

# Anchor Forests

Sustainable Forest Ecosystems through  
Cross-Boundary, Landscape-Scale  
Collaborative Management

## **Executive Summary**

Prepared for:

The Intertribal Timber Council  
1112 NE 21st Avenue, Suite 4  
Portland, OR 97232

March, 2016



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The Full Report on the Anchor Forests Pilot Project Assessment consists of eight parts: (1) an Executive Summary that encapsulates key findings and recommendations from the assessment, (2) a Final Report that summarizes the findings and recommendations specific to the six individual tasks, and (3) a Task Analysis Report that contains the detailed results for each of the six individual tasks.

In addition, four (4) short Anchor Forest videos have been produced to facilitate communication of the concepts and exemplify the value of balanced social/cultural, economic and ecologic forest ecosystem management. The Anchor Forest documents can be obtained from the Intertribal Timber Council office listed below. The final reports and videos are also available on-line at: [www.ITCnet.org](http://www.ITCnet.org).



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**Anchor Forests — People, Place, Community, Environment and Economy**

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## Acknowledgments

The Anchor Forest Oversight Committee and coordinating team gratefully acknowledges the tribes who participated in this assessment. Special thanks go to the members of the Anchor Forest Oversight Committee who helped guide and direct the team of coordinators and

consultants through analysis and final recommendations. We are indebted to the many tribal and agency representatives who generously gave their time and knowledge while participating in surveys, interviews, and site visits. Their contributions are greatly appreciated.

We also want to thank Laura Alvidrez, the Program Manager for the Intertribal Timber Council and Steve Andringa, Anchor Forest Project Manager for the Yakama Nation, for their continual support throughout the project.

## A special thanks to the following supporters and contributors

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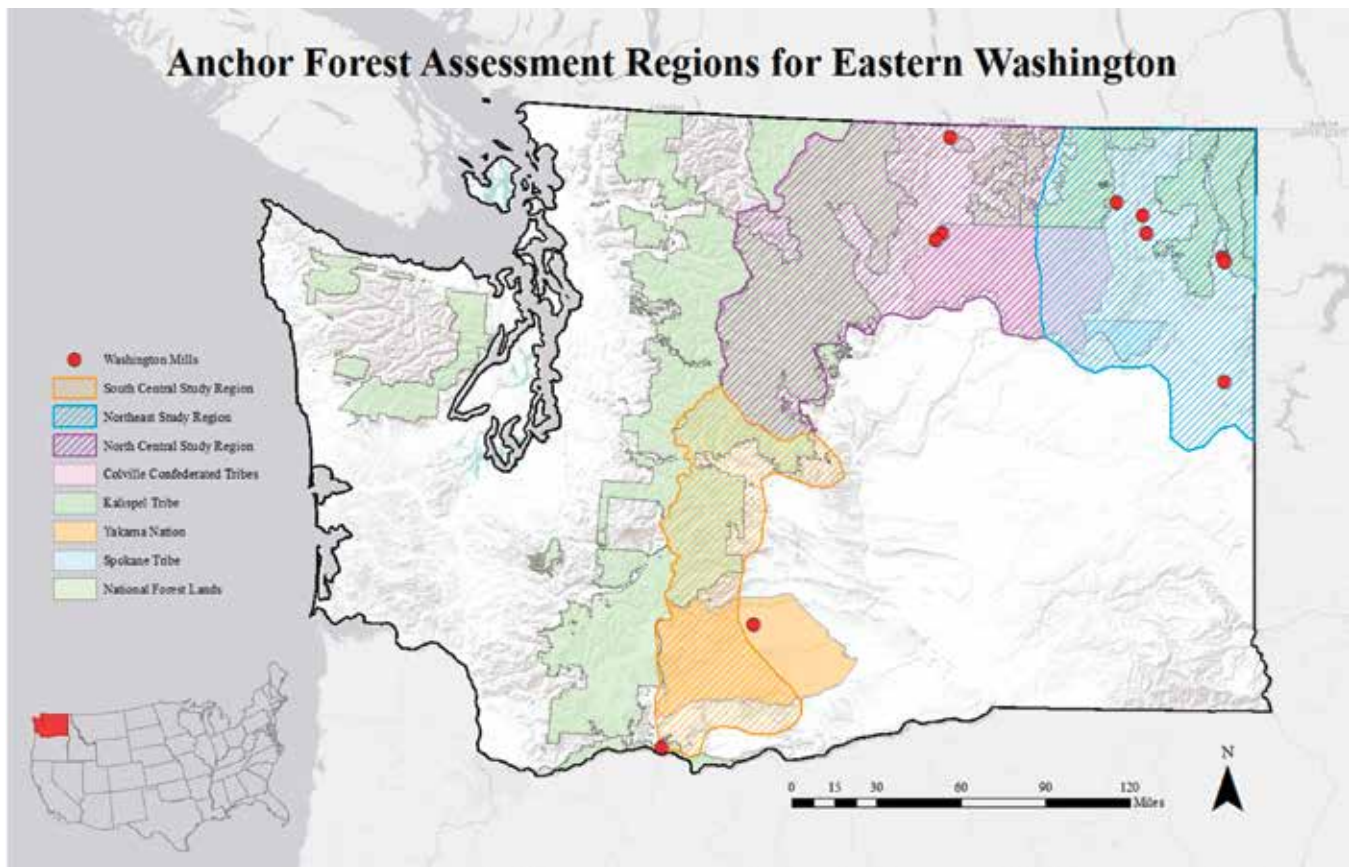
Margaret Parker

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Photos provided by The Yakama Nation, Northwest Management, Inc., and The Confederated Tribes of the Colville Reservation.

*Funding support for this study was provided by the Northwest Regional Office of the USDA Forest Service through a Domestic Grant (2011 DG-11062765 026) with the Intertribal Timber Council and the Bureau of Indian Affairs. In accordance with Federal law and U.S. Department of Agriculture (USDA) policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age, disability or retaliation. To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W Whitten Building, 1400 Independence Avenue SW, Washington, DC 20250-9410 or call (202) 720-5964 (Voice and TDD). USDA is an equal opportunity provider and employer.*





# Forests for Generations

There are more than 740 million acres of forested land (minimum of 10% tree canopy) within the conterminous United States. These forests are essential to

sustaining the myriad of social/cultural, economic and ecologic benefits society enjoys from these lands. Healthy forests can provide employment and

recreational opportunities as well as forest products such as building materials, food and medicines. They can provide a broad spectrum of ecosystem services such as habitat for flora and fauna, buffering of pollutants, carbon sequestration, places for personal reflection and cultural/spiritual benefits<sup>1</sup>. Healthy forests stabilize stream flow, alleviate flood hazards, and play a critical role in the quantity and quality of water available to society through storage, filtration, and supply. Forests of the western United States provide nearly 65% of the clean public drinking water for nearly 64 million people<sup>2</sup>.

The ability of our forests to continue to provide these benefits into the future remains very





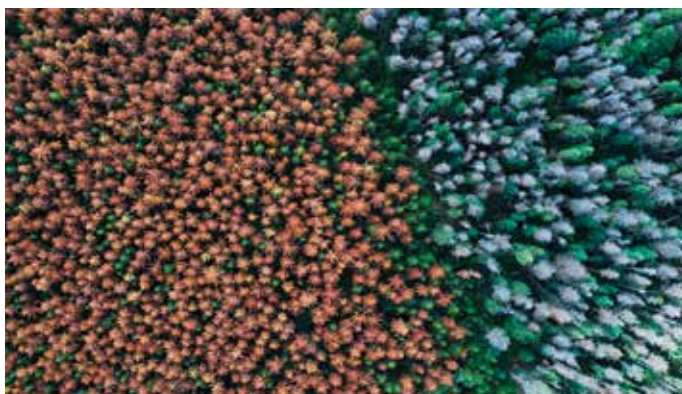
*“The human species, while buffered against environmental immediacies by culture and technology, is ultimately fully dependent on the flow of ecosystem services.”*

Millennium Ecosystem Assessment. Millennium Ecosystem Assessment: Current State and Trends. 2003. 25-36 p.

much at risk <sup>4,5</sup>. Unhealthy forest conditions <sup>6</sup>, exacerbated by a changing climate and legacy effects of past management practices, lead to catastrophic wildfires that sterilize and erode soils, contaminate water quality, alter habitats for fish, wildlife and plants, destroy homes and, in some cases, permanently alter the very forests we seek to protect and enjoy <sup>7</sup>.

