



Visibility of plants under the Endangered Species Act: Causes and Implications



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Are Plants inadequately protected under the ESA?

Listing

Capacity

\$\$\$ spending

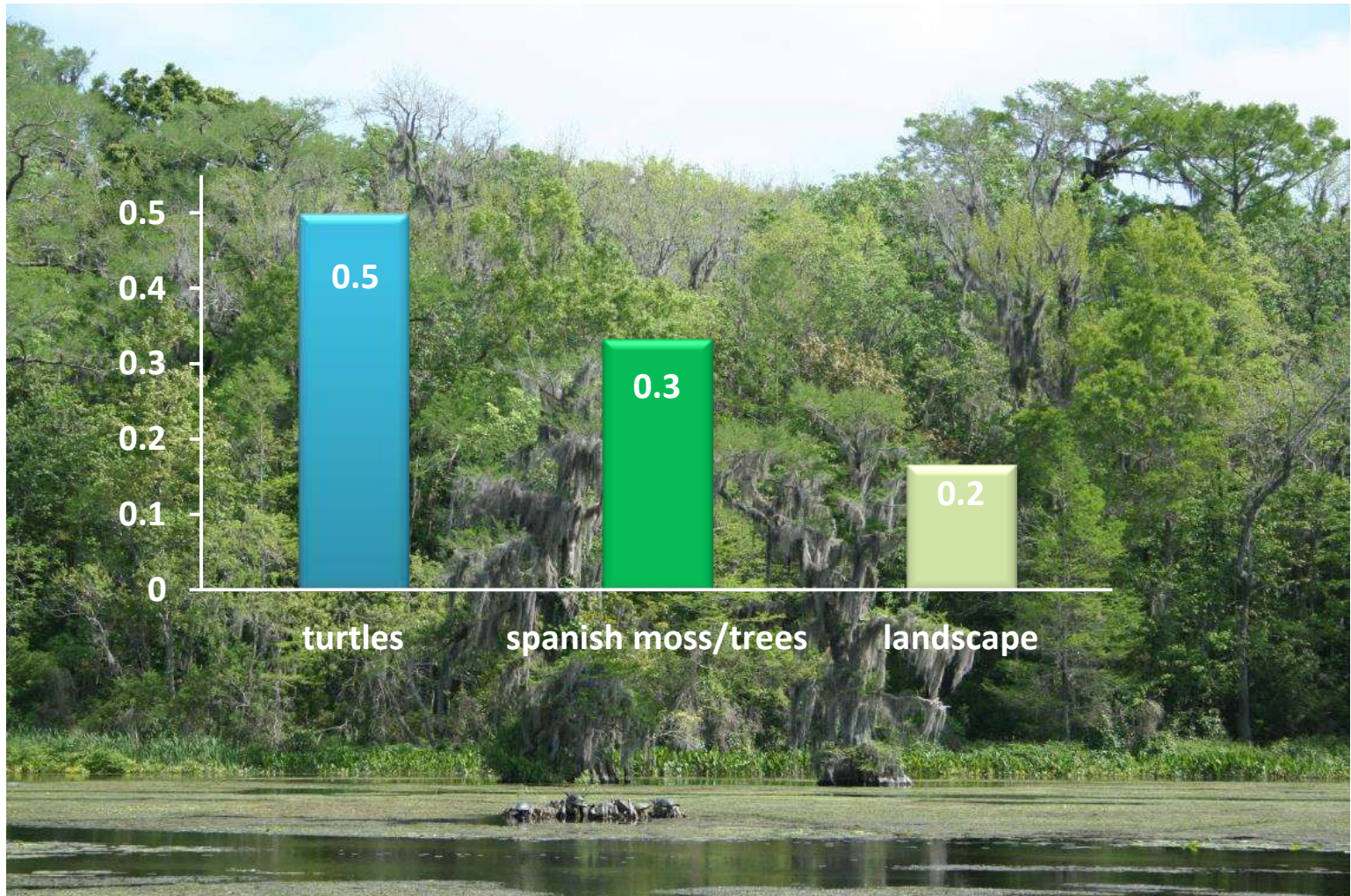
Recovery

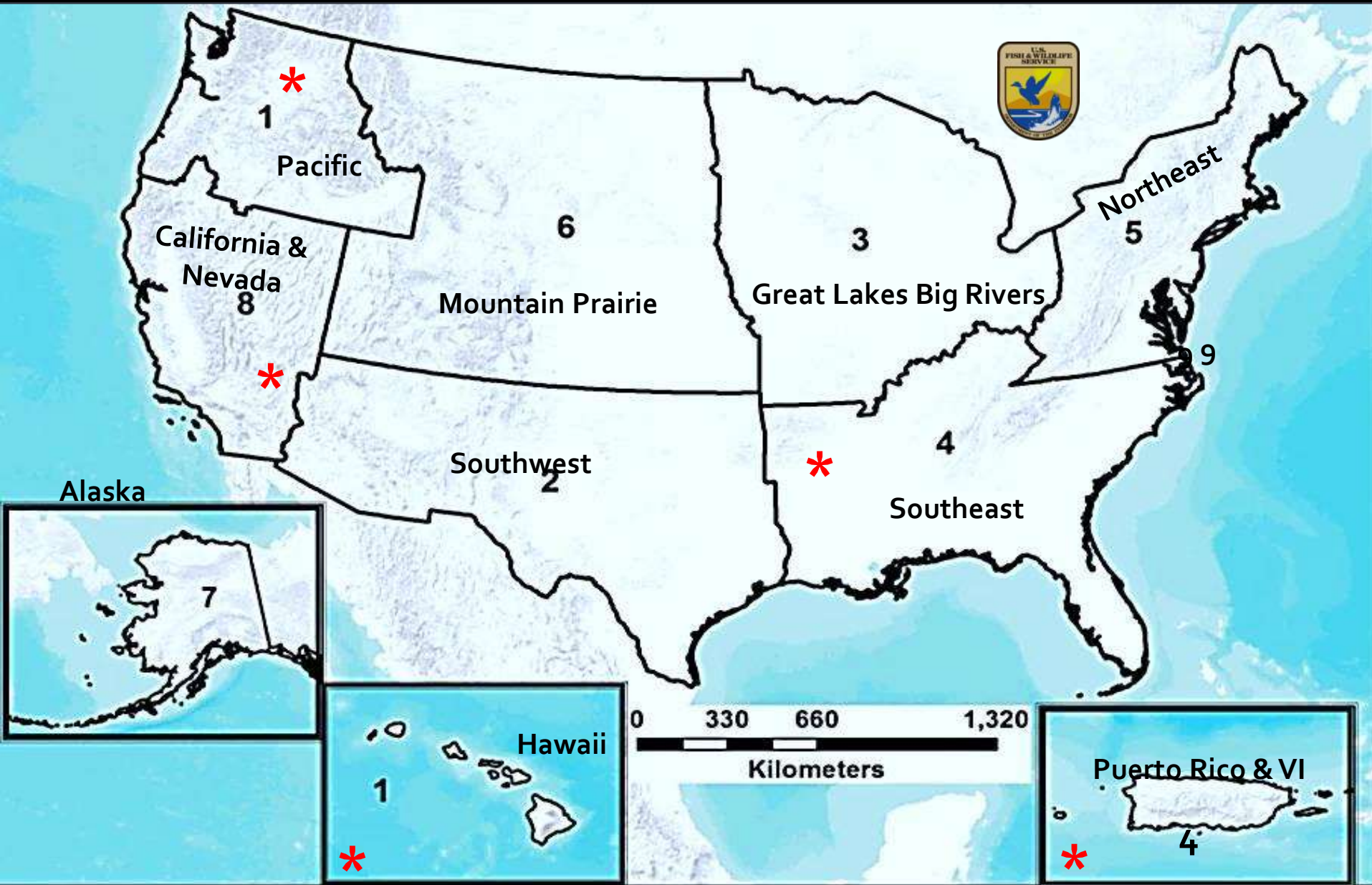
Plant blindness...?

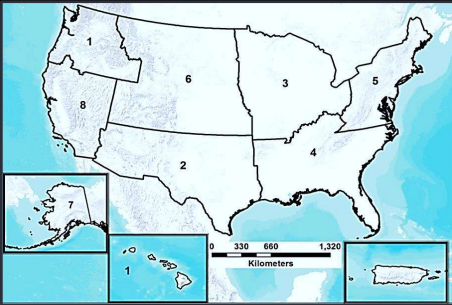
What can be done?



What do you see?







