



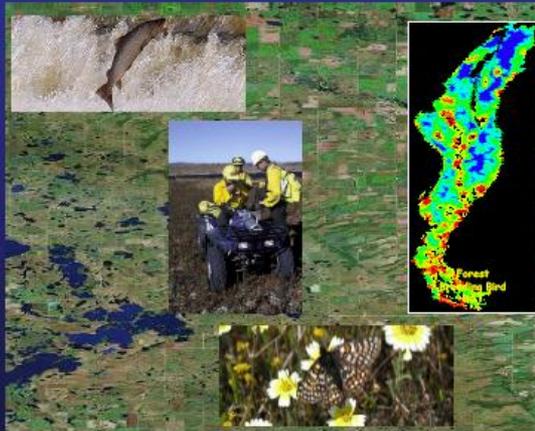
# Conservation In Transition...

## The Enabling Role of Geospatial Technology and Its Application In 21<sup>st</sup> Century Conservation

### *Sustaining Our Nation's Endemic Fish & Wildlife Resources*

#### **Strategic Habitat Conservation**

*Final Report of the  
National Ecological  
Assessment Team*



July 2006

#### **Leaders' Guide**

**Transformation of State Fish & Wildlife Agencies**  
*Ensuring the Future of Conservation in a Rapidly Changing World*

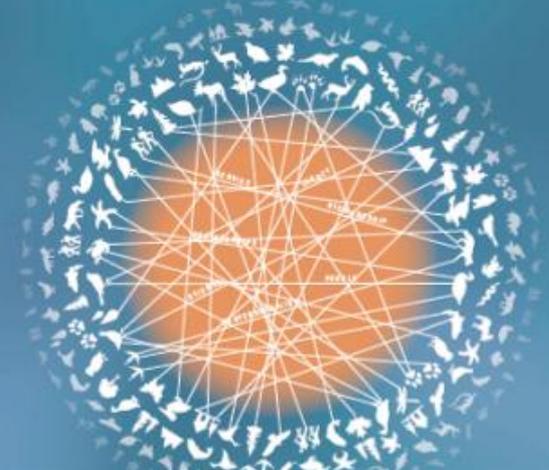


Daniel J. Decker  
Cynthia A. Jacobson  
John F. Orsini

U.S. Fish & Wildlife Service

#### **Conservation in Transition**

*Leading Change in the 21st Century*



Drucker: The most valuable asset of a 21<sup>st</sup> century institution will be its "Knowledge Workers" and their productivity.

## *Conservation In Transition...*

# **The Enabling Role of Geospatial Technology and Its Application In 21<sup>st</sup> Century Conservation**

## *Sustaining Our Nation's Endemic Fish & Wildlife Resources*

### Objectives:

Set The Stage: Reminder Of Foundational Changes Occurring In Conservation

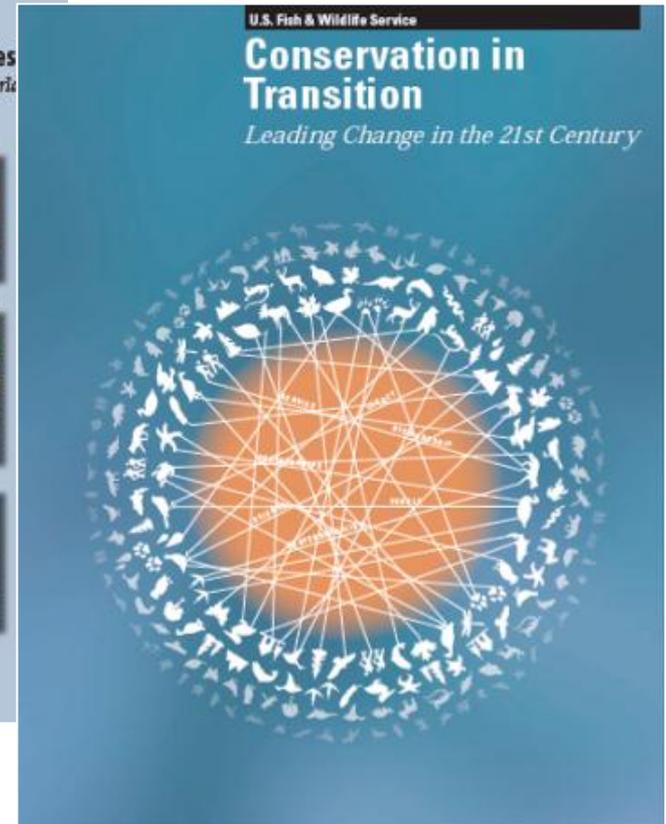
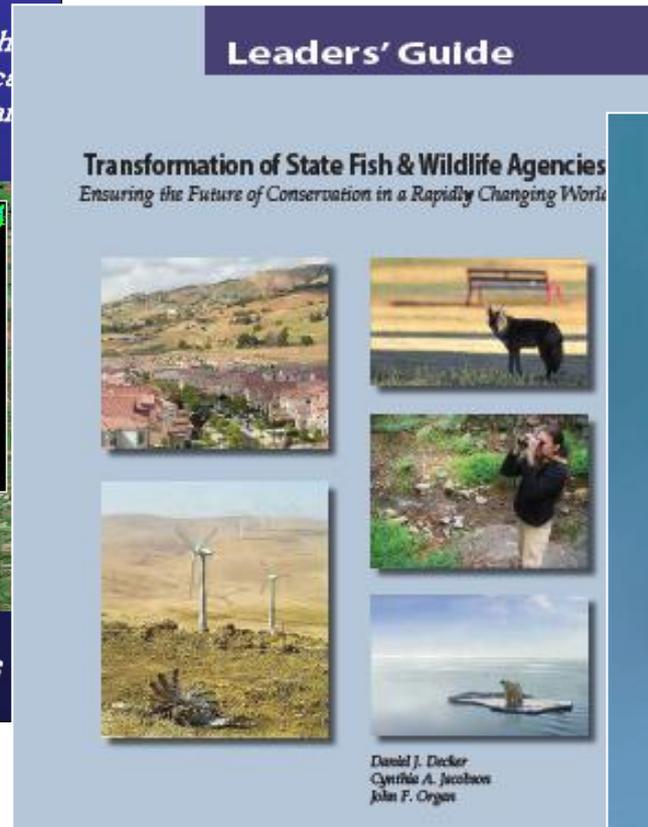
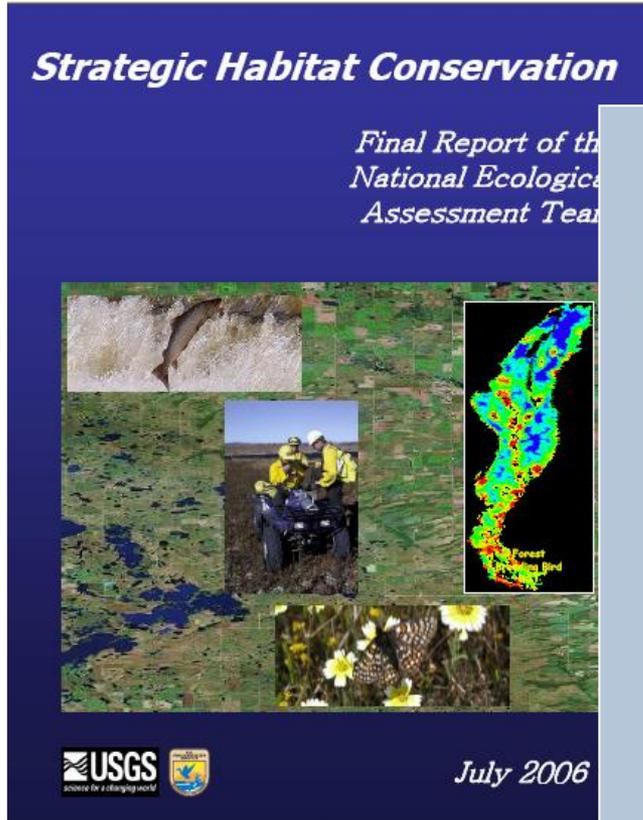
Provide Overview of FWS Progress: A “One-Service” Response Intended To Manage, Facilitate, And Lead Change