Nationwide, millions of forested acres, both private and public, are disappearing functionally and physically (Figure 1). This is exemplified by the 193 million acres of forest and grasslands within the National Forest System (NFS), administered by the United States Department of Agriculture Forest Service (USFS) <sup>8</sup>. On these lands management has centered on wholesale fire suppression for most

of the 20th century <sup>9,10</sup> leading to the currently degraded forest conditions and uncharacteristically severe wildfires that have recently burned forests, homes, and communities and led to the destruction of entire ecosystems. Many NFS lands, unstable and faced with a changing climate, are expected to continue this legacy of fire and deteriorate further in as little as 15 years <sup>11</sup>.



**Figure 1.** An unmanaged forest in Washington State with diminished ecosystem function and service (e.g., water quality, wildlife habitat, and recreational use) values due to insect and disease infestations. Historic management and administration, mixed with changing climatic conditions, have led to uncharacteristically high tree densities and fuel loads which now, through severe wildfire, threaten communities, the remaining forestlands, and ecosystems as a whole.

## Working forests are in decline, are we losing our forests?

- Forest health is deteriorating and we are unable to sustain ecological functions and economies of rural communities.
- Political conflicts, complex administrative processes, and legal challenges are impeding our ability to manage the land.
- There are increasingly fragmented forests subject to rising costs as a result of losses from insects, disease, and wildfire.
- A changing climate, invasive species, disappearing management, harvesting, transportation, and processing infrastructure, as well as increased reliance on substitutes and imports, have led to a general uncertainty in working forests.

A new management approach is needed to improve and sustain ecosystem function <sup>12,13</sup> as well as reduce the potential for landscape-altering conflagrations that jeopardize societal well-being and human safety at a cost of billions <sup>14,15</sup> for generations to come <sup>16,17</sup>. Land fragmentation <sup>18</sup>, administrative inconsistencies <sup>19</sup>, agency personnel turnover <sup>8</sup>, litigation <sup>20,21</sup>, and a weakened “social license” <sup>22,23</sup> create many of the formidable challenges facing maintenance of economically viable and ecologically functional forests. These “working forests” are a crucial part of providing benefits to society through improving overall forest ecosystem health <sup>24-26</sup>.

Harvesting, transportation, and processing infrastructure throughout the nation are disappearing, and without adequate infrastructure our ability to address declining forest health is substantially reduced. In addition

to losses in infrastructure, a lack of funding and an aging workforce has led to less investment in working forests and a decreased ability to address forest conditions that currently promote catastrophic wildfire and significant resource losses. Moreover, management capacity is eroding and investment strategies for the limited funding resources available are unfocused.

These challenges confronting our forests have reached crisis proportions and are too large and complex to be addressed by any single forest ownership or entity. Proactive, collaborative, cross-boundary, landscape-scale stewardship is essential to the management and maintenance of healthy forest ecosystem conditions. The need for creative actionable solutions has fueled the development of the Anchor Forest concept, and this assessment, to explore landscape-scale forest management that exhibits a sustainable social/cultural, economic, and ecologic balance <sup>8</sup>.

*“The threats facing our forest do not recognize property boundaries; we must operate at a landscape scale by taking an ‘all lands approach.’”*



# Anchor Forests

Anchor Forests are large tracts of forestland under long-term stewardship inclusive of commitments for commodity production that can economically incentivize cross-boundary, collaborative management. These lands would provide a pivotal setting for investments in ecological services and the infrastructure needed to address forest health conditions and sustain working forests, thereby improving ecosystem resiliency and decreasing the threats of wildfire.

The Anchor Forest concept is an effort to provide forest land stewardship across ownership boundaries and among disparate interests to address deteriorating forest health conditions by:

- Promoting forest ecosystem function through maintaining

*“Anchor Forests are a multi-ownership land based area which will support sustainable long-term wood and biomass production levels backed by local infrastructure and technical expertise, endorsed politically and publicly to achieve desired land management objectives.”*

Morishima G. National Conference of State Legislatures Environmental Forum. In: Indian Tribes and Forests - Anchor Forest. Denver, Colorado: Intertribal Timber Council; 2013. p. 70.

and improving the infrastructure needed to increase the ecosystem services and benefits gained from healthy forests;

- Reducing the impacts of insects, disease and wildfire in the face of a changing climate through active forest management; and
- Providing a framework for cross-boundary land management that achieves the social/cultural, economic, and ecologic values

and benefits realized through long-term stewardship.

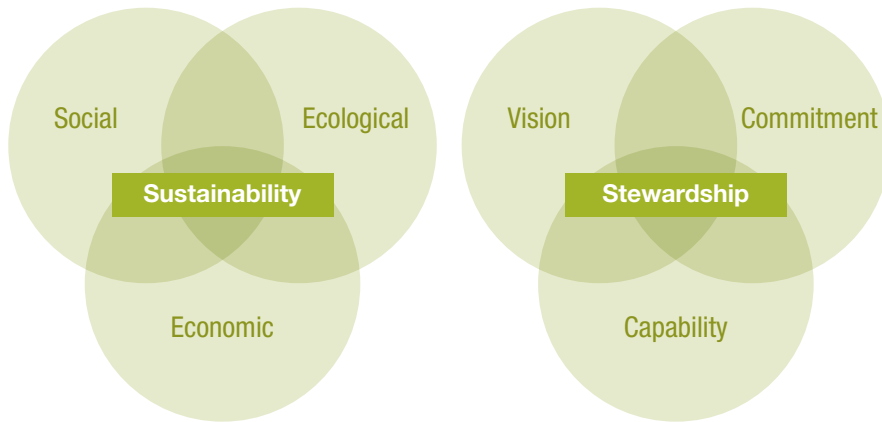
When established, Anchor Forests offer a framework for collaboration to improve the “social license” and ability needed to implement the “all hands, all lands” management of forested landscapes through the collective ability of many working toward a singular goal of forest ecosystem stewardship.





Successful forest stewardship requires coordination of management efforts, leadership founded by tenure in sustainable forest practices, and a dogmatic permanence focused on the future, such as that exemplified through Indian lifeways and the Traditional Ecologic Knowledge of tribes. The triple bottom line of the

Anchor Forest framework provides new opportunities to apply investments of scarce resources more effectively, encourage management to integrate attributes exemplified by tribal forests that foster stewardship (e.g., capability, commitment, and vision), and embody ecologic and economic sustainability (Figure 2).



**Figure 2.** The “triple bottom line” of sustainability combining social, economic, and ecologic dimensions inextricably coincides with the foundation of stewardship. Stewardship for sustainability has been described as the intersection between vision, commitment, and capability. *Vision* represents the ability to establish and convey a shared sense of “what can be,” *commitment* represents relationships that maintain respect, trust, and collaboration over the long-term, and *capability* represents the availability of competent interdisciplinary staff with the information and resources to implement multiple-use multiple-resource management plans <sup>28</sup>.

*“Ultimately, the people who are best able to take care of the land are those who live on the land, work on the land, and love the land. They have the knowledge, skills and motivation to care for the land. We need to empower them.”*

Gale Norton, Former U.S. Secretary of the Interior, on August 31, 2005 when announcing the Department of Interior’s participation in the National Conference on Cooperative Conservation



**Anchor Forests can benefit from tribal land stewardship in many ways including:**

- Permanence of land base committed to long-term stewardship.
- A triple bottom line of balanced management: cultural, economic, and ecologic.
- A legacy of management and operational expertise.
- The opportunities to “bridge gaps” and balance industry with ecology.
- In-depth Traditional Ecologic Knowledge of natural resources supported by western science.
- Reserved and Treaty rights on lands crossing ownership boundaries.
- Unique political and legal relationships with the United States.



