Staney Community Forestry Project

(Photo Credit: Paul Alaback)

Final Report

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Executive Summary

This Staney Community Forestry Project report is the culmination of a ten-month collaborative planning process that brought together a diverse group of stakeholders to develop a Prince of Wales Island ("POW") community-based vision for the greater Staney planning area that they hoped to see realized over the next 25-50 years. The purpose of this report is to share the results of this collaboration with the USDA Forest Service ("Forest Service") for use in implementing the Tongass Land and Resource Management Plan ("TLMP" 2008 update) in the defined Staney area.

As a result of intensive timber harvest in the Staney project area in the 1970's, the existing condition and successional trajectory of forests within the Staney project area, in combination with ongoing needs for maintenance of infrastructure, can be expected to limit fish and wildlife habitat and other forest values over time. This could lead to a loss of forest-based opportunities to the residents and communities of POW, and the nation, and does not meet the desired conditions set out in TLMP without further management. An ambitious program that invests in forest enhancement and restoration can mitigate or reverse many of these trends, while providing for a range of social and economic benefits to local communities.

During 2009-2010, four workshops were held, involving over 70 individuals, to develop a common understanding of the current environmental, economic, and social conditions in the project area and then to develop a vision for what the area should be like in 25-50 years. The vision developed by the group contains two basic concepts - to restore and/or enhance forest and habitat conditions and to provide jobs and forest products that are sustainable over the long term. The workshops also produced specific desired future conditions ("DFCs") for five sector areas: timber supply, economic opportunity, terrestrial habitat, aquatic habitat, and subsistence. These sector DFCs (See, page 10) are the final results of the process.

The intent of the collaborative group in presenting the final DFCs to the Forest Service is not to be overly prescriptive, but to give a general direction on how this group desires the Thorne Bay Ranger District to implement TLMP in the Staney area. The group recognizes the Forest Service's authority and responsibility for developing the site-specific projects and prescriptions, implementing those projects, conducting the NEPA process, and applying TLMP standards and guidelines to those projects.

The group recommends that the Forest Service adopt an adaptive management approach for the Staney project area based on the continuing results of a multiparty monitoring and evaluation program to ensure effective achievement of sector goals and DFCs and to address the uncertainties of climate change.

The Staney project area has provided great value to the residents and communities of Prince of Wales Island. The participants in this planning effort see a path forward that will help ensure that it continues to provide even greater value in the future and stand ready to assist the Forest Service in achieving that vision.

Introduction

Background

The Staney Creek landscape ranks among the most biologically productive and economically valuable watersheds in southern southeast Alaska, and among the highest priorities for restoration on Prince of Wales Island (Albert et al. 2008). From within this diverse and actively managed landscape, there are tremendous opportunities for restoration, enhancement, and continued management of ecological processes and structures, to produce a variety of values, goods, and services for nearby, resource dependent communities, in addition to a growing tourism industry that serves regional, national, and international visitors.

The Staney Community Forestry Project Area ("Staney project area") is a 139,000-acre area on the west side of Prince of Wales Island located in southeast Alaska. Most of the land within the area is managed by the USDA Forest Service, Tongass National Forest, Thorne Bay Ranger District. The area includes Value Comparison Units ("VCUs"[1]) 5710, 5871, 5880, 5900, 5910, 5920, 5930, and 5940. Currently, VCUs 5920 and 5930 are predominately un-roaded. VCUs 5710, 5871, 5880, 5900, 5910, and 5940 have had significant logging activity beginning in 1960. This area is a rich producer of fish, wildlife, and other forest products. From rural subsistence to recreation to commercial harvest of timber and fish, the land and water resources of the Staney project area have historically provided a bounty of goods and services on which people depend. These goods and services have enriched the lives of residents of the region, and in more recent times, the state and the country as well.

More than 15,000 acres of timber within the Staney project area were harvested during the 1960's and 1970's when harvesting and road building practices lacked the same level of environmental safeguards in place today. Harvested areas in southeast Alaska regenerate naturally to high density stands of mixed spruce, hemlock, and cedar. Twenty-five to 35 years after harvest, these dense young-growth stands significantly limit the amount of sunlight reaching the forest floor, and thus inhibiting understory vegetation development and persistence. This condition is termed the *stem exclusion phase* of a forest stand's development and can persist up to 150 years of age unless vegetation management treatments such as tree thinning are implemented. The lack of understory productivity and diversity, as well as lack of variability in overstory structure is problematic for a variety of species adapted to patchy old-growth forest conditions. Approximately 50% (~28,000 acres) of the suitable timber base in the Staney project area is in young growth that is or may be soon entering the stem exclusion stage. Over 12,500 acres

[1] These units roughly follow watershed boundaries, but have been adjusted in some areas to address resource management efficiency and feasibility.

have been pre-commercially thinned to date, and ongoing research is addressing the effectiveness of alternative treatments to meet multiple forestry and wildlife habitat objectives[2] .