No. of Federally Listed species / Group / Region (R)

Groups	R1	R2	R3	R4	R5	R6	R7	R8	Total
Amphibians	1	11	1	8	2	1		11	35
Arachnids	1	10		1					12
Birds	48	10	2	21	3	1	4	11	100
Clams		1	10	71	7				89
Crustaceans	2	5	1	6	5			8	27
Fishes	6	28	3	38	4	12		28	119
Plants	421	57	16	166	15	37	1	188	901
Insects	26	9	6	6	2	3		24	76
Lichens				2					2
Mammals	13	13	4	17	3	6	3	18	76
Reptiles	4	4	1	25	2			7	43
Snails	15	12	2	16	3	1		1	50
Total	537	160	46	377	45	61	8	296	1530

The Federal Endangered Species Act (16 USC 1531 et seq.) recognizes that rare species of

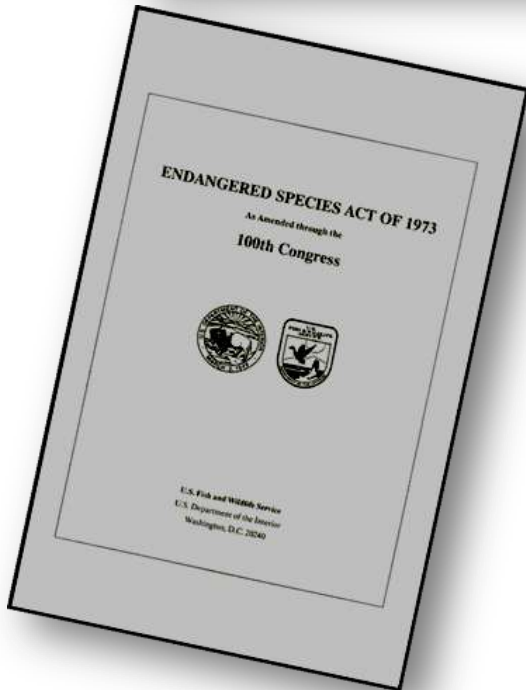
"...fish, wildlife, and plants are of aesthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people"

...but...

Endangered Species Act



Astragalus humillinus



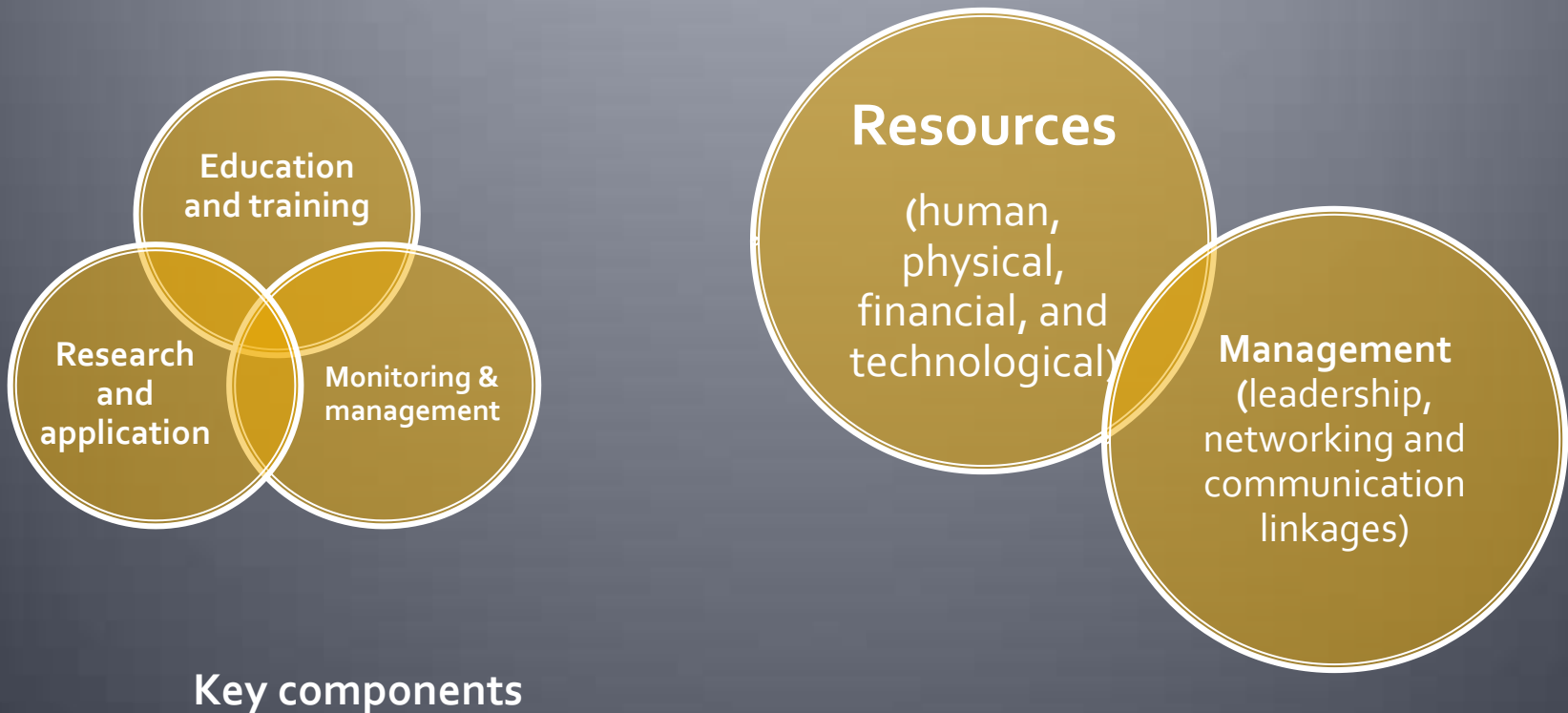
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ESA prohibitions: Plants vs. Animal