# Anchor Forest Assessments

The Anchor Forest assessment was to determine if the Anchor Forest concept is a viable framework for institutionalizing collaborative cross-boundary forest ecosystem management, and to assess the

potential of Anchor Forests to form the cornerstones needed to overcome forestland fragmentation and sustain ecosystem services at a landscape scale (Table 1).

Six assessments were performed to address the value and implementation of an Anchor Forest (Table 2). These studies evaluated the forestry industry infrastructure and capacity, potential stakeholder interests in participation, available funding mechanisms, and ecosystem services available, for three study regions in eastern Washington (Figure 3). The task findings were then used to evaluate the potential of existing processes and authorities to restore working forests and achieve economic and ecologic gains across multi-jurisdictional ownerships at the landscape scale.

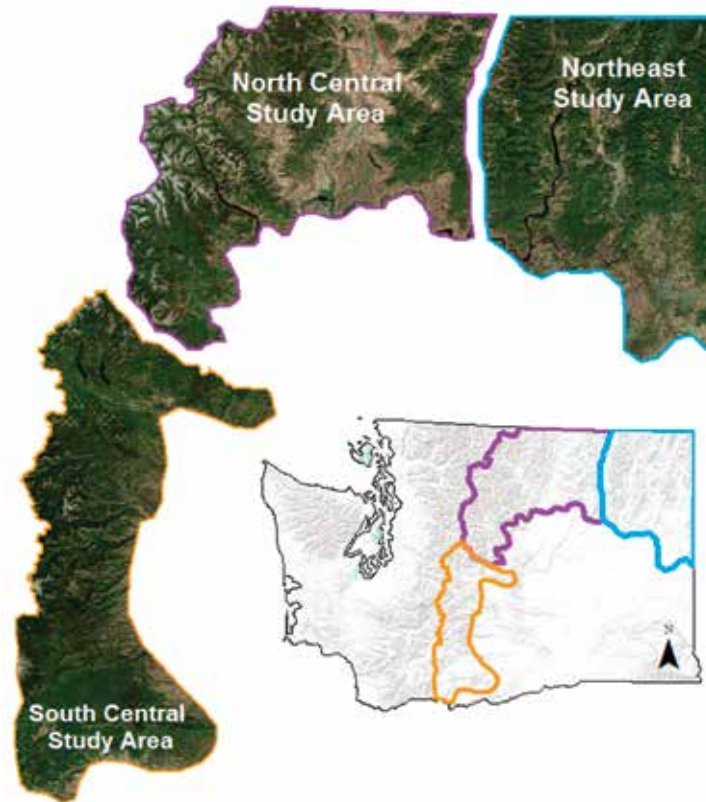
In order for Anchor Forests to fully realize the benefits of

**Table 1.** There were three central questions used to guide exploration of the Anchor Forest framework and the viability of implementation in eastern Washington to address degraded forest health conditions.

<b>What</b>	Would Anchor Forests form a useful framework for coordinating investment and management across fragmented forest ownerships and jurisdictional boundaries?
<b>Where</b>	Does the Anchor Forest concept represent a viable model to address the array of ownership patterns and differing infrastructure capacities encountered within the three study areas of eastern Washington?
<b>How</b>	What would provide the desired social/cultural, economic, and ecologic benefits and incentives needed to gain stakeholder and community participation in an Anchor Forest?

collaborative multi-jurisdictional forest stewardship, and address the forest health conditions facing landowners and managers, a foundation of trust and respect is necessary. Relationships built on trust and respect will ultimately facilitate decision-making that includes tribes, industry, agencies, scientists, land managers, and non-governmental organizations in a collaborative environment where collective knowledge and expertise can be pooled in an interdisciplinary manner to prioritize activities and achieve greater results.

This Anchor Forest pilot project study assessed opportunities and barriers for both individuals and organizations seeking to coordinate investment and management across fragmented forest ownerships through cooperatively developing a shared vision for future forests. The findings from each task are presented to facilitate management decisions that address forest ecosystem



**Figure 3.** The Anchor Forest study assessments were completed in the South Central (SC), North Central (NC), and Northeast (NE) portions of eastern Washington State. These regions were selected on proximity of tribal, NFS, and state lands, the occurrence of struggling forest infrastructure, and differences in capacity, capability, and markets. Additional selection criteria focused on the imminent danger of forests in these regions to catastrophic losses from wildfire, insects, and disease.

**Table 2.** The Anchor Forest study consisted of six “Tasks” aimed at defining the current conditions, opportunities, and barriers to implementation of a multi-jurisdictional landscape-scale management approach in eastern Washington.

Task description	Assessment action
Forest industry infrastructure	Study region assessments of: forest condition, forest planning, timber harvest, processing, infrastructure, capacity, and projected treatments needed.
Collaborative forest restoration frameworks	Assessment of existing collaborative forest restoration frameworks and insights applicable to the Anchor Forest concept.
Forestry institutional capacity	Evaluation of current forest management planning, actions, infrastructure, organizational commitment, and resources.
Collaboration opportunities and barriers	Assessment of local interest, capabilities, staffing capacities, available resources, opportunities and barriers. Focus-group discussions with potential stakeholder groups.
Resource database	Identification of technical and financial opportunities available to Anchor Forests.
Non-market forest ecosystem services	Identification of ecosystem service benefits from Anchor Forests, methods of quantifying non-market values, and incentives that increase stakeholder awareness and participation.



health. Recommendations focus on opportunities identified through assessments of existing personnel, expertise, and forestry infrastructure given the implementation of an Anchor Forest and the social license attainable through inclusion of diverse landowner interests. As an institutionalized collaborative framework, Anchor Forests have the potential to assist land managers in sustainably accomplishing cross-boundary ecosystem management while maintaining a balance of social/cultural, economic and ecologic practices at a landscape-scale.

*“Healthy working forests are essential to enable society to maintain clean air and water, and to protect our soils, fish, and wildlife. Economically viable infrastructure must be in place to reduce costs of forest management and minimize potential risks of loss to life and property from growing threats of wildfire, insect and disease. The integrated approach envisioned under the Anchor forests concept holds great promise as a means to focus scarce investments in infrastructure and environmental services, and as important, for helping diverse interests find a common path to the future.”*

Gary Morishima, National BIA Conference on Forestry and Wildland Fire, San Diego, 2012



## Anchor Forest Task Assessment Findings

Millions of acres of forests are in decline as a result of overstocking, pathogen epidemics, climate change impacts, and uncharacteristically severe wildfire. Within eastern Washington, Anchor Forests offer valuable tools for prioritizing investments that address forest health decline and increase ecosystem resilience. The Anchor Forest framework combines opportunities for landowners, communities, agencies, and tribes to achieve landscape-scale projects that address these declining forest conditions with cost-effective solutions. These projects, spanning multiple ownerships, offer a

foundation to participate in carbon sequestration, ecosystem resilience, and alternative energy markets utilizing wood at larger scales than were previously available.

Assessment findings draw attention to the Anchor Forests concept as a framework that recognizes and respects the prerogatives and obligations of individual landowners, and offers a foundation for the development of actionable strategies targeting collaborative landscape-scale management that will accrue shared benefits for all willing to work together in a respectful, trust-based atmosphere.



**TASK**

**1**

# Eastern Washington Forest Infrastructure, Commodity Production and Biomass

The east Cascades region of Washington State has experienced a reduction in sawmilling capacity over the past few decades and has a shortage of biomass facilities. These conditions represent a loss of forest management infrastructure and capacity available to support cross-boundary forest ecosystem management. When milling facilities and infrastructure are sparsely distributed within an area there can be substantial increases in product transportation and harvesting costs as well as decreased competitive bidding

for timber resources and low market values for products. These conditions lead to lost job opportunities and the reduction of an already limited workforce.

Across the State of Washington more than 1 million acres of forest land are being impacted annually by insects and disease leading to an increase in the size and frequency of wildfire (>9.4 million acres burned nationwide in 2015). Currently, within the three study regions, many of the remaining sawmills are operating at 10 to 30% below capacity. This,

coupled with an aging workforce, a weakened social license in support of silvicultural management, and an expanding urban population culturally removed from forestry, has created a challenging and dynamic environment for managers attempting to address degraded forest conditions and reduce the threat of wildfire.