Almost one-fifth (more than 4,600 acres) of the riparian (streamside) acreage has been harvested and regenerated to densely stocked young growth stands of primarily Sitka Spruce and Western Hemlock with patches of Red Alder in the Staney project area. The effects of riparian harvest may include increased sedimentation, decreased bank stability, change in tree species overstory, and diminished future recruitment of large wood that provides critical habitat for fish. Without restoration treatments, these detrimental effects may continue for over 100 years. About 240 miles of road were built to facilitate timber harvest in the Staney project area. Road related effects on freshwater systems range from disrupting the natural flow of water (hydrologic regime) and sediment (sediment routing, and sedimentation) to impeding fish migration. Almost 40 percent of the stream crossings on these roads (74 crossings, 63 red pipes [culverts that do not meet juvenile fish passage standards] and 11 gray pipes [questionable culverts] that will require additional analysis to determine if they meet required standards) will continue to limit the upstream migration of fish until they are removed, replaced, or corrected.

In March 2009, The Nature Conservancy and the Tongass National Forest ("TNF") developed a proposal to engage in a community planning process for the Staney Creek watershed. The idea was to facilitate a collaborative effort involving southeast Alaska stakeholders to develop a vision for how the watershed should be managed by the TNF. Simultaneously, the TNF had chosen Staney as an Integrated Resource Management Planning ("IRMP") area to design management programs for the benefit of a range of resource values.

A steering committee comprised of representatives of state and federal agencies, non-governmental organizations, and local communities met in September 2009 to design the development of the collaborative process. This committee established the framework for community meetings, timelines, and hired a meeting facilitator.

The purpose of this community forestry project is to bring together a diverse group of stakeholders that represent a broad range of forest values and uses, and to help provide guidance for TNF decision-making on matters affecting ecological, economic, and social conditions. In this way, we hope to provide a constructive and collaborative path forward. The specific need for this project is to define and implement a suite of appropriate land management actions that will help achieve desired future conditions as identified in the Tongass Land Management Plan ("TLMP") and the Staney Community Forestry Project Collaborative ("Working Group").

[2] 2009. Staney Creek, Integrated Resource Management Plan, Proposal for Action. U.S. Department of Agriculture, Tongass National Forest, Thorne Bay Ranger District

Both TLMP and the Working Group have defined a variety of desired conditions applicable to the natural resources and socioeconomic values of the Staney project area. While TLMP is associated with all Tongass resources, the Working Group's efforts have focused on five (5) key sectors in which they have identified a need for restoration, enhancement, or continued management to meet their desired conditions.

Process

At the Staney Steering Committee meeting on September 1-2, 2009, the following goals were adopted to guide the collaborative planning process:
Create a plan that:

- Integrates the economic, social, and ecological opportunities that exist in the Staney area.
- Balances development and conservation (Every interest gets something, no one interest gets everything).
- Provides several years of economic opportunity for residents, businesses, and communities on POW.
- Is adaptive, based upon the results of a monitoring program.
- When implemented will have broad community support.
- Uses the best available contracting tools to ensure successful implementation.
- Serves as a model for management of the Tongass National Forest through the transition from an old growth to a young growth economy.

The Steering Committee developed the following process for creating the collaborative plan:

1. Identification and invitation to the interested public (suggestions developed by the Steering Committee).
2. Communication of the project to the public.
3. First public meeting – Klawock – tentative date October 29, 2009.
4. Setting goals (first iteration complete – see below).
5. Description of current conditions (i.e., much of the information is available from Forest Service sources).
6. Agreement on Desired Future Conditions for the planning area (see vision for Staney Creek in 25 years, below).
7. Steps required to achieve the desired future conditions (i.e., existing projects cleared through various Forest Service decision documents as well as additional projects not included in these documents).
8. Monitoring program to be able to determine if Desired Future Conditions are being achieved.
9. A facilitator with resource collaboration experience should be hired to guide the process and facilitate the workshops. Marcus Kauffman of Marcus Kauffman Associates was hired for this role.

