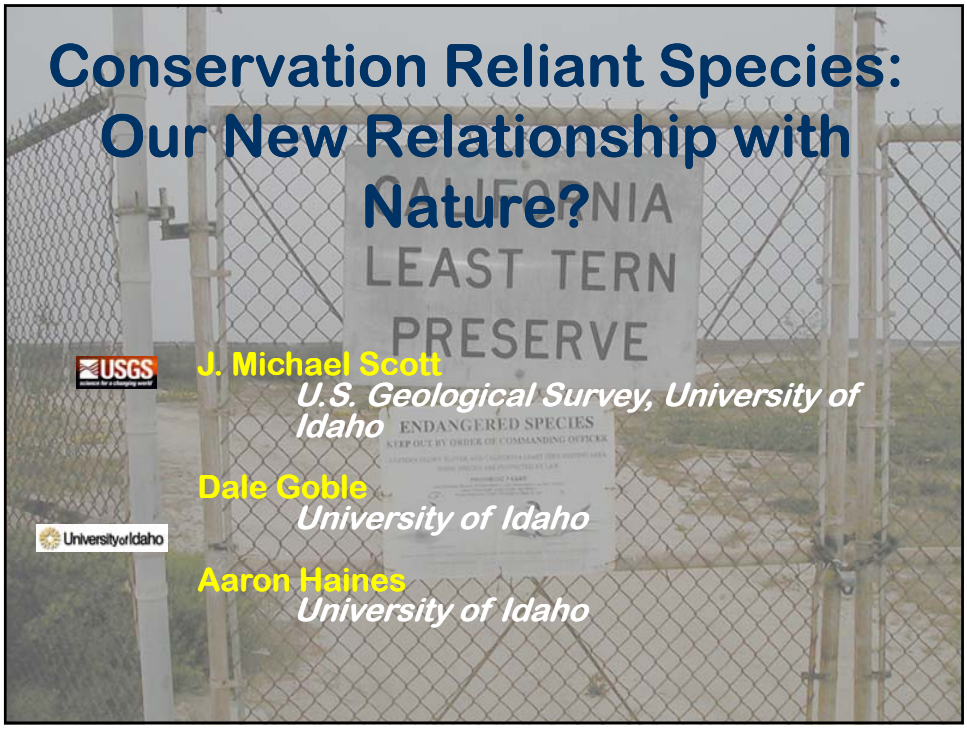

Conservation Reliant Species: Our New Relationship with Nature?

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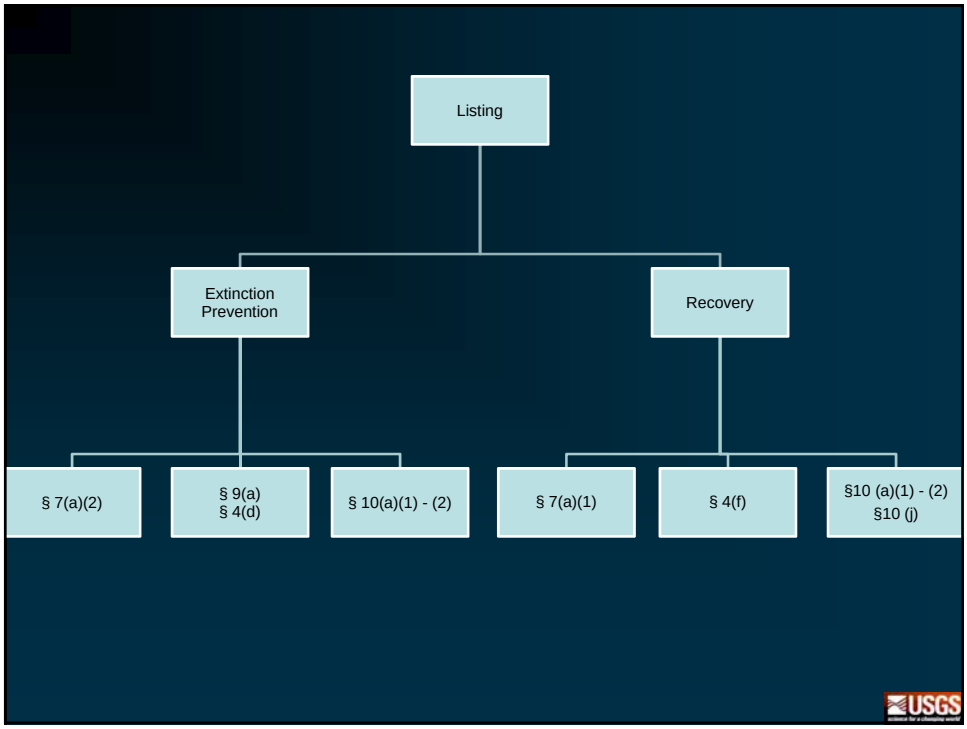
The Goal of the ESA is…

