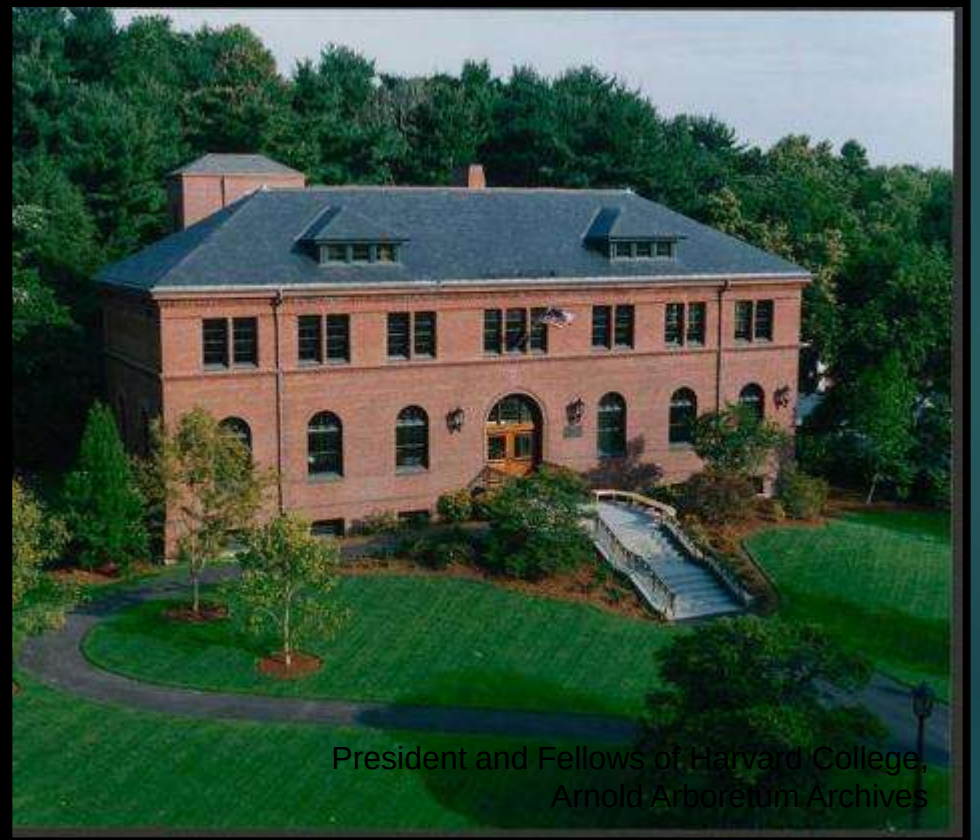
29 March 2017
Arboretum Wespelaar

Harvard University's Tree Museum: The Legacy and Future of the Arnold Arboretum

Michael Dosmann, Ph.D.
Curator of Living Collections

The ARNOLD ARBORETUM of HARVARD UNIVERSITY

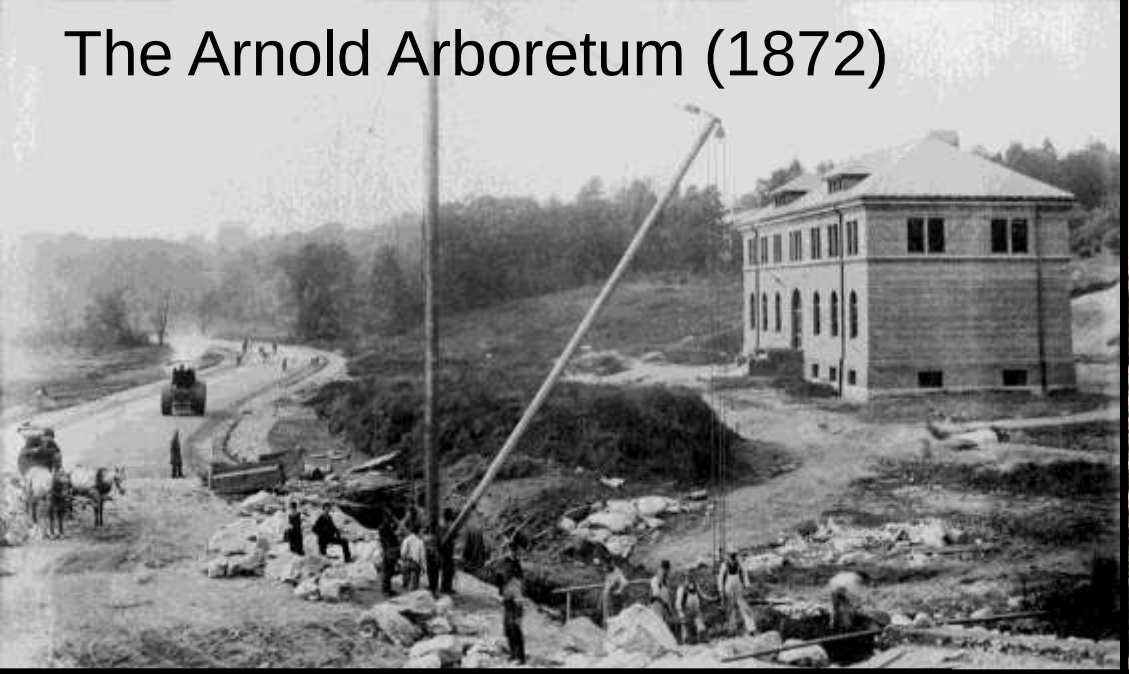


President and Fellows of Harvard College, Arnold Arboretum Archives

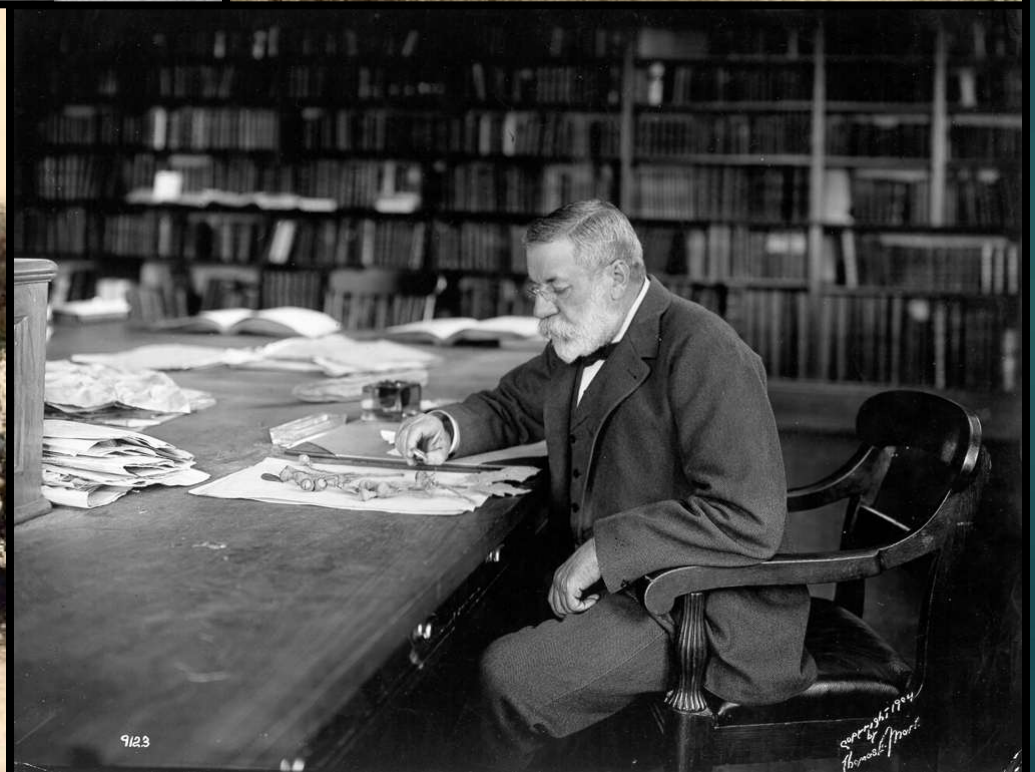

Bradley
Rosaceous
Collection

281 Acres /
114 Hectares

The Arnold Arboretum (1872)

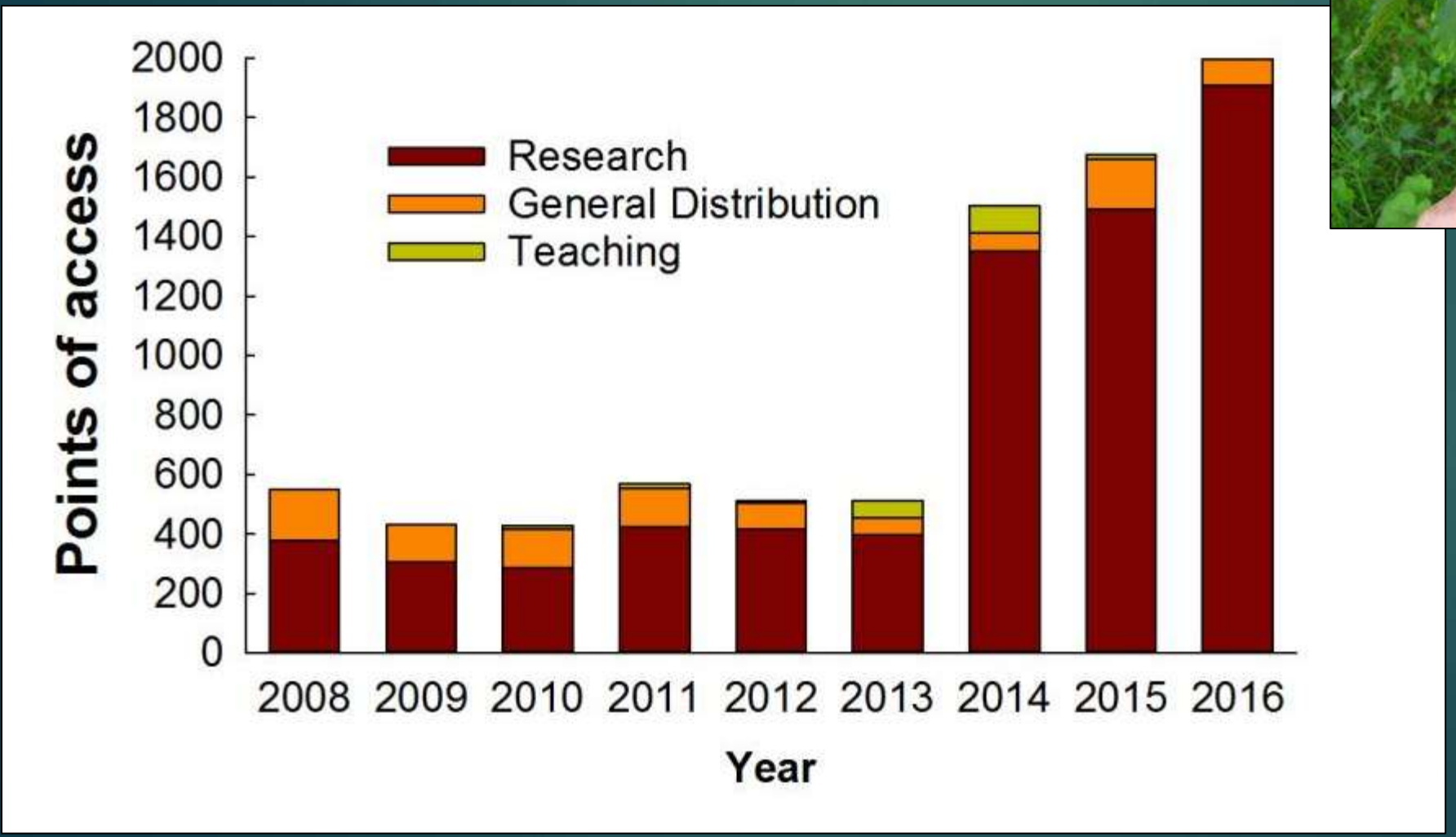


President and Fellows of Harvard College,
Arnold Arboretum Archives



Basic to applied biology of woody plants

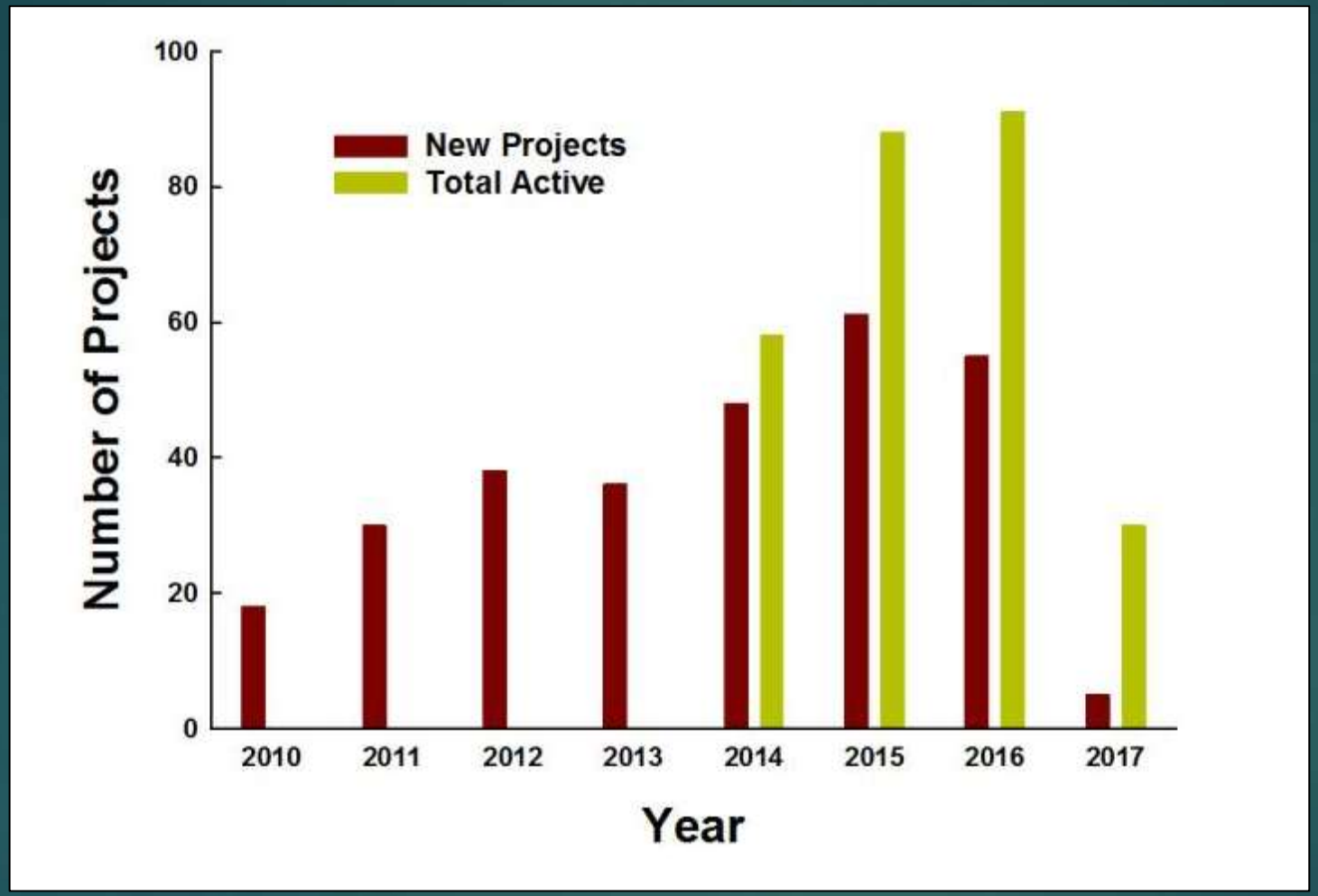
Collection based



Fagus grandifolia

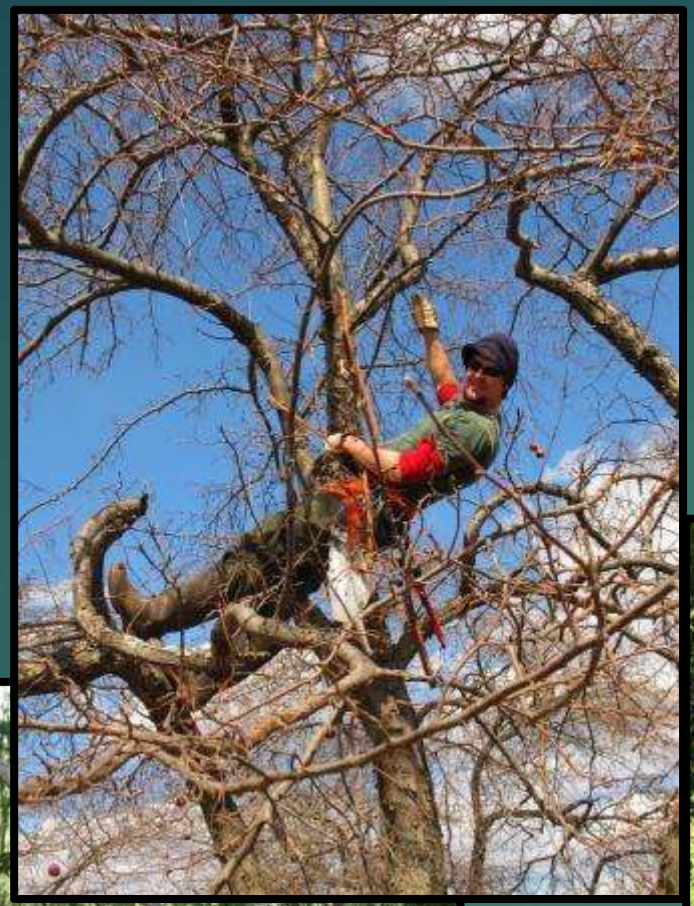
1800+ Uses of research in 2016

Research projects per year



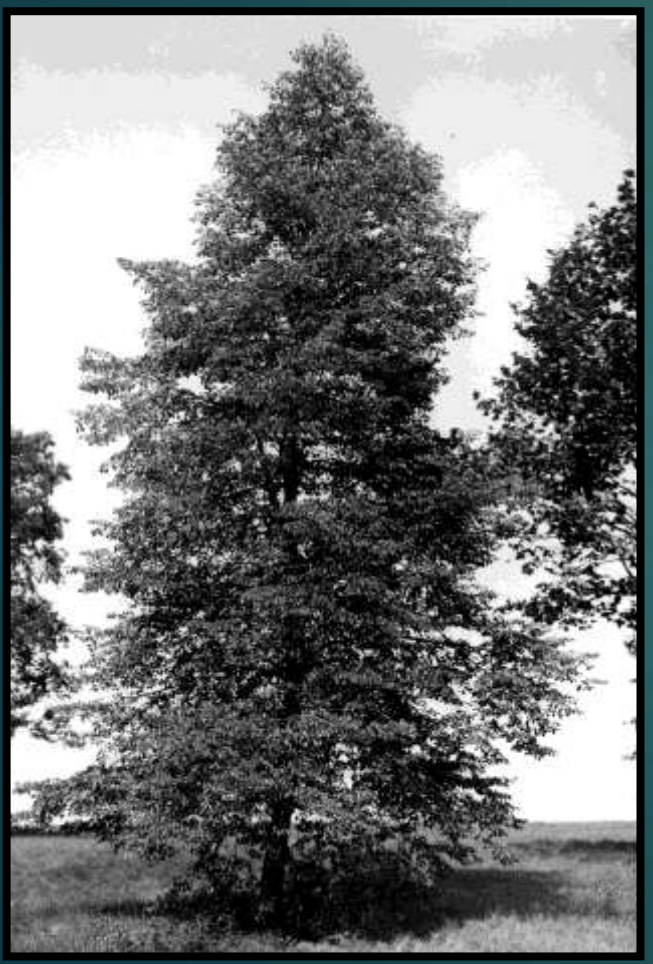
Practice good horticulture

Training and teaching



Evaluation, selection, and introduction

Tilia cordata
'Swedish Upright'



Cercidiphyllum japonicum
'Morioka Weeping'

Syringa 'Purple Haze'

Publication and Promotion

Twisted trees in the Arboretum

by Ned Friedman, Director of the Arnold Arboretum
February 27, 2017

Tweet Share 0

With snow still on the ground, but temperatures rising fast, last Monday I came upon the gnarled and pendulous cultivar of the white mulberry (*Morus alba 'pendula'* 5165*A) on Bussey Hill – acquired by the Arnold Arboretum in 1903. It appeared as some sort of sea serpent (well, snow serpent in this case) emerging from the lower depths. As a follow-up, I decided to scout some of the other wonderful "pendula" or "tortuosa" forms of trees (all of them ultimately derived from natural genetic mutations) on the grounds, especially those with gnarled, twisted, knotted tangles of branches. Two favorites are a small Japanese maple (*Acer palmatum 'dissectum'* 146-68*A; bottom left) along Meadow Road and a weeping Japanese pagoda tree (*Styphnolobium japonicum 'pendula'* 493-67*A; bottom right) in the legume collection.

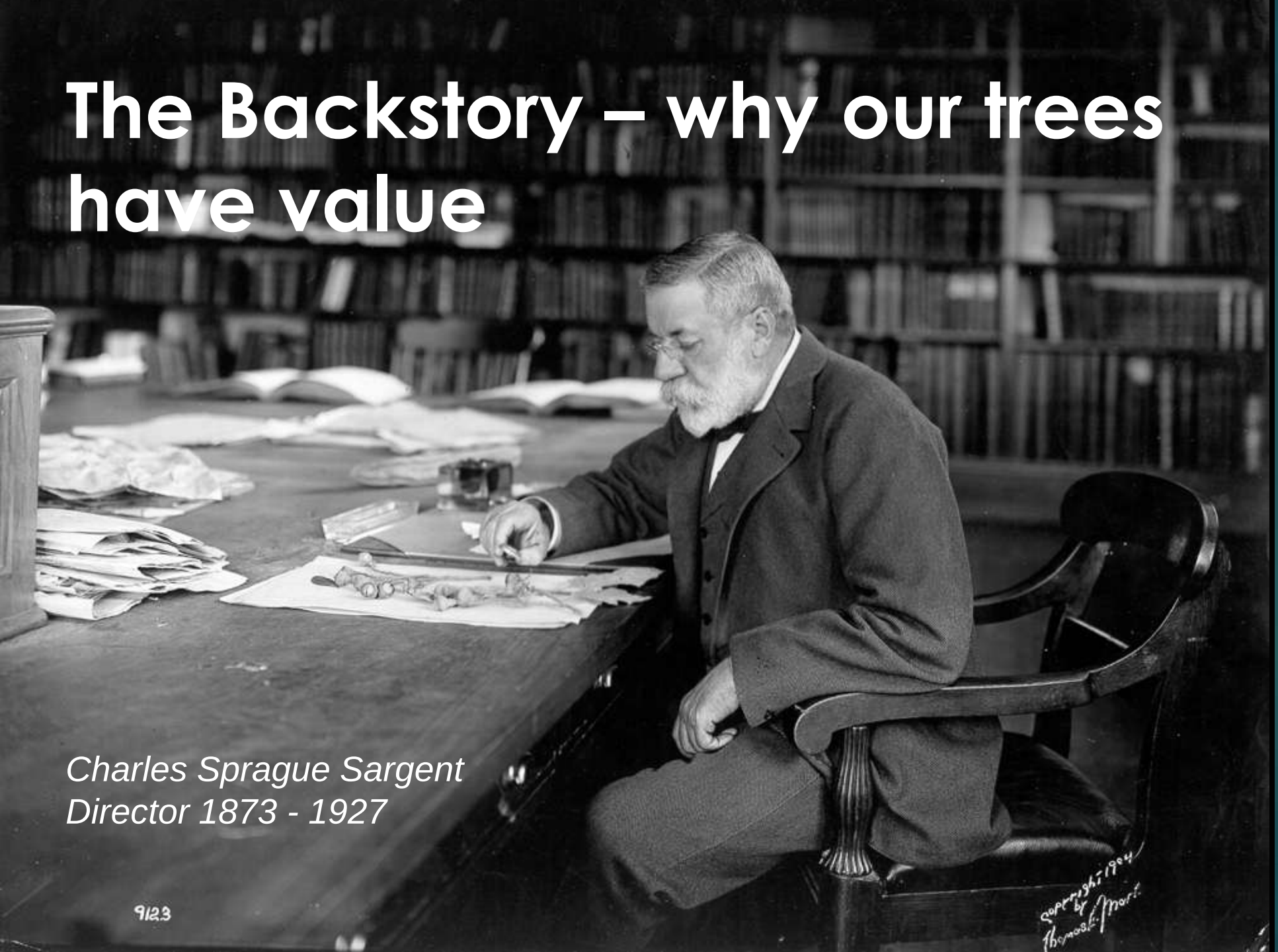
Hamamelidaceae, Part 1: Exploring the Witch-hazels of the Arnold Arboretum