The Working Group participated in four workshops that were held in Klawock (November 2009), Craig (February 2010), Thorne Bay (April 2010), and Coffman Cove (July 2010). A consistent core group of individuals participated in all workshops, but the group make-up for individual workshops varied as some individuals left while other individuals began attending. This turnover had an influence on the material produced from workshop to workshop.

At the Klawock workshop the group defined the historic (a very productive area of high diversity) and the present condition (declining productivity and reduced diversity for certain resources and species) of the Staney area through a series of resource presentations. From this information a general vision for the Staney area and goals for the five resource sectors (e.g., subsistence, terrestrial habitat, aquatic habitat, economic, and timber supply) were developed.

At the Craig workshop the individual sector groups defined the desired future conditions (DFCs) for the respective sectors. This work was facilitated by considering the present condition and envisioning the future condition when/if the present sector problems were corrected, specific resources were enhanced, and/or the present desirable conditions were maintained.

At the Thorne Bay workshop the full group worked together to further refine the sector DFCs, so that they were acceptable to the group as a whole. This workshop produced the final sector DFCs. These Sector DFCs will inform the Forest Service of the Working Group's desires as the TNF develops NEPA document(s), and plans, designs, schedules, and implements forest management projects in the Staney area.

The fourth and last workshop was held in Coffman Cove on July 26-27, 2010. The primary goal of this workshop was to ratify the Staney Community Forestry Project Agreement. Group participants will decide if they wish to sign the document as supporters of the project or be listed as participants in the process when the Final Report is released. There was a presentation and group discussion on the role of the Pacific Northwest Research Station in the Staney Community Forestry Project, especially in relation to the design of a monitoring program for research of the effectiveness of specific projects to achieve Sector DFCs.

The process and collaborative agreement were very timely in respect to: 1) the opportunity to submit a proposal for CFLR funding to potentially fund some of the restoration work identified in the DFCs; 2) the intent of the Forest Service to utilize Stewardship contracting on the Tongass for which the Staney Area is now well positioned and the collaborative group is well organized to continue as a Stewardship Collaborative Group; and 3) the new Forest Service direction to ramp up a young growth program with some utilization of old growth during the transition period, again positions Staney very well as a model of how this can work.

Results

During the first three workshops the Staney group developed a general vision, sector goals, and sector DFCs for the Staney Project Area.

The Group Vision for the Staney Project Area in 25-50 years *(Adopted by the Working Group at the Klawock Workshop)*

1. A landscape that has ecological integrity and resiliency in light of possible impacts from climate change.
2. A landscape that provides opportunities for multiple uses.
3. A landscape that produces economic benefit from young growth, with some economic opportunity for old growth products.
4. A landscape that supports abundant fish and wildlife.

The Group Sector Goals *(As developed by the Working Group at the Klawock Workshop)*

Subsistence

The Staney Project Area will continue to be a major storehouse for western Prince of Wales Island and will produce an abundance of subsistence resources. The POW Access and Travel Management ("ATM") plan will be implemented. Timber harvest will be designed and at a scale that maintains and/or enhances subsistence resources.

Terrestrial Habitat

The forests and uplands of the Staney Project Area will have a mosaic of habitats for all native and endemic species. Old growth functions will continue across the landscape and there will be abundant winter deer habitat, denning habitat, and canopy communities. Old growth harvests will be designed to maintain structural complexity and understory diversity and productivity. Adaptive management and monitoring will produce resilient, young growth stands that are developing old growth characteristics and components at a landscape level.

Aquatic Habitat

The Staney Project Area will have a fully functioning, productive hydrologic regime with enhanced sustainable flow and connectivity. Fish will benefit from improved access to residual and restored habitat, and improved floodplain structure and function.

Economics

Local contractors will have long-term, year-round work implementing the Staney Area Integrated Resource Management Plan. They will reinvest in their businesses and will more efficiently utilize the by-products produced by plan projects.

Timber

Both young growth and old growth timber will be harvested in the Staney Project Area at a sustained and consistent level. Old growth will be available for niche markets. Forest management treatments and new market research will allow the industry to overcome barriers and transition into young growth harvest with decreasing dependence on old growth harvest. The timber and wood fiber from these harvests will be locally processed to the greatest extent possible.

Desired Future Conditions (DFCs): The workshops produced specific desired future conditions ("DFCs") for five sector areas: subsistence, terrestrial habitat, aquatic habitat, economics, and timber supply. The intent of the final DFCs is to provide the Forest Service with the direction that the Working Group would like to see in the next stages of the process.

