Ciesla, FHML, Bugwood.org #5346085
- Engraver Beetles
- A S. Katovich, Bugwood.org #1398232
- B S. Tunnock, USFS, Bugwood.org #2253083
- C K. Walker, Museum Victoria, Bugwood.org #5403413
- Eriophyid Mites
- A Lauren Kerzicnik, Montana State University
- B M. Zubrik, FRI, Slovakia, Bugwood.org #5379452
- C S. Katovich, Bugwood.org #5424246
- European Elm Scale
- A J. Berger, Bugwood.org #5402456
- B W. Cranshaw, CSU, Bugwood.org #5303021
- Forest Tent Caterpillars
- A W. Ciesla, FHML, Bugwood.org #5537850
- B W. Ciesla, FHML, Bugwood.org #5509373
- C W. Ciesla, FHML, Bugwood.org #5509369
- D W. Ciesla, FHML, Bugwood.org #5509359
- Giant Conifer Aphids
- A B. Hammon, CSU, Bugwood.org #5495188
- B W. Cranshaw, CSU, Bugwood.org #1476087
- Leafcurl Ash Aphid
- A W. Cranshaw, CSU, Bugwood.org #5445320
- B W. Cranshaw, CSU, Bugwood.org #5445325
- C L. Hyche, Auburn University, Bugwood.org #1419468
- Leafhoppers
- A W. Cranshaw, CSU, Bugwood.org #1455200
- Mountain Pine Beetle
- A S. Valley, ODA, Bugwood.org #5478685
- B W. Cranshaw, CSU, Bugwood.org #5382166
- C W. Ciesla, FHML, Bugwood.org #1254003
- Oystershell Scale
- A W. Ciesla, FHML, Bugwood.org #1254050
- B W. Cranshaw, CSU, Bugwood.org #5509538
- C W. Cranshaw, CSU, Bugwood.org #1325097
- Pear Sawfly
- A J. Payne, USDA-ARS, Bugwood.org #1224178
- B L. Ingram, Bugwood.org #5401602
- Pine Needle Scale
- A J. Hanson, USFS, Bugwood.org #0949066
- B US National Collection of Scale Insects Photographs, USDA-ARS, Bugwood.org #5111063
- Poplar Borer
- A J. Solomon, USFS, Bugwood.org #3046001
- B W. Cranshaw, CSU, Bugwood.org #1476104
- C J. Solomon, USFS, Bugwood.org #284067
- Root Weevils
- A C. Moorehead, Bugwood.org #5211047
- B W. Cranshaw, CSU, Bugwood.org #5499242
- C W. Cranshaw, CSU, Bugwood.org #5561106
- Rough Bulletgall Wasp
- A W. Ciesla, FHML, Bugwood.org #5579319

- B S. Katovich, Bugwood.org #5497086
- C W. Cranshaw, CSU, Bugwood.org #5083021
- Spruce Bud Scale
- A S. Katovich, Bugwood.org #1593006
- Spruce Spider Mite
- A W. Strong, BC Ministry of Forests, Bugwood.org #5445600
- B W. Strong, BC Ministry of Forests, Bugwood.org #5445597
- Two-spotted Spider Mite
- A F. Pears, CSU, Bugwood.org #5361242
- B W. Cranshaw, CSU, Bugwood.org #5369738
- Western Spruce Budworm
- A W. Ciesla, FHML, Bugwood.org #758022
- B W. Ciesla, FHML, Bugwood.org #5466869
- C W. Ciesla, FHML, Bugwood.org #5466872
- White Pine Weevil
- A D. Herms, OSU, Bugwood.org #1523048
- B S. Katovich, Bugwood.org #1199034
- C W. Cranshaw, CSU, Bugwood.org #1326028
- Willow Redgall Sawfly
- A P. Kapitola, Central Institute for Supervising and Testing in Agriculture, Bugwood.org #4554074
- B DAFF Archive, Bugwood.org #1194105
- ABIOTIC ISSUES**
- Deep Planting/Grade Change
- A Sarah Eilers, Montana State University
- B Luana Vargas, Desert Botanical Garden, Bugwood.org
- C Sarah Eilers, Montana State University
- Deer
- A David Stephens, Bugwood.org
- B Whitney Cranshaw, Colorado State University, Bugwood.org
- Drought Stress
- A Robert L. Anderson, USDA Forest Service, Bugwood.org
- B Charles Hoysa, Virginia Cooperative Extension, Bugwood.org
- C Susan K. Hagle, USDA Forest Service, Bugwood.org
- Fasciation
- A Sarah Eilers, Montana State University
- B Richard Krott, Tizer Botanical Gardens
- Frost Crack
- A Sarah Eilers, Montana State University
- B Sarah Eilers, Montana State University
- Herbicide Injury—Glyphosate
- A Ansel Oommen, Bugwood.org
- Herbicide Injury—Synthetic Auxins
- A Brian Dintelmann; University of Missouri Weed Science Program
- B Minnesota Department of Natural Resources, Bugwood.org
- Leaf Chlorosis
- A Chance Noffsinger, Montana State University
- B Joseph OBrien, USDA Forest Service, Bugwood.org
- C Joseph OBrien, USDA Forest Service, Bugwood.org
- Leaf Scorch
- A Chance Noffsinger, Montana State University
- B Chance Noffsinger, Montana State University
- Seasonal Needle Drop
- A Ladd Livingston, Idaho Department of Lands, Bugwood.org
- Transplant Shock
- A Joseph OBrien, USDA Forest Service, Bugwood.org
- B Joseph OBrien, USDA Forest Service, Bugwood.org
- C Joseph OBrien, USDA Forest Service, Bugwood.org
- Voles
- A Sarah Eilers, Montana State University
- B Elizabeth Bush, Virginia Polytechnic Institute and State University, Bugwood.org
- C Richard Krott, Tizer Botanical Gardens
- Woodpeckers and Sapsuckers
- A Terry Spivey, USDA Forest Service, Bugwood.org
- B Alice Siebecker
- C Joseph OBrien, USDA Forest Service, Bugwood.org
- D Sarah Eilers, Montana State University