Andrew Gapinski

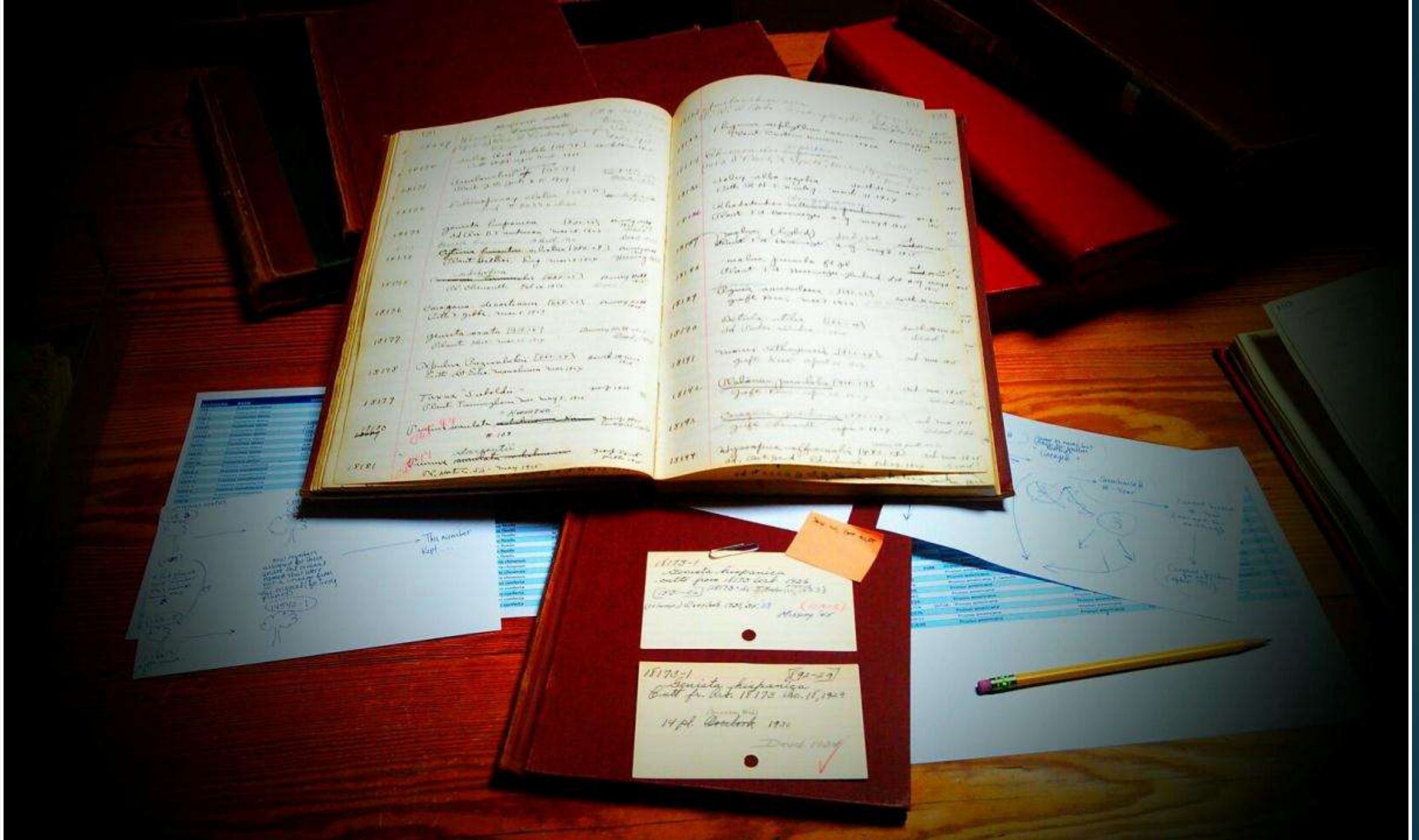
Hamamelidaceae, the witch-hazel family, includes approximately 30 genera representing around 100 species of deciduous trees and shrubs. Members of the family are found in both temperate and tropical regions of North and Central America, Eastern Asia, Africa, the Pacific Islands, and Australia. The Arnold Arboretum has a rich hi
family, from plant exploration
and introduction of its members
The Arboretum's Hamamelidac
which currently comprises ten te
genera, can be found in groupin
the Arboretum landscape. Specific locations

-hazels display attractive fall color, seen here, *Hamamelis* × *intermedia* 'Arnold Promise' (accession 380-
d orange foliage and *Hamamelis virginiana* L. *rubescens* (accession 527-92) with yellow foliage.

The Backstory – why our trees have value



Charles Sprague Sargent
Director 1873 - 1927



Arboretum Explorer

Featured Tours | Search | Destinations | Layers | My Visit 0 | Help

Search Arboretum

- [x] Advanced Search
- [ ] Wild Collected Only
- [ ] Exact Match

Plant ID

e.g., 63-78*A, 63-78

Common Name

e.g., White Willow

Scientific Name

e.g., Salix alba, Salix, alba

Family

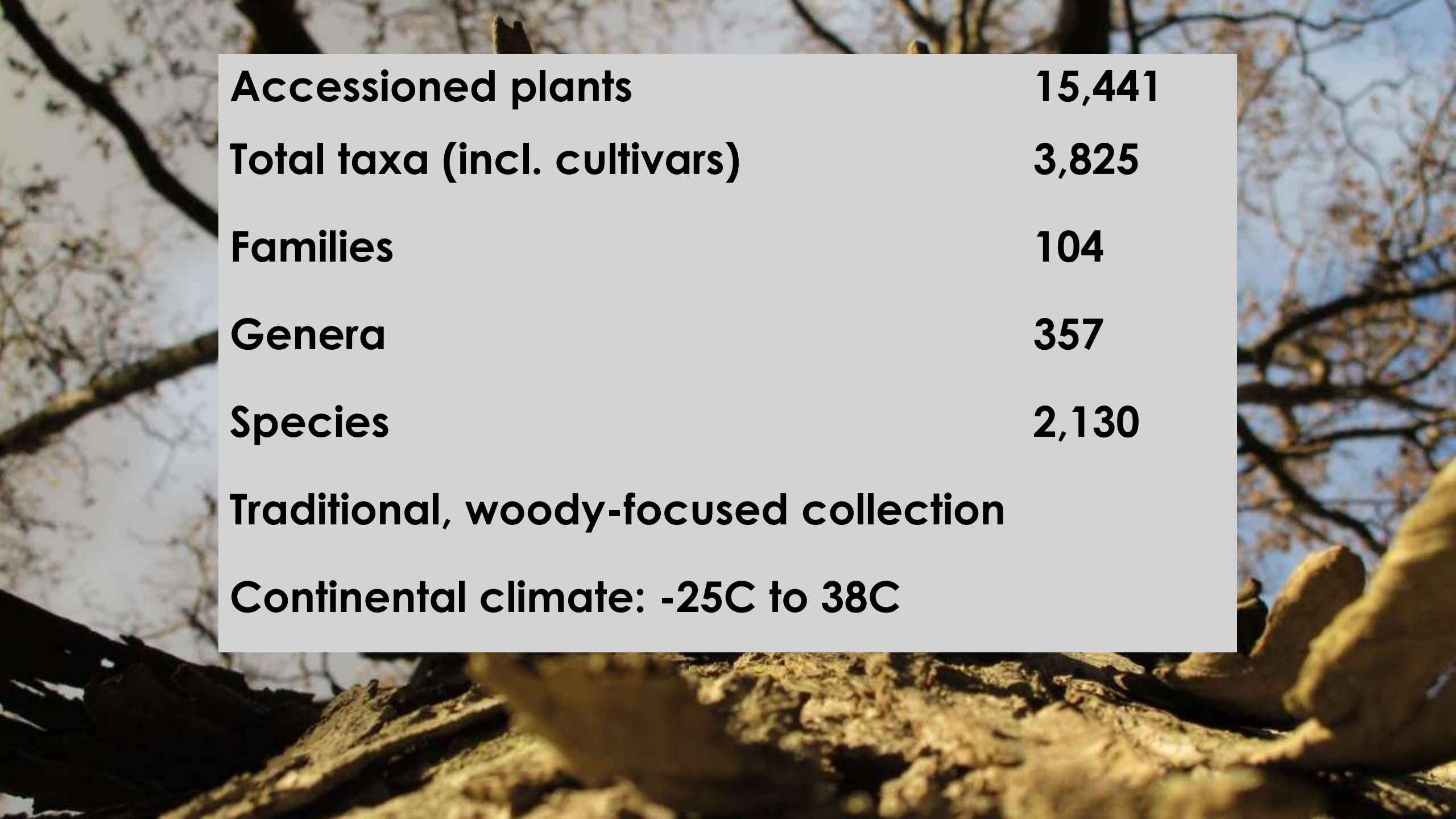
e.g., Salicaceae

Genus

Koelreuteria

30 Plants

Plant ID	Family	Name	Common Name	Condition	Garden Locati
14-2007*A	Sapindaceae	Koelreuteria paniculata	Golden Rain Tree	Fair	29-SE
1606-77*C	Sapindaceae	Koelreuteria paniculata	Golden Rain Tree	Good	11-NW
356-2007*A	Sapindaceae	Koelreuteria paniculata	Golden Rain Tree	Good	WH5-NW
293-2008*A	Sapindaceae	Koelreuteria paniculata	Golden Rain Tree	Good	WH5-NW



Accessioned plants	15,441
Total taxa (incl. cultivars)	3,825
Families	104
Genera	357
Species	2,130

Traditional, woody-focused collection

Continental climate: -25C to 38C

Collection Dynamics

There is always change

121-96*C *Hamamelis virginiana* ‘Mohonk Red’