There will be tradeoffs between sector goals as projects are implemented to achieve specific DFCs. Some sector goals and DFCs are complementary and some are not. It is understood that all of the DFCs cannot be realized on every acre, and that some areas are better suited to accomplishing specific sector DFCs than other areas. Negative tradeoffs can be mitigated with good management and good prescriptions, by compensating for sector fall off in other areas, and/or by the timing of the projects.

The Group agreed at the beginning of the Staney process that they would develop the sector DFCs for the defined Staney Area and that it would be up to the discretion of Forest Service resource specialists, with appropriate input from the Working Group, and under the guidance of the Tongass Land Management Plan on how best to implement specific projects to achieve these DFCs.

Some sector DFCs may not be attainable because of the uncertainties of climate change. Management should strive to achieve sector DFCs and then adapt as the impacts of this change become more apparent. Results of the monitoring program will help managers adapt to significant changes.

These Sector DFCs, *(as developed by the Working Group at the Thorne Bay Workshop)* are the final result of the Staney Community Forestry Process:

Subsistence Sector

1. Deer Productivity –
    a. Maintain deer productivity within the project area
        i. Manage young growth stands to maintain "no net loss" of habitat value for deer as stands enter stem-exclusion stage.
            1. Determine scope of need for young growth treatments based on number of acres entering stem-exclusion over time.
            2. Schedule treatment priorities based upon change in habitat.
        ii. In old growth, maintain forest structure in high-value winter range.

b. Indicator: Monitor deer population size over time within old growth and young growth using pellet transects and DNA mark-recapture techniques. Test effectiveness of young growth management techniques in maintaining deer populations.

2. Access
    a. Road access to areas used for hunting is maintained at current levels .
    b. Implement ATM so that access to subsistence hunting areas is maintained over time.
    c. Prioritize young growth management for hunting areas with road access and deer browse nearby (i.e., combine good habitat with "hunt-ability").
3. Data gaps
    a. Develop research and monitoring to address key information needs, including:
        i. Deer population trends and effectiveness of young growth treatments (potential for adding a module to the TWYGS study).
        ii. Status of fish populations and subsistence use.
        iii. Traditional ecological knowledge to understand historic patterns of use (see Langdon TEK study on salmon use in Klawock/west coast of POW).
        iv. Uses of other resources – berries, mushrooms, firewood.

<u>Terrestrial Habitat Sector</u>

Managed Matrix: Young Growth Management

Reestablish total pre-harvest understory productivity of the Staney Project Area within 50 years to provide habitat for Sitka Black-tailed deer and other species that depend on forest habitats. Without silvicultural management, current habitat in young growth is likely to decrease substantially into the future.

1. High Short-term Priority: At a minimum, maintain quantity and distribution of habitat sufficient to support deer populations that support use by humans and natural predators, while ensuring long-term sustainability of populations.
    a. Take management action to prevent loss of understory in young growth stands that are nearing stem exclusion, emphasizing stands that will be most productive over the next 10-20 years. Without silvicultural management, current habitat in young growth will decrease substantially into the future.
    b. Emphasize management (e.g., thinning or gap creation) in areas where deer will be accessible to human hunters.
    c. Within this short-term priority, the land use designations (Non-development/ Development LUDs) are not used to prioritize actions.
2. Reestablish and maintain a diverse understory mosaic that is well-distributed across the landscape at multiple scales.
    a. Emphasize management on sites with the highest long-term potential deer winter habitat value based upon pre-harvest estimated value.

b. When choosing between sites of equal productivity, focus management in Non-development LUDs, especially OGR, Beach and Estuary fringe, and Riparian Management areas.
c. Outside of Non-development LUDs, emphasize improving the ecological conditions of young growth stands adjacent to OGR and old growth patches to improve their effective size and to minimize fragmentation.
d. Distribution and diversity should reflect pre-harvest distribution, recognizing that a portion of the landscape will remain in young growth at all times.
e. When implementing management actions, reestablish a mosaic of habitats rather than a single treatment over large areas.
f. Use 200 acres as the minimum size of a unit of young growth in evaluating distribution and connectivity.