Prohibitions	Animals	Plants Endangered	Plants Threatened
Import or export (into, out of, or through the U.S.)	illegal	illegal	illegal
Engage in interstate or foreign commerce	illegal	illegal	illegal
Remove and reduce to possession from Federal property	illegal	illegal	illegal
Maliciously damage or destroy on Federal property	illegal	illegal	
Remove, cut, dig up, damage, or destroy on private property in violation of any law or regulation of any state including state criminal trespass law	illegal	illegal	
Remove, cut, dig up, damage, or destroy on private property (TAKE)	illegal		

Botanical capacity

Sensu: Kramer, A.T., B. Zorn-Arnold, and K. Havens. 2010. Assessing botanical capacity to address grand challenges in the United States.



US FWS personnel, 2014

Fish & Wildlife
Biologists: 254

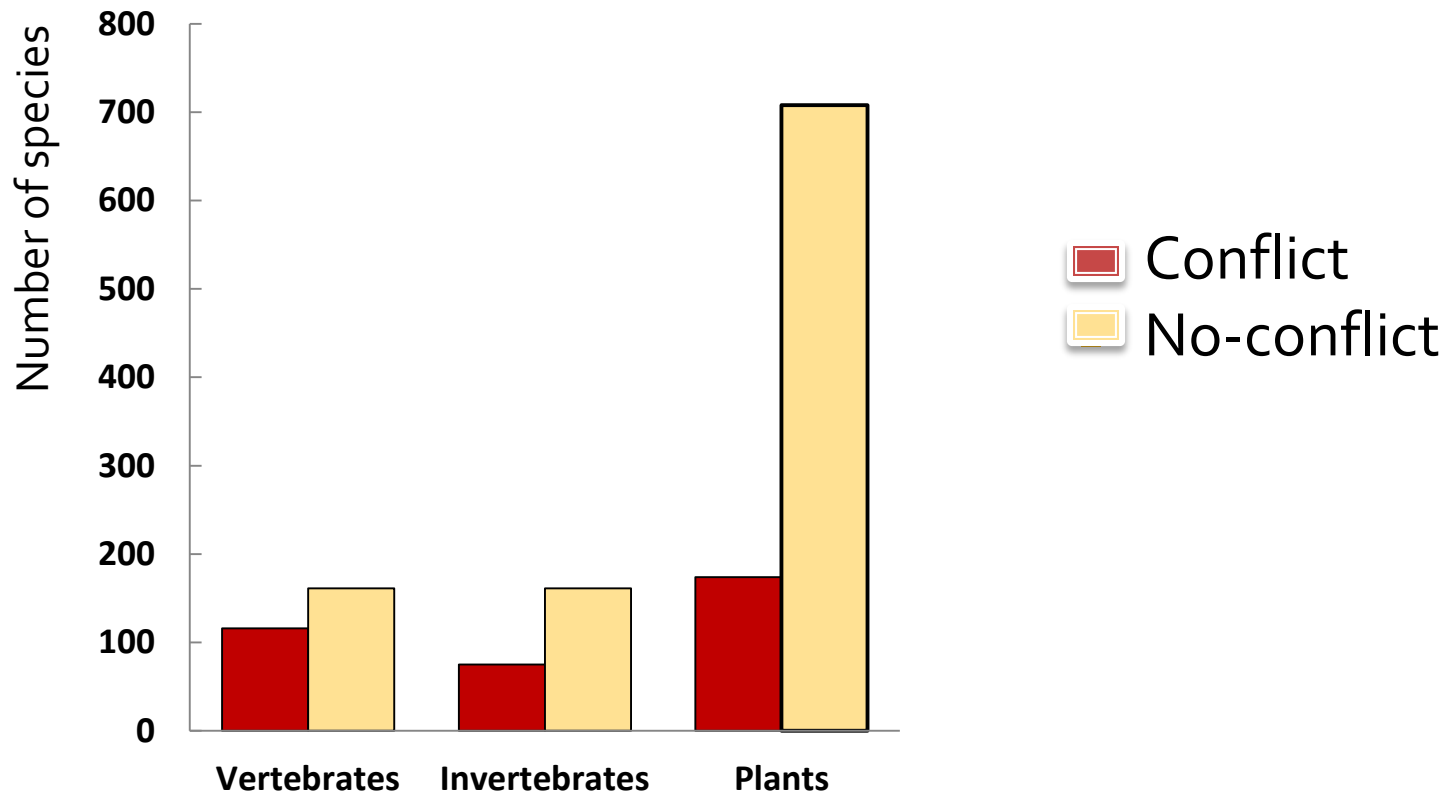
Animal species:
780

Biologists Assigned
Plants: 58

Botanists Assigned
Plants : 34

Plant species:
954

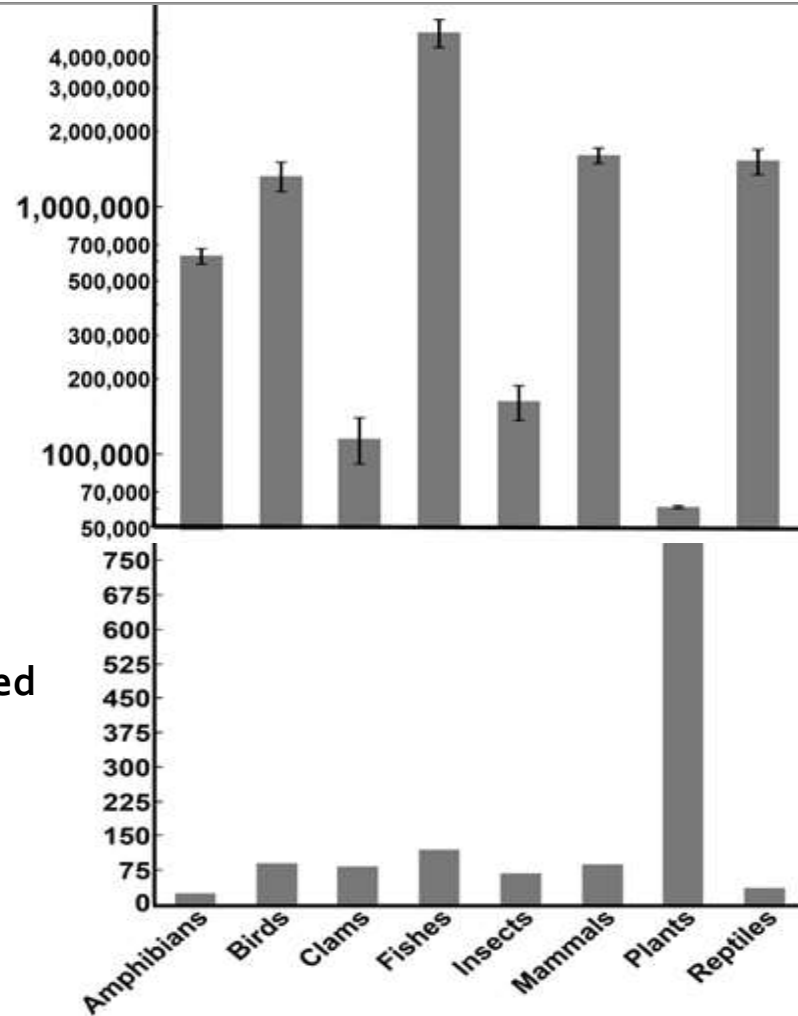
T & E species in 'conflict' with development vs. no-conflict