Through the Anchor Forest task assessments, proposed annual treatment-acre targets were developed (Table 3) to begin addressing the degraded forest conditions across eastern Washington. Annual treatment of these target acreages would achieve a level of landscape-scale support for biodiversity, soil protection, water quality, wildlife habitat,

**Table 3.** Summary information for the three study regions within eastern Washington are presented to show total forested lands, current annual treatments by landownership, and the estimated biomass produced and used for each region<sup>30</sup>. Analysis of harvesting, processing, transportation and utilization costs, and infrastructure needed for biomass and sawlog production are presented in Task 1<sup>30</sup>. The proposed increase in treatment acres for implementation of an Anchor Forest represents a cumulative total spanning all ownerships within each region and would be in addition to the displayed “Current Acres Treated Annually.” Operable acres are those available to forest management exclusive of wilderness, inventoried roadless and other federally protected areas<sup>31</sup>.

Regional conditions and target treatments	South Central	North Central	Northeast
Forested acres	2,356,000	3,276,000	1,808,000
Operable acres needing treatment <sup>1</sup>	450,000	468,000	973,000
Current acres treated annually	43,743	28,992	70,465
Current annual timber harvest (MMBF)	288	77	298
Estimated annual biomass from harvest (BDT) <sup>2</sup>	233,280	62,370	241,380
Estimated utilized biomass (BDT) <sup>3</sup>	39,411	10,537	40,779
Eastern Washington forest products produced by region	43%	12%	45%
<b>Proposed total increase in treatment acres</b>	<b>+2,257</b>	<b>+7,008</b>	<b>+14,035</b>

1 Haugo et al. 2015

2 Estimated annual biomass production was calculated using a conversion factor of 0.81 bone-dry tons of biomass per thousand board feet of timber harvest (Perez-Garcia et al. 2012).

3 Current statewide biomass utilization is 498,500 BDT (Perez-Garcia et al. 2012), with 18.2% (approximately 90,727 BDT) being attributed to eastern Washington. It was assumed biomass production for each study region was the same as percent-harvested timber volume, 43%, 12%, and 45% of the 90,000 BDT for the South Central, North Central, and Northeast study regions respectively.

aesthetics, recreational values, and support the infrastructure required to maintain these ecologic benefits. Implementing proposed target treatments would provide economic benefits to forests and communities through long-term (15+ year) planning that encourages capital investments in forestry infrastructure, local economies and forest ecosystem health (Table 4).

The urgency for increased forest treatments within eastern Washington is undeniable and faces a myriad of challenges, the greatest potentially being restoration of identified at-risk forest ecosystems on NFS lands under USFS management (SC region 11.7% (53,000 acres), NC region 50% (232,000 acres), NE region 27% (261,000 acres))<sup>30</sup>. On these lands management has fallen short of current management plan<sup>1</sup> approved objectives, on average, every year since 2000. An increase in regional capacity and



cross-boundary collaboration will be critical in maintaining these forests and building their resilience to wildfire in the face of increasing insect, disease, and climate constraints predicted to worsen within the next 15 years<sup>11</sup>.

<sup>1</sup> Many of the current management plans are dated and most are in revision, consequently, “planned harvest” volume is likely to change in order to more appropriately match the present management needs of these landscapes.

## Findings

- Current forest treatment levels on USFS lands are insufficient to keep pace with deteriorating forest ecosystem conditions, thereby promoting increases in wildfire frequency and severity across the landscape that threaten adjacent forestland ownership. Accomplishing the proposed target treatments on

**Table 4.** A summary of potential benefits and avoided costs following implementation of the Anchor Forest concept in each of the three study regions is presented following the results of the Task 1 analysis<sup>30</sup>. Avoided cost estimates were calculated based on implementing fuels treatments to reduce associated wildfire expenses as provided within the literature.

Estimated benefits from proposed treatment	South Central	North Central	Northeast
Additional forest products generated (MMBF)*	11	35	70
New jobs <sup>1</sup>	198	630	1,260
Wages <sup>1</sup>	\$5,808,000	\$18,480,000	\$36,960,000
Product sales <sup>1</sup>	\$35,200,000	\$112,000,000	\$224,000,000
Avoided cost per acre high-risk conditions <sup>2</sup>	\$1,402	\$1,402	\$1,402
Estimated total avoided costs	\$3,164,314	\$9,825,216	\$19,677,070

<sup>1</sup> Research has shown an average of 18 jobs, \$528,000 in wages, and \$3.2 million in sales are generated per million board feet of harvest within the Pacific Northwest (Cook et. al, 2015).

<sup>2</sup> An assessment of avoided costs using management costs and benefits derived from costs associated with investments in forest fuel removals and fire risk reduction (Mason et al. 2006).

\* Calculated based on an assumed harvest of 5,000 board feet per acre.



Dana Rand Photography

NFS lands would equate to an overall increase in management activity of nearly 50% from the current annual average within each of the three study regions.

- There is a need to be able to demonstrate how enhanced forest health and resilience, as well as a reduction of wildfire risk, can be achieved through utilization of responsible forest harvest and woody biomass use.

- Achieving forest health objectives will require increases in the annual treatment of forested acres in order to keep pace with deteriorating forest conditions, reduce wildfire threats, conserve water quality and wildlife habitat, increase public safety, and improve overall ecosystem function.
- Increased forest management actions to treat the identified

target acres will offer substantial savings in avoided costs, as well as provide the jobs, wages, and taxes needed to support local communities and maintain working forests.

- Long-term (15+ year) contract commitments to active management and timber supply are necessary to encourage the capital investments needed to outpace degrading forest ecosystem conditions across eastern Washington. These would allow industry to amortize investments and encourage the establishment and maintenance of infrastructure necessary to address forest conditions.
- To address the challenges of an aging demographic in the forestry sector, programs are needed that encourage and educate students on the importance of forestry and silviculture, as well as teach the value of communication skills and the “social license” required for forestry.







## Findings

### TASK 2

## Collaborative Forest Restoration Frameworks and the Anchor Forests Concept

A number of collaborative frameworks (i.e., Tapash Sustainable Forest Collaborative, North Central Washington Forest Health Collaborative, and Northeast Washington Forestry Coalition), have identified treatment goals that target forest ecosystem health and management<sup>24,32,33</sup>. These frameworks provide models of forest ecosystem management founded on stable partnerships, a strong willingness to push forward from all stakeholders, and thoughtful leadership with a clear understanding of anticipated outcomes.

However, despite state, federal and the public's attention to

forest ecosystem health and wildfire, the successes of previous collaboratives have largely been localized and forest health conditions across much of Washington have continued to decline. Assessment results did not identify an exemplary collaborative approach to completed projects encompassing multi-sector landowners with actions applied across jurisdictional boundaries and at landscape-scales similar to those proposed for Anchor Forests. Therefore, the triple bottom line of Anchor Forests and the objectives inclusive of ecosystem health, working forests, tribal lifeways, treaties, and sovereign rights make the Anchor Forest framework a unique and innovative approach.

*“Community-based landscape conservation is practiced when partners working in the right places on the right projects follow what has come to be known as the 80/20 rule—committing to work on the 80% in common, not the 20% that divides. Once partners build trust and credibility by working on the 80%, they are able to tackle the remaining 20%.”*

In reference to the Blackfoot Challenge Collaborative Partnership by Burnett, (2013)

- Several collaborative experiences throughout the West, suited to local temperaments and circumstances, have enabled diverse interests to gain a sense of community and purpose that has led to shared understandings and realized forest health objectives. However, improved collaboration at a landscape-scale is needed to address the pace of forest losses and fragmentation of forest land management.
- Agency leadership is needed at a national level to ensure accountability and consistency at the regional and community levels regarding management decisions and involvement in collaborative environments.
- There is a need to develop an Anchor Forest governance structure with consistent leadership that can provide guidance to Congress for improving administrative processes and legislative policies aimed at increasing the pace of forest treatments and encourage additional stakeholder participation in collaborative efforts.
- Tribal leadership and the inclusion of tribal Traditional Ecological Knowledge in collaboratives can be instrumental in fostering cross-boundary management efforts as a result of their history of proven long-term stewardship, political status as sovereign governments, unique rights, and management capabilities that ensure a social/cultural, economic, and ecologic balance of forest management actions.