to bring [a listed] species to the point at which [it is no longer] likely to become [in danger of extinction] within the foreseeable future throughout all or a significant portion of its range"

ESA § § 3(3), (6), (20)



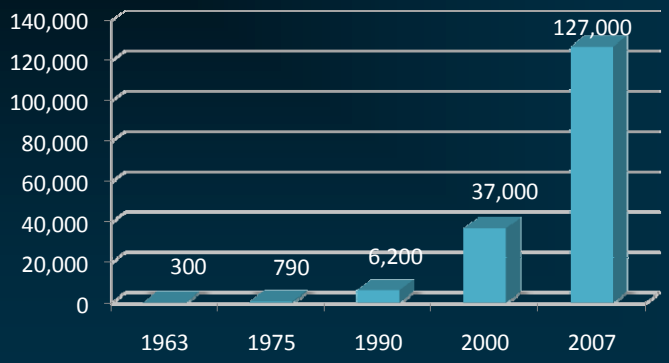
Assumptions behind the ESA's understanding of recovery

- Species at risk are identified
- Needed management actions identified
- Implemented at ecologically relevant scales
- Species distribution and numbers increase recovery goals achieved
- Protections afforded under the ESA no longer necessary
- Species is delisted and falls under protection of existing regulatory mechanisms

Assumptions met for some species…

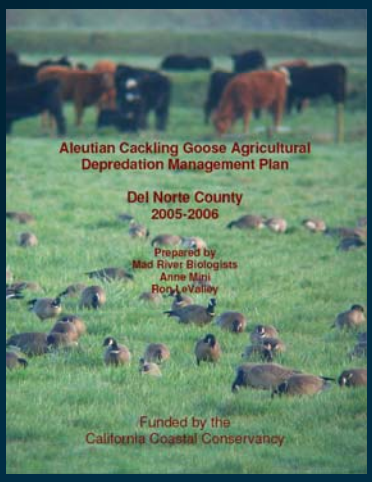
- Aleutian cackling goose
- Gray whale
- American alligator
- Brown pelican
- Arctic peregrine falcon
- American peregrine falcon

Demographics of Aleutian cackling goose



Agricultural Pest?

"This plan reflects the Conservancy's goal of promoting dialogue and cooperation between agency officials, local landowners, and others interested in the coexistence of a healthy goose population and agricultural land uses along the Pacific Flyway."



Risk-Management for Aleutian cackling goose

risks:	habitat loss on breeding grounds
risk-management:	USFWS refuge management statutes
risks:	habitat loss on wintering grounds
risk-management:	habitat acquisition in fee and easements
risks:	overharvest
risk-management:	Pacific Flyway Council monitoring & bag limits under MBTA

but assumptions are not met for others.