Spending for recovery of federally listed species



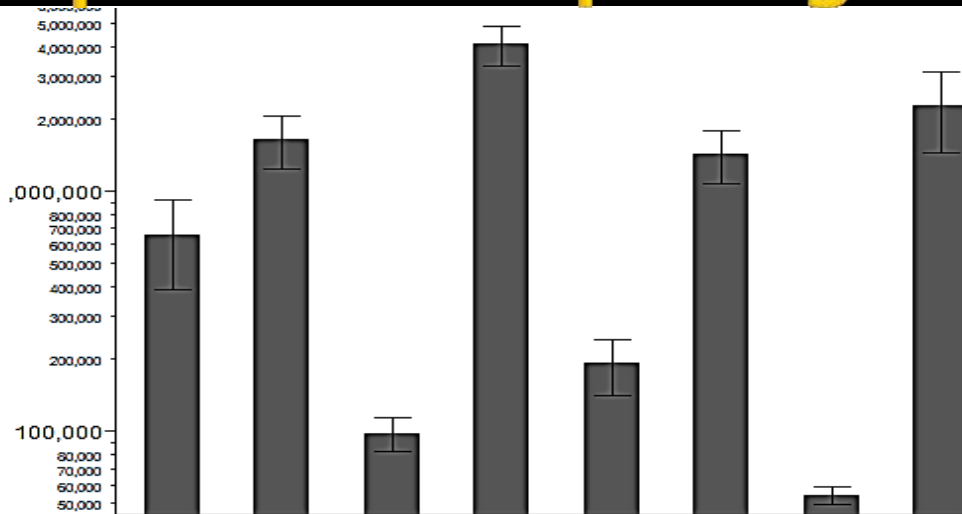
Investment per species, per years 2008-2011