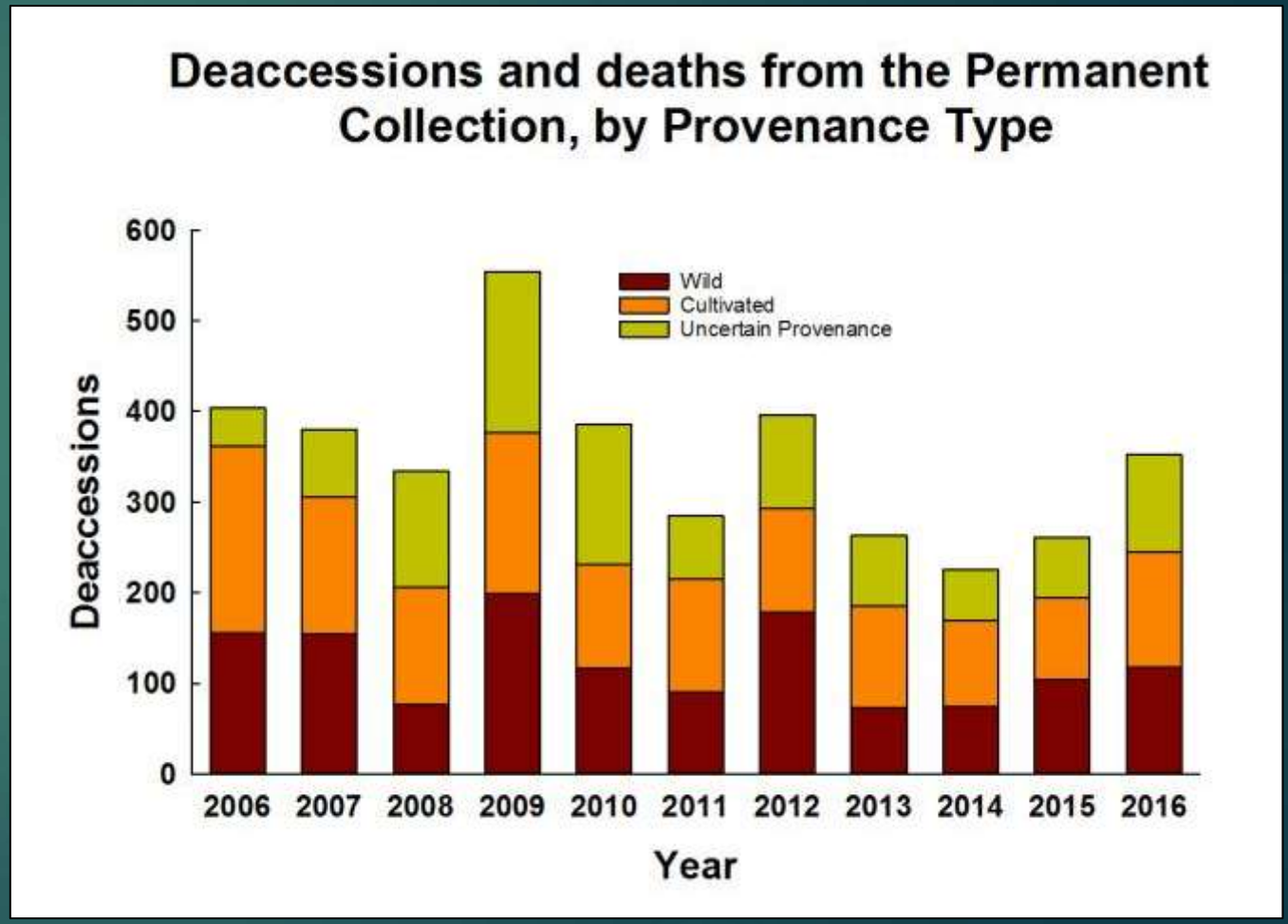
1905

150 years later…

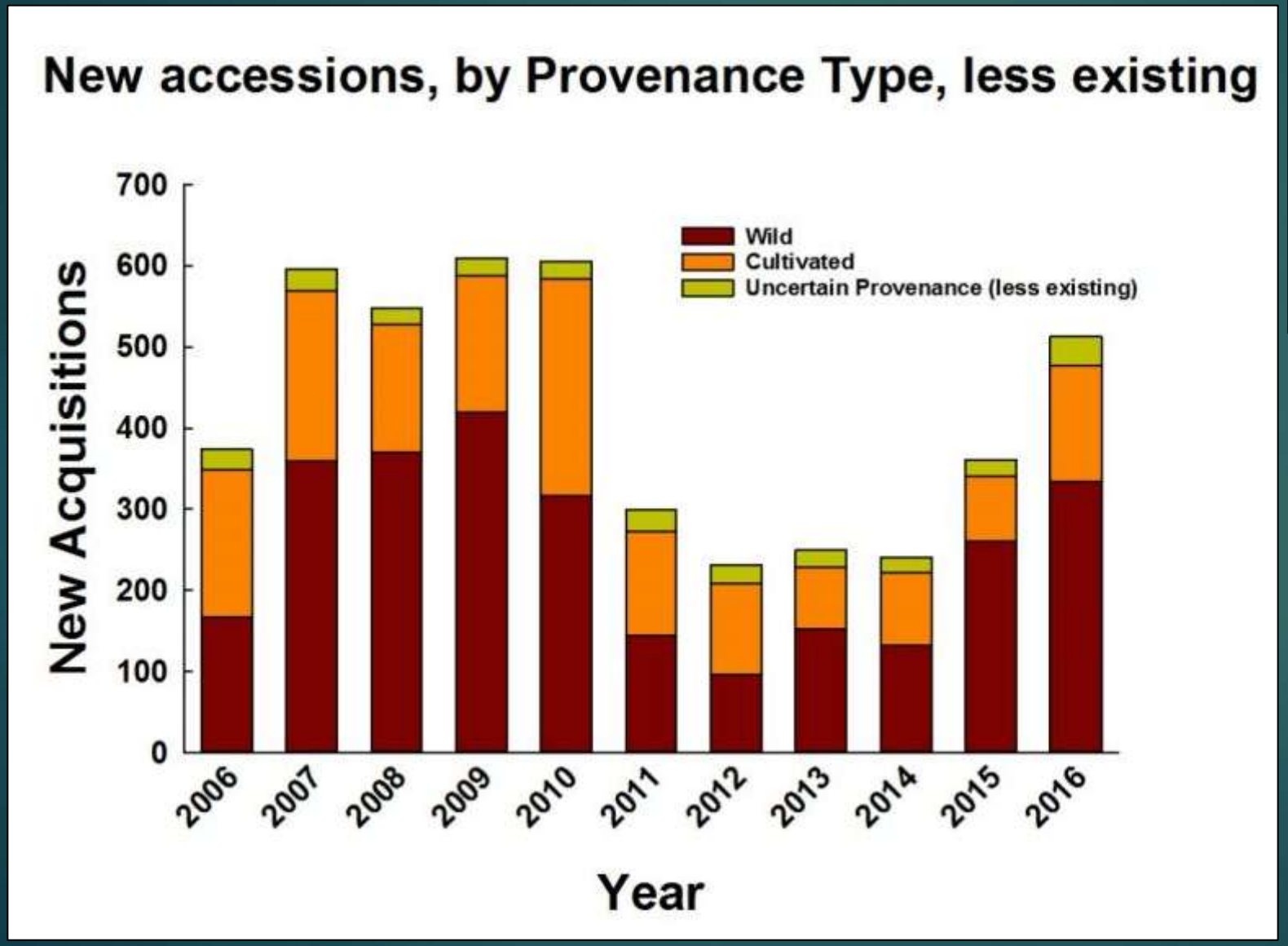
2016

Subtraction – ca 300/per year

After assessment, removal of low-value material benefits high-value accessions



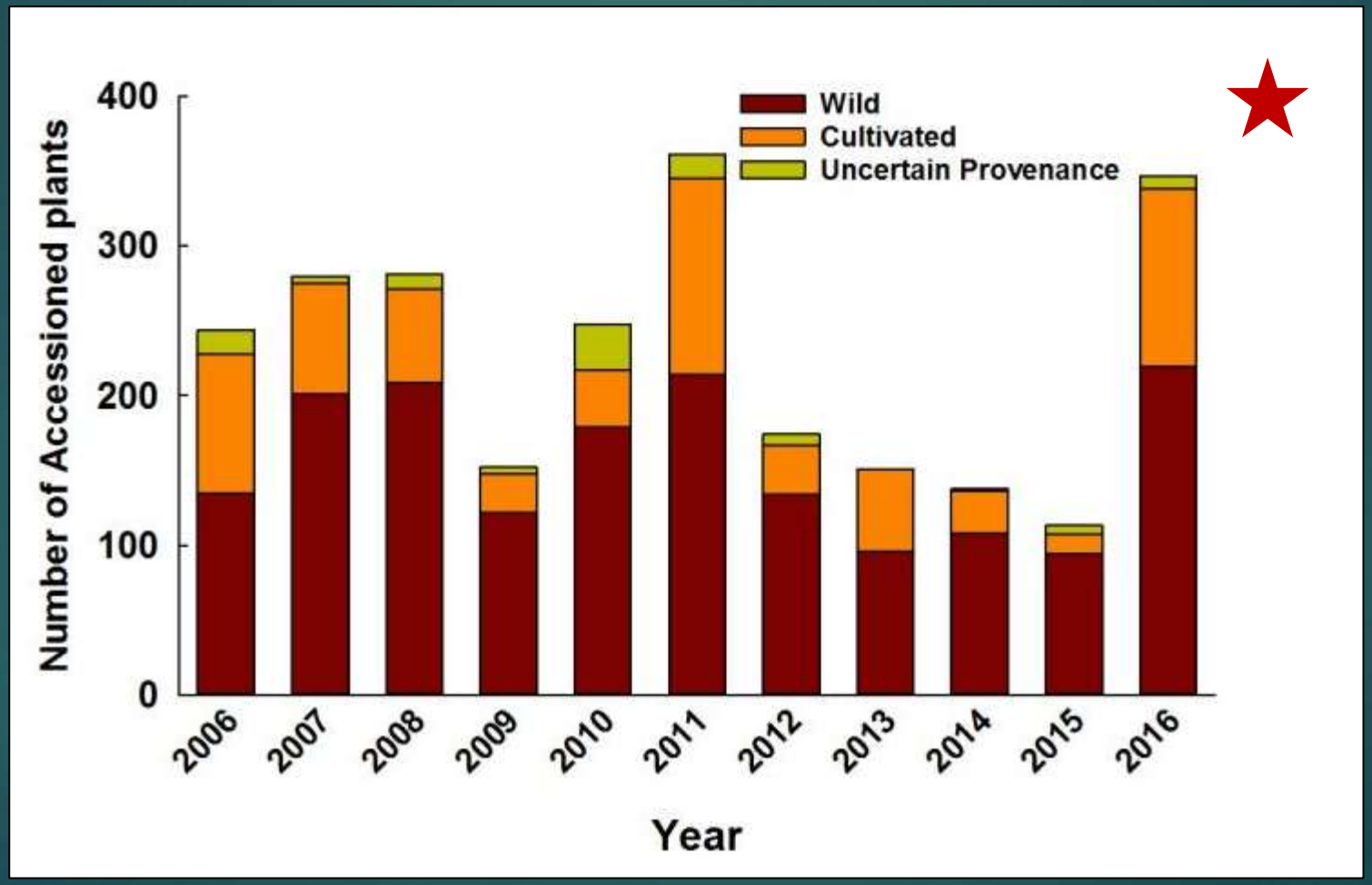
Addition – ca 450/year



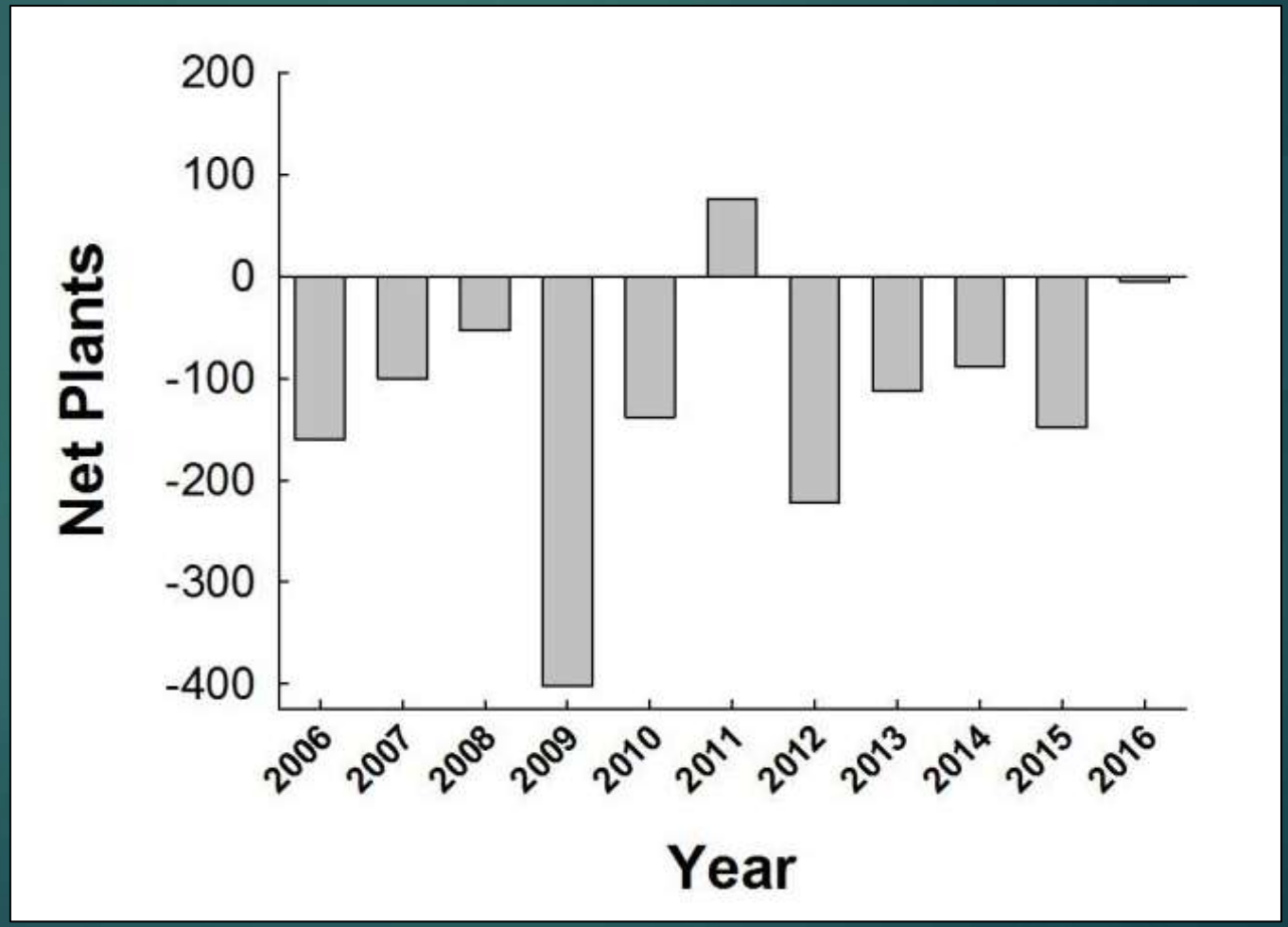
Adding to the Collections

Staking out new *Prunus hortulana*, from Missouri

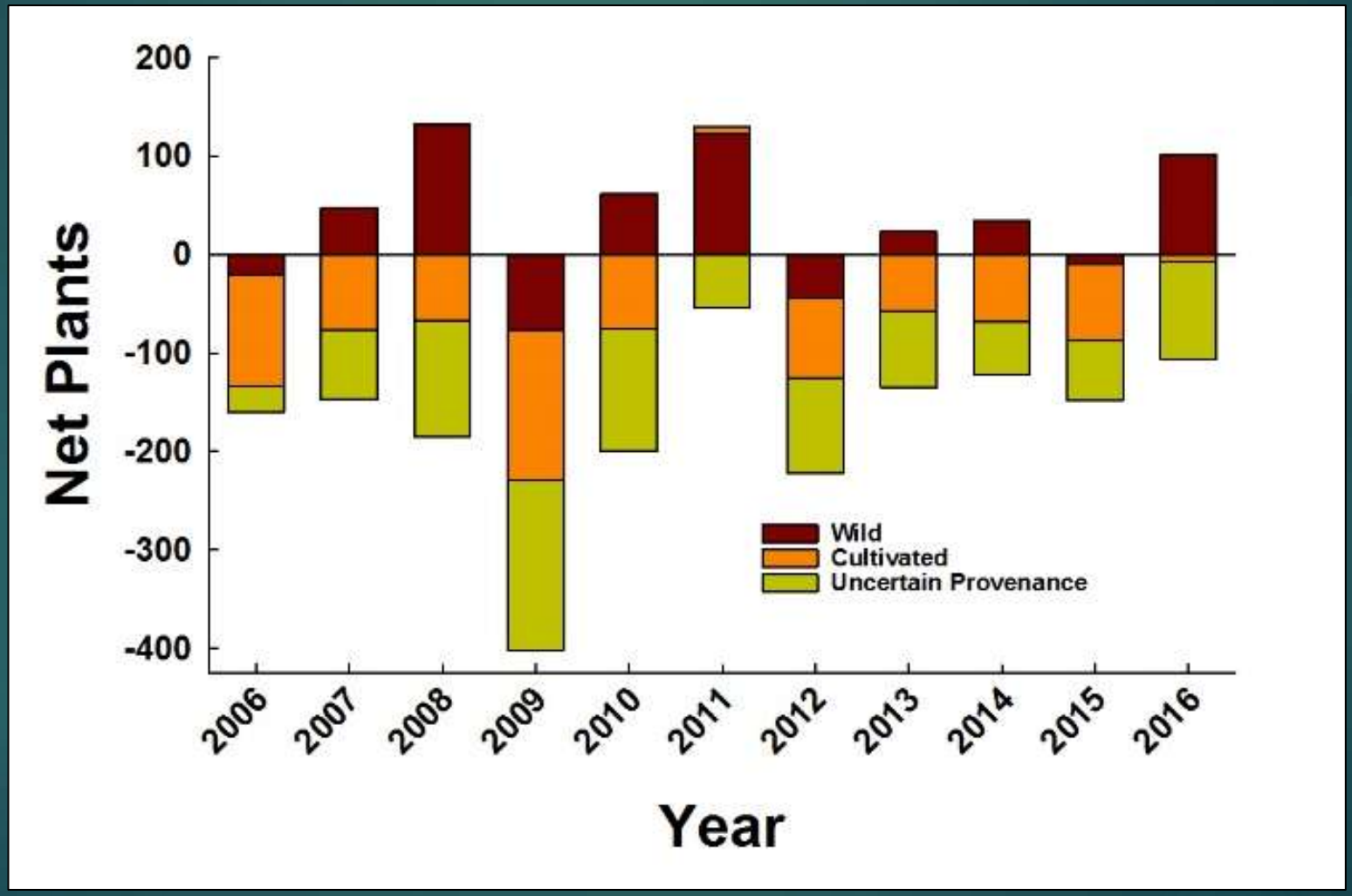
Planting into the Collections



Net Plants – We subtract more than we add, but…



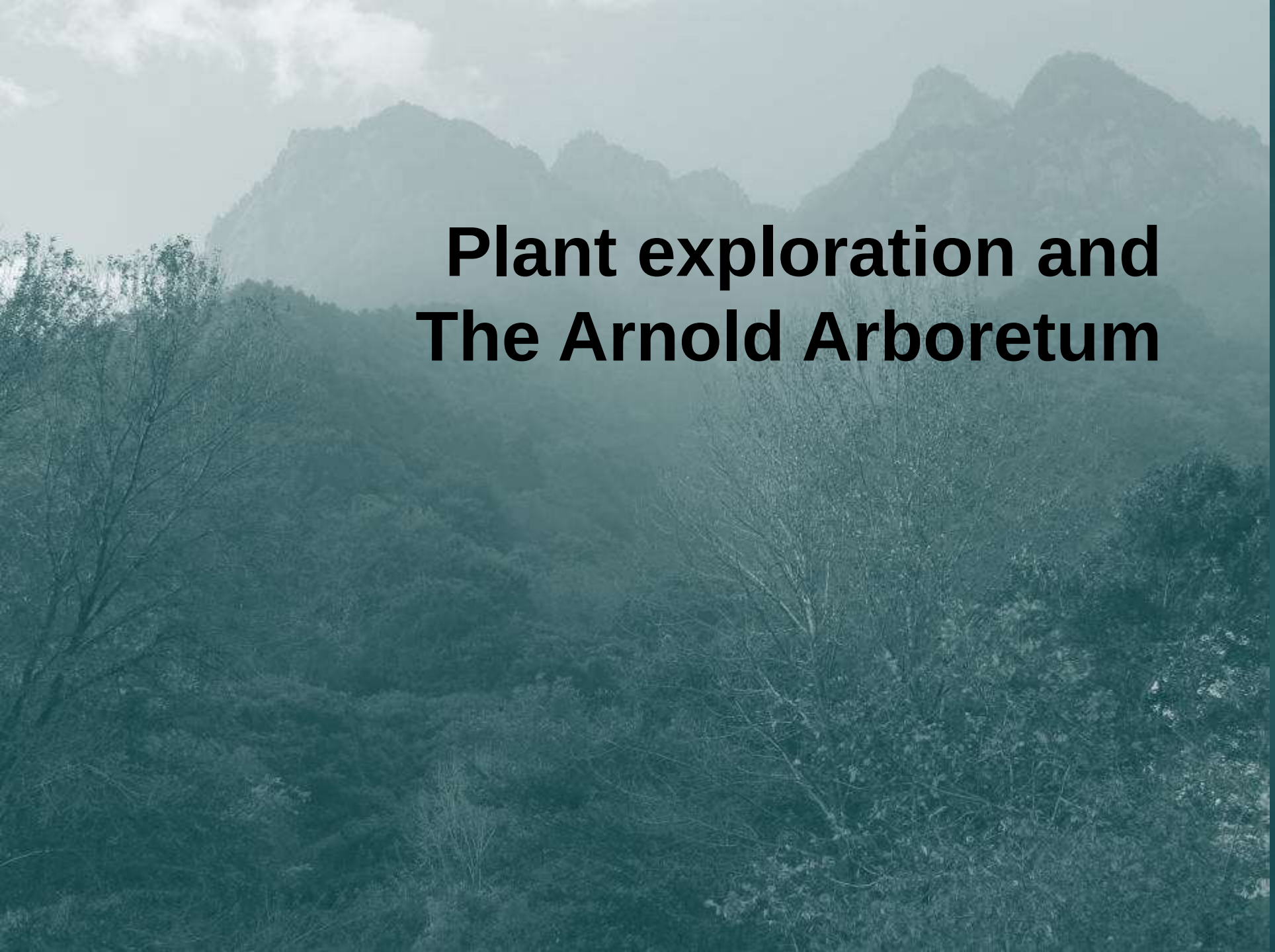
when taking into account provenance,



Leads to significant change in the permanent collection over time.

Provenance Type	2007	2016
Wild	40%	45%
Cultivated	41%	38%
Uncertain	19%	17%

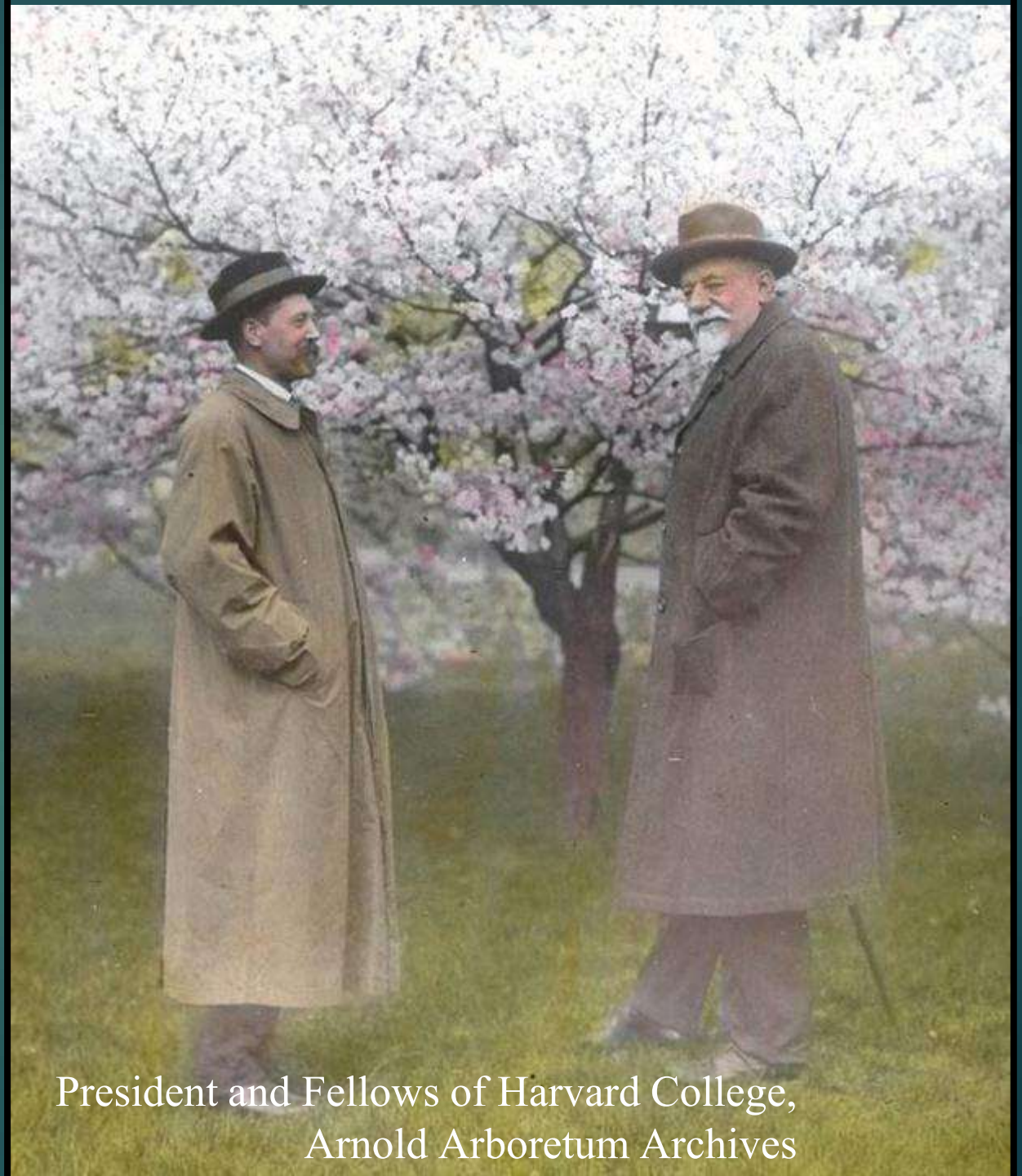
126-2005*C *Betula lenta*



Plant exploration and The Arnold Arboretum

Ernest Henry Wilson expeditions to East Asia

- China
  - 1899-1902 (Veitch)
  - 1903-1905 (Veitch)
  - 1907-1909
  - 1910-1911
- Japan
  - 1914
- Japan, Korea, Taiwan
  - 1917-1919



President and Fellows of Harvard College,
Arnold Arboretum Archives

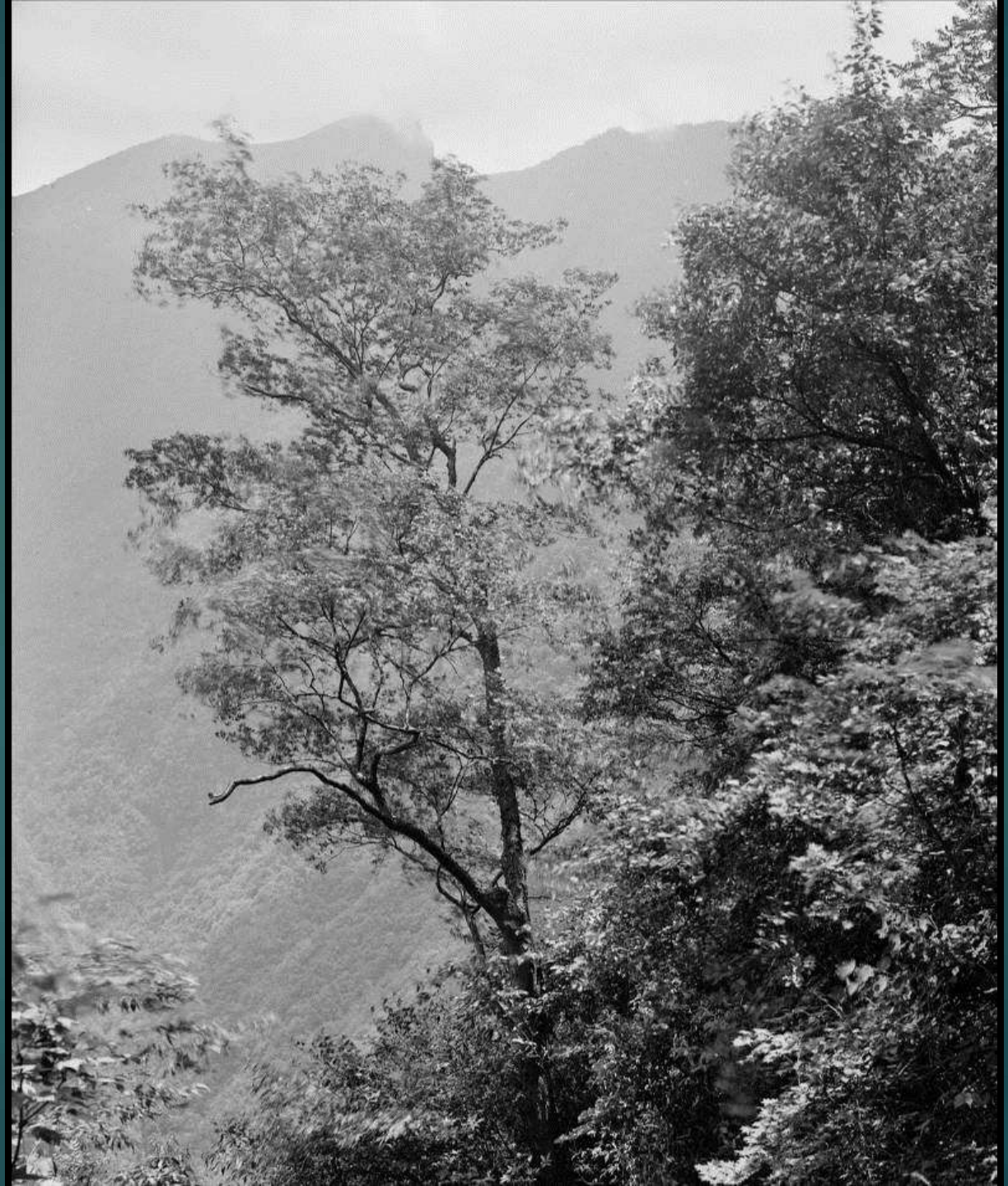
Photo by EHW, 7 September 1908, Sichuan

Davidia involucrata
var. *vilmoriniana*
(The Dove Tree)
30 Jan 1909

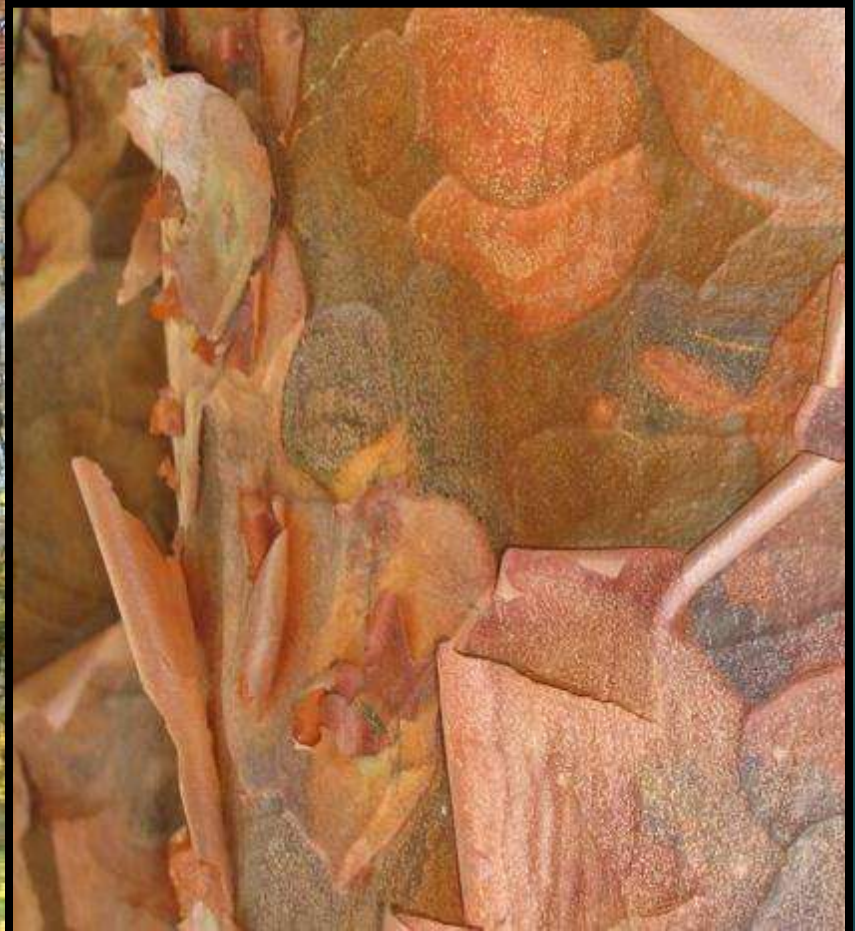
Davidia involucrata in
Ya’an, Sichuan, May 2014

Acer griseum
(paperbark maple)

24 June 1910
Sichuan
photo by EHW

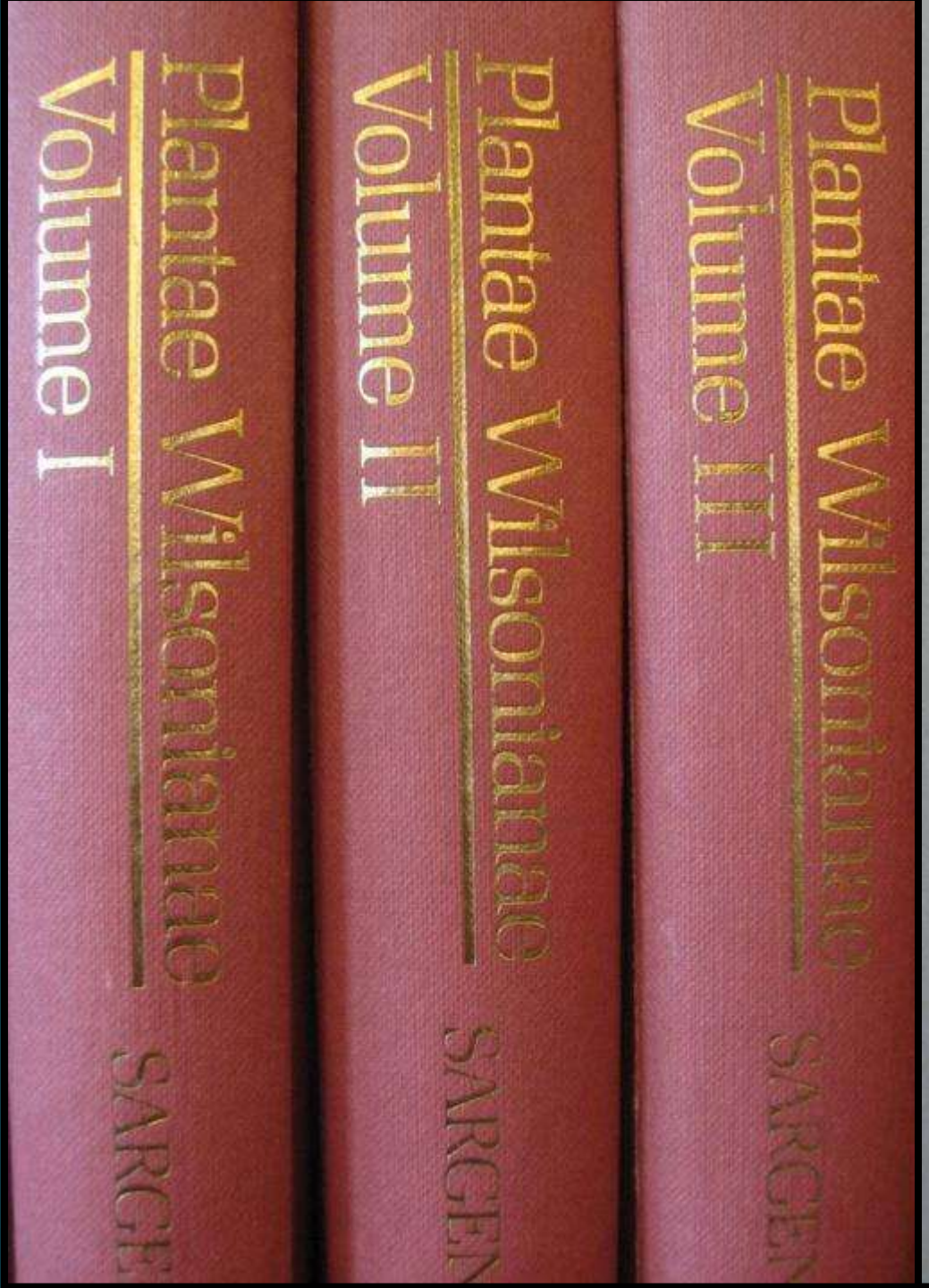


AA 12488*A, planted in 1907



A. Rehder, E. Wilson, C. Sargent, C. [illegible], C. [illegible]ner, Jr. August 1916

President and [illegible] College. Arnold Arboretum Archives



PUBLICATIONS OF THE ARNOLD ARBORETUM, No. 4

PLANTAE WILSONIANAE

AN ENUMERATION OF THE WOODY PLANTS COLLECTED IN WESTERN CHINA FOR THE ARNOLD ARBORETUM OF HARVARD UNIVERSITY DURING THE YEARS 1907, 1908, AND 1910

