Models for Integrating Traditional and Local Ecological Knowledge into Forest Management in the Pacific Northwest

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Traditional Ecological Knowledge

• Knowledge about the relationships living things have with each other and with the environment
• Handed down across generations
• Integrated system of knowledge, practices, and beliefs
• Dynamic and changing
• Locally specific
Local Ecological Knowledge

• Knowledge, practices, and beliefs about ecological relationships gained through personal observation of and interaction with local ecosystems, and shared among local resource users.
Why consider traditional and local ecological knowledge?

- Forest peoples are a source of data on forest ecosystems.
- Forest peoples value and manage for a large number of species.
- TEK can help restore forests to pre-settlement, “reference” conditions & enhance biodiversity.
- TEK & LEK tend to be adaptive.
- Forest peoples shape biodiversity.
American Indians

- Have inhabited the PNW for 10-12,000 years
- .5 million in CA, WA, OR
- Land holdings mixed, cover 4 million acres
- Treaty rights to public lands
Commercial NTFP Harvesters

- NTFPs = wild foods, medicinal plants, floral greens, native seeds, fiber & dye, oil
- Harvesting occurs for many reasons
- Commercial harvesters make part of their living from NTFPs, harvest large quantities and many varieties, range widely
- Depend on public and large private lands
3 topics relevant for forest management

- What do American Indian and commercial ntfp harvester resource use and management practices consist of, and how do they affect forest biodiversity?
- What are the constraints to applying TEK and LEK?
- How can we best share knowledge, and integrate TEK and LEK into forest management?
American Indians
Forest management practices

- Fire the most important environmental management tool
  - enhance food production
  - increase food security
  - reduce insects & disease
  - improve forage
  - enhance basketry materials
  - prevent catastrophic fire
Other techniques for enhancing desirable plant species

- Planting & broadcasting seeds
- Transplanting
- Modifying soils & digging
- Removing undesirable plants
- Pruning and coppicing
- Rotating harvest locations
- Diverting water
Effects on Biodiversity

- Maintained forest in different successional stages
- Multiplied the presence of ecotones
- Increased habitat and species diversity
- Increased ecological resilience
Constraints to applying TEK

- Loss of access to land and resources
- Prohibition of forest management practices
- Decline of forest resources having economic and cultural importance
Commercial Nontimber Forest Product Harvesters
Forest management practices

- Productivity experiments
- Monitoring environmental change
- Treading lightly
- Restricting harvests
- Managing patches for multiple species
- Resource rotation
- Succession management
Effects on biodiversity

• Low impact
• Maintains and may enhance biodiversity
Constraints

- Depend on public and large private lands
- Trend towards decreasing access
How to integrate this knowledge in forest management?
Write it down!
Direct engagement
Models

• collaborative species-specific management
• comanagement for ecological restoration
• integrated scientific panels
• formal institutional liaisons
• ecological modeling
• participatory research
Collaborative species-specific management: Restoration of basketry plants

- Tribal members, forest managers, University scientists collaborate to design and implement treatments that restore bear grass and associated habitat
- TEK about historic landscape structure and burning practices key
Co-management for restoration: Maidu Stewardship Project

- 2100 acres of the Plumas and Lassen National forests being managed with a 10-year stewardship contract
- TEK being used in forest restoration
Integrated Scientific Panel: Clayoquot Sound Panel

- Mix of western scientists and First Nations addressed conflict over old growth harvesting
- Management recs based on TEK and western science and co-management body created
Formal institutional liaison: Indigenous Peoples Restoration Network

• Provides technical assistance to indigenous peoples for restoration
• Provides assistance to resource managers who want to use TEK
• Promotes comanagement of public lands to facilitate integration of TEK
Ecological modeling

- Ethnoecological assessments
- Develop ecological models that simulate management practices
- Conduct field experiments
- Use results to develop management prescriptions
- Implement collaboratively
Participatory Research: Salal

- How do different harvest intensities affect salal regrowth and sustainability?
- Harvesters defined research questions, chose study sites, developed methods for measuring plant regrowth, collected and interpreted data, made management recommendations
Challenges to knowledge integration

- Different communication styles
- Lack of sociocultural understanding
- Trust
- Intellectual property rights
Conclusions

• The TEK and LEK of indigenous and local peoples have much to contribute to our understanding of the natural world, forest management problems, and how to solve them
• We need to more seriously assess the relationship between culturally-diverse forest management practices and biodiversity
• Directly engage tribes and harvesters in forest management efforts
• To protect and benefit from TEK and LEK we must address social, economic, and policy constraints on its use
• Biodiversity and cultural diversity are linked
Traditional and Local Ecological Knowledge About Forest Biodiversity in the Pacific Northwest

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