3. Reestablish and maintain diverse stand structure that is well distributed across the landscape at multiple scales.
    a. In addition to DFCs identified above, retain large residual trees not previously harvested to provide opportunities for future nesting by Queen Charlotte Goshawk and other species, potential cavity habitat, and eventually a source of large woody debris.
4. Reestablish and maintain connectivity within young growth stands.
    a. Avoid creation of large amounts of residual slash.
    b. Leave un-thinned corridors where slash may hinder movement.
5. Where beach fringe connectivity has been broken by past harvest, reserve adjacent old growth forest from harvest until the beach fringe returns as a functional old growth habitat.
6. Improve/restore beach fringe and riparian areas dominated by young growth to accelerate recovery of functional old growth connectivity and habitat character.
7. Monitor effectiveness of habitat management on wildlife habitats, and coordinate with ADF&G population monitoring, particularly for deer, bear, marten, and in the long term, endemic species.

Old growth forest in Timber Development LUDs

1. Avoid removal of more than 50% of the pre-harvest (remaining) productive old growth in the project area to promote viability of Queen Charlotte Goshawk.
2. Maintain sufficient patches of productive old growth to maintain current levels of denning habitat for black bears.
3. Reestablish and maintain old growth habitat connectivity between patches of old growth.
4. Establish and maintain old growth connectivity between old growth Non-development LUDs inside and outside the project area. Staney is potentially isolated by non-federal lands to the south and to the northwest, and by timber harvest to the east. Functional connectivity needs to be assessed to determine whether gaps exist and corridors are needed in the following areas:
    a. From the medium OGR in VCU 5890 to medium OGR in VCU 5920 to ensure connectivity to the southwest.
    b. North Fork of Staney Creek through the Logjam area to Honker Divide to the east/north.

c. Mouth of Staney Creek through Gutchi Creek to the north.

5. Maintain forest structure and habitat values of Beach and Estuary Fringe when addressing activities such as personal use and illegal harvest that may pose a risk to both the overall habitat quality and the needs of individual species such as bald eagles.

Young Growth Forest in Non-development LUDs

1. Manage young growth to reestablish the functionality of all components of the Tongass Conservation Strategy, including reserves, connectivity, and fine-filter conservation within the Staney Project Area within 200 years.
2. Ensure that small and medium OGRs meet all size, composition, and shape criteria under the Tongass Land Management Plan ("TLMP"). This may require adding adjacent young growth to the OGRs and altering the shapes.
3. Subject to the immediate short term priorities, above, when choosing between sites of equal productivity, focus management in Non-development LUDs, especially OGRs, Beach and Estuary Fringe, and Riparian Management Areas to achieve old growth character as quickly as possible.

Endemic Species

Desired future conditions for endemic species should be a high priority, but until a full analysis of existing information, information gaps, and risk are completed, no additional DFCs have been specified. This analysis should be a high priority.

Invasive Species

1. Establish a Tongass "early inv**a**der" program to identify new populations coming onto the island, and focus attention on monitoring and controlling them where necessary. The communities on POW can play a critical role. Establish a system that makes it easy for residents to report invasive populations so that information is available for designing effective containment strategies. This can be built on efforts that have already been initiated.
2. Aggressively manage invasive species that pose a high risk to habitat and population conservation.

Information Needs

1. Assess the quantity and distribution of understory on the landscape today to provide a baseline for future comparison.
2. Assess persistence of a diverse and abundant understory in treated (thinned, gapped, pruned, etc.) second growth stands.
3. Assess pre-harvest, current, and future distribution and value of deer winter habitat.
4. Additional discussion is needed to select the appropriate deer model for analysis.

5. Assess beach fringe habitat condition. Evaluate past harvest, current personal use harvest and illegal harvest in beach and estuary fringes. Current GIS layers do not depict older harvest within beach fringe, and so connectivity is inaccurately portrayed as intact.
6. Define target species in addition to Sitka black-tailed deer to better define specific connectivity needs.
7. Define connectivity of habitats required for movement of populations as well as individual animals.
8. It is essential to work with ADF&G to monitor population trends in Staney Area including:
    a. Population persistence in relation to habitat quality and management treatments including road management.
    b. Population persistence in relation to connectivity.
    c. Population persistence in relation to the effects of climatic variability.
    d. Studies of populations through genetic markers and pellet transects should be a high priority for monitoring.
9. Evaluate likely future changes related to climate change
    a. Model physical changes and the resulting changes in terrestrial habitats to identify habitats and species at risk.
    b. Identify habitats and species with their locations that are either 1) most resilient (likely to persist); or 2) Most at risk of loss.
10. Endemic Species**:** Evaluate species distributions, life history, habitat needs, and sensitivities to management. Analysis of connectivity island-wide will be critical for understanding how management activities, and in particular roads will impact these species. Much information exists on the distribution of mammal species. More work is needed on the many karst, and alpine plant species that are unique to Prince of Wales (and in many cases the nearby Queen Charlotte Islands as well).
11. Evaluate the functionality of old-growth reserves in the Staney project area. Some consist of very narrow strips of remaining old-growth following riparian corridors and beach fringe. These do not meet TLMP criteria that OGRs should be round blocks rather than long thin strips. Restoration treatments of adjacent lands may be necessary to help these OGR's to eventually meet management goals.