TASK

3

# Institutional Capacity and Barriers to Collaborative Cross-Boundary Forest Management

Interviews were conducted with leaders from state and federal agencies, tribal nations, NGOs, and the private business sector within each of the three study regions (Figure 3). Participants responded to questions regarding overall organizational: “willingness” to participate in an Anchor Forest, “readiness” to contribute staff and resources under current workload obligations, and overall perceived

“capacity” of the organization to support an Anchor Forest given current infrastructure, staffing, and resource allocations.

In general, respondents at the state and federal levels were most concerned with funding while non-government entities focused primarily on action, deliverables, and accountability. Willingness and capacity to participate in

an Anchor Forest was greatest within the tribal and private sector entity responses across all three study regions. The majority of participants indicated current collaborative forest management efforts are constrained by unclear actionable goals and objectives, a downsized workforce, reduced milling infrastructure, and limited time, staffing, and financial resources.





The majority of respondents supported investment in and implementation of an Anchor Forest due to the current conditions and threats facing forestlands throughout eastern Washington. The majority of participants were committed to dedicating staff time and resources in support of an effort where:

- Funding and staffing specific to forest management, forest development, and forest product sales were a priority.
- There is a focus on public communication/education to increase awareness of forest management needs.
- Examples showing the ability of collaborative actions to restore forest ecosystem functions and provide long-term economic sustainability to local communities were available to support the need for active forest management.

## Findings

- There is a growing urban population culturally removed from the functions of forestry and silviculture. This contributes to the challenges associated with improving forest ecosystem health and will require a balance of ecosystem stewardship, silviculture, forestry infrastructure, collaboration, leadership, public outreach, and diligence.
- In order to continue fostering optimism surrounding implementation of an Anchor Forest, steps need to be taken to address policy that can support collaborative tools such as Stewardship Contracting, Landscape-scale Treatment Areas, and Good Neighbor Authority.
- Survey responses and previous research<sup>19,35</sup> identified inconsistent agency decisions,

support, and participation in collaborative activities stems, in part, from the influence of local agency personnel attitudes, values, and beliefs in decisions and project guidance.

- A “champion” and leader is needed in each agency and tribal organization to collaboratively prioritize and direct management, gain funding, include a diversity of stakeholders, and mitigate conflict to ensure cross-boundary cooperation within an Anchor Forest.
- Chronic agency funding and expense challenges, staff and leadership shortages, personnel turnover and inconsistencies in federal action that influence management decisions must be overcome in order to sustain ecologically and economically viable forests across the landscape.

## Identifying Barriers to Cooperative, Collaborative Cross-Boundary Forest Management

Focus group forums provided an atmosphere where participants had the opportunity to candidly and constructively share perspectives on impediments to collaborative forest management, collectively devise strategies to overcome barriers to cooperatively managing forestlands across jurisdictional boundaries, and offer feedback on the Anchor Forest concept. Currently degraded forest condition was the topic of greatest priority commonly discussed, followed by particular legislation, local laws, and policies believed to be unreasonably time consuming and too slow to effectively achieve the management required on degraded forestlands.

The multi-jurisdictional coverage of Anchor Forests encourages the inclusion of more landowners into the processes, thereby increasing motivation to meaningfully

participate in an actionable collaborative that focuses on win-win outcomes. Efforts that bridge public agency strengths and public/private efforts can be provided within the Anchor Forest framework and center on the common desire to improve ecosystem function and maintain working forests.

Survey responses identified three key motivations in support of an Anchor Forest.

- The ability to influence forest management activities on national lands;
- Opportunities to overcome barriers and challenges facing successful implementation of sustainable forest stewardship; and
- The potential for landscape-scale, whole-ecosystem management.

### Findings

- Legal research has shown that many legal battles involve administrative technicalities rather than environmental impact issues<sup>29,36</sup>; thus, future efforts that inhibit the misuse of environmental legislation could be valuable to collaborative efforts<sup>21,37</sup>.
- Agreements and/or policy that protect the “collaborative process” and participant efforts from non-participant appeals and litigation are needed to improve collaborative efficiency and encourage participation from additional stakeholders.
- There is a lack of leadership and commitment from federal agencies further complicated by frequent staff turnover that contributes to significant delay and frustration within collaborative processes.
- Participants acknowledged the value of partnerships between stakeholders with differing opinions and the importance of federal agency and tribal leadership.
- To keep landowners, agencies and organizations at the collaborative “table,” incentives are needed to increase the quality and interaction of collaborative efforts. Incentives such as process efficiencies, protection of the collaborative process from non-participant appeals, objections and litigation, and additional financial resources and/or staff resources, were identified.





**TASK**  
**5**

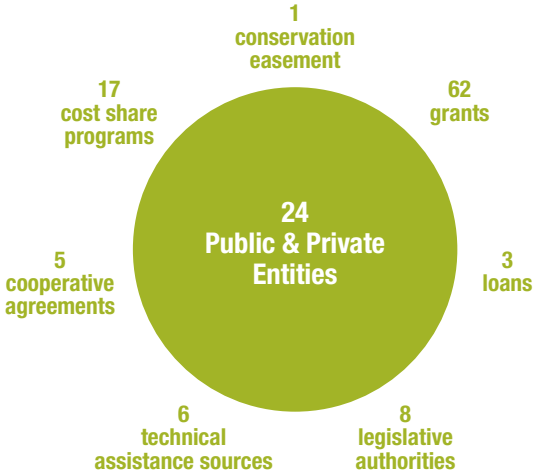
## Anchor Forest Information, Programs, and Financial Assistance Database

Cooperatives are employed throughout the United States and worldwide, with forestry cooperatives operating in 17 countries, involving over 3.6 million landowners, and managing more than 60 million acres of forest lands. There is currently a highly diverse array of existing programs designed to help maintain working forests on the landscape, however many of these opportunities are not being maximized.

Greater solicitation and utilization of funding can be achieved through coordinated efforts such as those within the framework of the Anchor Forest concept given the new opportunities to match available funding with ecosystem needs and a greater diversity of stakeholders. There are currently 90 funding sources within 24 different organizations (Figure 4) available

to natural resource management related activities. These funding sources are diverse and applicable to a complete spectrum of land management actions that target: restoration, research,

biodiversity enhancement, community assistance, and climate change. Using the Anchor Forest assessment database of available funding sources<sup>38</sup>, shared leadership within a collaborative framework such as provided by the Anchor Forest concept offers opportunities to adapt management decisions and maximize the use and effectiveness of available funding.



**Figure 4.** Twenty-four organizations and entities were identified offering a variety of funding opportunities applicable to the infrastructure and organizational goals of an Anchor Forest.

## Findings

- There are programs and legislation available to support Anchor Forests within the designed framework of multi-ownership coordination and management. Some of these include the Tribal Forest Protection Act, Collaborative Forest Landscape Restoration Program, Reserve Treaty Rights Lands, and the Environmental Quality Incentives Program, among others.
- There are several funding sources available for landscape-scale technical-assessment assistance such as the National Insect and Disease Risk Maps, the Analysis of Forest Restoration needs and Mechanical Treatment Opportunities, and the TNC/USFS Region 6 Joint Analysis of Forest Restoration Needs.
- The Tribal Forest Protection Act, among other tools such as the Tribal Trust Doctrine, need to have a greater emphasis within the USFS to provide for more consultation with tribes and a balancing of the social/cultural, economic, and ecologic management objectives for cross-boundary forest stewardship.