(To Help Clarify Seemingly Disparate “Serial” Priorities: SHC, LCCs, Refuge I&M, Surrogate Species, and [...LCD, At Risk etc...])

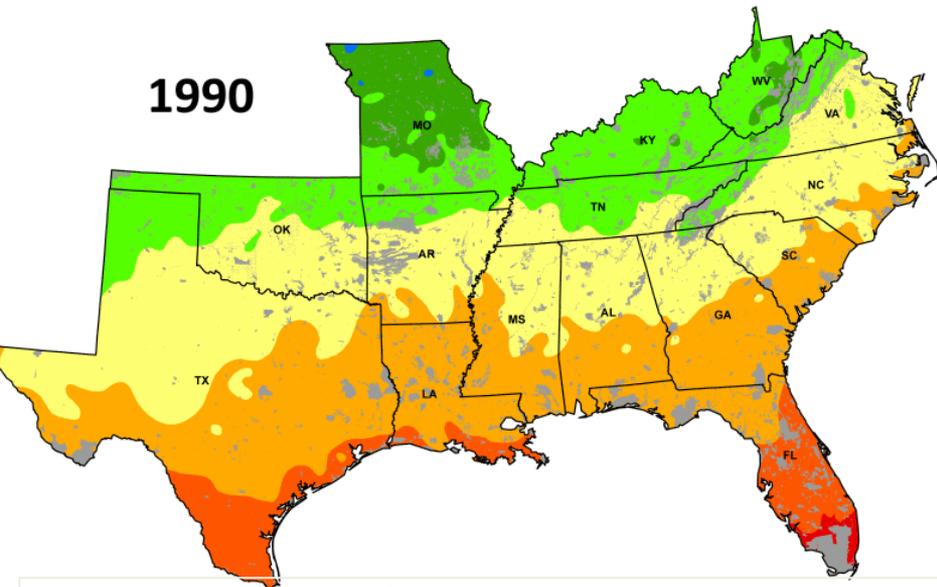
Open The Mike: A Group Karaoke On Key Roles **YOU** Can And Will Play To ***Unlock*** Or ***Gridlock*** 21<sup>st</sup> Century Conservation

# Forces Changing Conservation

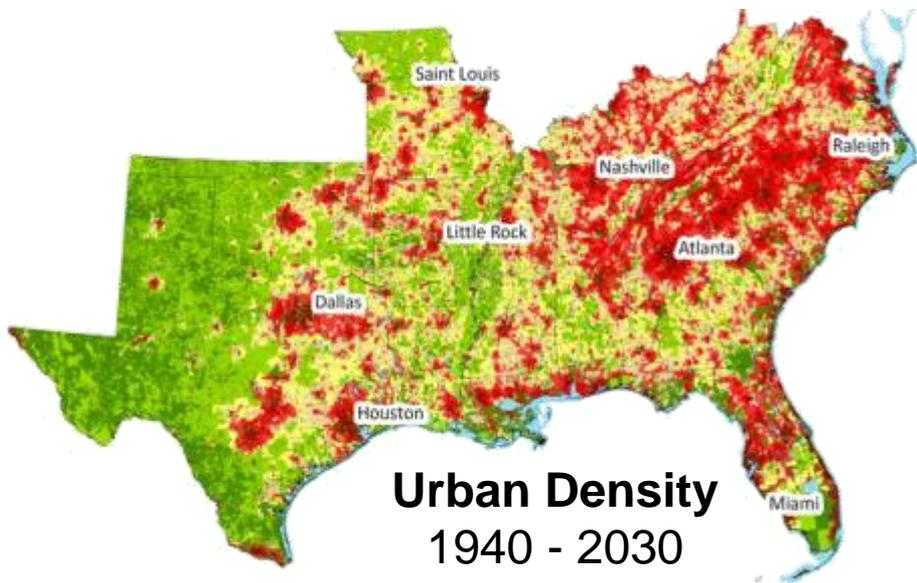
## Changing Who We Are & What We Do



# Plant Hardiness Zones and Public Lands



The Ecological Systems on Which Fish and Wildlife Depend Have and Are Continuing to Change...



