

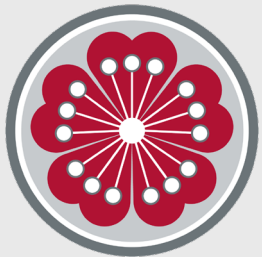


WASHINGTON STATE UNIVERSITY
EXTENSION



WOODY PLANTS for DIFFICULT SITES

Master Gardener Foundation of Washington State
2022 Advanced Education Conference



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WSU Extension

Engaging people, organizations, and communities to advance knowledge, economic well-being, and quality of life by fostering inquiry, learning, and the application of research.





Mission

Engaging university-trained volunteers to empower and sustain diverse communities with relevant, unbiased, research-based horticulture and environmental stewardship education.





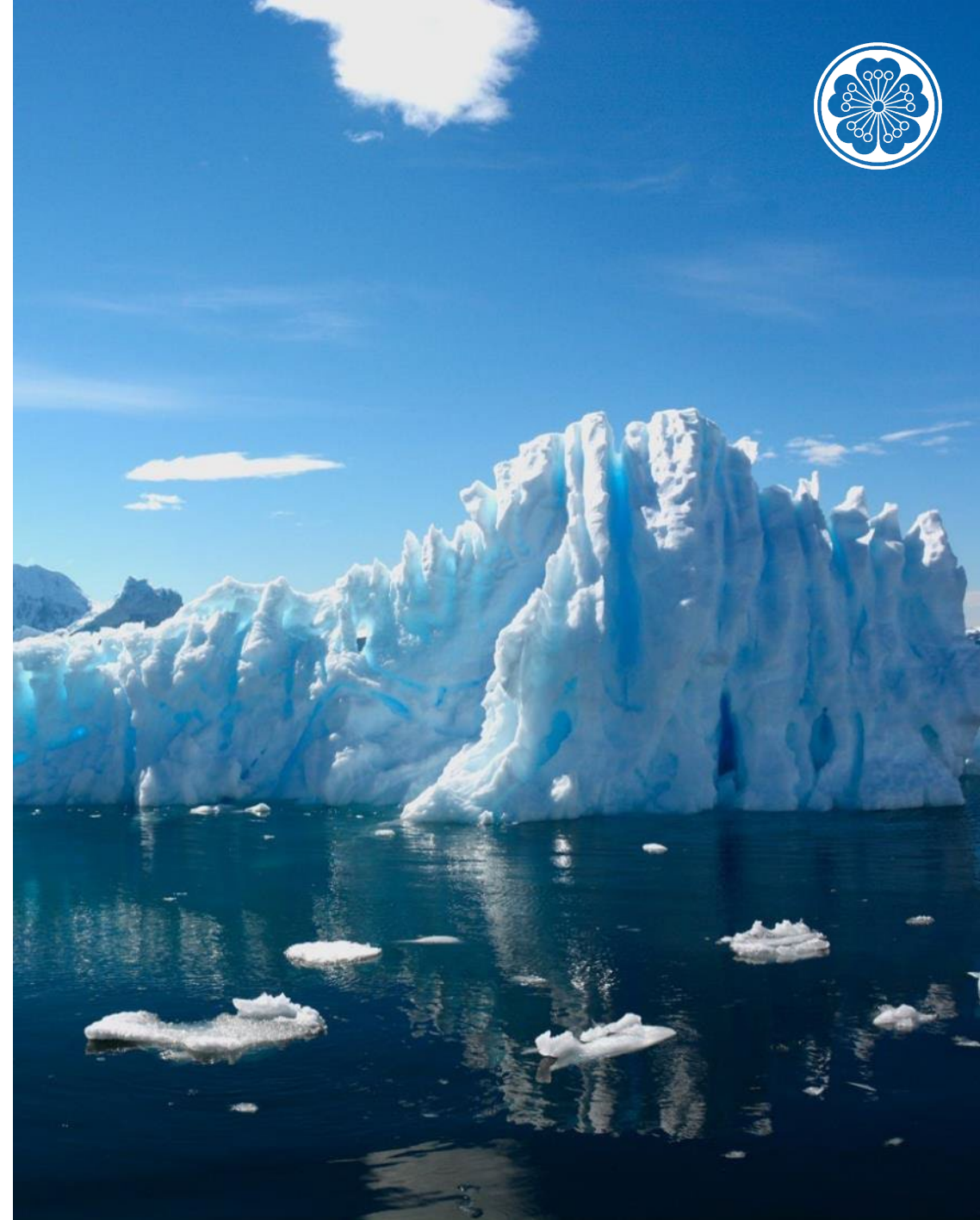


Climate Change



Teaches ways to create resilient landscapes that are adapted to our changing climate.

- Impact of climate change on people, wildlife and ecosystems
- We all have a role to play
- Techniques for home landscapes





Plants For Difficult Sites

How do we find them?

- Research
 - Study of native range
 - Experimental research
- Recorded experience

Carpinus betulus 'Franz Fontaine'

Fastigiate European hornbeam





Plants For Difficult Sites



Where do they come from?

- Ecological niche
- Wide tolerance of conditions
- Adaptability is a double-edged sword



Celtis occidentalis

Common hackberry

Ecological Niche

- Shade tolerance?
 - Understory forest plants
 - North sides of slopes (northern hemisphere)
- Wet soils?
 - Wetlands
- Drought tolerance
 - Shrub-steppe
 - (Desert)

Look to native conditions

Taxodium distichum

Bald cypress



Wide Tolerance

- Soil conditions
 - Low fertility
 - pH
- Wet soils?
 - Seasonal saturation
- Drought tolerance
 - Dry summer zones
 - More research being done on drought tolerance