## TASK 6

## Socio-Economic Forestland Values and Non-market Benefits of Ecosystem Services

Eastern Washington is experiencing severe forest-health issues and without strategically planned ecological management throughout the region these issues will continue to persist, further impacting communities and forests through landscape-scale tree mortality and catastrophic wildfire. The need to address forest health involves many considerations such as: ecosystem

services, public expenditures for wildfire suppression, water quality and quantity, soil erosion, fish, wildlife, economic vitality, carbon sequestration, and climate change mitigation. When forest management is practiced within the confines of property boundaries, isolation, fragmentation, and compartmentalization of thought have resulted in exploitation and

*“When the Forest Service’s general budget is reduced either by fighting wildfires of inflationary costs, other vital projects such as restoring watersheds, investing in infrastructure, and managing for ecosystem health are put on an indefinite hold. These programs are critical to protecting our communities, adapting to climate change, maintaining our forest products infrastructure and improving ecosystem health.”*

Letter from U.S. Senators Tester and Wyden et al. 2009, to President Barack Obama<sup>39</sup>

depletion of natural capitals and often accompany transfer of costs to others.

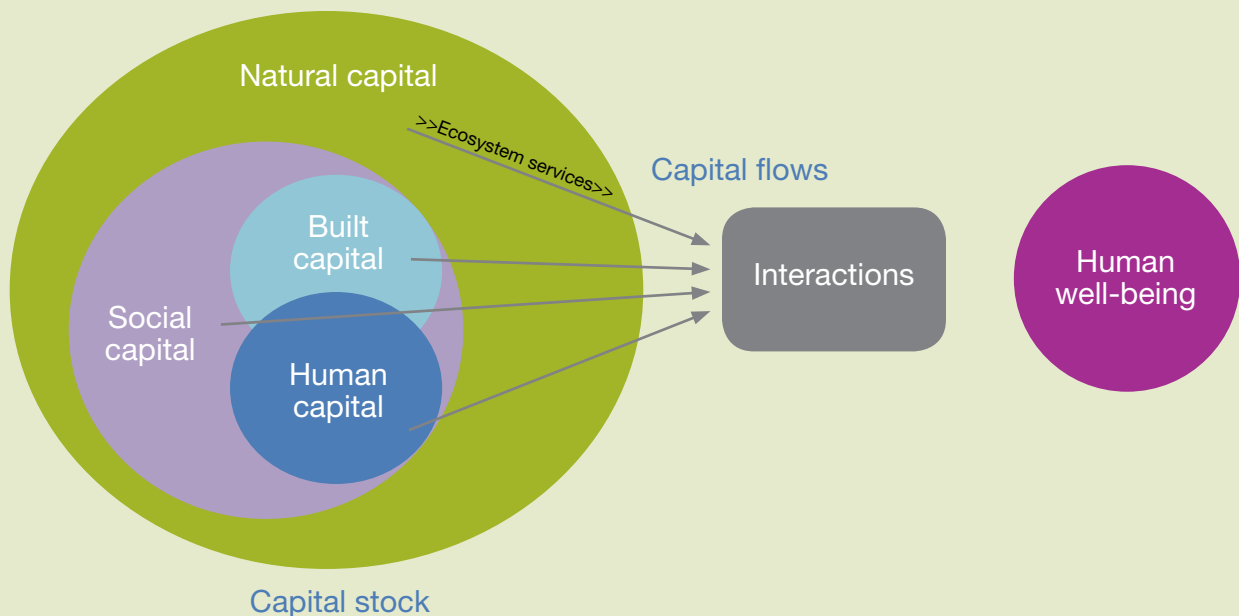
As land conversion to support a growing population occurs, and amenities on private lands are lost, public lands are expected to replace them and continue the availability of public environmental values. Consequently, there is a need to quantify and value the capacity of an ecosystem to provide public benefits (ecosystem services). Appropriate methods for estimating the value of ecosystem services include: avoided cost, contingent valuation, hedonic pricing, market pricing, production, replacement cost, and travel cost. These methods apply across the spectrum of Provisioning Services, Regulating Services, and Cultural Services natural environments can provide <sup>40,41</sup>.

One of the foremost challenges facing forest stewardship is in identifying the framework needed to maintain and expand working forests on the landscape that provide resource sustainability and improve ecosystem function, thereby increasing the value and extent of available ecosystem services (Figure 5).

- Anchor Forests help define the framework needed to support continued ecosystem services and the respective goods and processes that contribute to human well-being.
- Anchor Forests can help alleviate the conditions of unhealthy forest lands that create uncertainty and risk for communities from fire, and provide support to forest managers and owners amidst changing demographics and competing social values.



- The Anchor Forest framework can help buffer forest lands from unforeseen shifts in economic environments, globalization, population growth, and urbanization which can be at odds with ecosystem values and contribute to a weakening of the social license that keeps working forests working.



**Figure 5.** Human-environment interactions are formed between built, social, human and natural capital and collectively contribute to human well-being. Built (including economy) and human capital are embedded in society which is enveloped within the rest of nature. Ecosystem services are the relative contribution of natural capital to human well-being; they do not flow directly to create well-being and need the other sources of capital to exist. It is therefore imperative to incorporate all facets of capital within a collaborative ecosystem framework such as an Anchor Forest. (Reproduced with permission from Turner et al. (2015) <sup>41</sup>)

## Findings

- Non-market services and returns can be difficult to assess with confidence. Without long-term project monitoring to detect changes in ecosystems using measurable metrics, quantification of ecosystem services will remain a challenge for natural resource managers.
- Calculating the positive net benefits of fuel reduction treatments on market and non-market forest values has provided estimates of per-acre savings ranging from \$606 for moderate-risk to \$1402 for high-risk forest land<sup>42</sup> with even greater values expected if the per-acre economic values are tied to habitat protection, air and water quality protection, or carbon credits and other ecosystem services. Efforts to improve forest ecosystem health and treat fuels are required to reduce federal expenses associated with wildfire.
- Research has shown that every \$1.0 spent on restoration can potentially avoid \$1.45 in fire suppression costs<sup>43</sup>. Avoided costs per-acre as well as jobs, wages, and product sales benefits would be significant within each of the three study regions given treatment of the proposed annual acres through Anchor Forests (Table 4).
- Long-term ecosystem monitoring is needed to evaluate the forest treatment practices applied and to assess changes as management occurs, provide feedback for adapting future activities, and assess opportunities that outpace currently-increasing insect, disease, and wildfire damages.
- Tribal lands have been managed to sustain a host of ecosystem processes and services essential to human well-being for millennia using holistic management actions founded by culture, land tenure, respect and Traditional Ecological Knowledge.

*“Indian tribes are here to stay. We will not sell our land or sheer down our forests during wavering economic times and relocate our operations elsewhere. Our ancestors, our culture, is committed to the land upon which we live.”*

(Former ITC President Jaime Pinkham of the Nez Perce Tribe, 1995 testimony, NIFRMA Oversight Hearing)







## The Future with Anchor Forests

There is a need to demonstrate the value of effective cross-boundary planning and partnerships to enhance forestland stewardship, coordinate and leverage resources, evaluate investments in working forests, and improve the quality of life and societal well-being that forestlands provide.

### What

The challenges facing landscape-scale forest management require the inclusion of diverse stakeholders, protection of the collaborative process, and balanced social/cultural, economic, and ecologic solutions that increase forest resiliency and mitigate

continued losses. Through innovation, collaboration, respect, and trust, Anchor Forests can maintain working forests, support local communities, and improve forest health conditions throughout the nation.

Many of the challenges associated with public forestlands are largely

*“With treaty rights and trust responsibilities of the federal government, tribes can provide a possible recipe for change.”*

Wood MC. Indian Trust Responsibility: Protecting Tribal Lands and resources through Claims of Injunctive Relief against Federal Agencies. *Tulsa Law Review*. 2003;39(2):355–368.

systemic, involving issues at a national scale, associated with public land law and governance, federal environmental laws, and conflicting planning, limited funding, and differences in agency cultures. For these reasons and others, collaboration is, and will continue to be, a slow process requiring patience, communication, relationship building, conflict resolution, leadership and commitment to realize the objectives and apply the management needed to restore forest health and the vital ecosystem services provided to our nation by its forests.