- Columbian whitetail deer
- Robbin's cinquefoil
- Hoover's wooly star
- Bald eagle
- Grizzly bear
- Gray wolf

Thus traditional concept of recovery may be an unobtainable goal…

Kirtland's Warbler *Dendroica kirtlandii*

…Some species are conservation reliant

Criteria for assessing whether a species is conservation-reliant

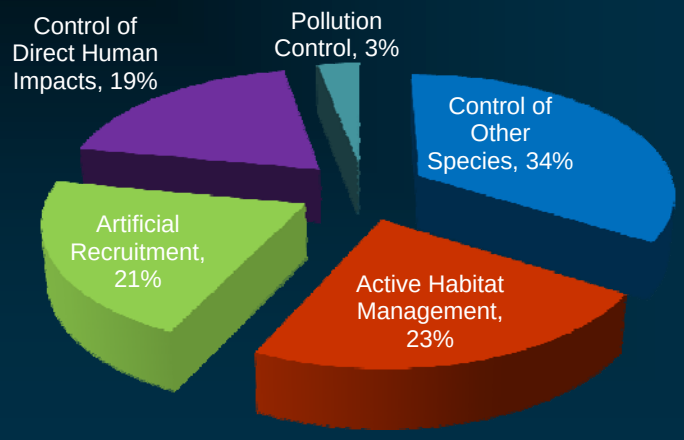
- Threats to the species' continued existence are known and treatable
- The threats are pervasive and recurrent, eg nest parasites, non-native predators
- The threats render the species at risk of extinction, absent ongoing conservation management
- Management actions sufficient to counter threats have been identified and can be implemented, eg prescribed fires, restrictions on grazing or public access, predator or parasite control
- Federal, state or local governments – often in cooperation with private or tribal interests – are capable of carrying out the necessary management actions as long as necessary. ("in perpetuity" is a lightning rod)

Conservation Reliant Species

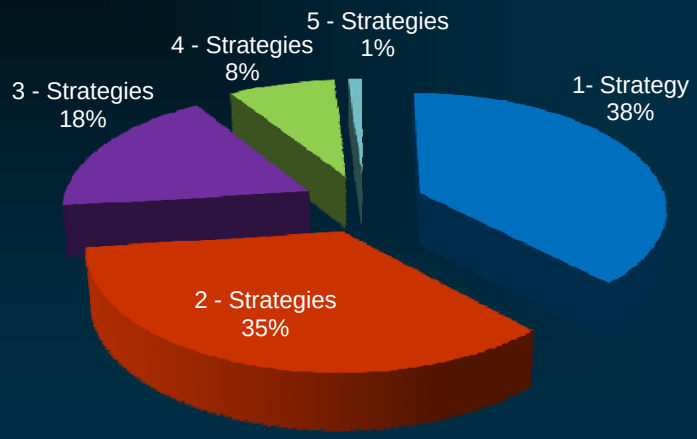
Maintenance of positive rates of reproduction for many species is dependent on elimination of human disturbance.

Or in the case of many Hawaiian forest birds, predator control.

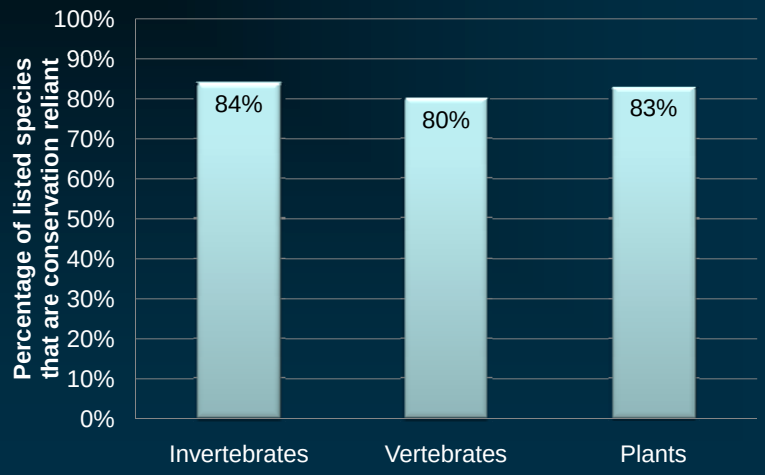
Percentage of conservation reliant species requiring each conservation-management strategy