Number of listed species, 2011

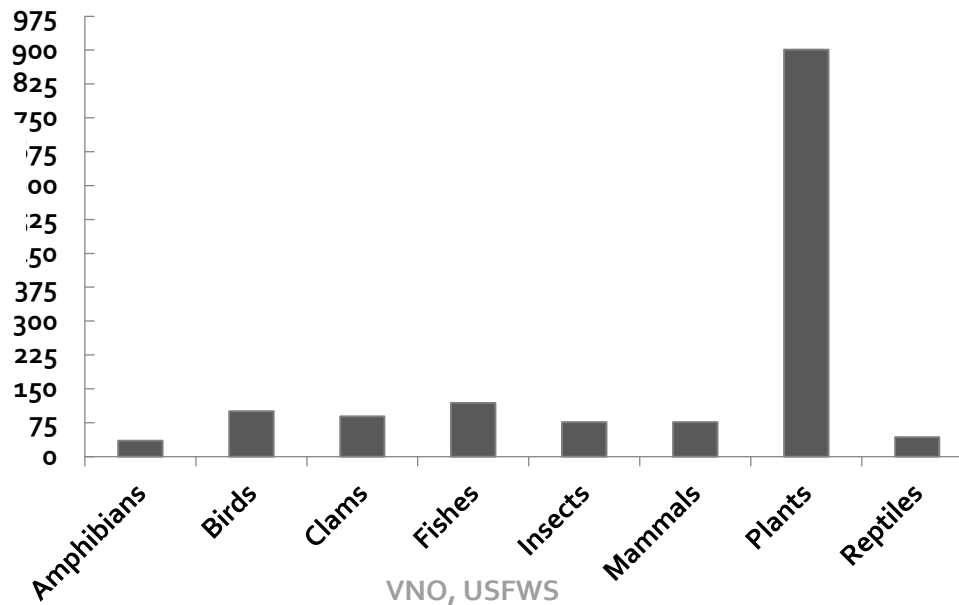
Investment per species 2014-2015

Investment per species, per years 2014-2015

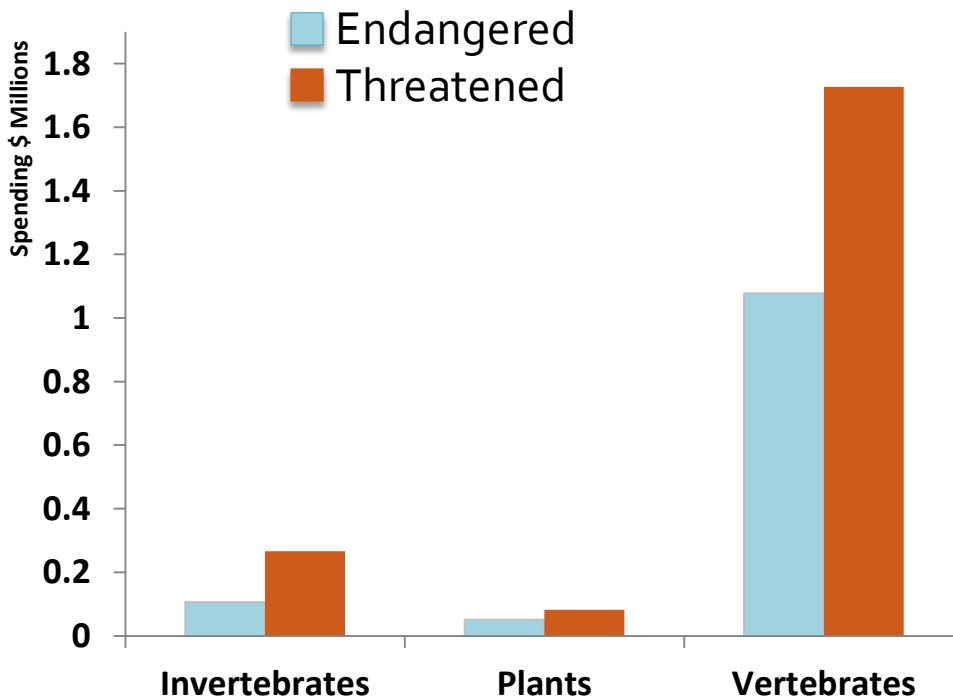


■ Investment similar across years

Number of listed species, 2015

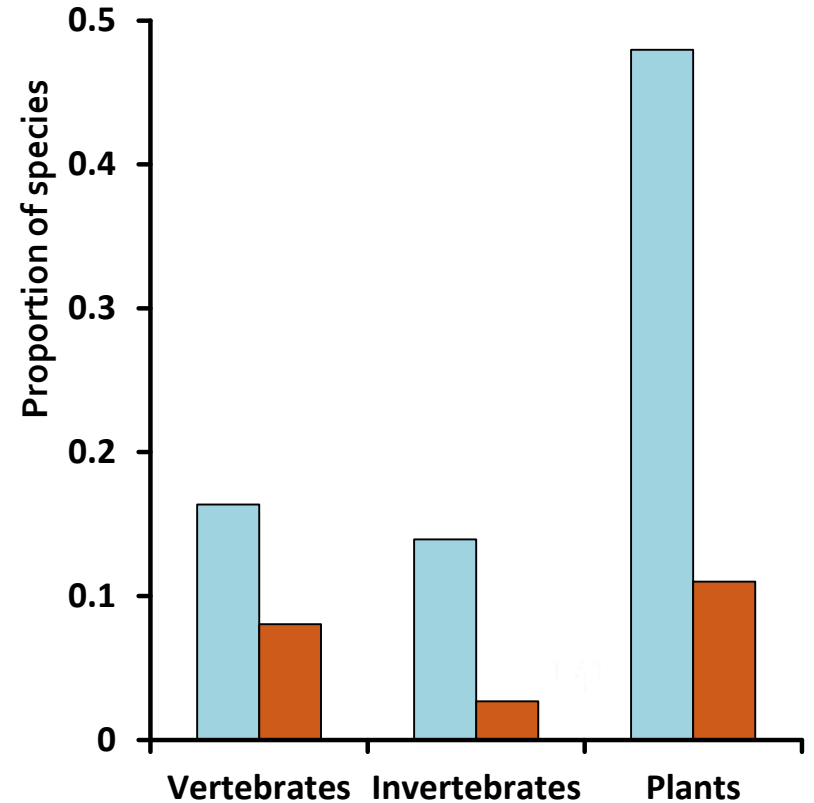


2015 Spending/species...

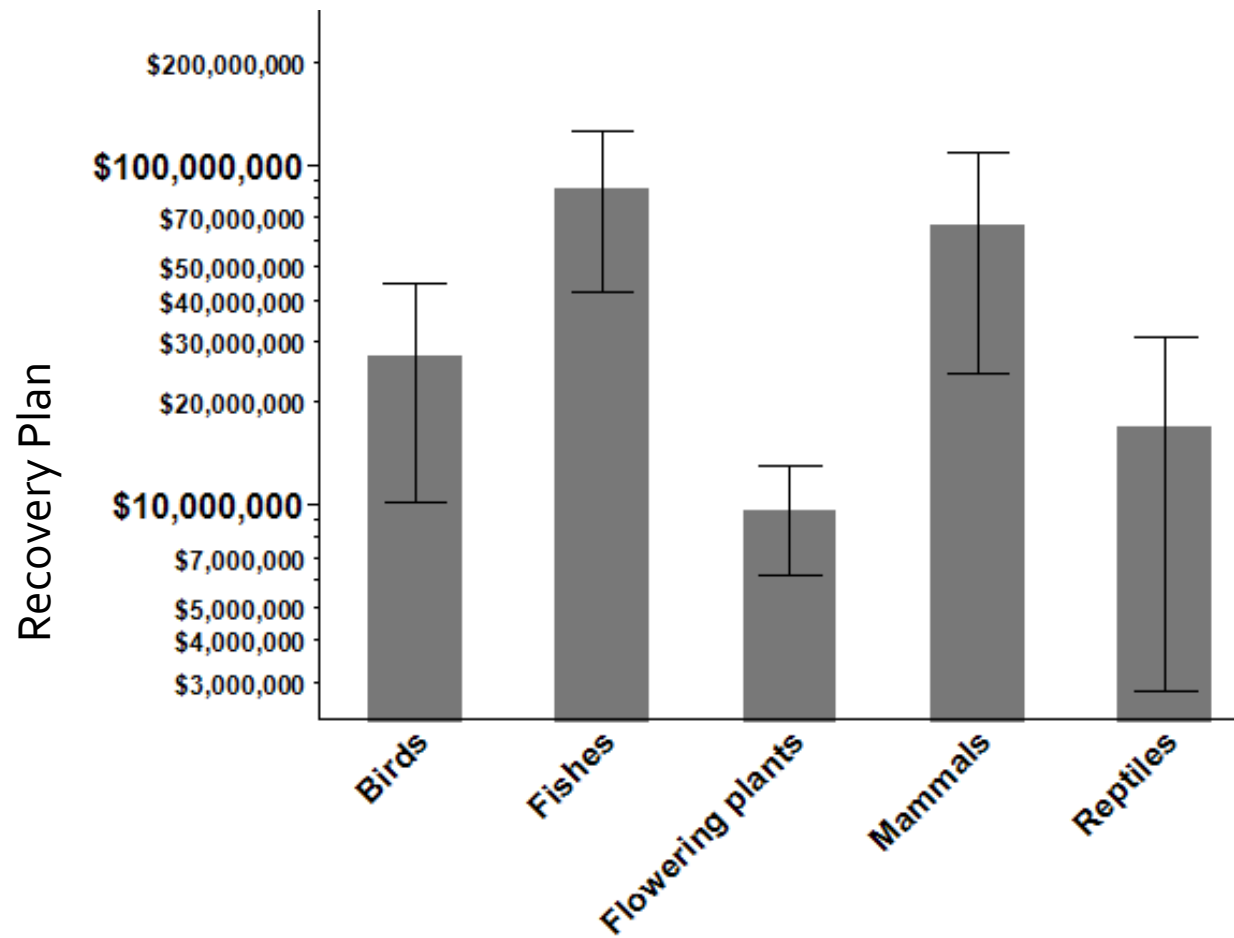


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★ PLANTS: 59%
VERTEBRATES: 24%
INVERTEBRATES: 17%



Cost to recover a species



Summary points



Lack of financial support	Private land: unequal protection	Limited botany staffing	Implications
x	x	x	Imperiled plants disappearing from public / private lands
x	x	x	Decision-makers not aware / informed about botanical issues
x		x	Research, protection, & conservation: minimal
	x	x	Unequal implementation of species conservation protection
	x		Low priority with agency managers



What Can be Done to Influence Reform

At local, regional, and national levels?

developed to improve and accelerate conservation of imperiled plant species, 2012