# Why in 3 Slides



Societies' Values on Which Fish and Wildlife Conservation Depend Have and Are Continuing to Change...



# ACCOUNTABILITY

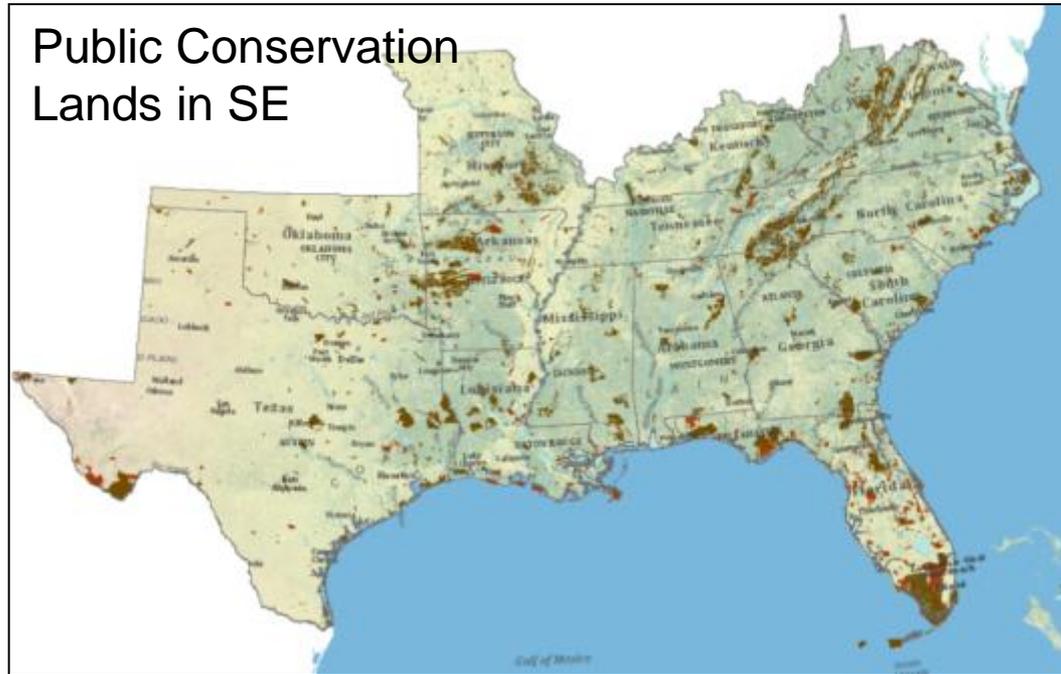
# Why in 3 Slides

## The Public Trust Doctrine

The Nation's fish and wildlife resources are publicly owned and held in trust by the government for the continuing benefit of the public.

**How Much?**  
**How Much More?**  
**Where?**

## Public Conservation Lands in SE



# Landscape Conservation Why in 3 Slides

## Advancements in...

### Conservation Theory

Conservation Biology

Landscape Ecology

Ecosystem Management

### Digital Revolution

Geographic Information Systems

Remote Sensing

Information Management

Remote Collaboration

### Decision Theory

Adaptive Management

Structured Decision-making

Bayesian Belief Networks



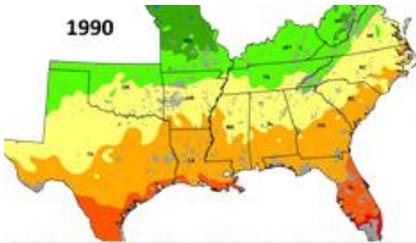
# WE NEED TO

# Why?

# WE HAVE TO

## Rapid and Systems-level Changes

## Transparency & Accountability



The Ecological Systems on Which Fish and Wildlife Depend Have and Are Continuing to Change...



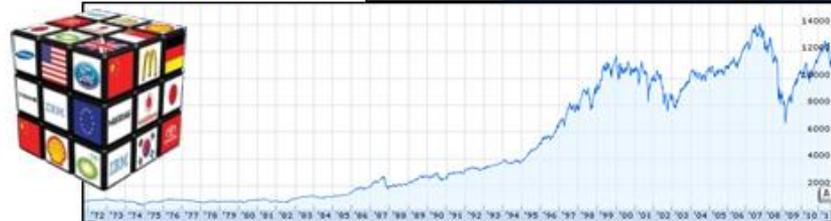
Societies' Values on Which Fish and Wildlife Conservation Depend Have and Are Continuing to Change...



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The Nation's fish and wildlife resources are publicly owned and held in trust by the government for the continuing benefit of the public.



How Much?  
How Much More?  
Where?



## Advancements in Theory and Technology

Conservation Theory	Digital Revolution	Decision Theory
Conservation Biology	Geographic Information Systems	Adaptive Management
Landscape Ecology	Remote Sensing	Structured Decision-making
Ecosystem Management	Information Management	Bayesian Belief Networks
	Remote Collaboration	