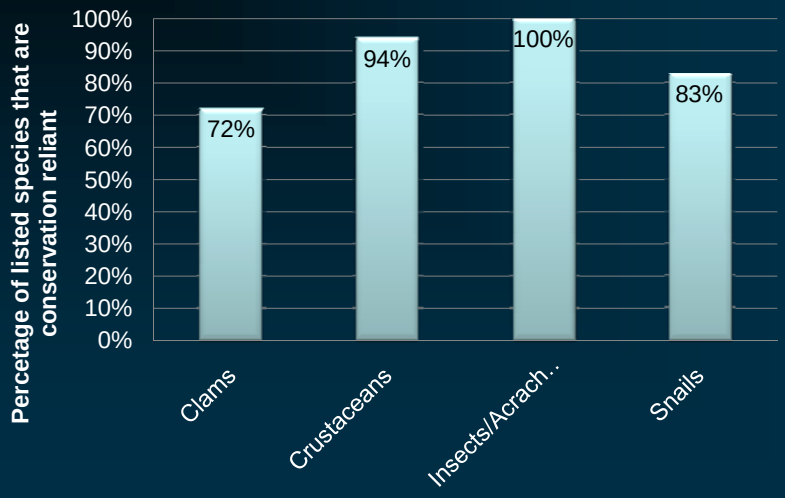
Percentage of conservation reliant species with one or more conservation-management strategies.



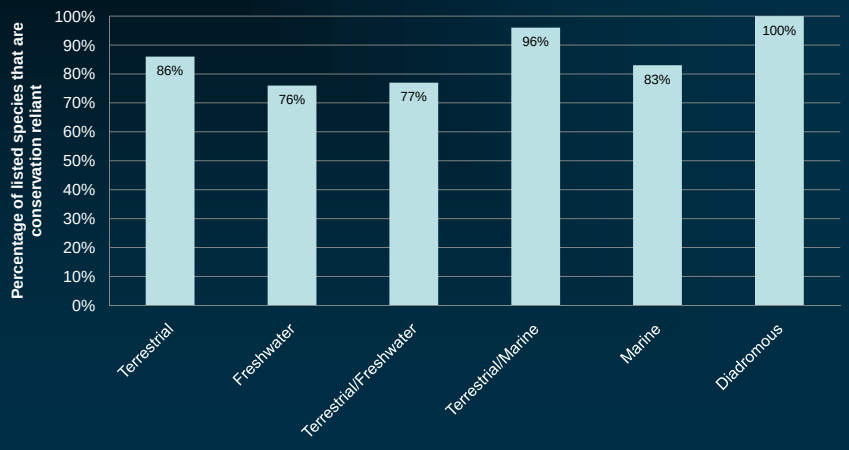
Conservation Reliant Listed Species



Invertebrates



Conservation reliant species



Conservation Reliant Management Actions

1) Control of Other Species

a. Control exotic fauna	20%
b. Control exotic flora	14%
c. Control native fauna	4%
d. Control parasites and disease	2%

2) Active Habitat Management

a. Fire management & control	8%
b. Control water systems	5%
c. Mechanical vegetation control	3%
d. Coastal habitat restoration	1%
e. Erosion control	1%

3) Control of Direct Human Impacts

a. Control human access	7%
b. Control ORV access	3%
c. Control grazing	3%
d. Control low impact recreation	2%
e. Control illegal collecting	1%
f. Control vehicle traffic	1%

4) Artificial Recruitment

a. Captive propagation	14%
b. Captive breeding	2%

5) Pollution Control

a. Control chemical run-off	1%
b. Control siltation	1%
c. Control water quality	1%
d. Control use of pesticides and herbicides	<1%

Management strategies in support of conservation reliant invertebrates

	Insects/Arachnids	Crustaceans	Clams	Snails
Control of Other Species	31%	28%	4%	42%
Active Habitat Management	19%	33%	17%	8%
Control of Direct Human Impacts	27%	20%	1%	3%
Artificial Recruitment	19%	3%	51%	44%
Pollution Control	4%	18%	26%	2%

