What is Siberian Elm Doing in New Mexico?

Ben Wright
Good Elm

Bad Elm
A Hearty Traveler

_Ulmus Pumila_ in the Gobi Desert

_Ulmus pumila_ in Santa Fe, NM
Mongolia
Gobi Desert
Northern China
Southern Siberia
North Korea

*Ulmus pumila* Native Habitat

Reproduced from Wesche et al. 2011
Native Habitat Characteristics

Wikipedia

https://foxstudio.biz/2014/03/12/the-wildart-mongolia-expedition-part-8-en-route-to-takhilin-tal/
Tolerant Genetics

- Tolerates extreme environments
  - Roots are adept at finding water
- Hybridizes easily with other elm species
  - Helps colonization process
- Resistant to Dutch Elm Disease
Energetic Reproduction and Growth

• Flowers in Spring
• High Pollination Range
• Massive Seed Dispersal volume and high rates of Germination
• Early Seedling stage is the most sensitive time for water limitation
• Fast Growth
• Reproductive age ~ 10 years

4 Month old seedling at Parr Field, Taos, NM Oct. 2015.
Physiological Response to Drought

• Does not close stomata in response to water loss through leaves
• Roots spread deep for groundwater and wide for surface water
• Will shut off sections of canopy structure to reduce transpiration loss
• Clonal reproduction when necessary
Ecological Characteristics

- Individuals or clumps
- Closed canopy
- Establishes on disturbed sites
- Tends to dominate sites
- Allelopathy may be possible but research is not yet convinced

Romo Wetlands adjacent to Baca Park, Taos, NM
Introduction to North America

• Introductions began in early 1860’s and took off in early 1900’s

• Rave reviews by nursery sellers

• Used for wind breaks, erosion control, and street and landscape trees

• Possibly the most planted landscape tree in N. America

1908  Frank Nicholas Meyer  Near Fengtai, Chihli , China
A Willing Performer

http://lakeshorebonsai.com/?tag=siberian-elm

https://livingtorontojournal.com/2016/03/16/a-property-of-art-toronto-topiary/
Siberian Elm Vs. Chinese Elm

Ulmus pumila

Ulmus parvifolia
Adaptation in North America

- Widely Distributed
- Listed on invasive species lists for 25 states
- Regulated in Illinois, New Hampshire and New Mexico
- Invasive characteristics most pronounced in the Southwest

Adaptation to New Mexico

- Governor Tingley enthusiastically encouraged its distribution through the state in the 1930’s
- Created a tree canopy in many communities for the first time
- It is often poorly regarded and management is difficult
- Listed by the USDA as Class C noxious weed in NM
Problems with Pumila

You Tell Me!
Problems with Pumila

• Co-dominance
• Brittle Limbs and Weak Structure
• Dieback especially under water stress
• Aggressive seeding habit
  • Tingley Snow
• Difficult to Manage
• Crowds out native vegetation
• Roots grow into pipes
• Pollen allergies
How to manage *ULPU* to maximize benefits

- Management planning and resource allocation
- Map their locations
- Choose their spots by elimination
- Prune for good structure
  - Reducing Co-dominance
  - Perpetual Crown Cleaning
- Eradicate Seedlings ASAP
- Irrigate when practical
- Stage Removal and Replacement
Management and Planning

• Technical Support and Leadership
  • Collaboration!
• Education
  • For agencies, land managers, trades
• Information
  • Public
• Integrated Vegetation Management
  • Prevention
  • Containment
  • Control
• Restoration
  • Reestablish native vegetation
• Monitoring
Mapping ULPU

• Strategies for multi-trunk form and tendency towards thickets
  • Ignore below a specified size
  • Map areas as polygons
  • Clumping into average size and counting stems
  • Satellite mapping?
Uses for Siberian Elm Wood

• Tight interlocking grain
• Dense wood with dark and light grain
• Pliable and bends well
• Resistant to decay when permanently wet
• Not as desirable as *Parvifolia* but still useful.
Seeds can be composted or...

Salad Greens

Carrot shavings and elm samaras with horseradish dressing

https://wildfoodgirl.com/2016(elm-samaras-edible-gourmet/)
Ulmus Alternatives

- Dutch Elm Resistant
- Sterile Seed
- Seeding in Fall
- Hearty to NM climate
- Flexibility in choices is required

American Elms – Last elm standing - *Ulmus americana*
New Harmony, Princeton, Jefferson

Asian Elms
Emerald Sunshine Elm - *Ulmus propinqua*
Allee 2 - *Ulmus parvifolia*

Asian Elm Hybrids
Accolade Elm - *Ulmus (japonica x wilsoniana)* ‘Morton’
Frontier Elm - *Ulmus (carpinifolia x parvifolia)* ‘Frontier
Triumph Elm - *Ulmus (wilsoniana x japonica x pumila)*
How to Kill *Ulmus pumila*

Extremely resistant to mortality

- Persistence
- Excavation
- Air Knife Excavation
- Girdling
- Herbicide
Ongoing Research

• Specific Tests and experiments
• NM Forest Analysis Project
• Community Outreach and Education
Resources and Collaboration

• Federal Agencies
• NM Native Plant Society
• NM Interagency Weed Action Group
• NM State Forestry
• NM Urban Forest Council
• NMSU Cooperative Extension Service
• Schools
• Colleges and Universities
• Tree Boards
• Volunteer groups and organizations
Summary
THANK YOU!

- Think Trees
- NM Urban Forest Council
- NM State Forestry
- NM Native Plant Societies
- Taos Tree Board
- Taos Heartwood Coalition
- Oregon State University

Brunet et al., 2013. “Hybridization and introgression between the exotic Siberian elm, Ulmus pumila, and the native Field elm, U. Minor, in Italy.” Biological Invasions. 15: 2717-2730.

“Conservation Plant Characteristics for Ulmus pumila (Siberian Elm)” USDA. Natural Resources Conservation Service.


Moore, Lincoln M. “Plant Fact Sheet: Siberian Elm” USDA. NRCS. ed. 2006.


Sibirische Ulme. Wikipedia auf Deutsch. Web download. 3/14/16.