Acer saccharum

Sugar maple

[John Ruter, University of Georgia, Bugwood.org](http://Bugwood.org)



1580871



The Japanese Maple Quandary

Invasive species on the east coast

- Virginia
- Washington DC
- Displacing native plants

Should we remove Japanese
maples from our planting lists?

Eradicate them from our
landscapes?

Acer palmatum

Japanese maple



Noxious weed search

Identify a W

Noxious Weed Board

- State
- County

WA Invasive Species Council

USDA PLANTS database

[Invasive Plant Atlas of the United States - Database of Plants Invading Natural Areas: Invasive Plant Atlas of the United States](#)



COMMON NAME	ADAPT	HEAT ONLY		HEAT & HARDINESS	
		ZONE SUIT	ZONE VULN	ZONE SUIT	ZONE VULN
Aleppo pine	.	✓	●	✓	●
Alleghany serviceberry	+	✓	▼	✓	▼
American basswood	.	✓	●	✗	○
American beech	.	✓	●	✓	●
American elm	.	✓	●	✓	●
American hornbeam	+	✓	▼	✓	▼
American smoke tree	.	✓	●	✗	○
American sycamore	.	✓	●	✓	●
American witch-hazel	.	✓	●	✗	○
Amur maackia*	+	✓	▼	✗	⊖
Apricot	.	✓	●	✗	○
Arizona cypress	.	✓	●	✓	●
Austrian pine	.	✓	●	✗	○
Bald cypress	+	✓	▼	✓	▼
Big leaf maple	.	✓	●	✓	●
Birch bark cherry	.	✓	●	✗	○
Black cherry	-	✓	⊖	✓	⊖
Black locust*	.	✓	●	✗	○
Black maple	.	✓	●	✗	○
Black poplar	.	N/A	N/A	✓	●
Black walnut	-	✓	⊖	✓	⊖
Boxelder	.	✓	●	✓	●
Callery pear*	.	✓	●	✓	●
Cherry plum	.	✓	●	✓	●
Chinese chestnut	.	✓	●	✓	○

Filtering Choices

Changing Growing Conditions

- Heat tolerance
- Drought tolerance
- Wind tolerance

- Filtering out the potentially invasive

[PugetSound species handout 1x1Portrait \[Updated 2.25.22\].pdf \(forestadaptation.org\)](#)



Drought Tolerant

WASHINGTON STATE
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**DROUGHT TOLERANT LANDSCAPING
FOR WASHINGTON STATE**