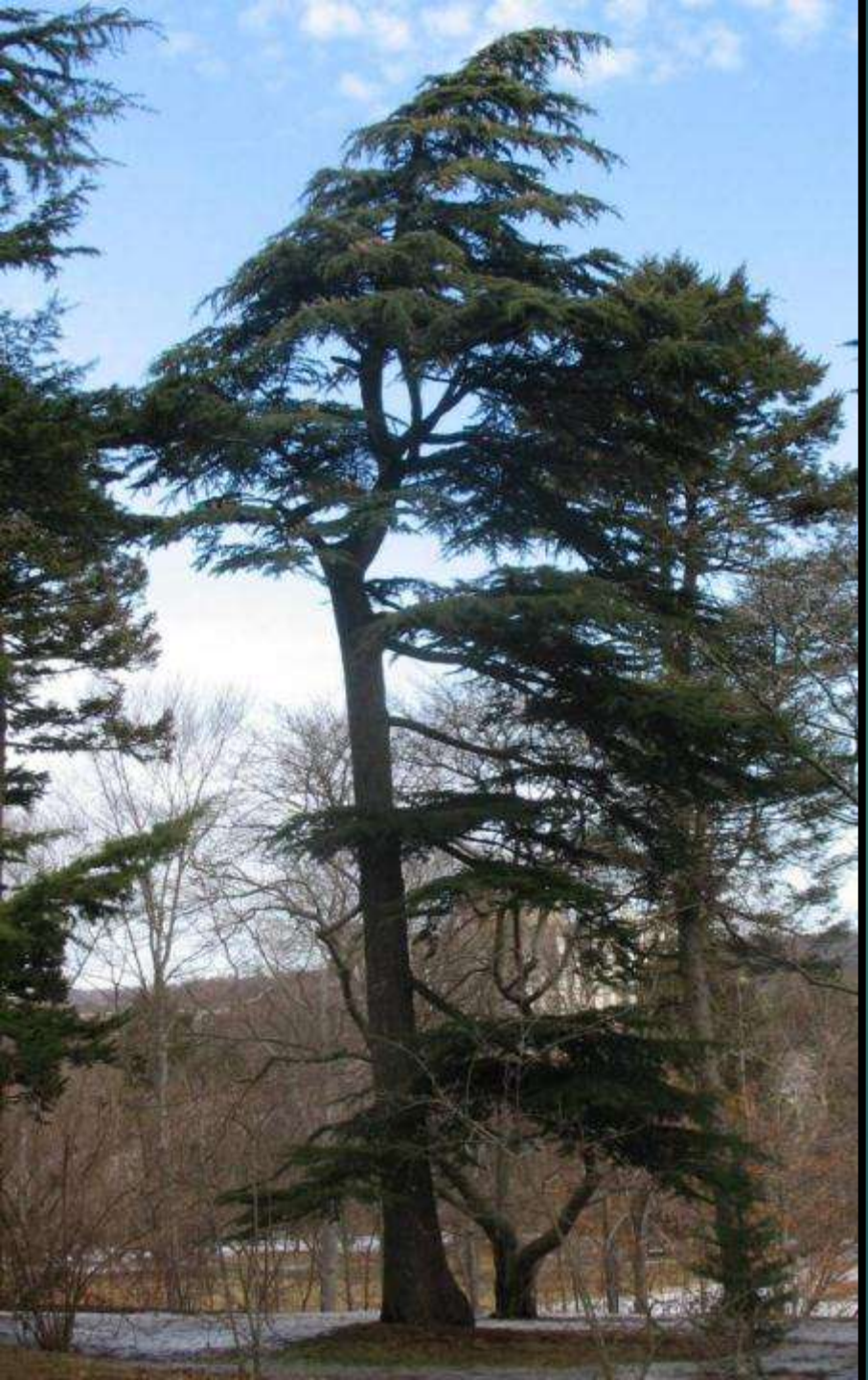
BY E. H. WILSON

EDITED BY

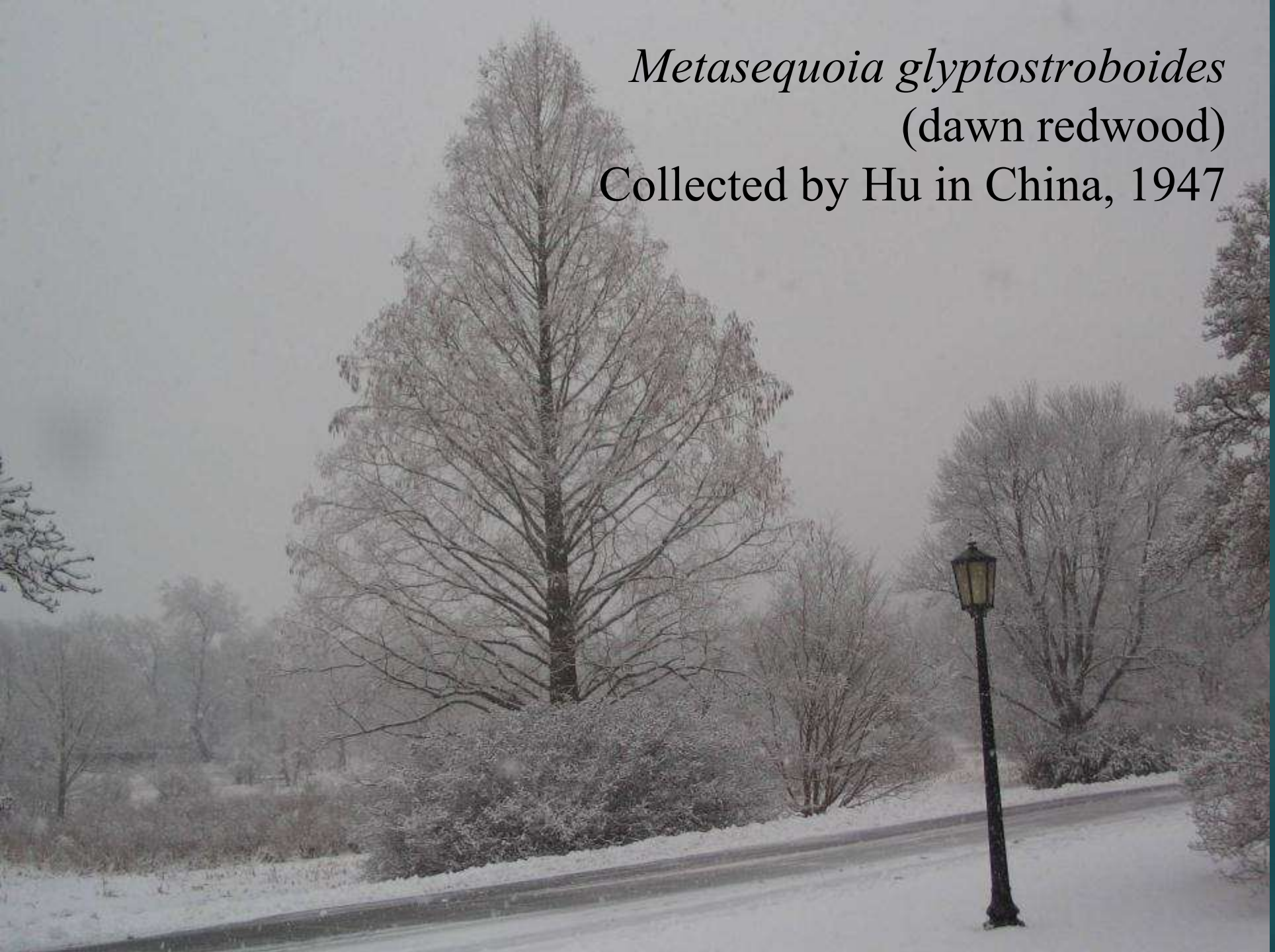
CHARLES SPRAGUE SARGENT

VOLUME I

Hydrangea paniculata ‘Praecox’
(early panicled hydrangea)
Collected by Sargent in
Japan,1892



Cedrus libani
ssp. *stenocoma*
(hardy cedar of Lebanon)
Collected by Siehe in
Turkey, 1900

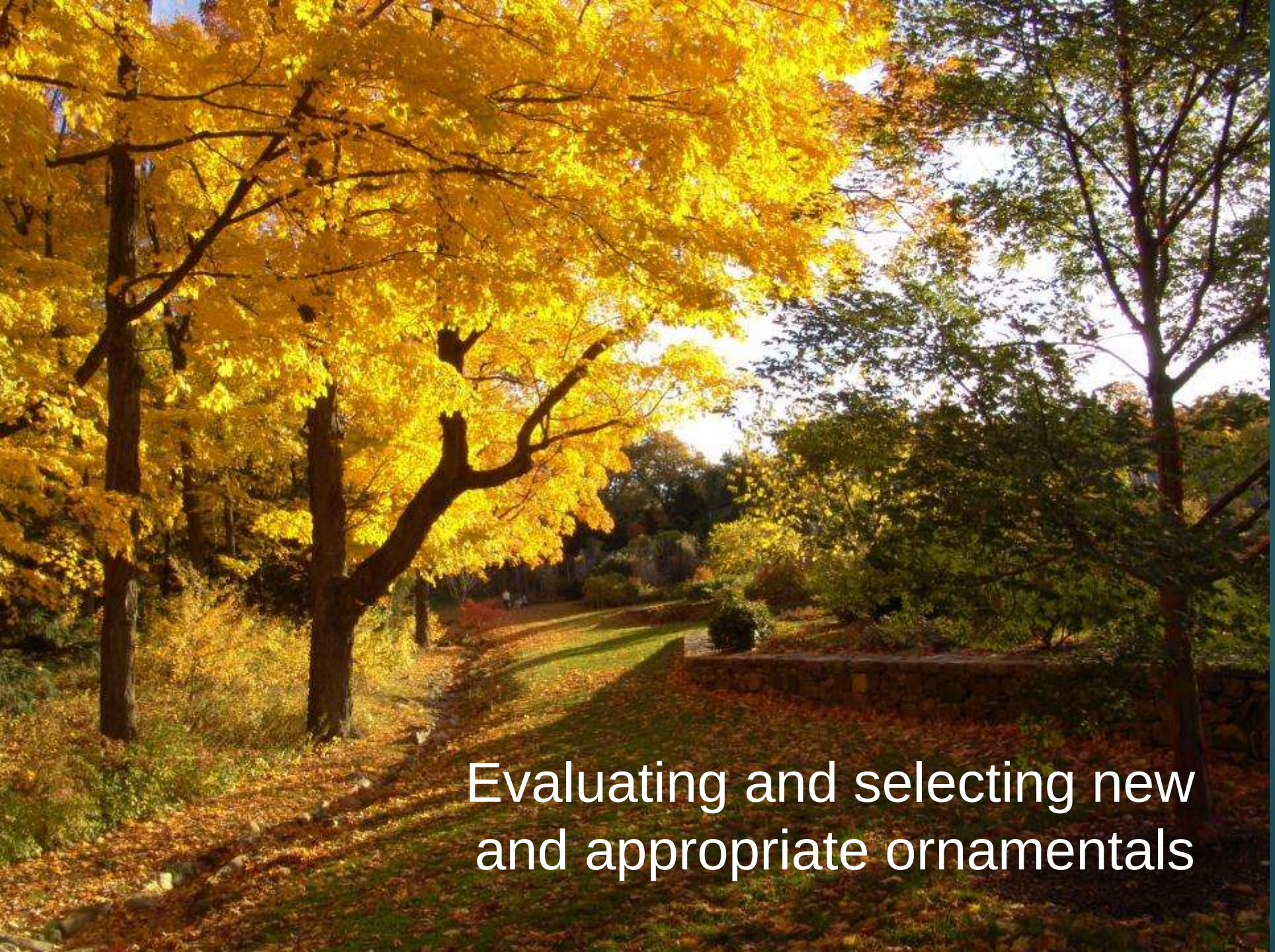


Metasequoia glyptostroboides
(dawn redwood)
Collected by Hu in China, 1947

Plant exploration of the past

“Discovering” and introducing new plants – a focus on Alpha Diversity and Economic Botany, including exciting ornamentals for horticulture.

But the world has changed…



Evaluating and selecting new and appropriate ornamentals

Building a better urban forest

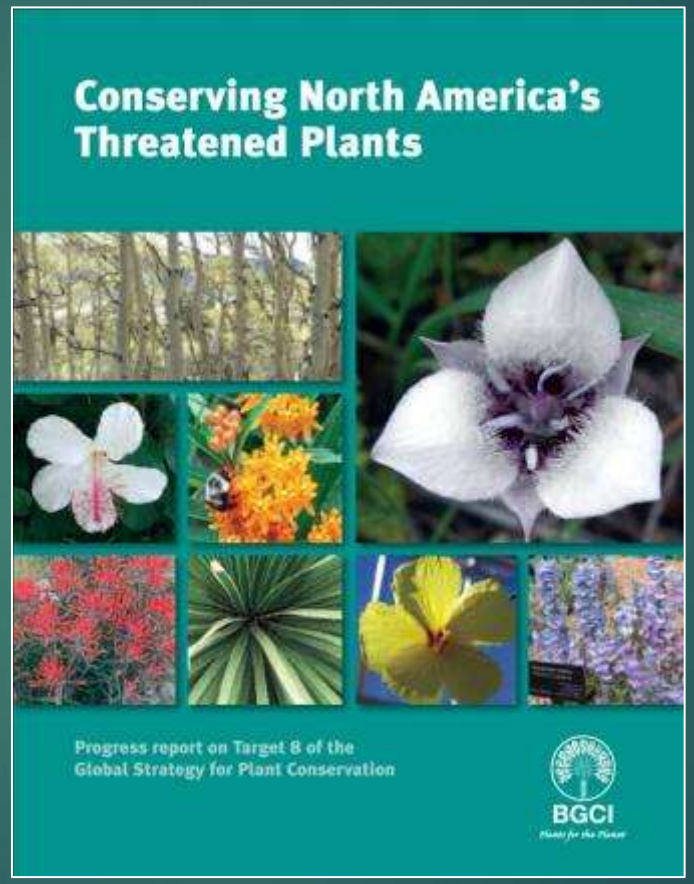
Seeking new plants tolerant of “life on the street”

Preserving and studying rare plants

Rhododendron vaseyi

Conservation: The North American Collections Assessment

- 9,496 threatened North American plant species (ca. 1/3)
- 230 plant and seed collections surveyed
- Only 39% species represented in collections



UNITED STATES BOTANIC GARDEN

BGCI
Plants for the Planet

The ARNOLD ARBORETUM of HARVARD UNIVERSITY

Kramer, A., A. Hird, K. Shaw, M. Dosmann, and R. Mims. 2011. Conserving North America's threatened plants: Progress report on Target 8 of the Global Strategy for Plant Conservation. Botanic Gardens Conservation International U.S.

Plant exploration in the present

Responsible collection of plant biodiversity in response to a changing world

…documenting
…conserving
…researching
…growing
…sharing

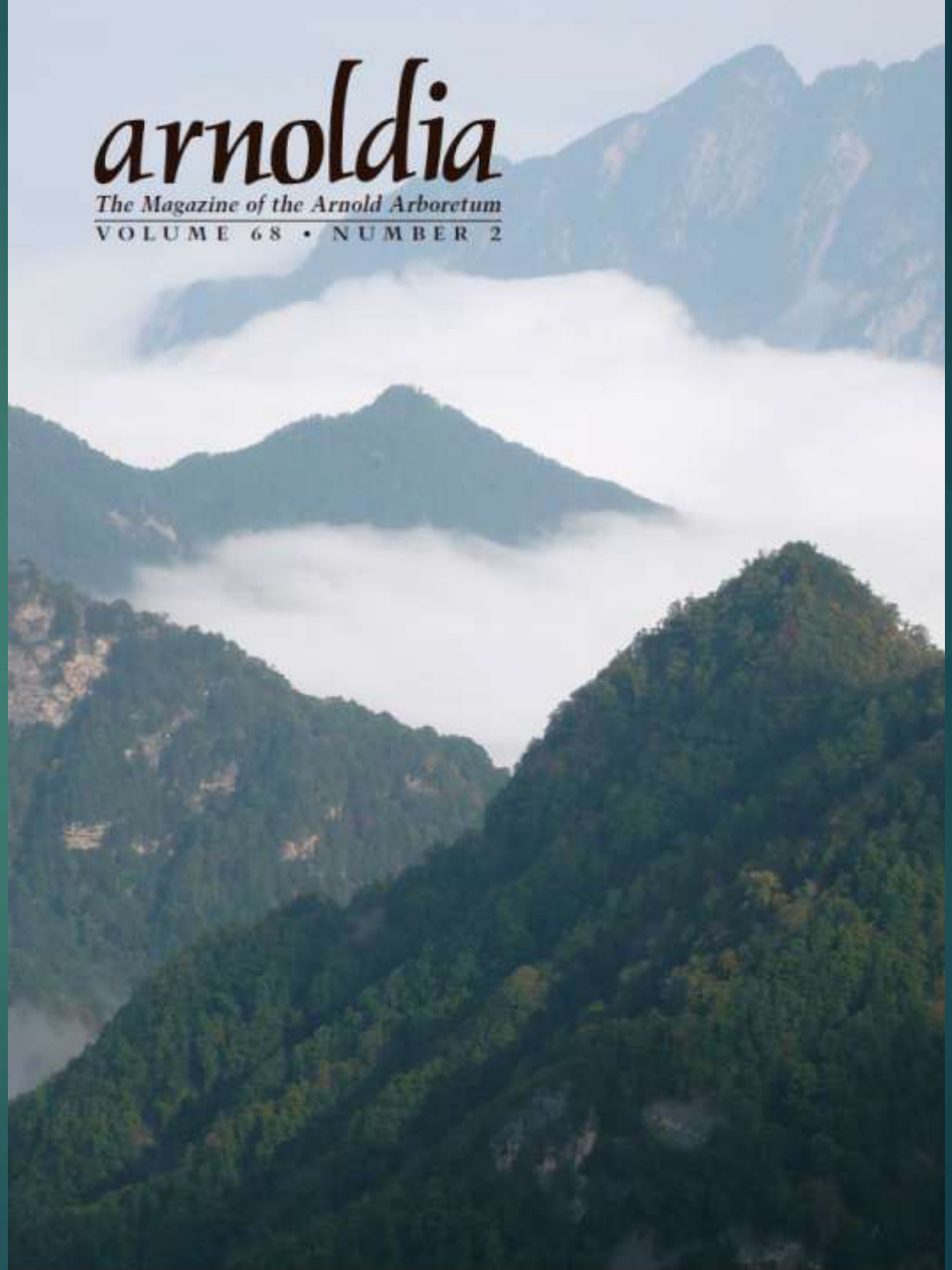
Elements of Successful Plant Exploration

Planned
Focused
Collaborative
Documented
Long-term commitments

North America China Plant Exploration Consortium (NACPEC)

***Arnoldia* 68(2)**

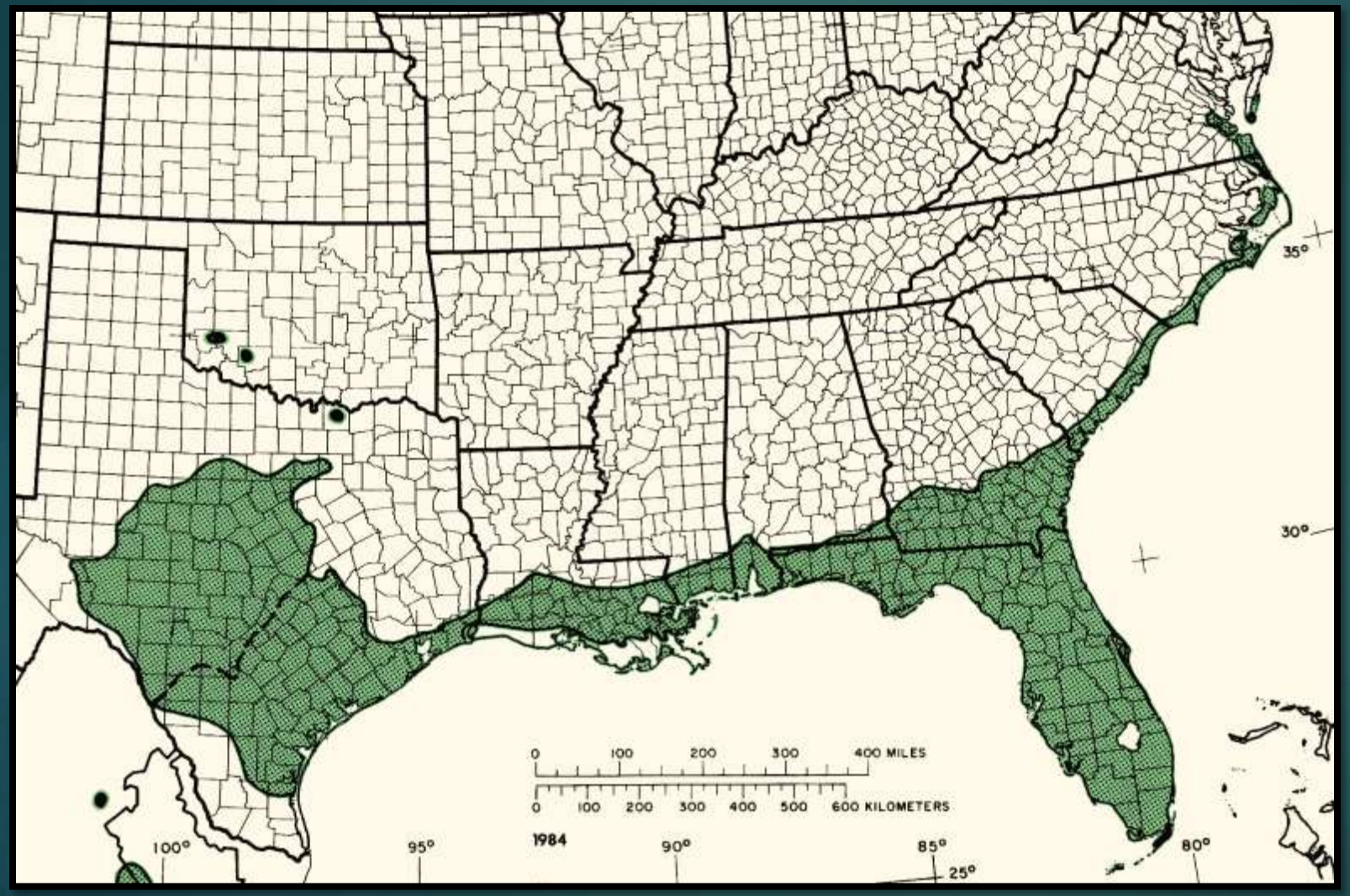
Modern and Future Botanic Garden Plant Exploration



The quest for the hardy live oak

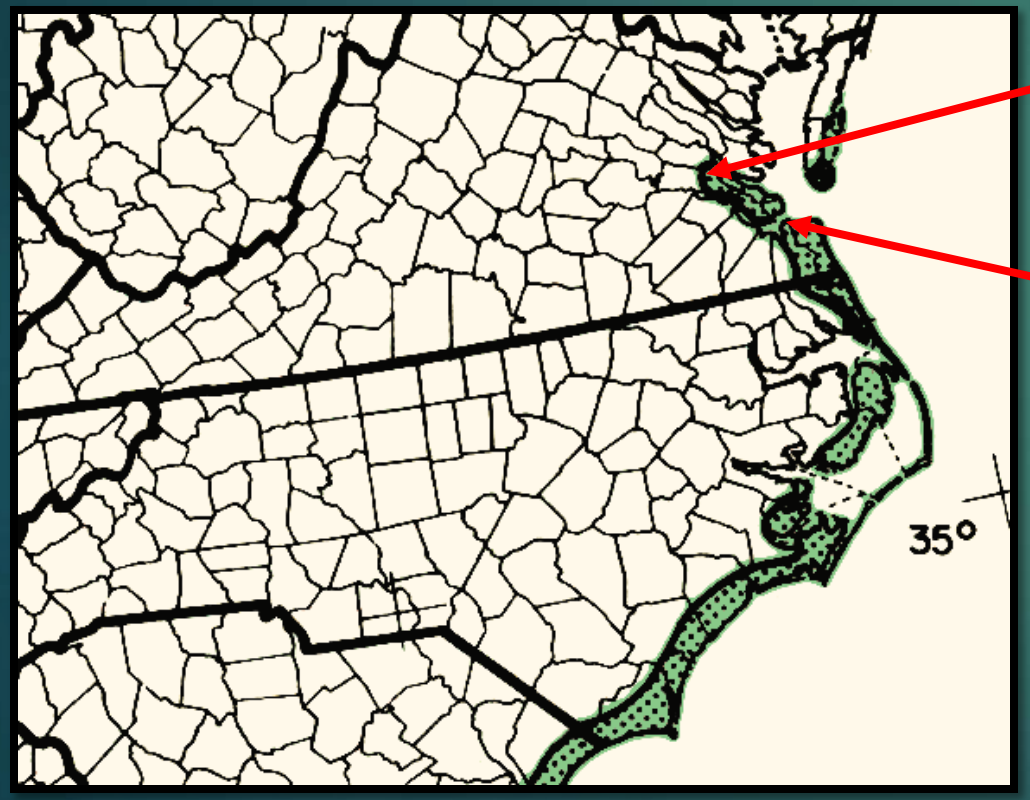
Morris Arboretum & Arnold Arboretum 2012 Expedition