# WE CAN

# Conservation In Transition...

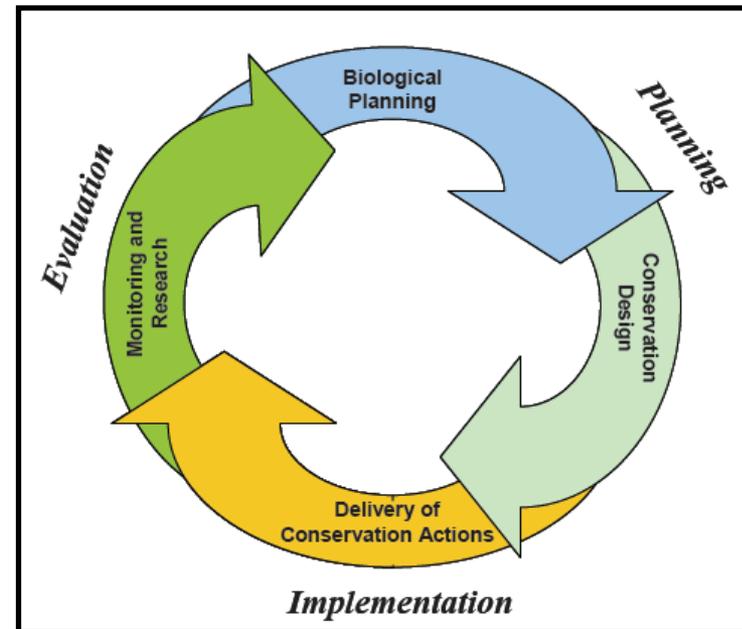
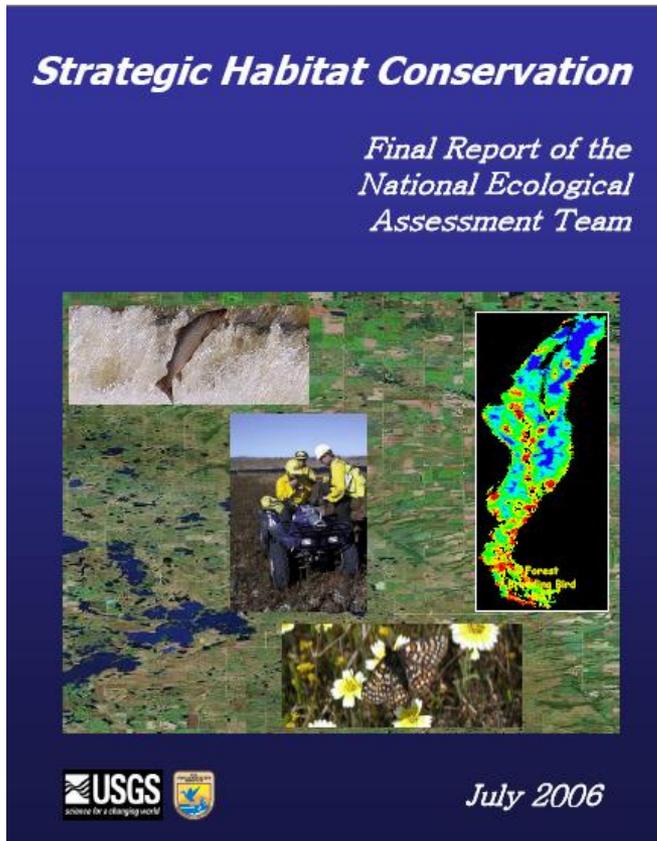
## Operating Under A Conservation Target of Sustaining Our Nation's Endemic Fish & Wildlife Resources

An Operational Comparison		
	Resource Management (Land Stewards)	Conservation Science (System Sustainability)
Planning	<ul style="list-style-type: none"><li>• Activity oriented</li><li>• Administratively focused</li><li>• Programmatically explicit</li><li>• Opportunity based</li></ul>	<ul style="list-style-type: none"><li>• Outcome oriented</li><li>• Model based</li><li>• Spatially explicit</li><li>• Multi-scaled</li></ul> <ul style="list-style-type: none"><li>• Predictive</li></ul>
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# Strategic Habitat Conservation

- Release of Strategic Habitat Conservation July 2006
- Release of SHC Technical Handbook in 2008

The FWS “One-Service” Response  
Intended To Manage, Facilitate, And Lead  
Change

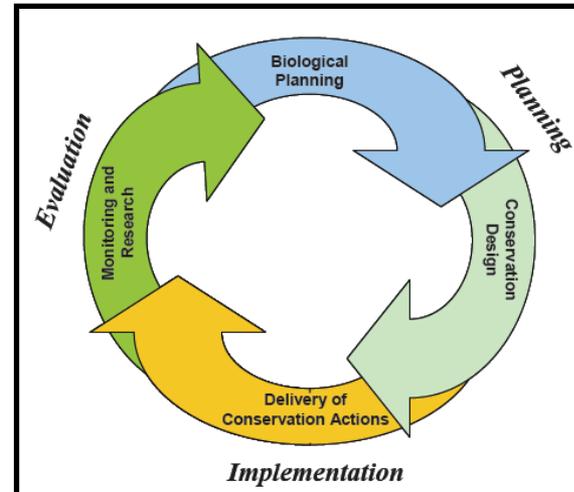
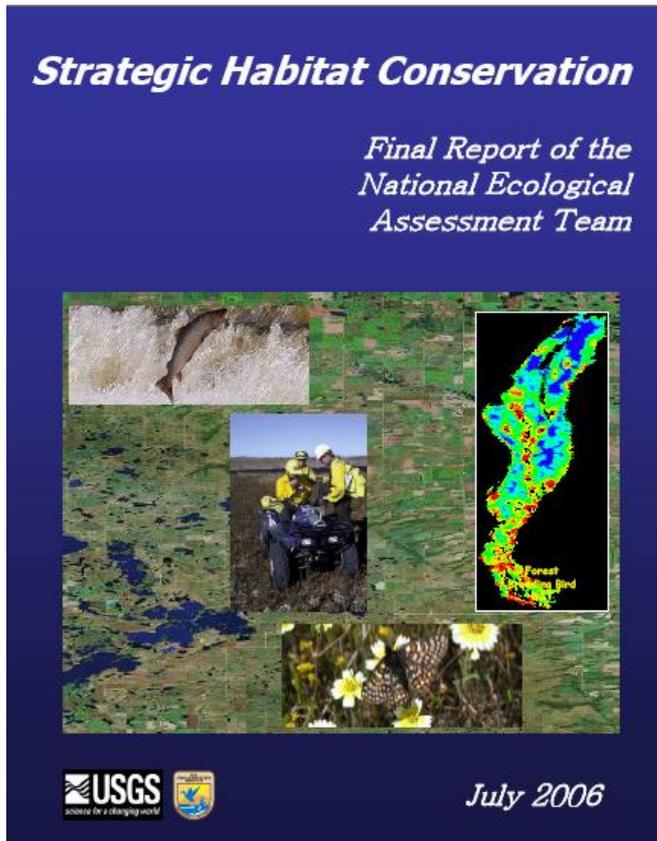