Although the proposed treatment acres within each of the three study regions would represent a significant gain, treatment

of additional acres must be encouraged, given the significant increases in tree mortality, insect and disease infestations, and wildfire frequency over the past decade and predicted for the future<sup>11</sup>. Specifically, this assessment has acknowledged the greatest need for forest treatment exists on NFS lands managed by the USFS within eastern Washington.

### Where

Through analysis of three study regions within eastern Washington, tribal forests have surfaced as prime candidates for Anchor Forests, given the legacy of tribal stewardship, their extent, often bordering federal forestlands, and the status of tribes as sovereign

nations. Between the three study regions, the South Central and Northeast exhibited the greatest potential for implementation of the Anchor Forest concept, given their collaborative forest management background, milling infrastructure, processing capacity, and landownership extent, as well as past collaborative forestry-related projects.

### How

Assessment results indicate the value of relationships founded in trust and respect within a collaborative group can be more critical to the success of an organization than any one particular governance structure. However, the function of a well-defined structure is undeniably



advantageous in organizing efforts and leveraging resources. For this reason and a necessary degree of direct decision-making from land management agencies and tribal nations, given legislative mandates and sovereign rights, the “Executive Team” and “Working Group” framework of the Tapash Collaborative may be appropriate for implementation of the Anchor Forest concept in either the South Central or Northeast study regions.

Management tools that complement a collaborative governance structure with tribal leadership, as illustrated by the flow chart in Figure 6, are likely to provide increased opportunities for sustainably addressing forest ecosystem health in eastern Washington.

There is a need to implement forest conservation and management projects at a sufficient spatial and temporal scale to make a significant difference at the landscape level to outpace tree mortality by insects, disease, and wildfire in the face of a changing climate and provide sufficient economic benefits to retain viable processing infrastructure, working forests, and rural communities.

A minimum of 15-year supply agreements are needed to provide amortization opportunities for industry investments in infrastructure and encourage the establishment of additional infrastructure necessary to complete the restoration activities identified. These long-term landscape-scale (1,000,000 plus acre) project areas focusing on the treatment of areas where trees are overstocked and unhealthy may provide the greatest level of support from landowners and



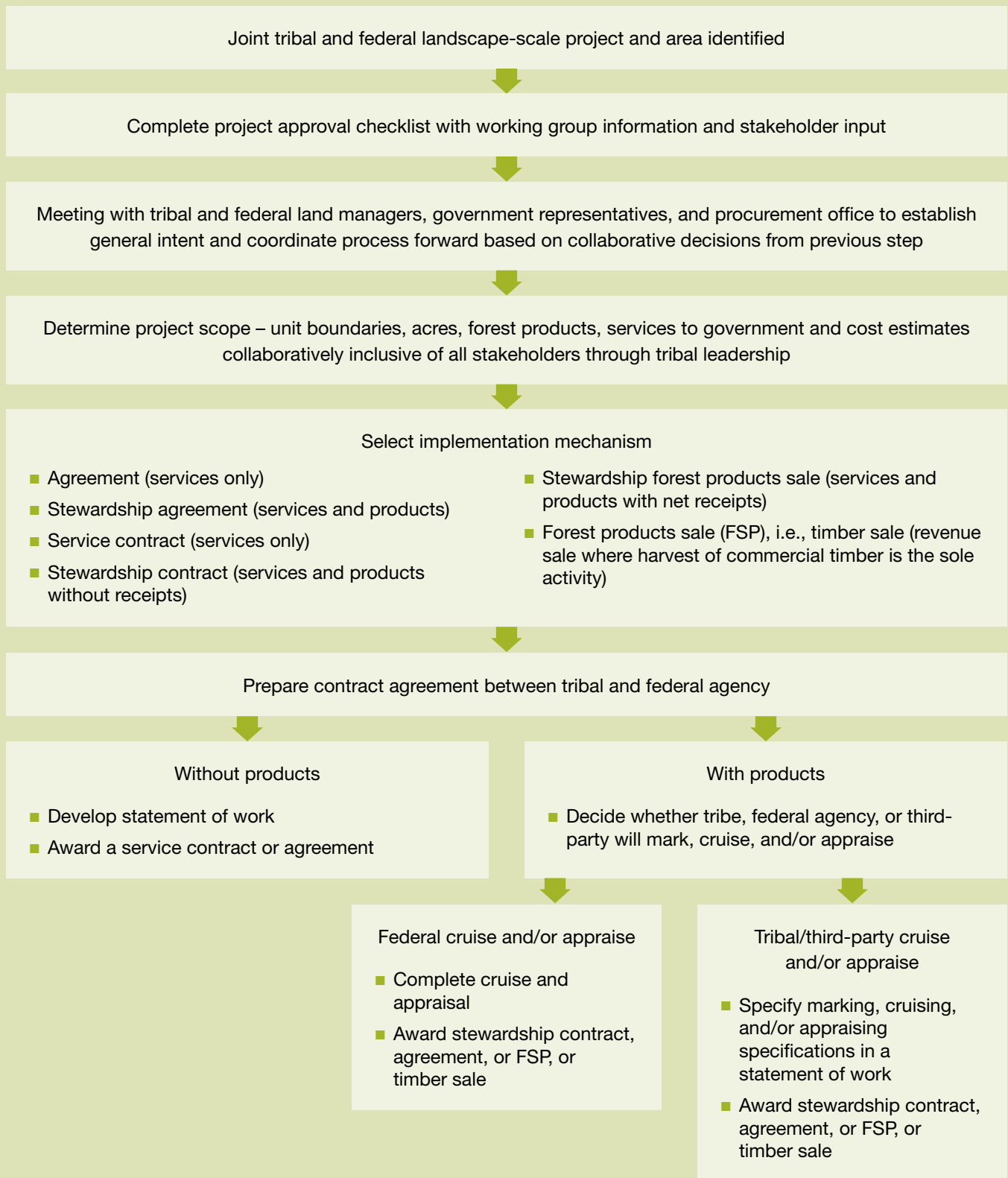
stakeholders within currently established policies.

A “champion” and leader is needed in each agency and tribal entity to collaboratively prioritize and direct management of Anchor Forests. Leaders must be committed to the process by continually seeking to build trust and relationships between collaborators while remaining engaged in projects through completion.

Programs and policy such as CFLRP, Stewardship Contracting, and Stewardship Agreement, TFPA, and the Good Neighbor Authority, as well as pressure from collaborative groups to renew efforts for landscape level integrated resource projects, are necessary to achieve forest

ecosystem conditions that support a social/cultural, economic, and ecologic balance. Cross-agency Memoranda of Understanding may also provide a directive option between the Departments of Interior and Agriculture with the Bureau of Indian Affairs to move funding to on-the-ground applications of forest health treatment on NFS lands and tribal lands held in trust.

Federal employees need to be incentivized to effectively implement the collaborative process and build lasting relationships through measurable metrics based on advancement, participation, and completion of partnership projects.



**Figure 6.** A general Anchor Forest landscape-scale project design matrix identifying collaborative input for a proposed project with tribal leadership, inclusive of cross-boundary management on tribal, federal, and other land ownerships. (Adapted with permission from Cook & Wilson (2015) <sup>45</sup>)

There is a need to develop a framework that categorizes areas within a forest, using measurable metrics, where social, environmental, and economic goals are prioritized and ranked. This would assist collaborative groups in focusing their efforts.