Quercus virginiana range



Burns and Honkala. 1990. *Silvics of North America*

Virginia Populations



- Richmond: 1940, -24C/-12F
- Hampton & Williamsburg: 1985, -22C/-7F

First Landing State Park

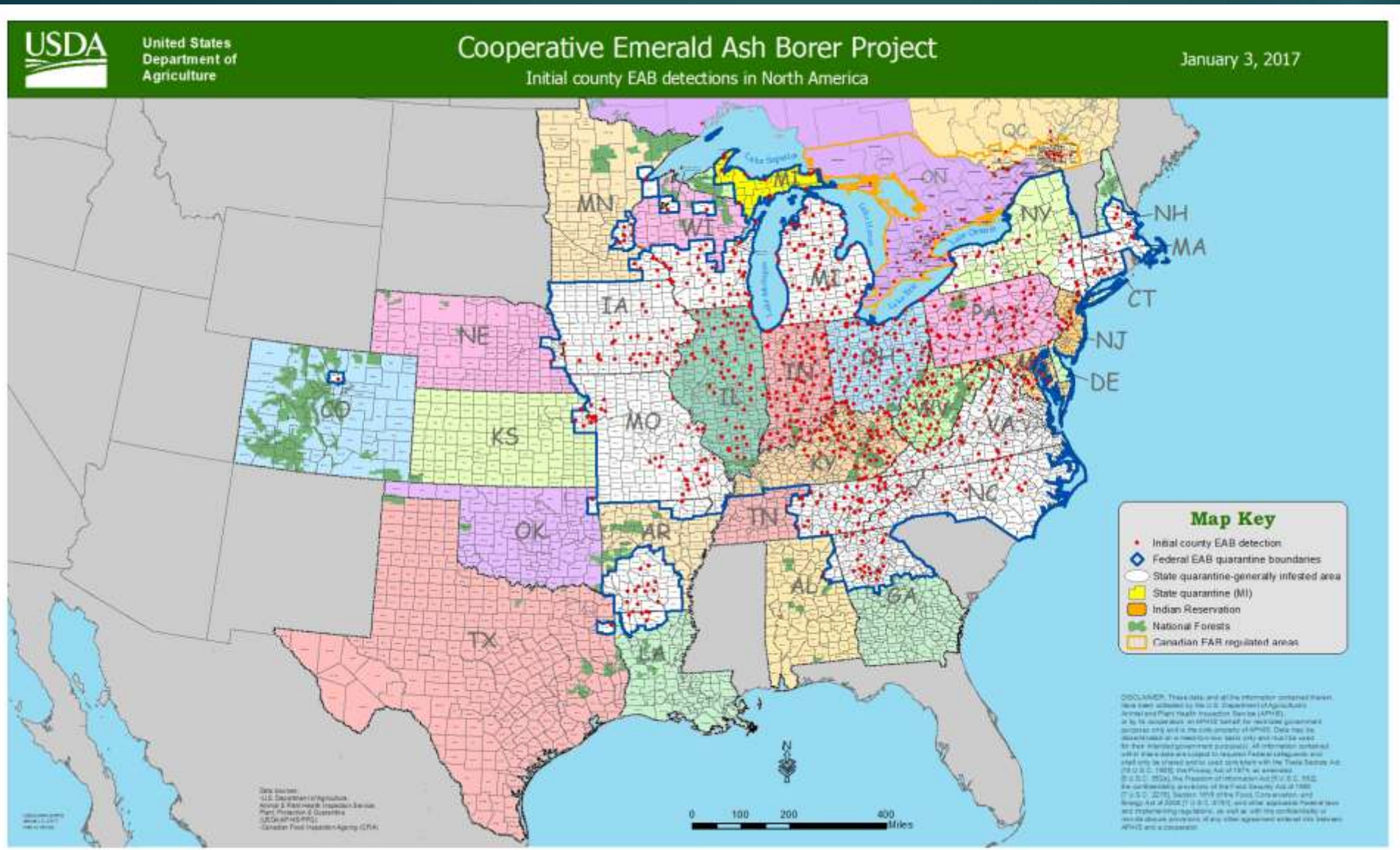

403
2012
403
2012
403
2012
403
2012

Collecting Fraxinus *for Conservation*

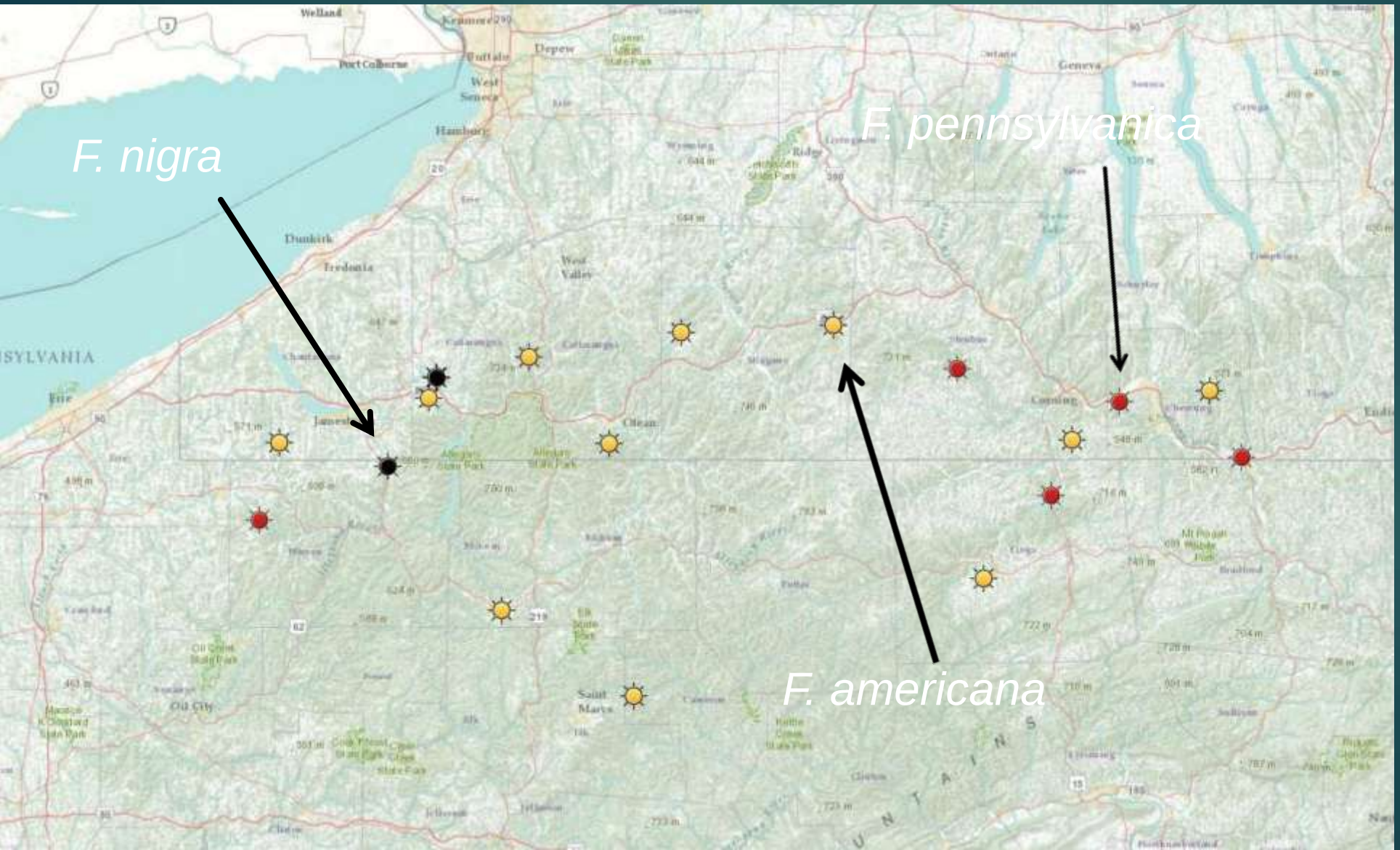
USDA-ARS, Brenton Arboretum, Arnold Arboretum 2011 Expedition

Sargent, C. S. 1894. The Silva of North America, Vol. 6. (C. Faxon, illus.)

Emerald Ash Borer (EAB)


USDA
United States Department of Agriculture
Cooperative Emerald Ash Borer Project
Initial county EAB detections in North America
January 3, 2017
MN
WI
MI
ON
QC
NY
NH
MA
CT
NJ
DE
PA
IA
NE
CO
KS
MO
IL
IN
OH
WV
VA
KY
NC
TN
OK
AR
MS
AL
GA
TX
LA
Map Key
Initial county EAB detection
Federal EAB quarantine boundaries
State quarantine-generally infested area
State quarantine (MI)
Indian Reservation
National Forests
Canadian EAB regulated areas
0 100 200 400
Miles

Fraxinus collections: NY & PA in 2011



Fraxinus americana #701, Randolph, NY


Tree 7

2 states,
3 species,
10 counties,
21 populations,
& 181 ash trees.

A Ten-Year campaign of plant exploration throughout the temperate world: 2015-2024

395 Target Taxa

The ARNOLD ARBORETUM of HARVARD UNIVERSITY
CAMPAIGN FOR THE LIVING COLLECTIONS

Last autumn the Arnold Arboretum launched the Campaign for the Living Collections, an ambitious ten-year plan to expand the breadth of plant holdings and increase their scientific and horticultural value. Considerable thought and effort went into creating a document that guides the Campaign's mission. We present this important document here in its entirety for the benefit of Arboretum supporters, stakeholders, and colleagues. Additional articles covering aspects of developing our Living Collections will be featured in Arnoldia this year.

Developing an Exemplary Collection: A Vision for the Next Century at the Arnold Arboretum of Harvard University

William E. Friedman, Michael S. Dosmann, Timothy M. Boland, David E. Boufford, Michael J. Donoghue, Andrew Gapinski, Larry Hufford, Paul W. Meyer, and Donald H. Pfister

Arnoldia
73(3):2-18

The ARNOLD ARBORETUM of HARVARD UNIVERSITY
CAMPAIGN FOR THE LIVING COLLECTIONS

The Campaign for the Living Collections is well under way at the Arboretum. In the last issue we presented the document that guides the Campaign, and in this issue we get to the action—how does the Arboretum curatorial staff prepare for and carry out plant collecting expeditions? Curator of Living Collections Michael Dosmann and Manager of Plant Records Kyle Port provide insight and share photographs from their recent trips.

The Art and Act of Acquisition

Michael S. Dosmann and Kyle Port

Plant exploration combines a love of plants with adventure. Over its nearly 145-year history, the Arnold Arboretum has harnessed these passions by leading or supporting more than 150 plant collecting events across 70 countries. As knowledge of the plant kingdom has evolved, so have the Arboretum's living collections, placing even greater demand on deliberate and strategic collection planning. As described in the previous issue of *Arnoldia* [Friedman et al. 2016], the new 10-year Campaign for the Living Collections articulates a number of broad goals that, when met, will preserve the collections' singular legacy and advance it well into the future. For example, there is a call to strengthen the species representation within genera such as *Viburnum* and *Taxus* that are useful to the study of biogeography. As a means of broadening the number of genera in the collections, several marginally hardy taxa like *Daphniphyllum macropodum* and *Nothofagus dombeyi* have been identified as species worth trying to grow here. And, because of the great threat of extinction, numerous conservation-status species are highlighted before they disappear from the wild.

The Arboretum will meet these collections goals through the acquisition of nearly 400 target taxa, or desiderata, with each fulfilling at least one (and typically several) goals. For many of the taxa on the list, the Arboretum needs several unique acquisitions (e.g., from multiple locations), so what is initially a list of 395 blossoms into a vibrant garden of 720 actual targets. Each of these targets will require its own acquisition plan and approach. A few might be purchased from nurseries, some may be acquired from cooperative institutions and repositories, while others will be sought out and obtained through the Arboretum's network of colleagues. However, the majority will be obtained on specific plant expeditions in which an Arboretum staff member leads or participates. With the vision and goals in place, a new generation of explorers, horticulturists, and other Arboretum friends and associates are rallying to collect from the temperate flora and cultivate these plants in the Arboretum.

Few endeavors are as rewarding and exciting as seeing plants in their wild habitats, collecting seeds or other propagules, and then bringing them back home to cultivate. As botanical garden professionals, we also value the role plant exploration plays in other aspects of collections manage-

Arnoldia
73(4):2-17

Acer tsinglingense

Goals for building an exemplary collection

A Synoptic Collection – every temperate woody genus

High-value rarities

"Finally Wild"

Broadened Diversity – both phylogenetic and biological

New Introductions

National Collection Genera:

Acer, Carya, Fagus, Stewartia, Syringa, & Tsuga

Carya laciniosa 22868B

1. Comprehensive species diversity

All known hardy species… and even some marginal ones

2. Improve wild representation

At minimum, one wild lineage per species

3. Increase provenance diversity

Three to five populations, capturing species' "breadth"

Future National Collections

Forsythia, Carpinus, Ostrya, Ginkgo

1. Comprehensive species diversity

2. Improve wild representation

Ostrya japonica

The Desiderata: Overview

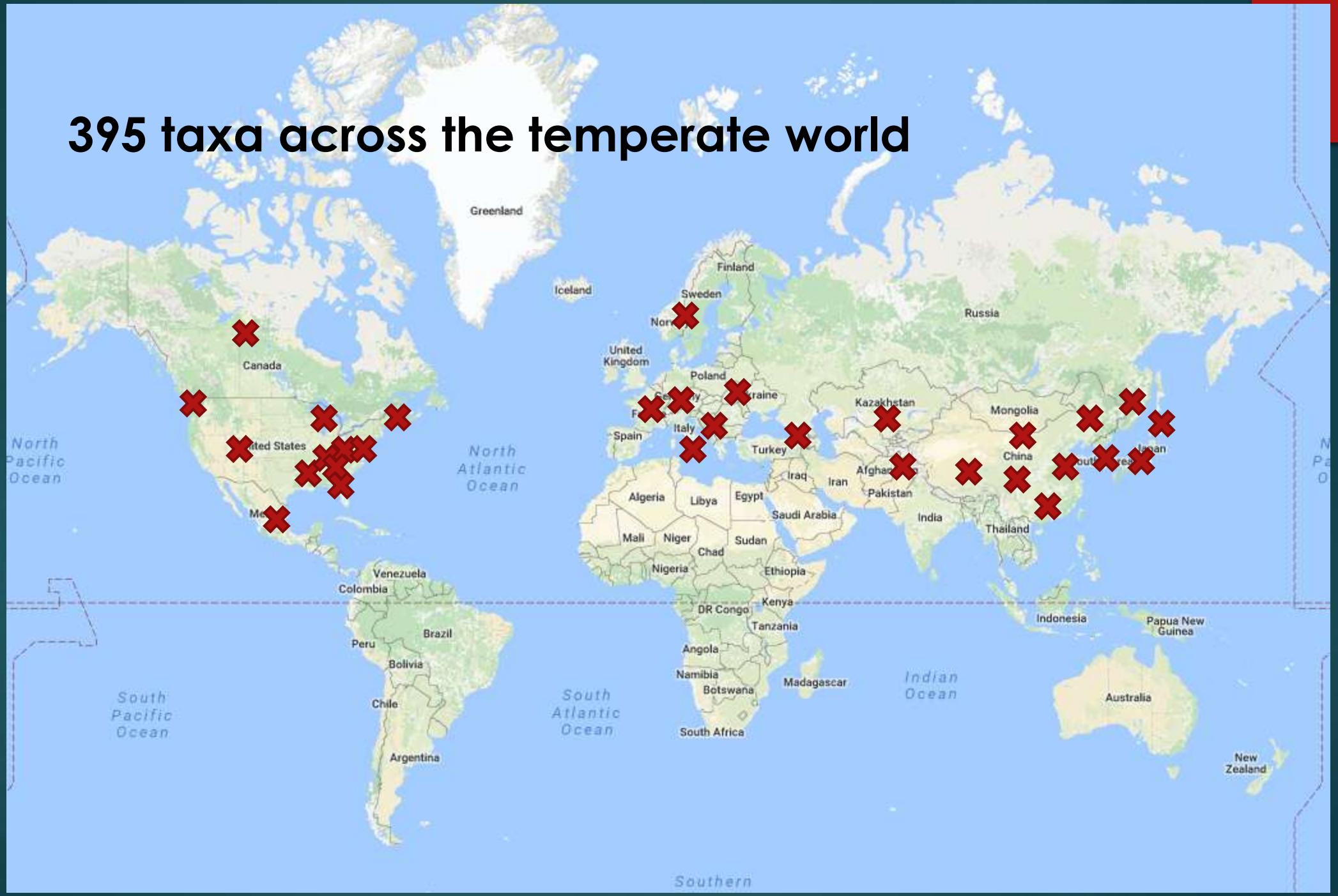
Species to collect because of:

Conservation concern	46
6 National Collection Genera (current)	113
4 National Collection Genera (future)	42
Disjunct Genera (E North America – E Asia)	26

The Desiderata: Overview

Acquisition targets' regions of origin:	
Eastern Asia	180
Eurasia	13
Europe	14
North America	128
South America	2

395 taxa across the temperate world



Individual Taxon Profiles (ITPs)

-Basic taxon description

-Location possibilities

-Conservation details

-Possible collaborative partners

195 ITPs completed to date (70% of the remainder needed for the Campaign)

Taxon Profile: *Hypericum kalmianum*

Scientific Name (The Plant List): *Hypericum kalmianum* L.

Other Names (The Plant List): *Norysca kalmiana* (L.) K. Koch

Common names (Flora of North America):

Kalm's St. John's wort, millepertuis de Kalm Kalm's St. John's wort, millepertuis de Kalm

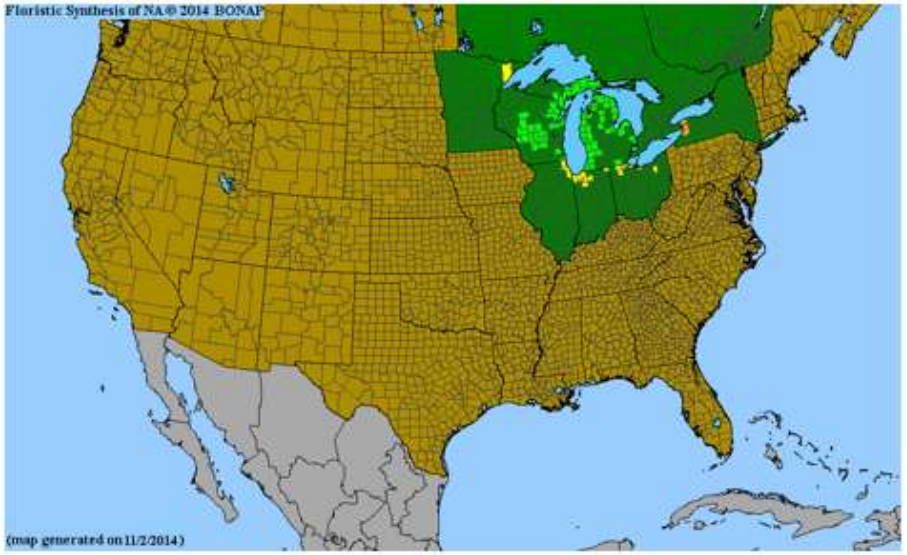
Taxon Description (Flora of North America):

Shrubs, erect, forming slender to rounded or flat-topped bush, (1.4–)2–6(–10) dm. Stems: internodes 4-lined at first, then terete. Leaf blades narrowly oblong to oblanceolate or linear, (15–)20–45 × 3–7(–10) mm, base articulated, narrowly cuneate to subattenuate, margins subrecurved to revolute, apex rounded to obtuse, midrib with 9–14 pairs of branches. Inflorescences usually (1–)3–7(+)-flowered <from apical node>, rarely with flowers from 1–2 proximal nodes. Flowers 20–35 mm diam.; sepals deciduous, not enclosing capsule, (4–)5, elliptic or oblong to obovate, subequal, 4–9 × 1.5–5 mm; petals (4–)5, golden yellow, obovate to oblong, 8–15 mm; stamens deciduous, 150–200; ovary (3–)5(–6)-merous. Capsules narrowly ovoid-conic, 7–11 × 4–7 mm. Seeds narrowly carinate, 0.7–1.1 mm; testa subscalariform. 2n = 18. Flowering summer (Jul–Aug).

Living wild AA Accessions (as of Dec 2016): none

Desired Regional Provenances: Great Lakes

Taxon Range (BONAP):



Preferred Habitat (Flora of North America):

Sandy or calcareous dune slacks or swales, rocky shores, plains and low prairies, along streams, sphagnum-sedge swamps; 10–400 m

Additional Notes (Flora of North America):

Hypericum kalmianum is a northern derivative of *H. prolificum* with shorter stems, narrower leaves, fewer and larger flowers, and, usually, five styles and placentae. Natural hybrids with *H. prolificum* have been reported from Wisconsin.

In NPGS?

none

In BCGI?

Yes (60+ sites worldwide)

ITPs can also inform future landscape decisions

Hypericum kalmianum 'Ames' (319-2001*A)
photo: Michael Dosmann

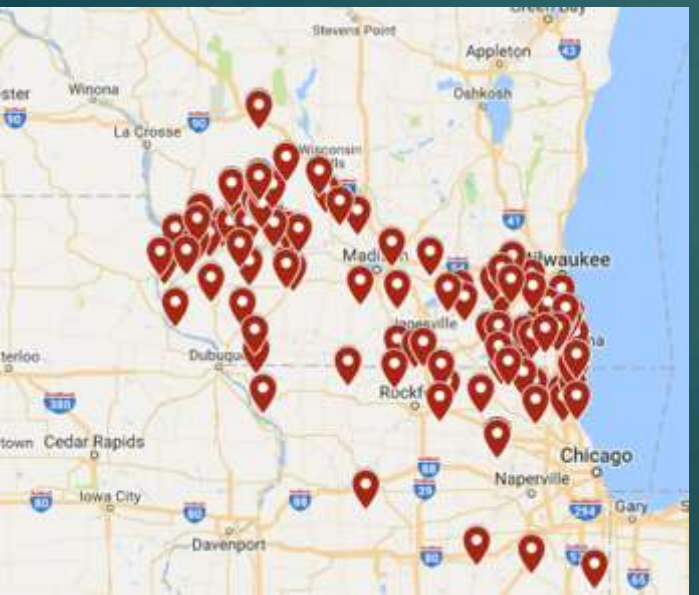
Coarse

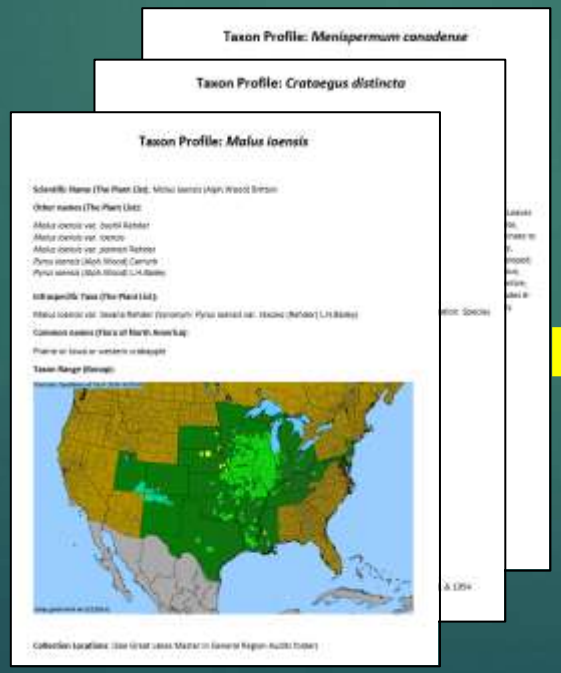
Refined

SERNEC

Southeast Regional Network of Expertise and Collections

Taxon	Google Map Location	Notes
Hypericum kalmianum	42.61N, 86.066W	Fennville, ca 2.3 mi NE; Specimen of Hypericum kalmianum L. recorded on Jul 6, 1991 from R. L. McGregor Herbarium Vascular Plants Collection dataset
Hypericum kalmianum	42.91221N, 88.48648W	Human Observation of Hypericum kalmianum L. recorded on Jul 16, 2016 from iNaturalist Research-grade Observations dataset





Taxon Profile: *Hypericum kalmianum*

Scientific Name (The Plant List): *Hypericum kalmianum* L.

Other Names (The Plant List): *Norysca kalmiana* (L.) K. Koch

Common names (Flora of North America):

Kalm's St. John's wort, millepertuis de Kalm Kalm's St. John's wort, millepertuis de Kalm

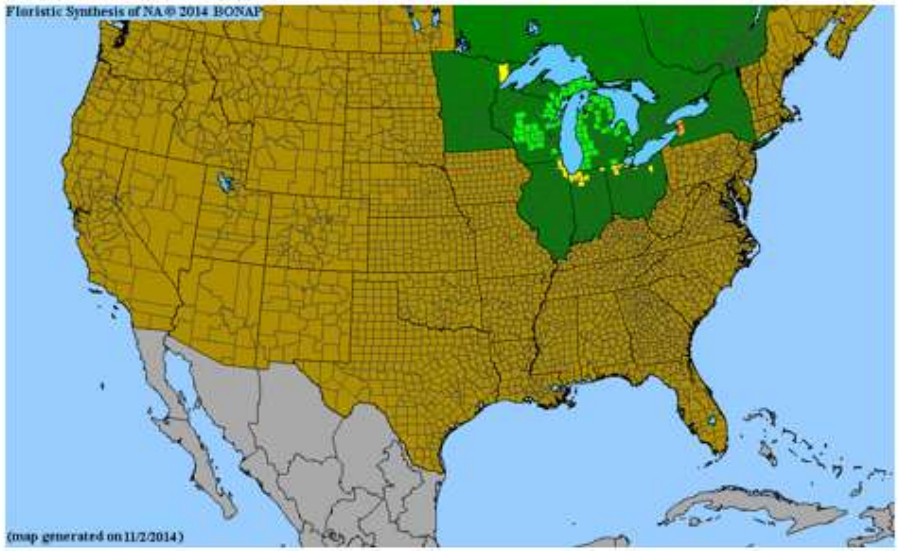
Taxon Description (Flora of North America):

Shrubs, erect, forming slender to rounded or flat-topped bush, (1.4–)2–6(–10) dm. Stems: internodes 4-lined at first, then terete. Leaf blades narrowly oblong to oblanceolate or linear, (15–)20–45 × 3–7(–10) mm, base articulated, narrowly cuneate to subattenuate, margins subrecurved to revolute, apex rounded to obtuse, midrib with 9–14 pairs of branches. Inflorescences usually (1–)3–7(+)-flowered <from apical node>, rarely with flowers from 1–2 proximal nodes. Flowers 20–35 mm diam.; sepals deciduous, not enclosing capsule, (4–)5, elliptic or oblong to obovate, subequal, 4–9 × 1.5–5 mm; petals (4–)5, golden yellow, obovate to oblong, 8–15 mm; stamens deciduous, 150–200; ovary (3–)5(–6)-merous. Capsules narrowly ovoid-conic, 7–11 × 4–7 mm. Seeds narrowly carinate, 0.7–1.1 mm; testa subscalariform. 2n = 18. Flowering summer (Jul–Aug).