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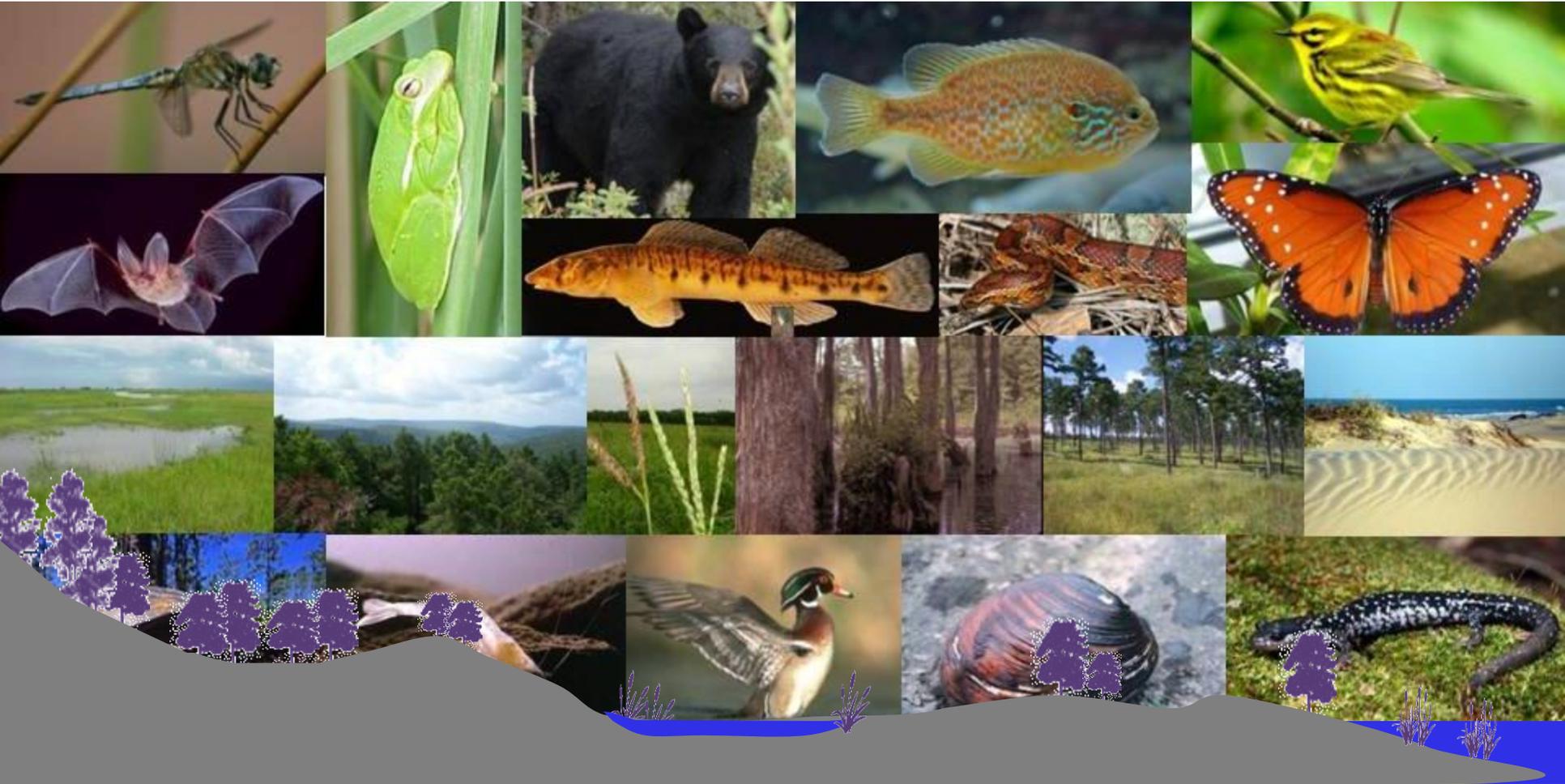


# Strategic Habitat Conservation

- Release of Strategic Habitat Conservation July 2006
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- **Conservation Target:** Landscapes that can sustain populations of fish and wildlife resources.
  - How Much, How Much More, and Where?
- **Science:** As a body of knowledge and as a method of discovery:
  - Learning Becomes an explicit objective of management.

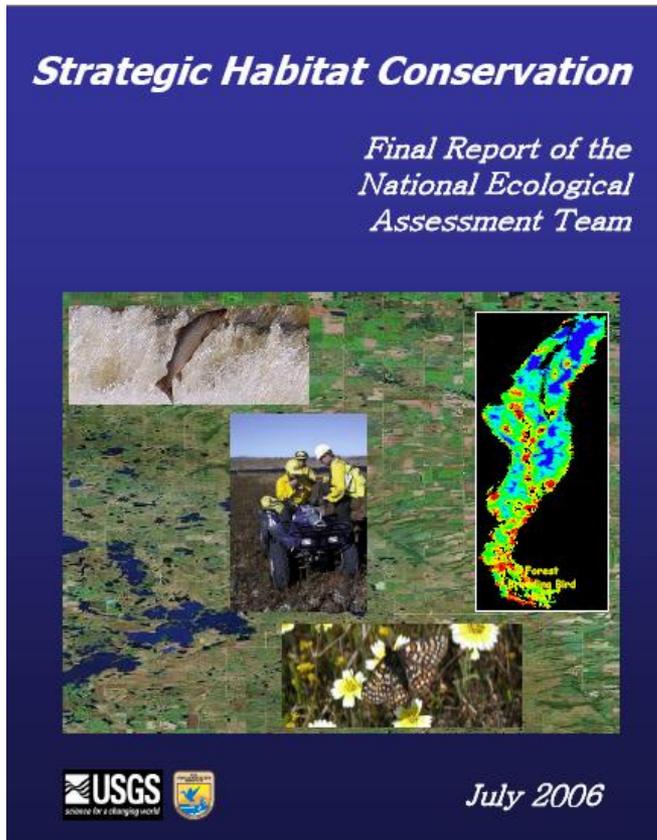


# Acknowledges Species are Drivers of Landscape-scale Conservation – Measures of System Sustainability



# Strategic Habitat Conservation

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- Release of SHC Technical Handbook in 2008