Improve baseline botanical knowledge of rare plant species within the Service.

Emphasize the need for botanical capacity.

Provide financial support for the implementation of the objectives and actions.

Broaden the Service's plant conservation message within and outside the agency through directed outreach and communications.



The role of education as a Tool

- ✦ Educate non-majors and the public to engage in lifelong appreciation of plants



Mentor students and interns

Goals:

- help achieve conservation
 - Improve baseline data
- developing the next generation of conservationists



Work with partners to improve funding opportunities

Florida Rare Plant Conservation Endowment

- US Fish and Wildlife Service and Conservation Specialists
- For all Florida Imperiled plants (>500 plants)
- Initiated Sept 2015-ongoing



 The Institute for Regional Conservation
Conservation of rare plants, animals, and ecosystems



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2016 southeastern **PARTNERS IN** Plant Conservation

at the Center for Southeastern Conservation

- coordinated by the Atlanta Botanical Garden's Center for Southeastern Conservation
 - and co-sponsored by the U.S. Fish and Wildlife Service, U.S.D.A. Forest Service, National Wildlife Refuge Association, Georgia Department of Natural Resources, and the Georgia Plant Conservation Alliance.
- bring together government agencies, land managers, botanical gardens, university programs, and botanical experts
 - Inform best practices and topics relevant to rare plant conservation
 - Form a cohesive network of resources to support regional efforts for at-risk & listed plant species in the Southeastern U.S.

Are Plants inadequately protected under the ESA?

English
Common
Law

Zoo-centric
culture

Listing

Capacity

\$\$\$ spending

Recovery

Plant blindness...?

What can be done?



To Influence Reform

- ✦ We need to keep educating students, the public, other scientists, and decision-makers of the essential nature of plants.
- ✦ Plants are essential to our lives, wildlife, climate — and to future initiatives / research in the U.S. ✦

Thank you!