Conservation reliant strategies for animal species

	Terrestrial	Freshwater	Terrestrial / Freshwater	Diadromous	Marine
Control of Other Species	35%	23%	27%	18%	13%
Active Habitat Management	17%	29%	29%	21%	13%
Control of Direct Human Impacts	20%	10%	24%	21%	63%
Artificial Recruitment	25%	25%	17%	18%	<1%
Pollution Control	3%	12%	3%	21%	13%

Management actions in support of conservation reliant species

Invertebrates	
Captive propagation	21%
Control exotic fauna	14%
Control exotic flora	13%
Control native fauna	10%
Control parasites and disease	9%
Mechanical vegetation control	6%
Control water systems	6%
Control human access	5%

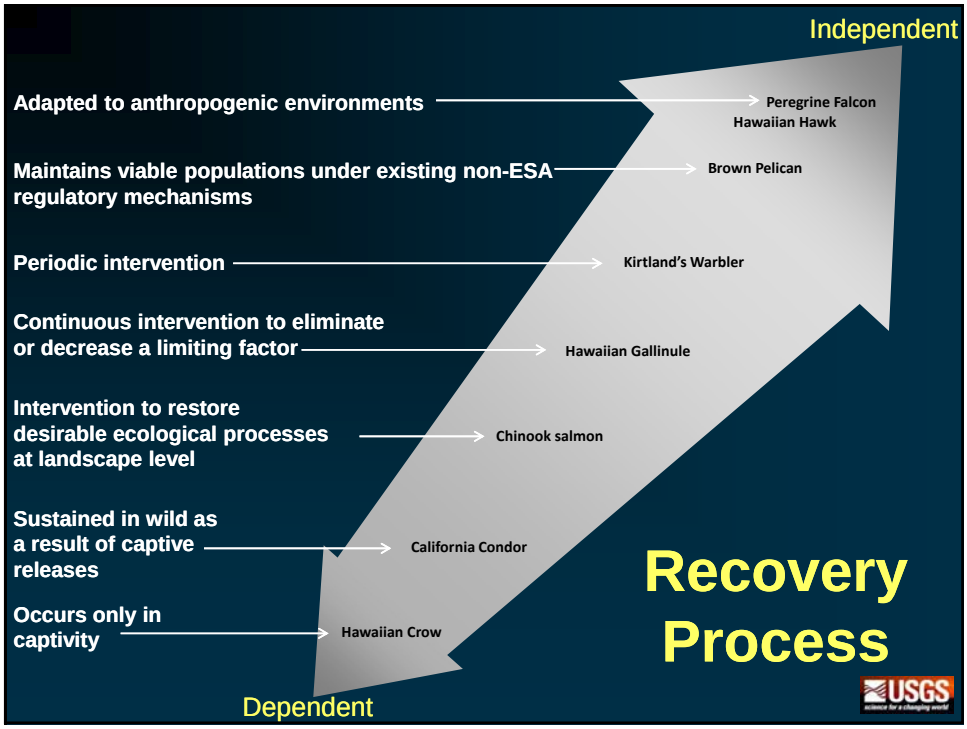
Plants	
Control exotic fauna	24%
Control exotic flora	19%
Captive propagation	15%
Fire management & control	13%
Control human access	7%
Control ORV access	5%

Vertebrates	
Control exotic fauna	16%
Control water systems	10%
Control native fauna	7%
Control human access	8%
Control exotic flora	6%
Captive breeding	6%
Captive propagation	5%
Fire management and control	5%

We maintain species we love

Can we expand our love?

How do we do it?



Requirements for Recovery Management Agreements (RMAs)

- Biological goals keyed to recovery plan
- Required management actions that link to threats
- Adaptive management strategies
- Duration of agreement
- Assurances of parties ability to implement agreements
- Signatures of responsible parties
- Demonstrated record of successful management intervention prior to delisting