- **Conservation Target:** Landscapes that can sustain populations of fish and wildlife resources.
  - How Much, How Much More, and Where?
- **Science:** As a body of knowledge and as a method of discovery:
  - Learning Becomes an explicit objective of management.
- **Landscape:** Land management occurs at the site scale; yet ecological outcomes are system dependent, operating on processes manifested at broader spatial and temporal scales.
  - Addressing the Challenges of Scale
- **Interdependence:** Goals and objectives of functional landscapes to sustain fish and wildlife exceed the operational reach of individual programs, agencies, and organizations
  - Collaboration++

# The “Urgency” of SHC: A perspective of Project Leader, Fall 2008, on the U.S. Fish and Wildlife Service’s “Approach to Business”

*“My biggest worry is the ‘budget neutral’ constraint we heard earlier this year. You can't do this on the cheap and resistance will be huge if project leaders are told to take it on as an additional task as a home-grown, naturally evolving, cottage industry style of action with the implication being they should drop other things (very important things to them) or told to ‘work smarter not harder’. No successful retooling of industry or major ‘Manhattan Project-type government initiative’ ever got off the ground without new money - not a re-slicing of the pie.”*

Extra Duties

Not Reasonable

Impractical

Creating New Capacity  
& Capability

Where's The Money

# 2008-2010 Continued Responses to the Challenges

- A Way of Working Response -

U.S. Fish & Wildlife Service

## Conservation in Transition

Leading Change in the 21st Century

DRAFT

U.S. Fish & Wildlife Service

## Rising to the Challenge

Strategic Plan for Responding to Accelerating Climate Change

FWS Leadership Commits To Catalyzing Wall-to-Wall Collaborative Technical Capacity: *Biological Planning, Conservation Design, Outcome-based Monitoring, and Assumption-driven Research* In Support of Our Conservation Delivery Decision-making Enterprise

## Catalyzed International LCC Network NWRS Inventory and Monitoring



Landscape Conservation Cooperatives

- |   |                                   |                                     |                                  |
|---|-----------------------------------|-------------------------------------|----------------------------------|
| 1. Appalachian                              | 7. Great Plains                   | 13. Plains and Prairie Potholes     | 19. Northwestern Interior Forest |
| 2. California                               | 8. Gulf Coast Prairie             | 14. South Atlantic                  | 20. Western Alaska               |
| 3. Desert                                   | 9. Gulf Coastal Plains and Ozarks | 15. Southern Rockies                | 21. Pacific Islands              |
| 4. Eastern Tallgrass Prairie and Big Rivers | 10. North Atlantic                | 16. Upper Midwest and Great Lakes   | 22. Caribbean                    |
| 5. Great Basin                              | 11. North Pacific                 | 17. Aleutian and Bering Sea Islands | Unclassified                     |
| 6. Great Northern                           | 12. Peninsular Florida            | 18. Arctic                          |                                  |

Albers Equal Area Conic NAD83  
Produced by FWS, RTM, Denver, CO  
Map Date: 12/4/2011



# Aligning Our Business Management Systems To Support A One-Service SHC Approach

Jun 22 2011



United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Washington, D.C. 20240



In Reply Refer To:  
ABHC/DTS 048640

JUN 22 2011

Memorandum

To: Service Directorate  
From: Deputy Director *D. A. Sola*  
Subject: Building a New U.S. Fish and Wildlife Service Operational Plan Based on Biological Outcomes

Of our many conservation successes of the 20<sup>th</sup> Century, perhaps none surpass the restoration of North American waterfowl. By the 1930's, the cumulative effects of commercial harvest, habitat destruction, and persistent drought had reduced populations of many waterfowl species to small fractions of their historical abundances. Thankfully, the concerted efforts of conservation leaders, legislators, government agencies and private individuals led to new laws, policies, and programs that changed the way harvest regulation and habitat conservation were pursued. These changes brought about many of the features we now accept as vital components of our conservation toolbox: the Federal Duck Stamp, a National Wildlife Refuge System, annual waterfowl surveys, Flyway Councils, a strategic North American Waterfowl Management Plan, NAWCA, Joint Ventures and more. It is no coincidence that the 2009 State of the Birds Report found that waterfowl (and other wetland dependent birds) are the only major group of birds with upwards population trends.

But the achievements in waterfowl conservation weren't due solely to more laws, more money, and more land. Along the way, we also learned the importance of working in partnerships, obtaining and applying the best science, and using a strategic landscape approach. Our challenge for the future is using what we've learned from past successes of our past and applying them to emerging challenges.

A few years ago, we described a new conservation approach for the Service. As detailed in the document **Conservation in Transition: Leading Change in the 21<sup>st</sup> Century**, we recognized that with the new challenges of the 21<sup>st</sup> century and recent advances in conservation science, as well as the drive for biological accountability, the Service needed to take a more strategic approach to sustaining fish and wildlife populations at landscape scales. In that document we committed to:

- A shift from managing individual resource components to sustaining species, populations, communities, and systems;
- An emphasis on science explicitly linking work at project scales to achievement on broader scales, including landscapes, major ecoregions, and entire species ranges;
- Increased use of predictive models and specific measurable biological outcomes;

- Increased emphasis on biological accountability and inter-organizational collaboration; and
- Increased emphasis on transparency, public participation and engagement.

We now need to solidify new organizational processes to secure an enduring change in how the Service manages its resource conservation enterprise -- beginning with a complete revitalization of the Operational Plan (Ops Plan) based on biological outcomes at the landscape level.

To that end, I recently asked Kathy Tynan and Seth Mott to bring together a team of Service leaders to begin helping us re-tool the Ops Plan to support decision-making based on biological outcomes at the landscape level. It is my intention that this team will serve both as architects of the proposed framework and overarching Steering Committee that will leverage our scientific and technical teams as needed in future implementation. I also want to ensure that our employees have a voice in this process, so I have asked the team to build this into their approach. Their first effort is to develop an operational framework that supports biological outcomes at the landscape level for presentation at the August Directorate Meeting.

It is my hope that tomorrow's Ops Plan will provide the framework to support:

- **Alignment & Collaboration:** to enable Service programs, staff and external partners to work together with a common understanding of priorities, roles, responsibilities and intended results.
- **Investment Decisions:** to make well-reasoned, transparent investment choices based upon Administration and stakeholder priorities and upon the Service's distinctive capacity to address them.
- **Stakeholder Support:** to demonstrate to internal and external stakeholders, Department of the Interior, Office of Management and Budget and Congress the alignment of program resource requirements with Service requirements, and with Administration and stakeholder priorities.
- **Performance Management:** to monitor and evaluate agency performance (i.e., effectiveness, efficiency and quality of efforts to achieve biological outcomes), ensure accountability for results, and adjust conservation strategies accordingly.

