General Trust responsibility to Indian & Alaska Native Tribes for management natural resources.

- Some National Forests & Grasslands completely overlap Tribal lands
- Over 2000 miles of shared borders with reserved lands (either treaty or Executive Order reservations)
- Use agreements through treaty, etc. for other specific resources

Government-to-Government CONSULTATION key to USFS interactions with Tribes and Alaska Natives.
Policy Context

- Executive Order 13175 – Consultation and Coordination with Indian Tribal Governments, 2000
- USDA Strategic Plan
- FS Roadmap for Responding to Climate Change
Our Nations' forests: Many values

Critical ecological, socioeconomic & cultural infrastructure

- Fuelwood
- Lumber
- Nonwood forest products
- Biodiversity
- Carbon storage
- Climate regulation
- Ecological
- Soil protection
- Health protection
- Ecotourism
- Social
- Recreation
- Amenities
- Sports (e.g. fishing)
- Cultural
- Historical
- Spiritual

Millennium Ecosystem Assessment 2005
Our Nations’ forests: Many threats

Forests are dynamic, but the dynamics are changing

- Land conversion
- Air / water pollution
- Altered wildfire regime
- Climate change
- Fragmentation
- Resource use / extraction
- Invasive species
- Insects & disease

Our Nations’ forests: Many threats

Invasive species

Resource use / extraction

Land conversion

Air / water pollution

Altered wildfire regime

Climate change

Fragmentation
Our Nations’ forests: Vulnerable / at risk

RISK = Likelihood of exposure + Magnitude of impact

Exposure to threats

Values at risk
- Ecological
- Social
- Economic
- Cultural

Sensitivity to threats

Adaptive capacity
Whitebark pine in western subalpine forests

Interacting stressors: climate change, white-pine blister rust, mountain pine beetles (MPBs), and impacts of fire exclusion

Between 2005 and 2007 an estimated 600,000 whitebark pines were killed by MPBs in Washington and Oregon
Threats: Wildland fires

Acres Burned in the 11 Western States
(Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming)

Climate change interactions

- Dry Winters
- Warm Springs
- Early Snowmelt
- Drier Soils in Early Summer
- Longer Dry Season
- Drier Vegetation
- More Fires

Million acres

0 1 2 3 4 5 6 7

Threats: Insects & Disease

National Composite Insect and Disease Risk* Map (2006)
~58 million acres at risk

Top Mortality Agents
1. Mountain Pine Beetle
2. Red Oak Decline
3. Southern Pine Beetle
4. Root Diseases-All
5. Gypsy Moth

*Risk = the expectation that 25% or more of the standing live volume of trees greater than 1” in diameter will die over the next 15 years.
Insect and disease threats vary across the country.
Mountain pine beetles have infested 17.5 million forested acres across 6 western states.

Contributing risk factors:
• Climate change (drought and warmer winters)
• Stand homogeneity (1900s logging, fire suppression)
• Disease (e.g., white pine blister rust)

Outbreak as of 2008
- Mnt pine beetle
- Spruce beetle
- Pinyon ips beetle

Pine species in the western U.S
(e.g., lodgepole, ponderosa, whitebark)

Kurz et al. 2008; Raffa et al. 2008; USFS 2010
Compounded, interacting threats

Mountain pine beetles have infested 17.5 million forested acres across 6 western states

Contributing risk factors:
• Climate change (drought and warmer winters)
• Stand homogeneity (1900s logging, fire suppression)
• Disease (e.g., white pine blister rust)

Could turn some western forests from a carbon sink to a carbon source

Outbreak as of 2008
Mnt pine beetle
Spruce beetle
Pinyon ips beetle

Kurz et al. 2008; Raffa et al. 2008; USFS 2010
Responding to climate change

“No action in the face of climate change is a decision that may carry the greatest risk.” – Western Governors’ Association

Waiting to cross that bridge until we get there carries its own risks...

The Forest Service must respond to climate change if it is to continue fulfilling its mission.
Risk management framework

1. Identify problem and objectives
2. Establish decision-making criteria, receptors, exposure units and risk assessment endpoints
3. Assess risk
4. Identify options
5. Appraise options
6. Make decision
7. Implement decision
8. Monitor

Yes

Problem defined correctly?
Yes

Criteria met?

No

No
USFS strategy: Climate change roadmap

Assess
- Risk/Vulnerability
- Policy
- Knowledge Gaps
- Management Outcomes

Manage
- Adaptation
- Mitigation
- Sustainable Consumption

Engage
- Education
- Science-Management Partnerships
- Alliances
Immediate Initiatives: Assess the impacts of climate change and associated policies on tribes, rural communities, and other resource-dependent communities.

“Some groups of communities, such as American Indians, might be especially vulnerable because of location or cultural and economic circumstances. Some 70,000 communities in the wildland-urban interface might be at additional risk from wildland fires.... Vulnerability assessments are needed for communities, their institutions, and their capacity to adapt to disturbances associated with climate change. Vulnerability assessments are the basis for defining the social, economic, and ecological costs of inaction as a reference point against which to compare proactive adaptation measures.”
USFS strategy: Assess

- RPA Assessments—climate change scenarios
- LANDFIRE—fuel and fire data
- Carbon OnLine Estimator (COLE)—forest carbon estimates
- Watershed Condition Framework—15,000 forested watersheds
- Watershed Vulnerability Assessment—11 pilot efforts
Vulnerability assessment – Has the Unit developed relevant information about the vulnerability of human communities, key resources, and ecosystem elements to the impacts of climate change?

- What key resources have you identified on your unit?
- How have you reviewed and used existing scientific, social, and economic information about the exposure and sensitivity of those resources to climate change?
- What current stressors are you observing on your unit? How do you expect these stressors might interact with a changing climate?
- What historical climate data and climate projections have you examined? How might your key resources and their stressors be impacted by future climate change?
- Who have you consulted to create or review your vulnerability assessment?
- Have you used this vulnerability information to prioritize possible management actions?
Vulnerability – 3 Components

- Exposure
- Sensitivity

Potential Impact

Adaptive Capacity

Vulnerability
USFS strategy: Engage

• Collaborative Forest Landscape Restoration Program—10 projects, many focusing on hazardous fuels reduction
• Stakeholder engagement in forest planning rule
• Science-management partnerships
• Interagency efforts (e.g., Greater Yellowstone Coordinating Committee, LCCs, etc.)
Engagement

USFS R&D All-Station “Coordinated Approach to Tribal Climate Change Research”

- Identify tribal climate change research & info needs
- Build a portfolio of collaborative research projects nationally
- Share research results

- Local Liaison/POCs established in each Research Station
- 2011 Workshops held in PNW, Lakes States, Southwest, and Southeast for Tribal managers to meet directly with USFS Scientists
- Ongoing networks science-manager established in PNW and Southwest
USFS strategy: Manage

Increase Resistance
   “bounce off”
(e.g., thinning, prescribed burning, firewise houses)

Promote Resilience
   “bounce back”
(e.g., plant seedlings, fire insurance)

Facilitate Transitions
   “bounce forward”
(e.g., zoning changes to reduce WUI)
Thank you

Sanford Gifford