Living wild AA Accessions (as of Dec 2016): none

Desired Regional Provenances: Great Lakes

Taxon Range (BONAP):



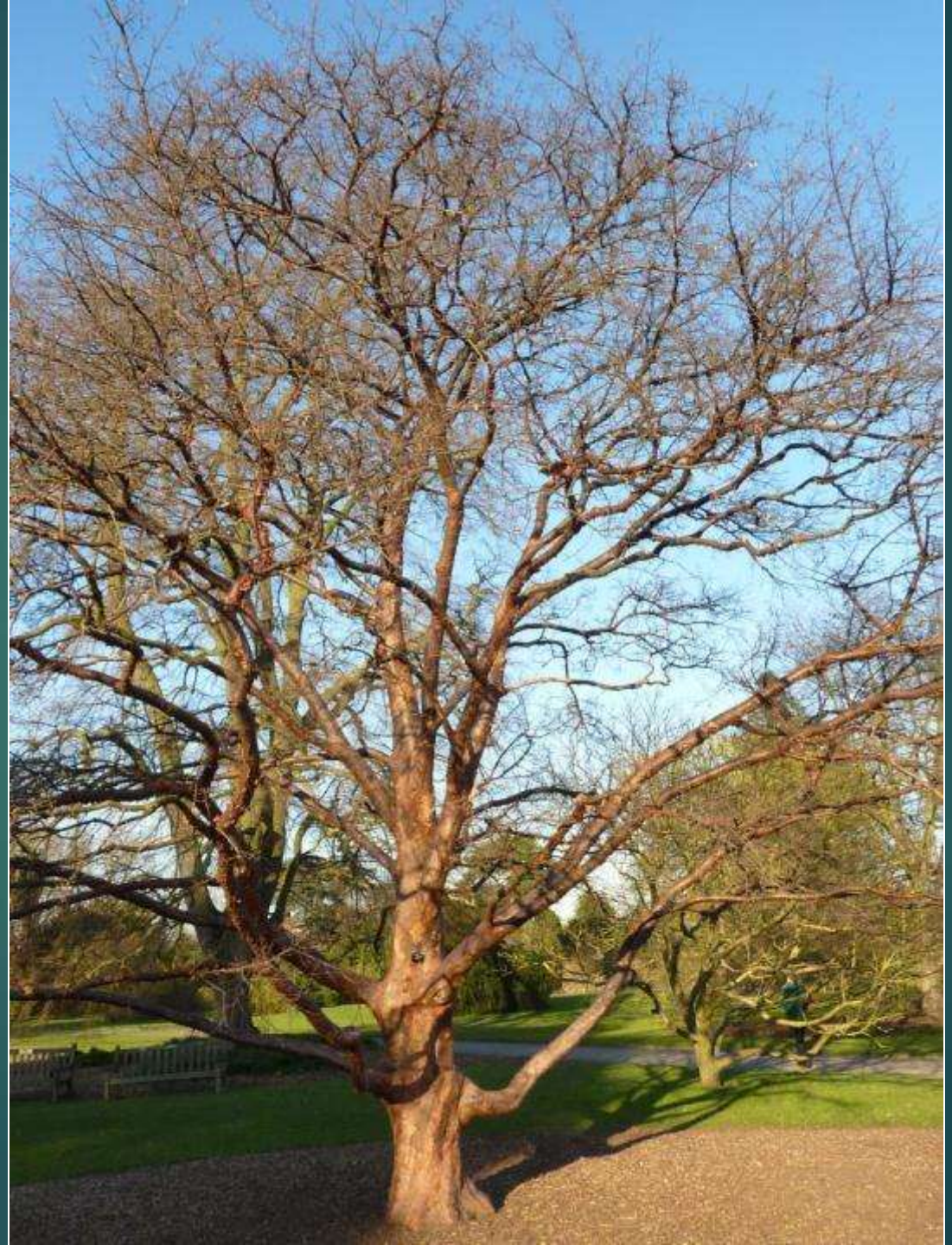
2015, NACPEC TRIP FOR *ACER GRISEUM* CONSERVATION

Three germplasm introductions of paperbark maple by E. H. Wilson

- 1901 – EHW (Veitch Seed) #1291
  - Seed, high germination success, ca 100 seedlings resulted and sold "Wilson #1"
- 1907 – EHW (Arnold Arboretum) #340
  - Seed, poor to no germination success, none survived*
- 1907 – EHW (Arnold Arboretum) #719
  - Two seedlings "Wilson #2"


AA 12488*B, planted in 1907

All cultivated trees outside of China can be traced to “Wilson #1” and “Wilson #2”



Royal Botanic Gardens, Kew
(photo by A. Aiello)

Until a third collection

NACPEC 1994

13 seedlings – 3 to the AA

Photo by P. Del Tredici

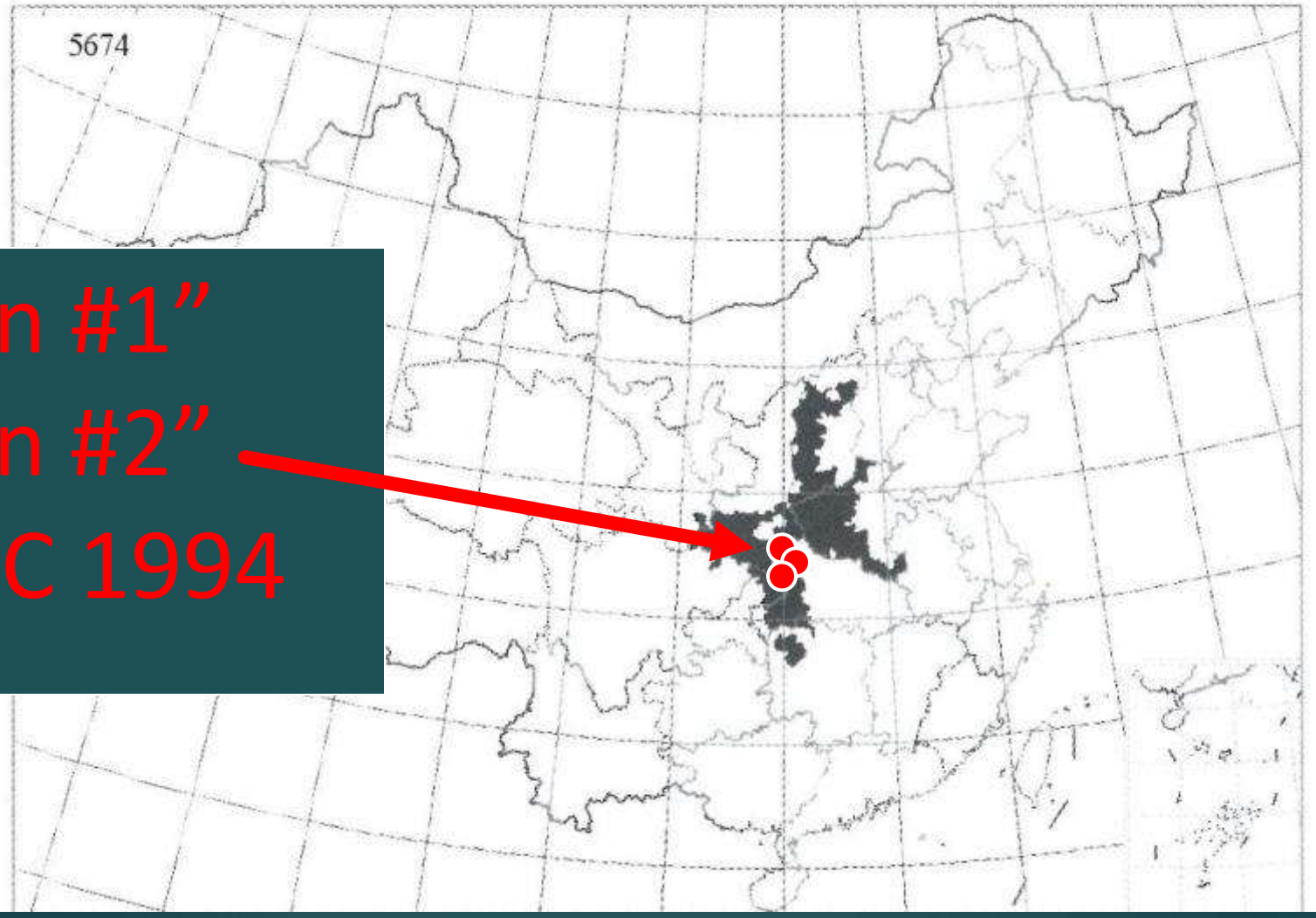
AA 767-94*A

Aceraceae 槭树科 *Acer* 槭属

Acer griseum (Franch.) Pax 血皮枫

Trees, deciduous

11.9 (3.3~16.2); −1.8 (−12.7~4.4); 24.4 (17.5~28.1); 12.3 (6.6~16.2); 100.9 (45.4~135.6); 17.9 (0.6~65.0); 737 (507~891) | 752 (427~1492); 368 (258~613); 36 (10~140) | 2.3 (−36.5~106.2); 648 (427~891); 193.9 (70.3~334.4)



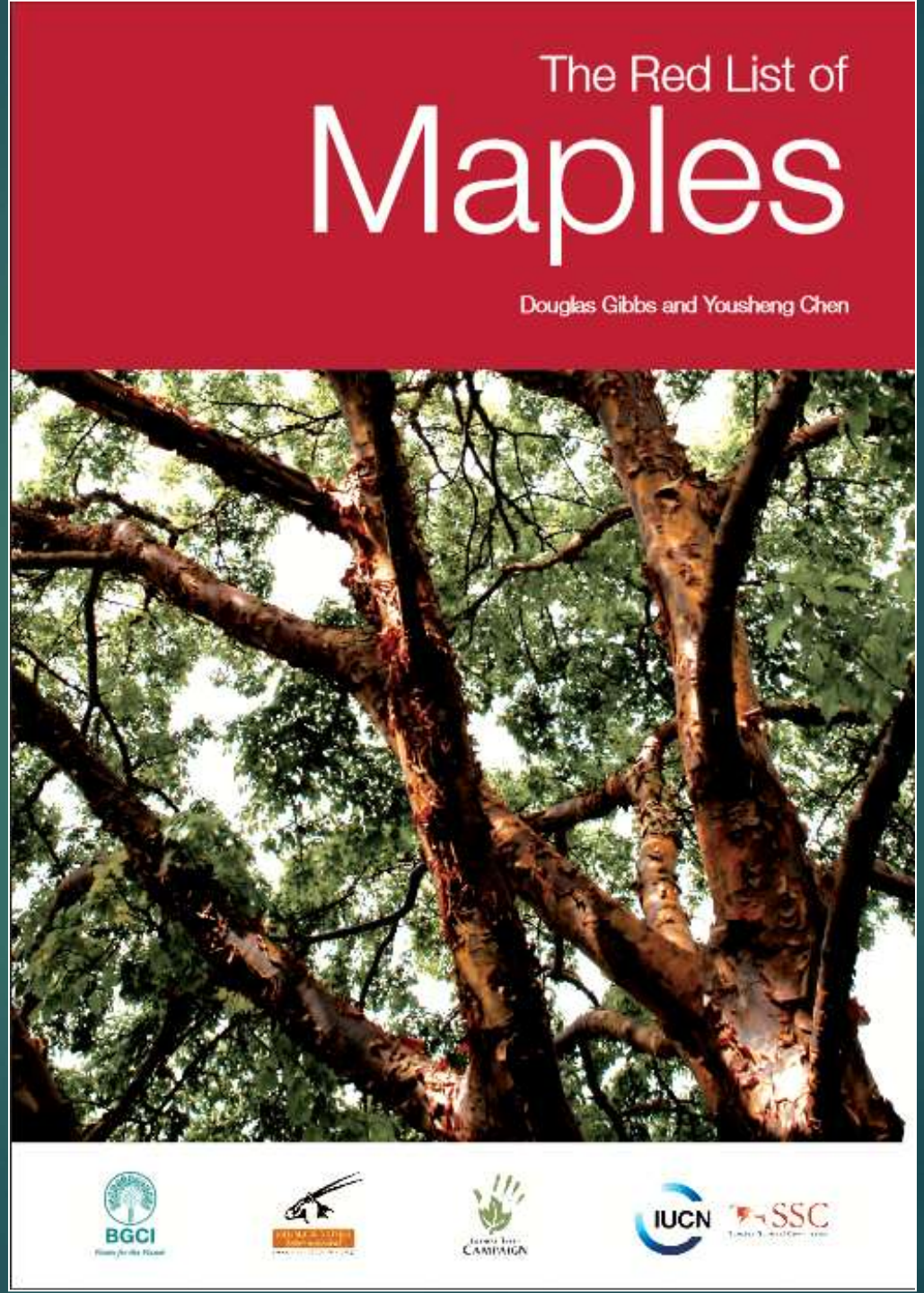
"Wilson #1"

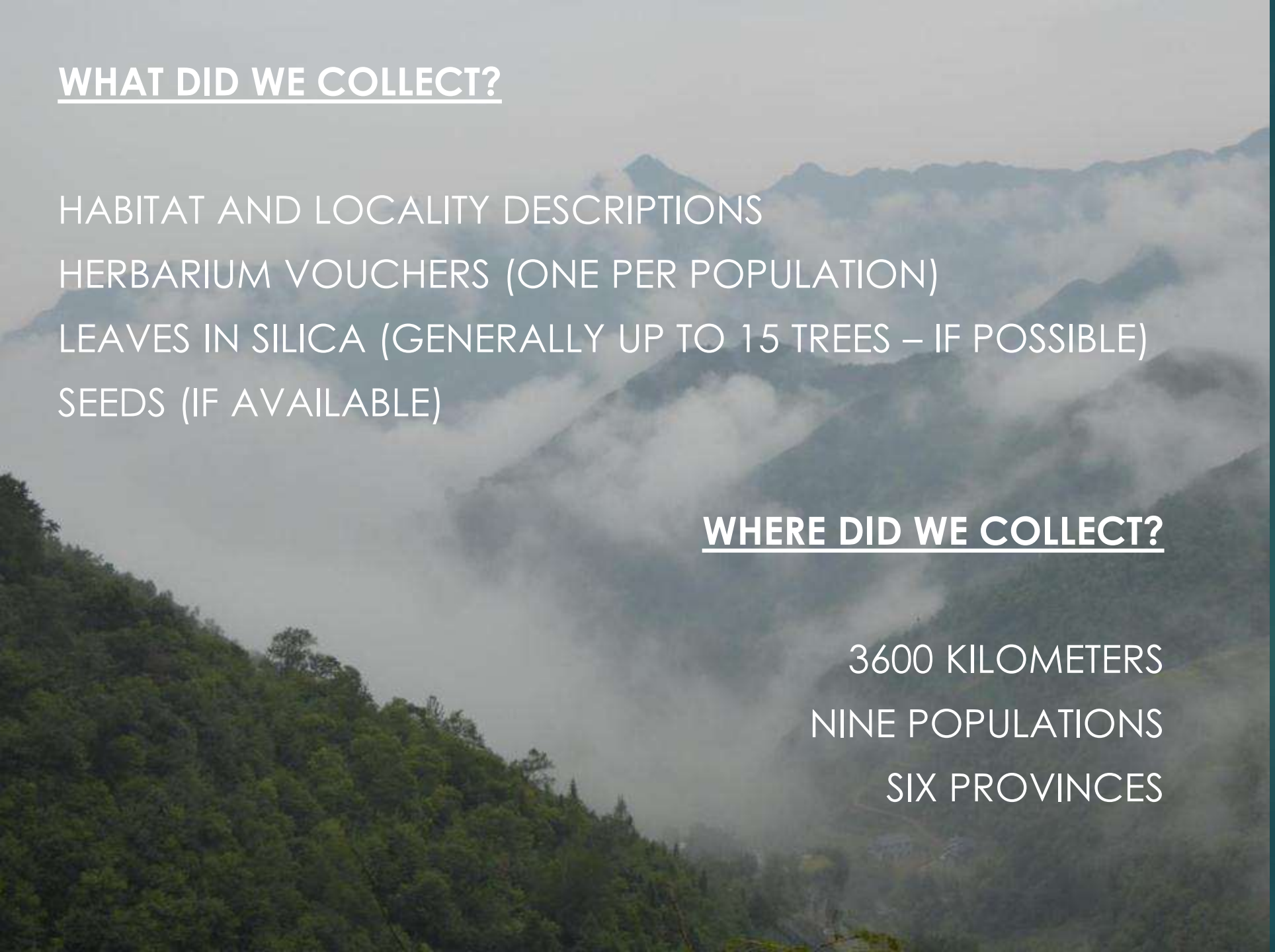
"Wilson #2"

NACPEC 1994

2009 Report updated the Conservation Status of *Acer griseum to* EN-A2c

Facing a very high risk of extinction in the wild due to a 50% or greater reduction in population size over the last three generations due to a decline in the area of occupancy/extent of occurrence/quality of habitat.





WHAT DID WE COLLECT?

HABITAT AND LOCALITY DESCRIPTIONS

HERBARIUM VOUCHERS (ONE PER POPULATION)

LEAVES IN SILICA (GENERALLY UP TO 15 TREES – IF POSSIBLE)

SEEDS (IF AVAILABLE)

WHERE DID WE COLLECT?

3600 KILOMETERS

NINE POPULATIONS

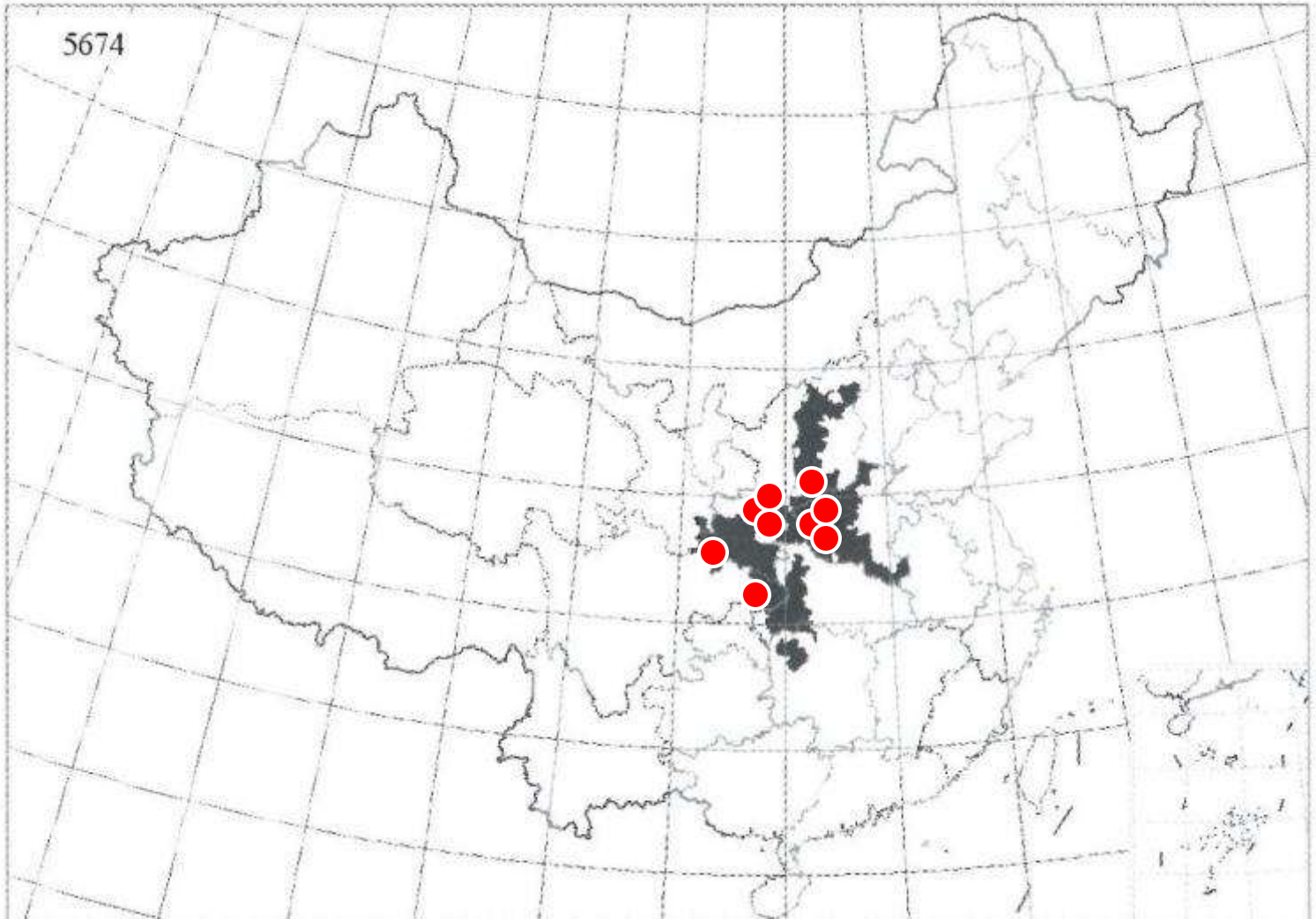
SIX PROVINCES

Aceraceae 槭树科　*Acer* 槭属

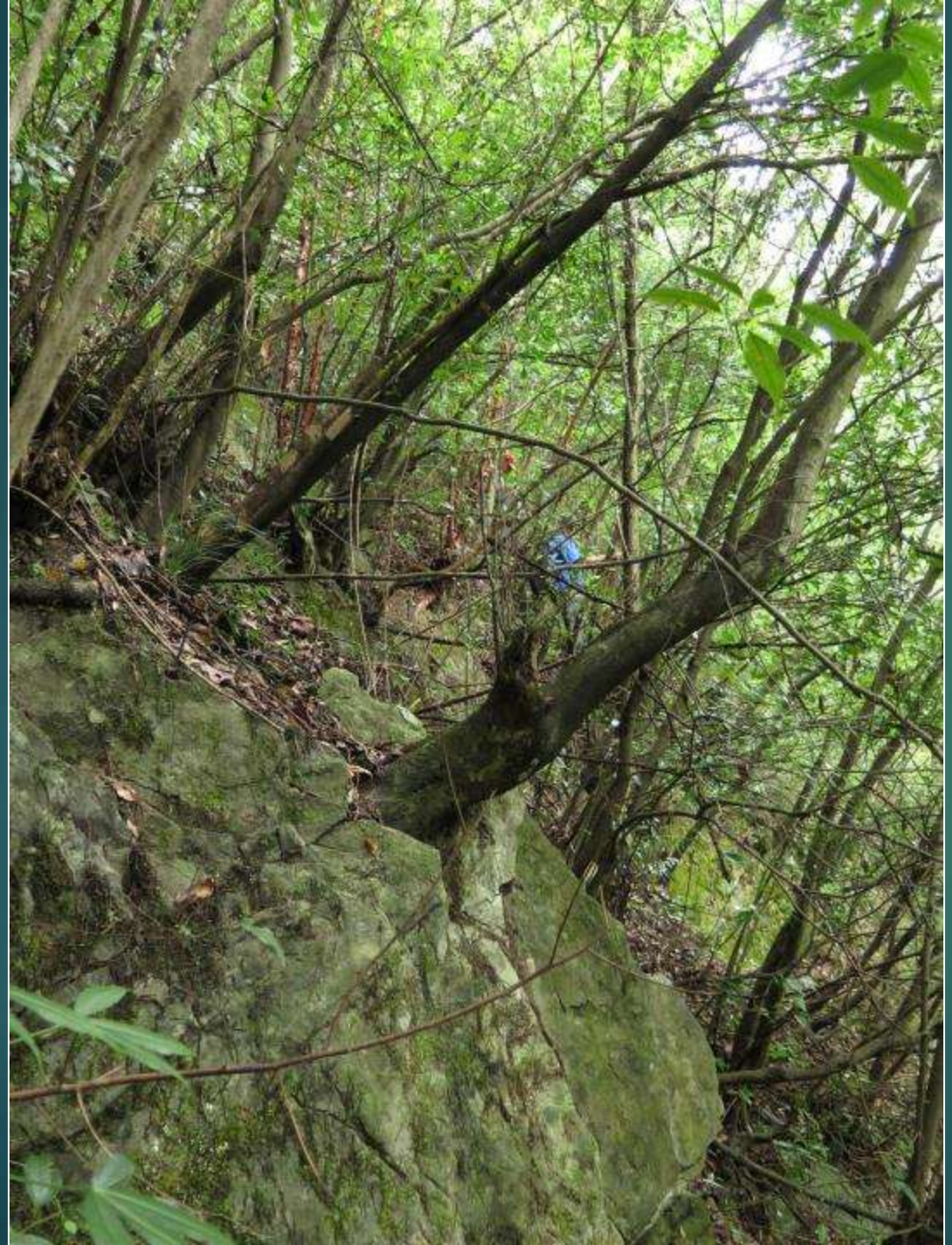
Acer griseum (Franch.) Pax 血皮枫

Trees, deciduous

11.9 (3.3~16.2); −1.8 (−12.7~4.4); 24.4 (17.5~28.1); 12.3 (6.6~16.2); 100.9 (45.4~135.6); 17.9 (0.6~65.0); 737 (507~891) ▌ 752 (427~1492); 368 (258~613); 36 (10~140) ▌ 2.3 (−36.5~106.2); 648 (427~891); 193.9 (70.3~334.4)