I will look to the Directorate to lead this effort as part of this final step in transforming our conservation approach. Thank you for making team members (list attached) available for their first meeting. I also ask for your support and cooperation in accommodating upcoming meetings to complete their work prior to the August Directorate meeting.

Attachment – Biological Outcomes Ops Plan Team



# Aligning Our Business Management Systems To Support A One-Service SHC Approach

Jun 22 2011

Increase Transparency and Science-driven Strategic Conservation Investments Agency-wide: HQ, RO, Field Stations.

- Define Common Biological Objectives at Landscape Scales
- Translate Into Landscape and Habitat Objectives
- Connect, Align, and Target our Resource Decision-making Practices and Systems
- Measure Progress and Success (Accountability)
  - Conservation Actions
  - Biological Outcomes

# Landscape X



Public Has Entrusted Thousands of Species To FWS.

(Public Has Entrusted Even More Species to State Fish and Wildlife Agencies)

Fish and wildlife agencies have a finite set of resources (human and financial capital) to carry-out their public trust mandates – insufficient to address all requirements (and certainly not addressed equally).

Only a subset of trust responsibilities get attention; hence, Public Trust responsibilities must be prioritized and work aligned along those priorities.

# Priority vs. Surrogate Species

## - Concepts -

### Priority Species

- Emphasize a subset based on any number of criteria
- Implies relative rank/importance
- Exclusionary approach
- 1:1 species benefits
- Any broader benefits implied/assumed



### Surrogate Species

- Emphasize as many species as possible
- Not intended to imply relative rank/importance
- Inclusionary approach
- 1:many/many:many intended species benefits
- Broader species benefits explicitly stated, evaluated

# Strategic Habitat Conservation

- Release of Strategic Habitat Conservation July 2006
- Release of SHC Technical Handbook in 2008
- Release of Draft Technical Guidance in July 2012
- Series of workshops in the region Fall of 2012

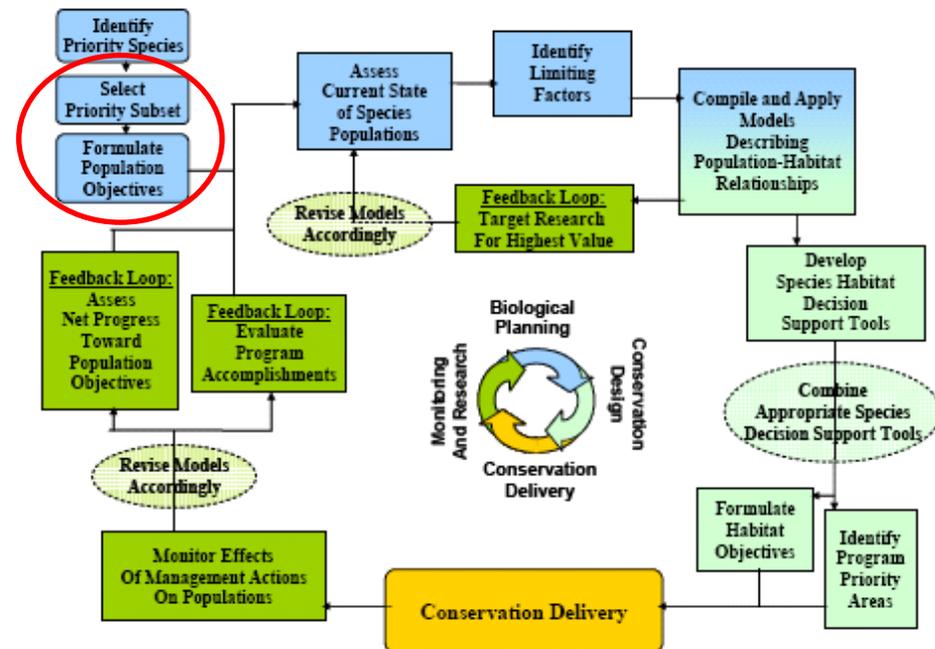
July 20, 2012

## DRAFT Guidance on Selecting Species for Design of Landscape-scale Conservation

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### Strategic Habitat Conservation Diagram



Strateg



WHO IS YOUR  
SURROGATE  
BABY?



I AM MY  
OWN  
SURROGATE  
SPP!