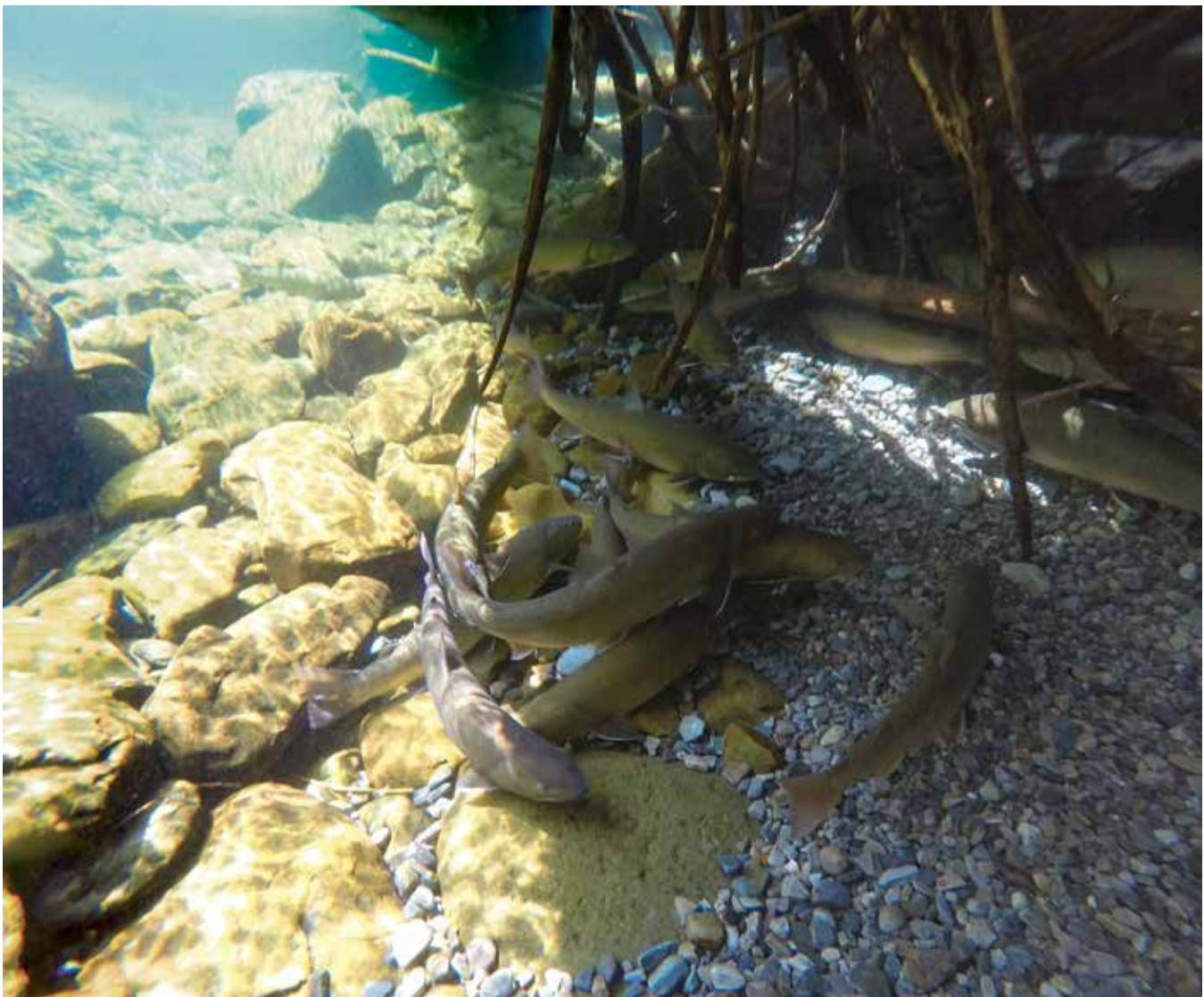
Collaboratives should consider negotiations similar to the concept of baseball arbitration where, for example, a member of the National Association of Arbitrators, trained to look at information from multiple perspectives, can make a decision that will “stand” throughout the duration of a collaborative project. Decisions should be based on environmental

performance, similar to the metrics provided for in environmental auditing standards<sup>5,46</sup> and be based on the best available science.

Monetizing water-related ecosystem services may offer a practical, common-sense approach for protecting or valuing both forests and other ecosystem services. Identifying the direct and indirect impacts associated with ecosystem services is often not examined, therefore, employing methods such as value-based accounting may provide a measure of the effects of changes over time, and the results of alterations to forest conditions brought about

by collaborative management activities.

To fully realize the opportunities of the Anchor Forest framework, the successes of past collaborative programs and the stewardship, cultural ties, and sovereign rights of tribal leadership should be integrated into the governance of each Anchor Forest. The leadership, tenure and stewardship tribal nations can offer would be invaluable in furthering both treatments on NFS lands and in strengthening the social license required for forestry in order to maintain working forests and improve ecosystem services.





## Summary

Anchor Forests define the triple bottom line by providing the necessary “balance” of natural resource management required to bridge interests across multi-jurisdictional landownership boundaries. Within eastern Washington, Anchor Forests offer valuable tools for prioritization of investments and maximization

of opportunities for protecting sensitive species and their habitats as well as increasing overall forest ecosystem resiliency. The Anchor Forest concept combines opportunities for landowners, communities, agencies, and tribes, and provides a framework for landscape-scale projects to address increasing forest losses

from insects, disease, and wildfire while simultaneously providing cost-effective forest management. Spanning multiple ownerships, Anchor Forests can provide support for participation in carbon sequestration, ecosystem resilience, and alternative energy markets utilizing wood at larger scales than previously available.

*“The ecological practices tribal peoples have cultivated for millennia are inherently sustainable and practical; they are time-tested methods for resource and, correspondingly, cultural survival. Today tribes are using their unique knowledge and skills in concert with modern management practices, often collectively with community and non-tribal organizations, to produce real accomplishments and model programs of excellence.”*

NCAI. Fiscal Year 2016 Budget Request. 2015:106–115.<sup>47</sup>

The assessment findings draw attention to the Anchor Forests concept as a framework that recognizes and respects the prerogatives and obligations of individual landowners, and offers a foundation for the development of actionable strategies targeting collaborative landscape-scale management that will accrue shared benefits for all willing to work together in a respectful, trust-based atmosphere. Anchor Forests have the potential to address many of the challenges facing landscape-scale forest management through the inclusion of diverse stakeholders, support for collaborative actions, and an arena to develop balanced social/cultural, economic, and ecologically collaborative solutions. This enables landowners and stakeholders to more effectively achieve the activities necessary to increase forest resiliency, support local communities, and mitigate additional losses.

## Findings from the Anchor Forest Pilot Project Study Assessment

- There is a growing urban population culturally removed from the functions of forestry and silviculture.
- Chronic federal agency funding and expense challenges, staff and leadership shortages, personnel turnover and inconsistencies in federal action that influence management decisions must be overcome.
- Current forest treatment levels on USFS lands are insufficient to keep pace with deteriorating forest ecosystem conditions, thereby promoting increases in wildfire frequency and severity across the landscape that threaten adjacent forestland ownership.
- Deteriorated forest conditions are facing particular legislation,



local laws, and policies that are often unreasonably time consuming and too slow to effectively achieve the actions needed.

- Without assessment data and long-term project monitoring using quantifiable metrics, quantification of ecosystem services will remain a challenge for natural resource managers.
- Tribal leadership can be instrumental in fostering cross boundary collaboration given their history of proven long-term stewardship, political status as sovereign governments, unique rights, and management capabilities.

## Recommendations for Anchor Forests

- Implement forest conservation and management projects at a sufficient spatial and temporal (15+ year) scale to make a significant difference at the landscape (1,000,000 plus acre) level.
- Classify landscape conditions or regions with similar attributes using measurable metrics, where



- social/cultural, economic, and ecologic goals are prioritized.
- Identify the direct and indirect impacts associated with ecosystem services through long-term monitoring.
  - Involve diverse landownerships as stakeholders through third-party facilitation and structured communication outreach programs to attain a foundation to develop actionable strategies.
- Develop a measure of “protection” for the collaborative process and stakeholder efforts in order to minimize administrative appeals and objections, and focus on environmental performance.
  - Engage tribal leadership in collaborative efforts for cross-boundary forest management.
  - A “champion” and leader is needed in each agency and tribal entity to collaboratively prioritize
- and direct management of Anchor Forests.
- Funding sources should be integrated within a structured “one-stop” shopping investment framework to facilitate effective leveraging and efficient application.
  - Develop a transparent public forum for dissemination of collaborative decisions, examples, results, and successes.



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## **Anchor Forests**

Sustainable Forest Ecosystems through  
Cross-Boundary, Landscape-Scale  
Collaborative Management

### **Executive Summary**

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