Gaonanzhen, Chongqing



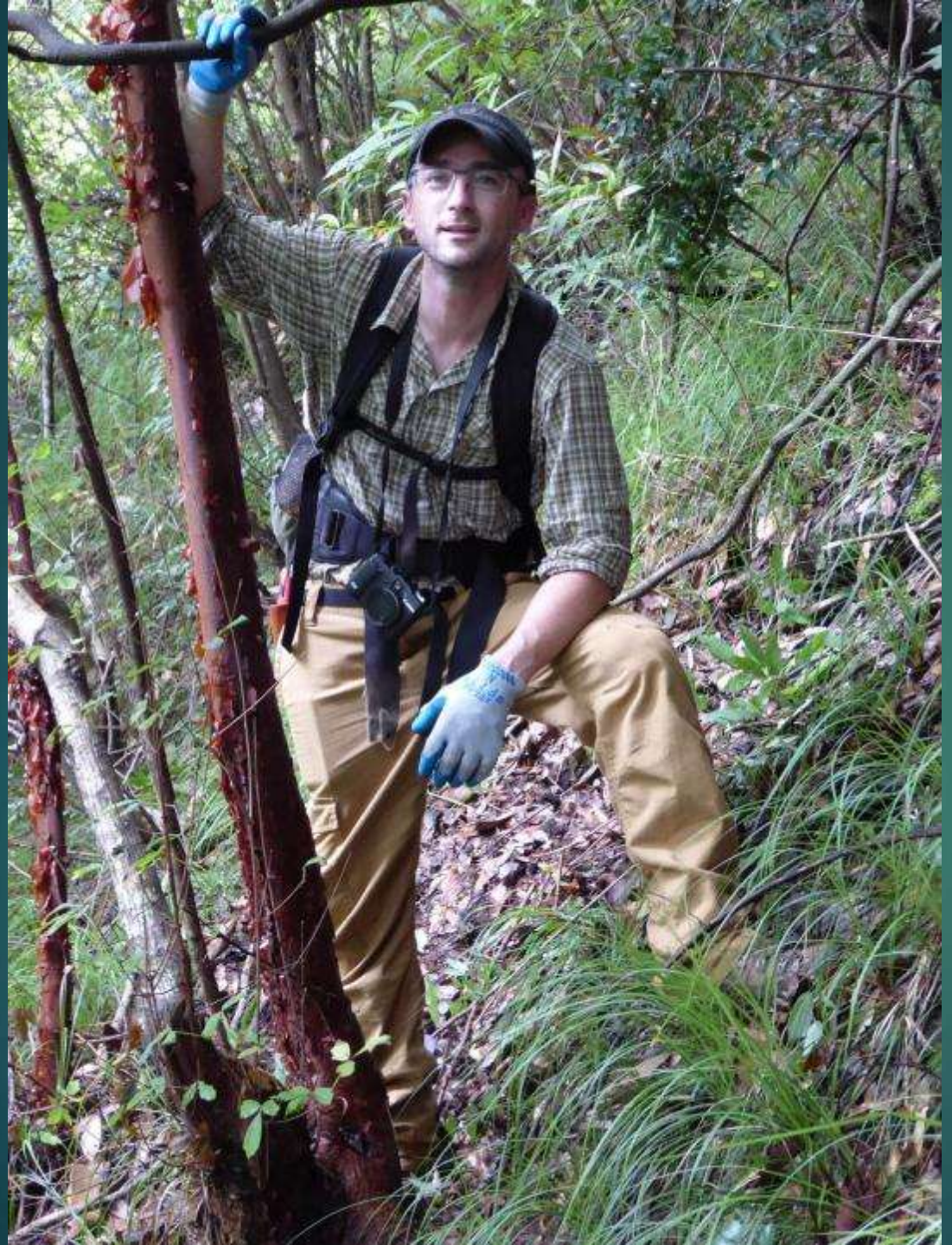


photo by T. Aiello





Guangwushan, Sichuan

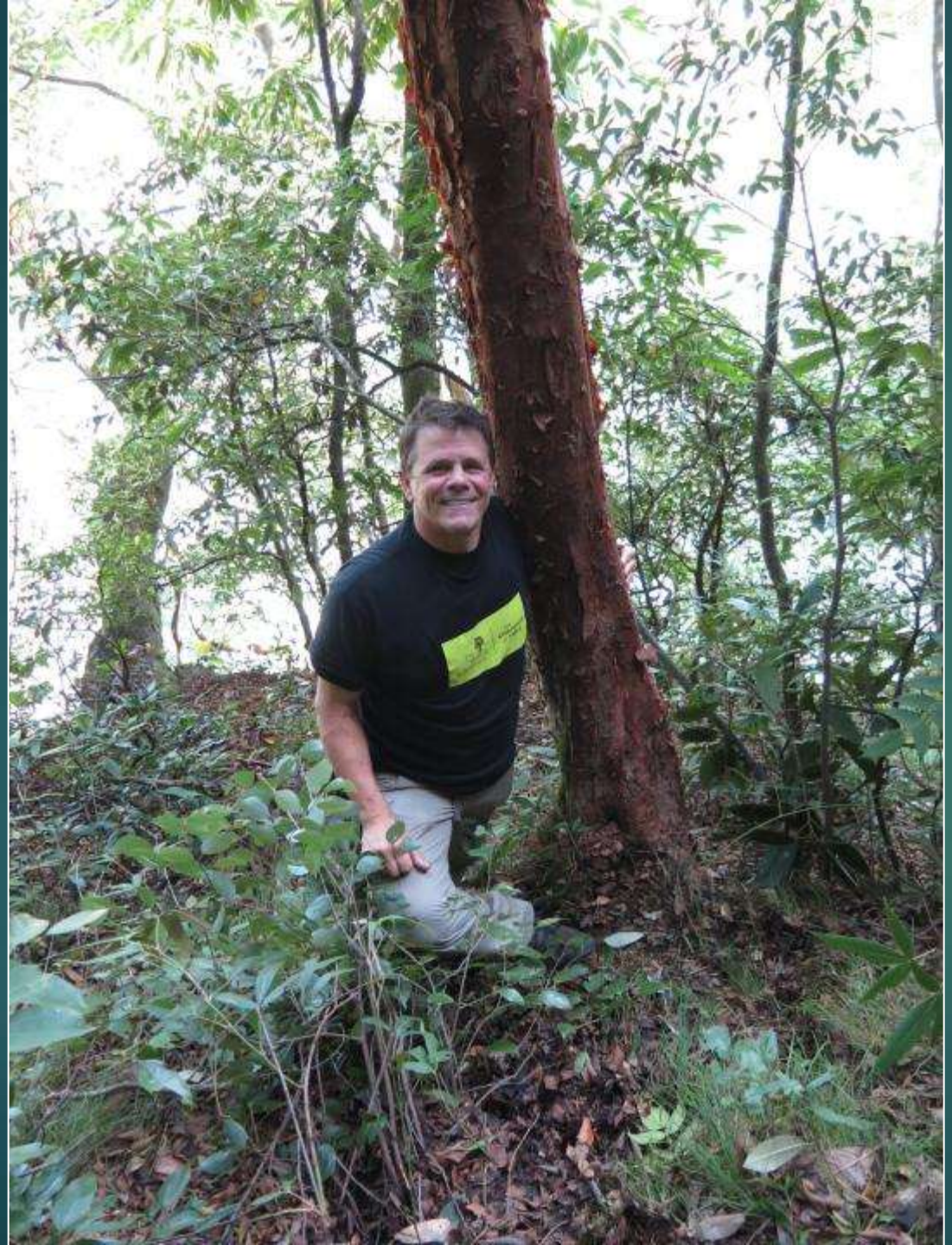



photo by K. Wang

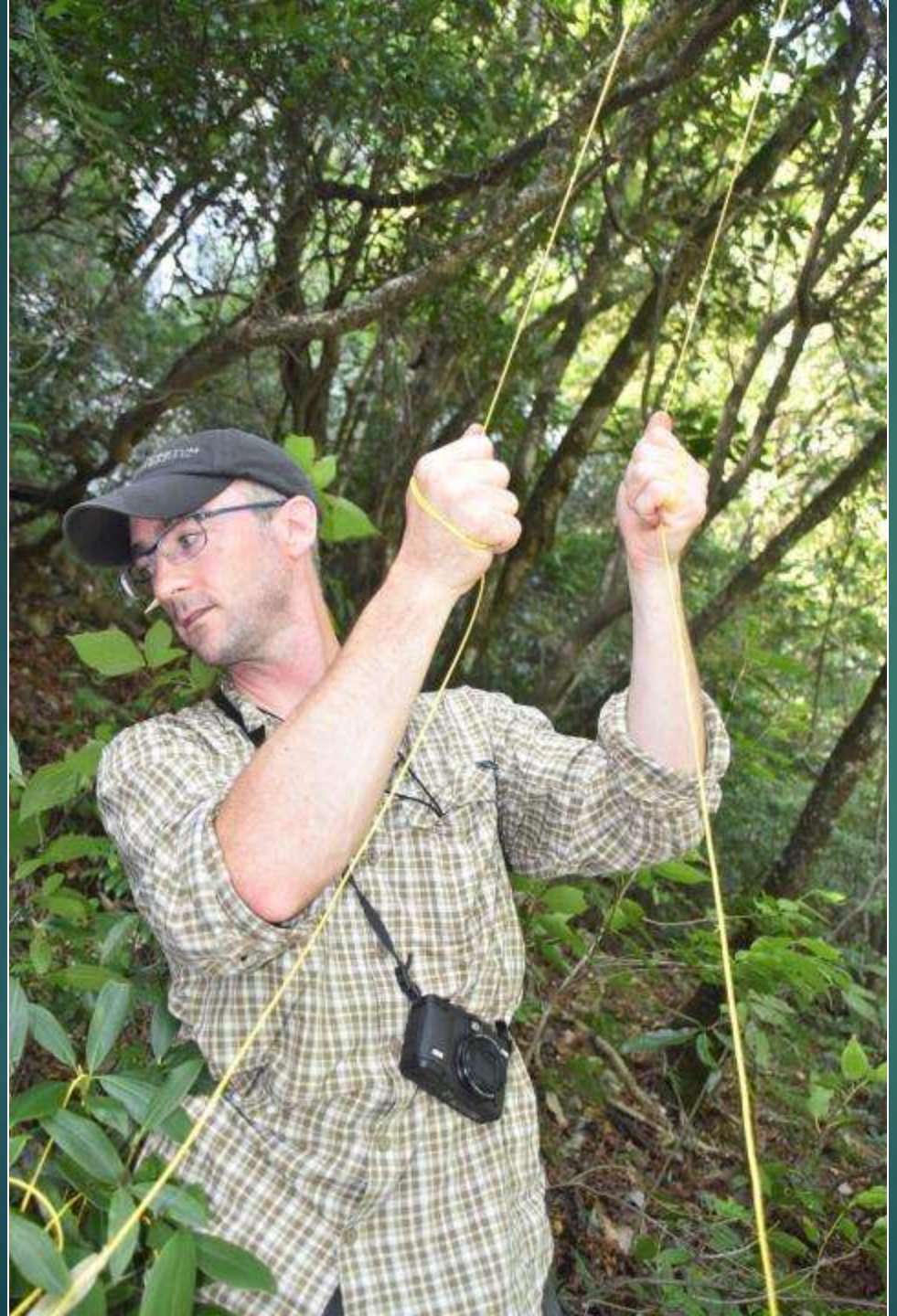


photo by K. Wang

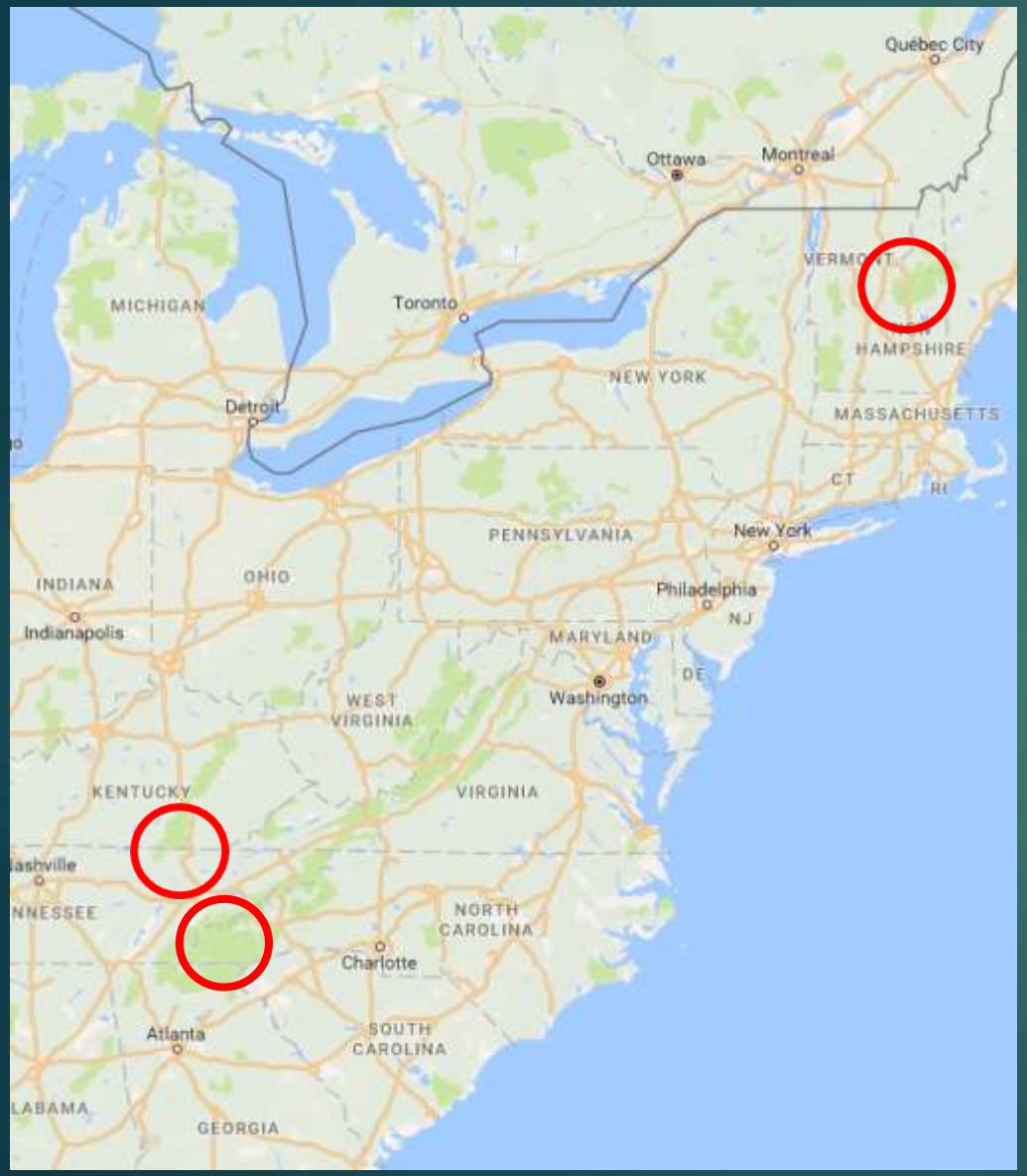
photo by K. Wang

Corylus fargesii

2015 NACPEC trip
Shaanxi

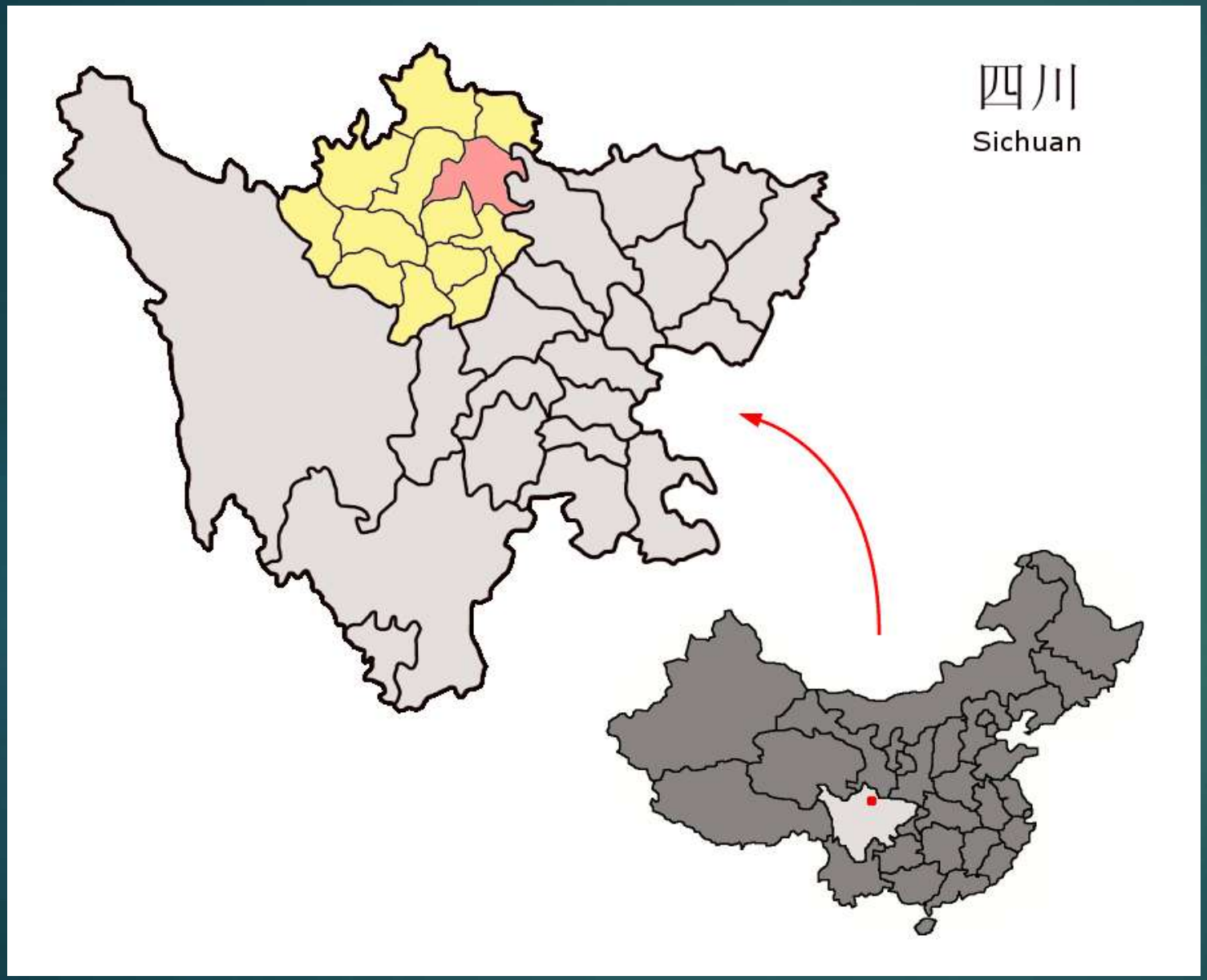
274-2015
Corylus fargesii
w/c China SD
Corylus fargesii