Ginkgo biloba

Ginkgo

Jason Sharman, Vitalitree, Bugwood.org

545474

WSU PEER
REVIEWED
EM087E



Drought Tolerant

(west of Cascades)

Mediterranean cypress

- *Cupressus sempervirens*
- Zone 7 hardy
- 50 x 15
- Very heat tolerant
- Does not tolerate wet roots

Cupressus sempervirens

Mediterranean cypress

Forest and Kim Starr, Starr
Environmental, Bugwood.org

Drought Tolerant

(west of Cascades)

American hophornbeam

- *Ostrya virginiana*
- 30' x 20'
- Tolerant of clay soil
- Tolerates partial shade
- Recommended for heat tolerance
- Recommended for storm resilience



UGA1480315

Ostrya virginiana

American hophornbeam

T. Davis Sydnor, The Ohio State University, Bugwood.org

Drought Tolerant

(west of Cascades)

Persian Parrotia

- *Parrotia persica*
- Small to medium tree
- Early spring flowers
- Vivid fall color
- Exfoliating multi-colored bark
- Zone 5 hardy



1610614



1610621

Parrotia persica

Persian parrotia



John Ruter, University of Georgia, Bugwood.org



Drought Tolerant

(west of Cascades)

Tatarian dogwood

- *Cornus alba*
- *Cornus sericea* var. *sericea*
- Spreading shrub 8 x 8
- Hardy to zone 3
- Cultivars with variegated foliage (pictured)
- Sun to partial shade
- Vivid color of red twigs can be maintained by pruning older growth

Cornus alba

Variegated Tatarian dogwood

Landscape Plants, Oregon State University



Drought Tolerant

(East of Cascades)

Quercus rubra

Red oak

Tom DeGomez, University of
Arizona, Bugwood.org

5390006

Larger Trees

- Common hackberry
- Northern red oak

Small Trees

- Amur maackia
- Big-tooth maple

Shrubs

- Blue elderberry
- Golden currant
- Ninebark
- Ocean spray
- Oregon grape
- Potentilla



Drought Tolerant

(east of Cascades)

Big-tooth or Canyon maple

- *Acer grandidentatum*
- Smaller tree (under 30')
- Usually multi-stemmed habit
- Alternative to Amur maple (*Acer ginnala*)
- Bright red fall color
- Hard to find in nurseries

Acer grandidentatum

Big-tooth or Canyon maple

Drought Tolerant

(east of Cascades)

Amur maackia

- *Maackia amurensis*
- Smaller tree (usually under 30')
- Spring flowers highly fragrant
- Hardy to Zone 3
- Few, if any, pest problems
- Difficult to transplant
- Potentially invasive west of Cascades?

No history of invasiveness in US



Maackia amurensis

Amur maackia

T. Davis Sydnor, The Ohio State University, Bugwood.org



Drought Tolerant

(east of Cascades)



Berberis aquifolium

(*Mahonia aquifolium*)

Oregon grape

Landscape Plants, Oregon State University

Oregon grape

- *Berberis aquifolium*
 - Formerly *Mahonia aquifolium*
- Multi-stemmed shrub
- Numerous species and cultivars of different
 - Heights
 - Hardiness
 - Leaf shapes/lengths
 - And drought tolerance

Drought Tolerant

(All)

Ninebark

- *Physocarpus capitatus*
 - Pacific ninebark
 - Moister areas, acidic soil
 - WA coast to western MT
- *Physocarpus malvaceus*
 - Mallow ninebark
 - Drier areas
 - East of Cascades
- *Physocarpus opulifolia*
 - Common ninebark
 - Mid-west to east coast
 - Many cultivars



Physocarpus

Ninebark

Landscape Plants, Oregon State University



Plants for Wetter Sites

Flood tolerant

Seasonally saturated soils

Tolerates poor drainage

Plants native to wetlands

Metasequoia glyptostroboides

Dawn redwood

Richard Webb, Bugwood.org

Trees

- Bald cypress
- Dawn redwood
- River birch
- Swamp white oak
- Willow oak
- Tupelo