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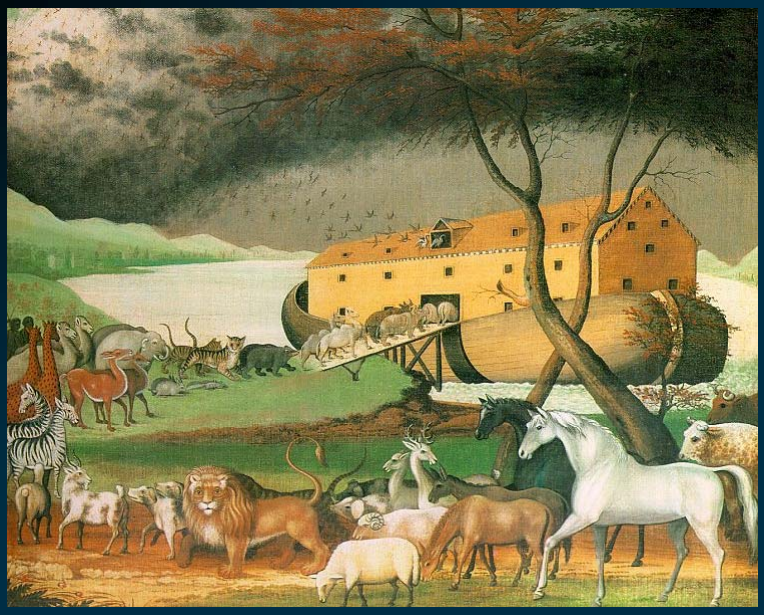
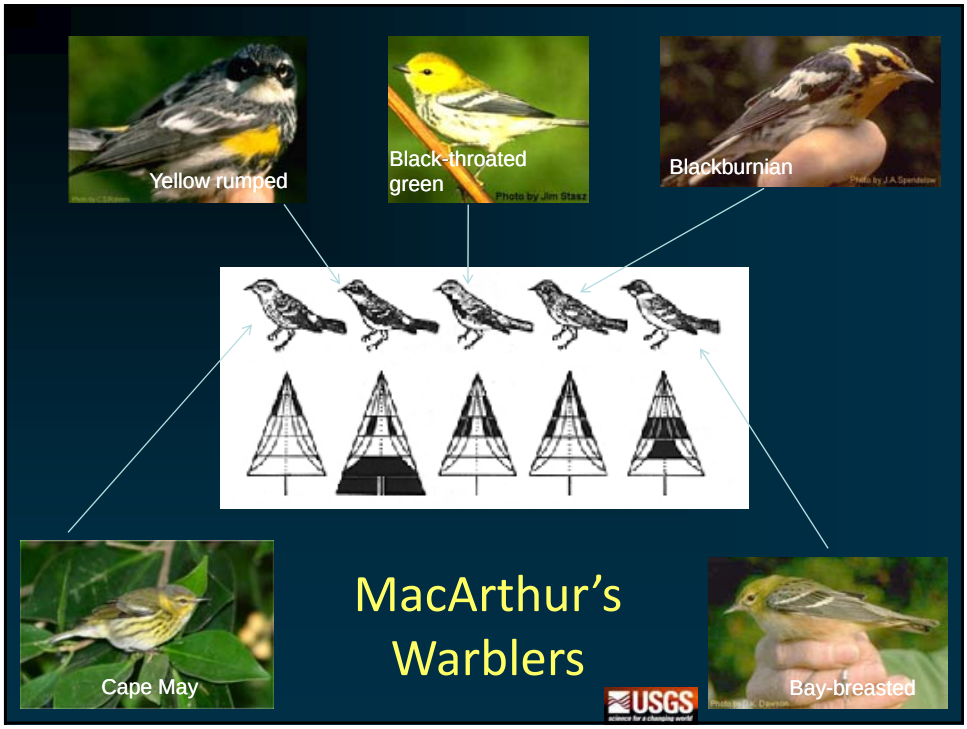
USGS



Mike's Version

- What's the niche segregation in Hawaii's honey creepers?
- Where do they forage?
- How do they forage?
- How do they spend their time?



Mike's Products

- Publications in Ecology and Science
- Career advancement GS-13, just around the corner

Gene's Version

- Are the species still extant?
- Where can I find them?
- How many are there?
- What habitat types do they occur in?
- What's the conservation status of the areas they occupy?

Gene's Products

- New wildlife refuges and management action plans

Management relevant