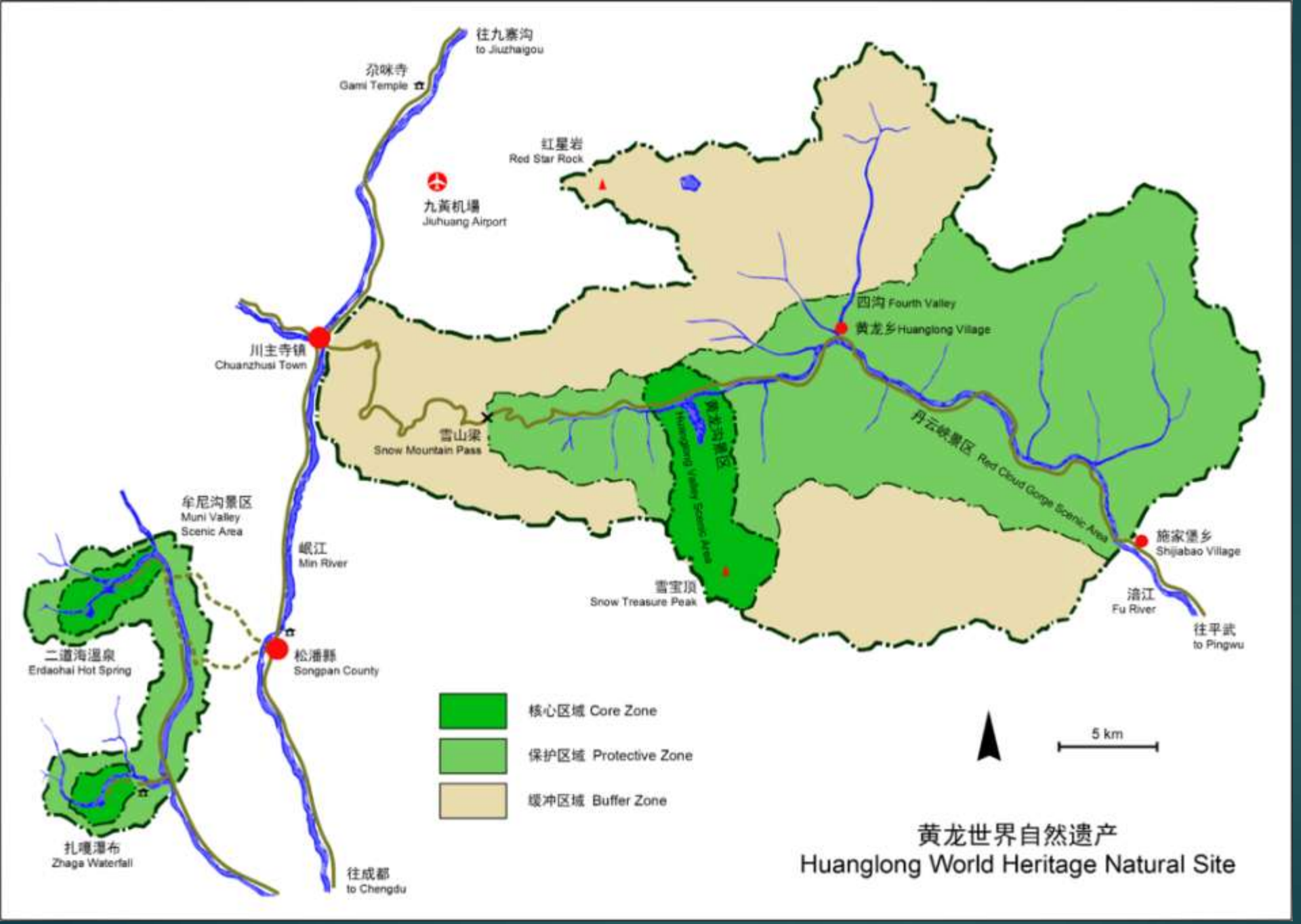
Expeditions 2016

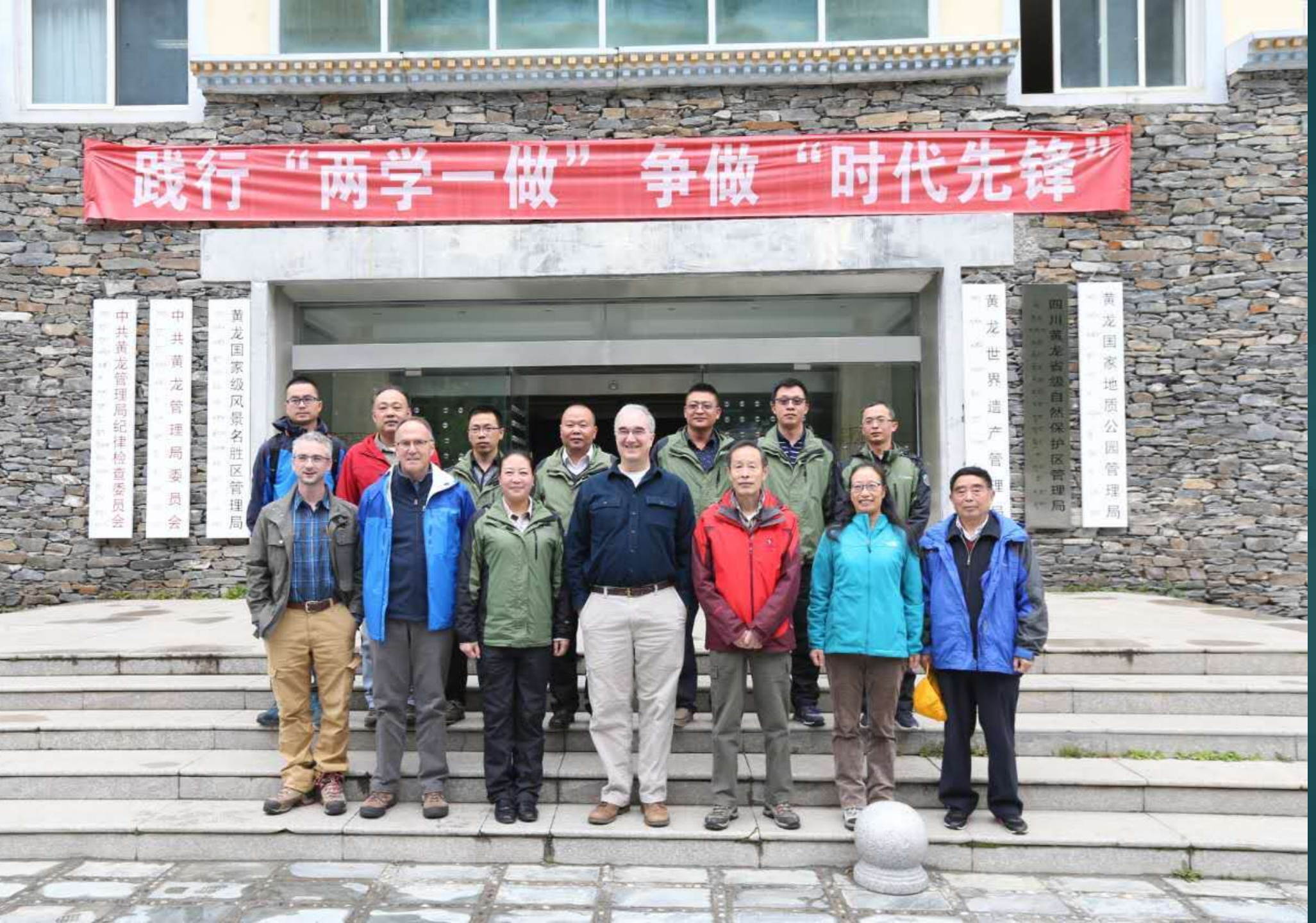


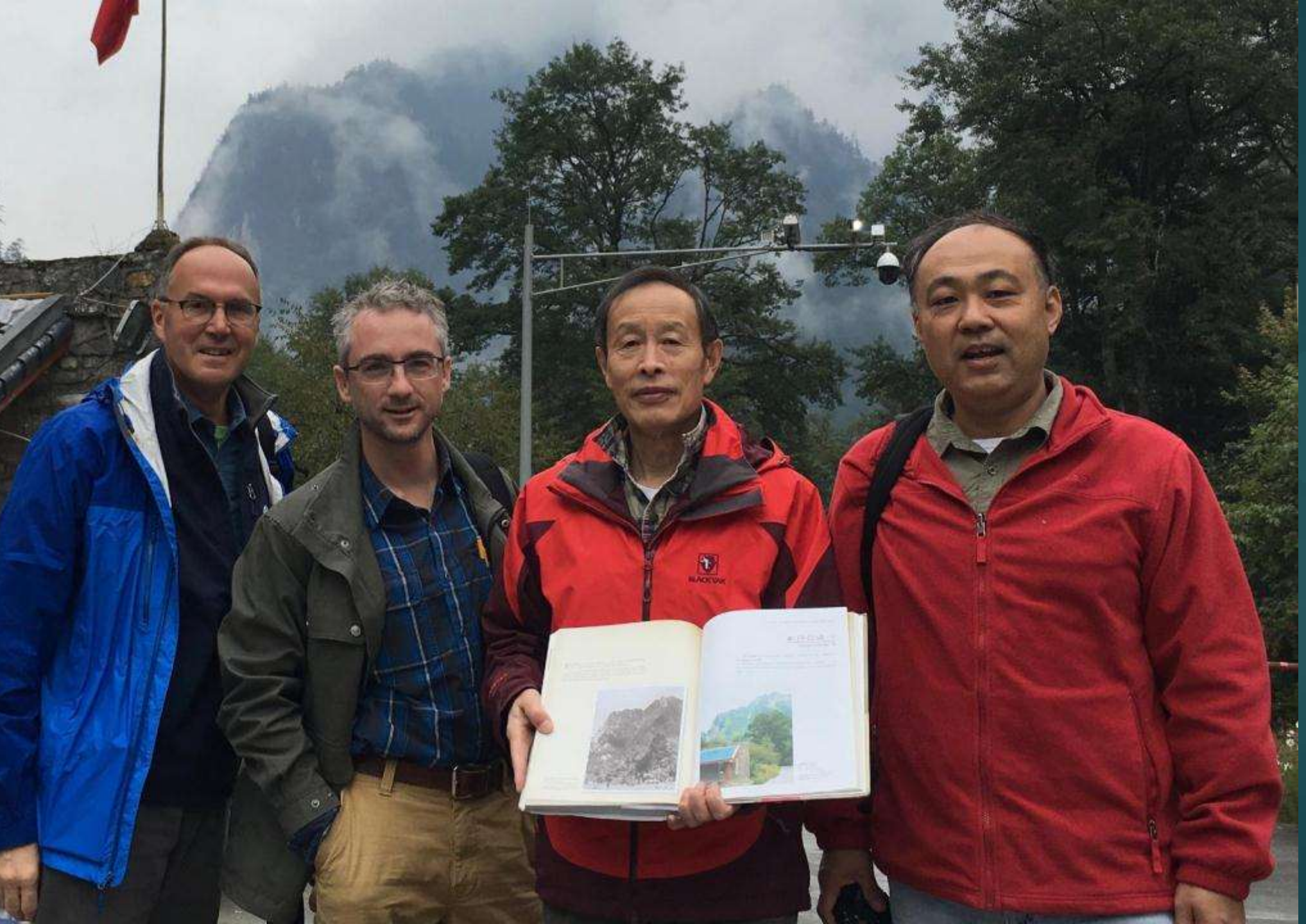
2016 NACPEC Expedition to Sichuan

Fig. 1. Songpan County, Sichuan (from Wikipedia)



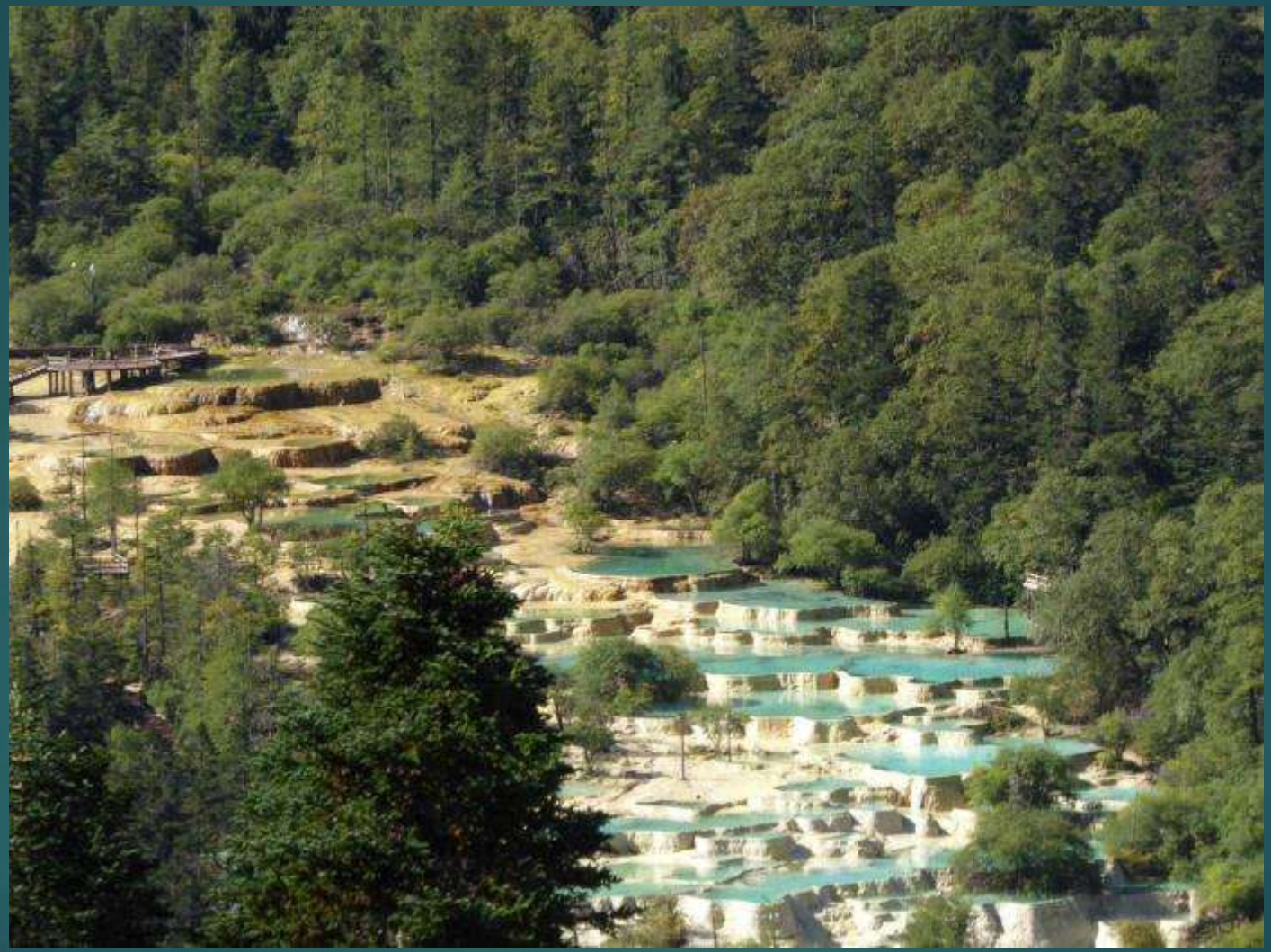

往九寨沟
to Jiuzhaigou
尕咪寺
Gami Temple
红星岩
Red Star Rock
九黄机場
Jiuhuang Airport
川主寺镇
Chuanzhusi Town
雪山梁
Snow Mountain Pass
四沟 Fourth Valley
黄龙乡Huanglong Village
黄龙沟景区
Huanglong Valley Scenic Area
丹云峡景区 Red Cloud Gorge Scenic Area
施家堡乡
Shijiabao Village
涪江
Fu River
往平武
to Pingwu
牟尼沟景区
Muni Valley
Scenic Area
岷江
Min River
雪宝顶
Snow Treasure Peak
二道海温泉
Erdaohai Hot Spring
松潘縣
Songpan County
扎嘎瀑布
Zhaga Waterfall
往成都
to Chengdu
核心区域 Core Zone
保护区域 Protective Zone
缓冲区域 Buffer Zone
5 km
黄龙世界自然遗产
Huanglong World Heritage Natural Site


践行“两学一做”争做“时代先锋”
中共黄龙管理局纪律检查委员会
中共黄龙管理局委员会
黄龙国家级风景名胜区管理局
黄龙世界遗产管理
四川黄龙省级自然保护区管理局
黄龙国家地质公园管理局



Meliosma alba (syn. *M. beaniana*)
Mayuan Village, Pingwu County, Sichuan

Photo by E. H. Wilson 19 August 1910

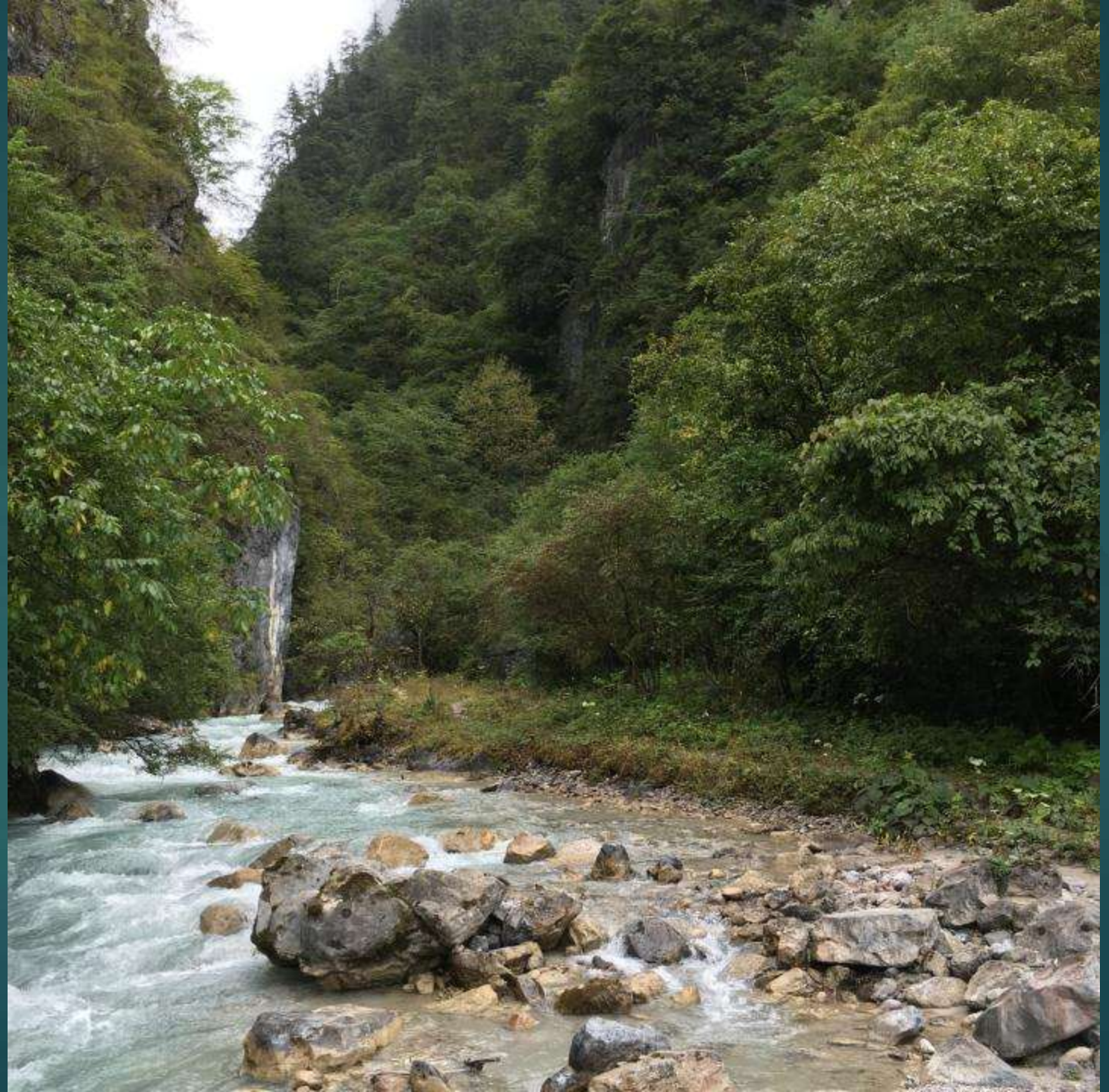


Acer caesium

Viburnum schensianum

Paeonia anomala var. *veitchii*

Ilex fargesii



Viburnum erubescens

Magnolia officinalis

Viburnum foetidum

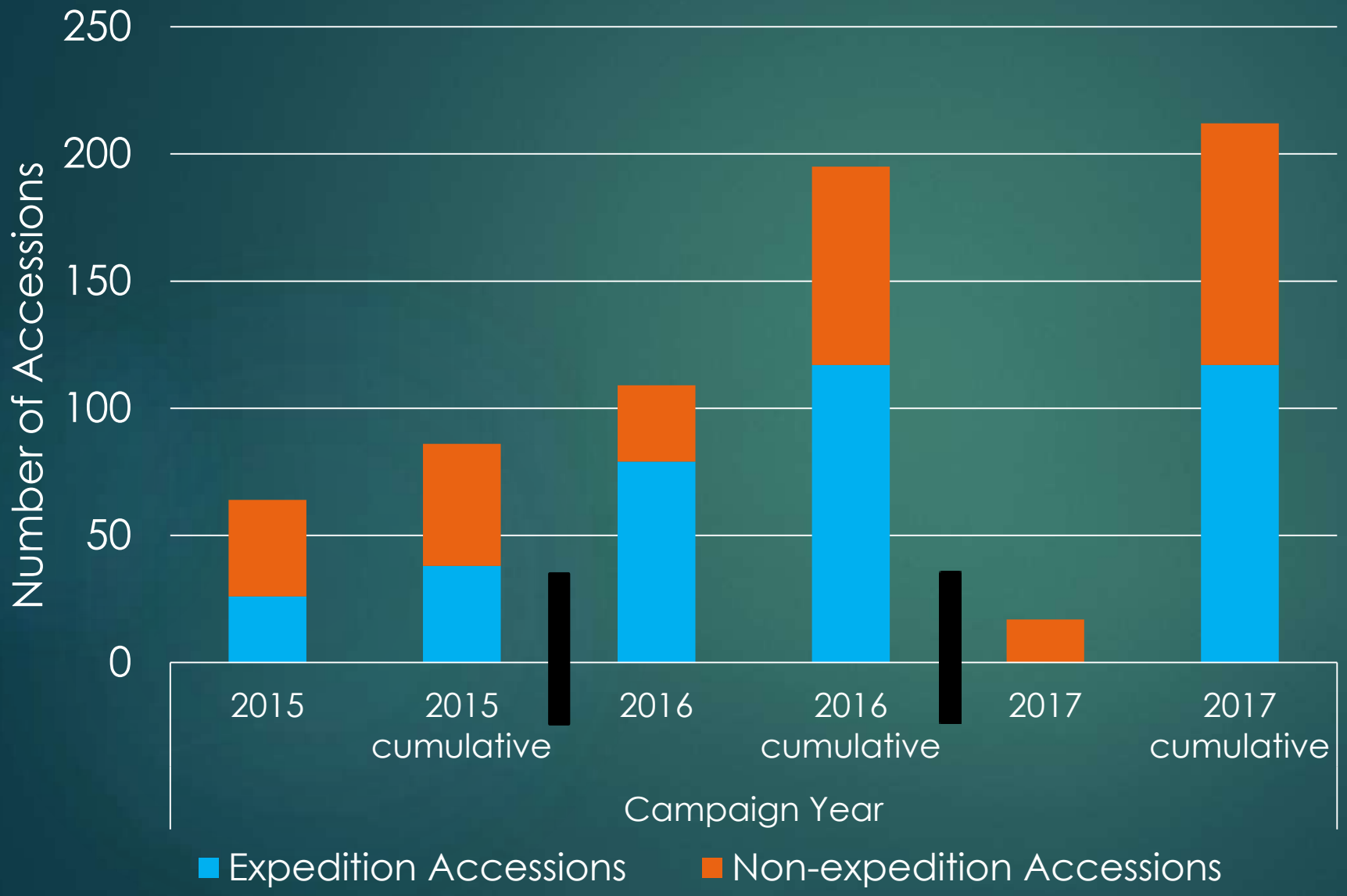
Helwingia chinensis

NACPEC 2016 – Sichuan Province

Acer caesium ssp. *giraldii*
Acer erianthum
Carpinus fangiana
Corylopsis willmottiae
Dipteronia sinensis
Enkianthus chinensis
Helwingia chinensis
Ilex fargesii
Magnolia officinalis
Paeonia anomala ssp. *veitchii*
Picea asperata
Polygonatum cirrhifolium
Rhododendron przewalskii
Rosa graciliflora
Rosa moyesii
Rosa roxburghii
Salix sp.
Skimmia melanocarpa
Sorbus pallescens
Sorbus wilsoniana
Syringa sweginzowii
Triosteum pinnatifidum
Viburnum aff. *betulifolium*
Viburnum cylindricum
Viburnum erubescens
Viburnum foetidum
Viburnum schensianum

Helwingia chinensis

Quantitative Update: Desiderata Acquisitions



Current Taxa Count = 119
(30% of Campaign total)

209 Accessions collected

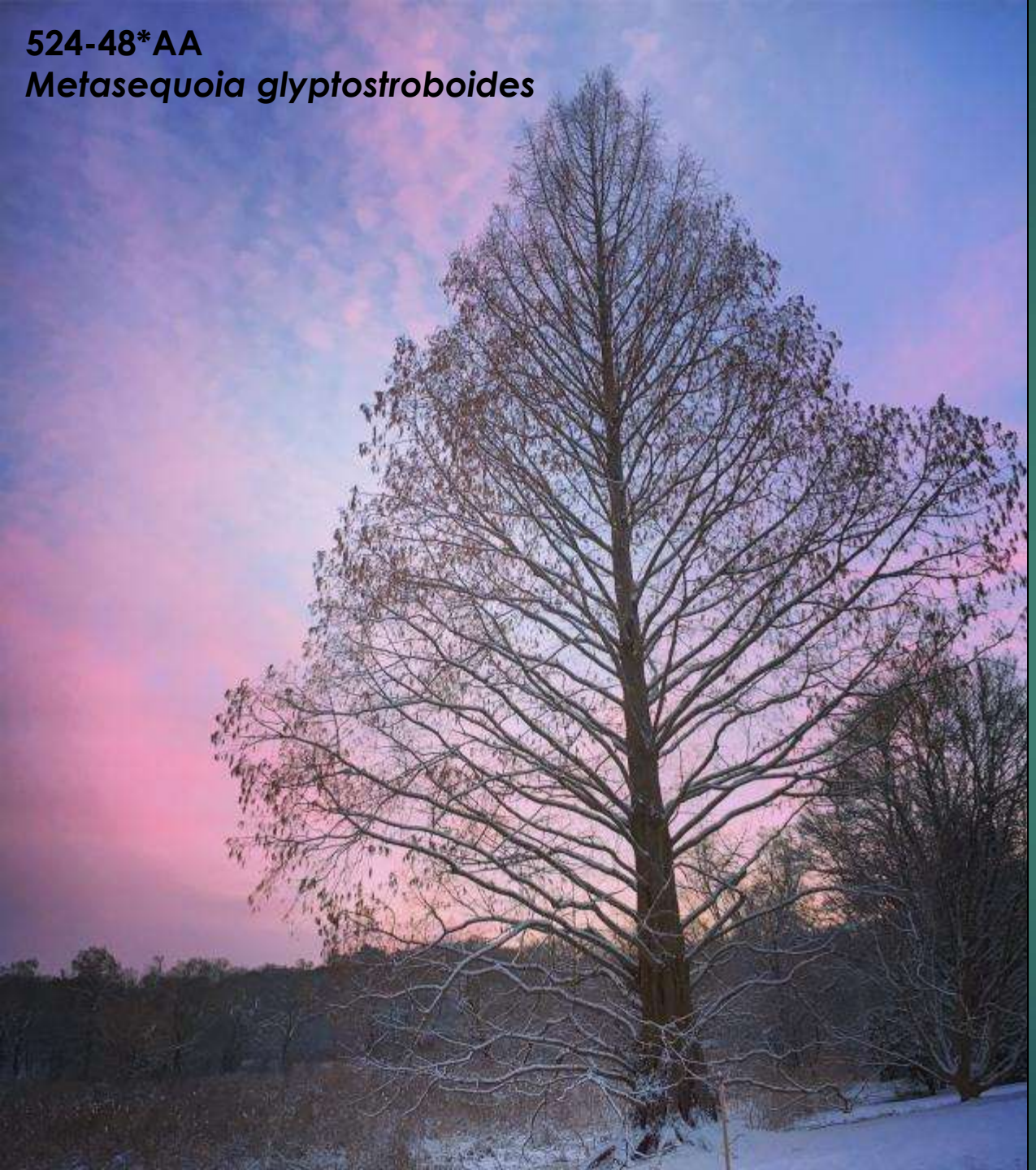
61 Taxa acquired via Expedition
(50% of all Campaign acquisitions to date)

9 Expeditions to date

Number of new families = 2
(Cactaceae, Tetracentraceae)

Number of new genera = 12

Number of new species = 46



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www.arboretum.harvard.edu

Carya ovata