Shrubs

- A dozen native shrub willows
 - Scouler's willow
 - Pacific willow
- Dwarf blue arctic willow
- Buttonbush
 - *Cephalanthus occidentalis*

Wetter Sites

River birch

- *Betula nigra*
- 50 x 30'
- Borer resistant (not immune)
- Exfoliating bark
- Yellow fall color

- 'Dura-Heat' and 'Heritage' are more heat resistant cultivars



UGA000801



Betula nigra

River birch

Paul Wray, Iowa State University, Bugwood.org (left)
& Richard Webb, Bugwood.org (above)

Plants for Wetter Sites

Tupelo or Black gum

- Tolerant of wet soils
- Glossy green leaves
- Vivid red fall color
- Berries (with more than one tree)
- 30 x 20 feet



Nyssa sylvatica
Tupelo or Black gum

T. Davis Sydnor, The Ohio State University, Bugwood.org (both)

Plants for Wetter Sites



Salix scouleriana

Scouler's willow

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

Native willows:

- Hooker's willow
 - *Salix hookeriana*
 - To 18' tall
 - Native to southern Puget Sound and coasts of WA & OR
- Sitka willow
 - *Salix sitchensis*
 - 3-24' tall
 - Native west of Cascades
- Scouler's willow
 - *Salix scouleriana*
 - 6-36' tall
 - More drought tolerant
 - Native, found throughout state except south-central WA



Wetter Sites

Buttonbush

- *Cephalanthus occidentalis*
- 12'x 8' in size
- Tolerates standing water
- Does NOT tolerate drought
- Pollinator-friendly
- Hardy to zone 5
- Native to SE United States
- Cultivars bred for
 - Dwarf size 6'
 - Longer bloom

Plants for Not as Wet Sites

Trees:

- Hackberry
- London plane tree
- Sycamore
- Western red cedar

Smaller trees

- Black hawthorn
- Coast elderberry
- Kousa dogwood
- Northern white cedar

Shrubs

- Black chokeberry
- Downy serviceberry



Platanus occidentalis

American sycamore

John Ruter, University of Georgia, Bugwood.org (both)

1611381

Not as Wet Sites

Western red cedar

- *Thuja plicata*
- Washington native
- Large tree (too large for most homeowners)
- Numerous dwarf cultivars



Thuja plicata

Western red cedar

(Left) By abdallahh from Montréal, Canada - Vancouver, CC BY 2.0, <https://commons.wikimedia.org/w/index.php?curid=8773644>

Chris Schnepf, University of Idaho, Bugwood.org (above)



Not as Wet Sites

Northern white cedar or American arborvitae

- *Thuja occidentalis*
- 30 x 15'

Tolerates clay soil, compacted soil

High resiliency to heat, possibly more than Western red cedar

Numerous cultivars used for hedging



Thuja occidentalis

Northern white cedar

Steven Katovich, Bugwood.org (left)

Paul Wray, Iowa State University, Bugwood.org (above)

UGA138801



Not as Wet Sites

Douglas or Black hawthorn

- *Crataegus douglasii*
- 25 x 25
- Prefers moist soils, but tolerates some drought
- Tolerates partial shade
- White flowers in spring
- Purple berries in late summer
- Wildlife friendly
- Native on both sides of Cascades



Crataegus douglasii

Black or Douglas hawthorn

Dave Powell, US Forest Service
(retired), Bugwood.org (both)

UGA121504



Storm Resilient

Taller trees

- Bald cypress
- Cryptomeria
- Shumard oak
- Sugar maple

Smaller trees

- Flowering dogwood
- Black gum/Tupelo
- Hophornbeam/Ironwood



Bald cypress, *Taxodium distichum*
Oregon State University Landscape Plants

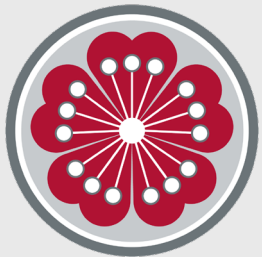


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