PICK ME  
AS YOUR  
SURROGATE

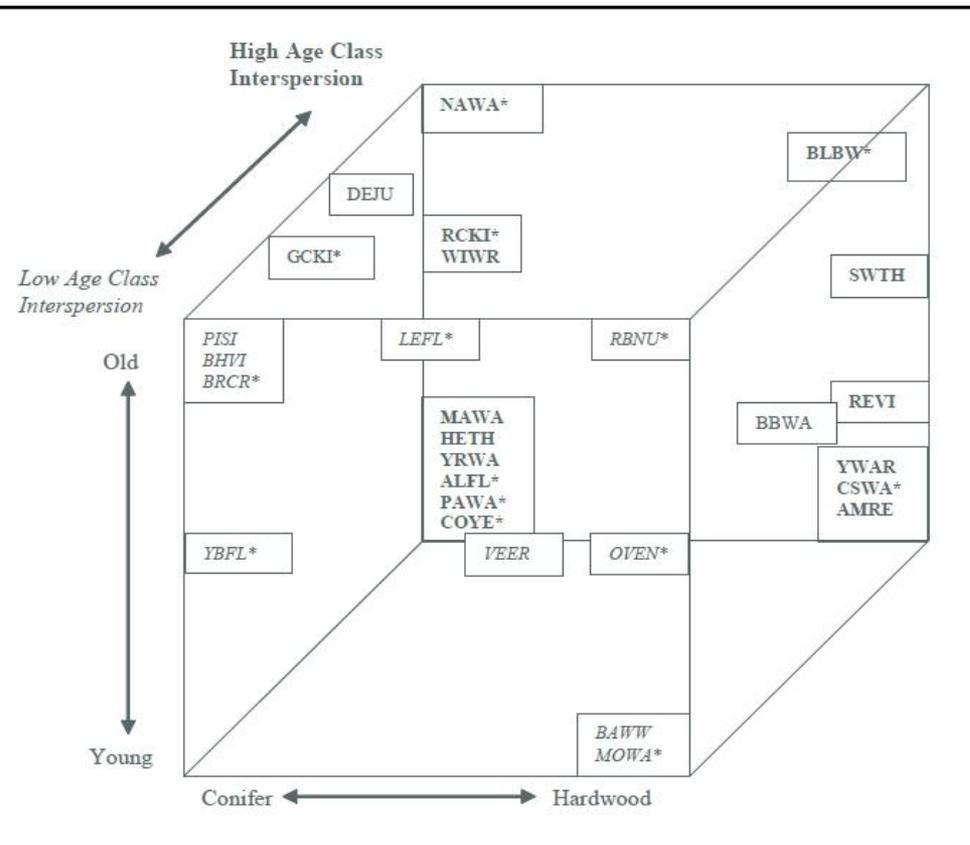


I ATE  
YOUR  
SURROGATE  
SPECIES.



PROTECT  
ME?

# Application of The Surrogate Species Approach



- Define Common Biological Objectives In The Context of System Sustainability
- Translate Into Landscape and Habitat Objectives
- Align and Target our Actions to Achieve Objectives
- Measure Progress and Success:
  - Conservation Actions
  - Biological Outcomes



# Species Conservation at Landscape Scales

### Biological Planning

Consistently identifying common biological outcomes at landscape scales using surrogate species approach, and species of conservation interest; setting population objectives.

- Surrogate Species
- Species of Conservation Interest (Outside of Surrogate Landscape)
- Other Service Priorities

### Conservation Design - Setting Landscape Objectives

Landscape conservation design includes identifying those factors limiting our species conservation targets from achieving their population objectives, and helps us establish landscape objectives that describe where, how much conservation is needed.

Under Construction

### Conservation Delivery - Landscape Annual Work Planning

Demonstrates the Service's cross-program alignment around common biological outcomes at landscape scales, and enables us to work in concert with partners towards a shared understanding of landscape-scale priorities, roles, responsibilities, work activities, and intended results.

Under Construction

### Conservation Accountability

Allows the Service to measure our conservation success, in terms of both species outcomes, and the effectiveness of our conservation actions, and adapt over time.

Under Construction

### Conservation investment Strategy - Tying Resource Allocations to Landscape Biological Outcomes

Enables the Service to make well-reasoned, transparent conservation investment decisions based on common biological outcomes at landscape-scales and in consideration of the Service's unique capacity to address them.

Under Construction

# Conservation In Transition...

Drucker: The most valuable asset of a 21<sup>st</sup> century institution will be its **"Knowledge Workers"** and their productivity.

## An Operational Comparison

	Resource Management (Land Stewards)	Conservation Science (System Sustainability)
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# Conservation In Transition...

## Operating Under A Conservation Target of Sustaining Our Nation's Endemic Fish & Wildlife Resources

The 21st Century wildlife agency will need...

- A capacity for conservation that extends beyond the operational footprint of its programs – the capacity to characterize, assess, and predict population and habitat sustainability across scales
- New organizational core competencies in landscape assessment
- An approach to partnering that enables a region's private, state, federal conservation infrastructure to operate as a networked, leveraged system
- To assume a role in the Public Square that extends beyond the operational footprint of its programs
  - Make available transparent, science-based assessments of population and habitat sustainability
  - Engage the citizenry in the search for socially viable solutions

# Conservation In Transition...

## Operating Under A Conservation Target of Sustaining Our Nation's Endemic Fish & Wildlife Resources

The 21<sup>st</sup> Century Workforce Is...

Educated and trained in systems thinking

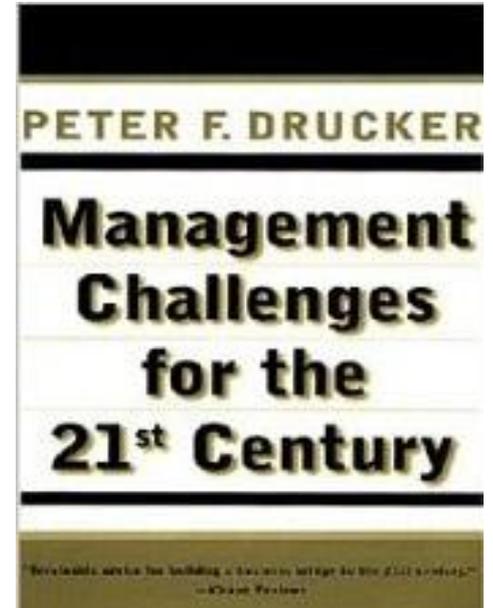
Socially conditioned to networking

“Knowledge workers” are

uncomfortable in hierarchical command and control  
organizational structures

more comfortable AND productive when empowered to  
work in a horizontally integrated capacity

Choose WHERE they want to use their knowledge!



# Geospatial Science – A Key To Unlocking OR Gridlocking 21<sup>st</sup> Century Conservation

What are YOU doing to:  
Unlock?      Gridlock?

## Barriers of Organizational Structures (silos)

Operate as a “System” – National and Regional and across Functions/Expertise

Knowledge Accessibility – To Data? To You? To Your Communities?

Interoperability Potential? Integration Potential?

Busting the Barriers of Scale: Organizationally, Spatially, and Temporally

## Barriers of Science Integrity and “One-Service” Spatial Continuity (>QA/QC)

Tools and Digital Data Proliferation (Do we really need another DST, webportal, etc)?

Are We Innovating From Existing Standards?

Is our Workforce Disciplined In Data Management (its everyone’s job)

Are we Documenting Assumptions and Uncertainties? Are they being tested?

Interoperability Potential? Integration Potential?

## Barriers of Geospatial Illiteracy

What does our Organization’s Core Competencies need to encompass?

What Basic Understanding is Needed by Leadership?

What are the Opportunity Cost With Pacing Geospatial Innovation?