Overview of Understory

1. A diverse understory mosaic provides habitat for a mix of species and structural elements such as evergreen forbs, deciduous shrubs and patchiness even within the stand scale. Available information suggests that forests that are thinned will lose their understory within 10-15 years following treatment. We can expect to have a serious shortfall in a diverse and abundant understory in as little as 10 years in many parts of the Staney Watershed.
2. Through the ongoing FSL TWYGS program and previous research we have good information on short-term responses of understory vegetation to thinning. The real question for getting to a productive understory in 50 years is how to extend the longevity of these treatments. Canopy

gaps are one technique that appears to have great longevity, but we will only have 20 years of response data. Commercial thinning is another treatment that will be critical to know more about. USFS monitoring of canopy gaps and other treatments showing promise over time (every 10 years) will be critically important to determine how we can reach these goals.

3. A diverse understory mosaic should be well distributed across the landscape at multiple scales. Available evidence suggests that original forest had a small percentage of second growth forest (<10%). Terrestrial habitat value could best be maximized by avoiding management actions that create openings larger than 2 acres and create a diverse stand structure mosaic across the landscape.
4. The DFCs identify overarching goals to achieve in the long term. To achieve these goals, we need sufficiently detailed information about existing habitats, young growth age and character, and wildlife populations. We also need to develop and implement monitoring of target wildlife populations.

<u>Aquatic Habitat Sector</u>

1. Maintain, restore, or enhance ecological connectivity within all watersheds to maintain or improve fish migration.
    a. Complete grey pipe analysis.
    b. Develop prioritization of all red pipes.
    c. Red pipes removed, replaced, or 404 waiver.
    d. Pull all structures on all live streams (1-4) on all proposed maintenance Level I roads.
    e. Data Gap – Identify all red pipes in project area.
2. Achieve an invasive-free project area.
    a. Highest priority should be given to treating new invasive species that are known to provide threats to streams.
    b. Treat known introductions to minimize their negative effects.
3. Maintain or restore landscape hydrological functions.
    a. Stabilize all segments of roads that are degrading water quality and/or aquatic habitat.
    b. Data Gaps
        i. Impacts from upland canopy closures on hydrological function.
        ii. Long-term stream and air temperature data. Existing road conditions in all watersheds in the project area (except Staney).
4. No net gain in miles of road or number of fish stream crossing structures. No net loss of aquatic habitat or essential fish habitat.
    a. Data Gaps
        i. Baseline data Effects on habitat from climate change.
5. Achieve TLMP riparian DFCs.

<u>Economic Sector</u>

1. Continuity and duration of work.

a. Ensure availability of long-term supply in work and byproducts that leads to investment in equipment and manufacturing (e.g., 10 years)
    i. Need reliable supply of employment opportunity for both forest treatments and timber harvest.
    ii. Use multiyear contracting.
b. Maintain existing jobs in natural resource management sector on POW.
    i. 250 acres of thinning per year is a full-time job
    ii. Provide year-round jobs that can support families and provide some benefits .
c. Use locally-manufactured products and secondary processing.
    i. Local manufacture equals local employment.
d. Use a collaborative process to try and meet multiple objectives and avoid litigation delays and costs.
e. Develop a marketing plan and implement a marketing program to develop consistency and long-term reliability from natural resources sector.

2. Increase number of local jobs.
    a. Establish a training program for local youth to learn about employment opportunities in the natural resources fields, and to develop education, experience and skills of workforce.
    b. Institute value added contracting to increase the number of local contractors (POW-based) awarded the projects.
    c. Enhance economic effectiveness of projects.
3. Facilitate bidding process for local contracts.
    a. Establish better advertisement policies so that local contractors know how and when to bid.
    b. More available FS staff (e.g., contracting officers) for bidding process.
    c. The FS should evaluate all of the options available so that local contractors benefit (e.g., stewardship authorities, best value contracting, etc.).
    d. Use Stewardship authority to implement project.
4. Capacity Building. Need to build skills, education, and networking of labor pool, and make investments in infrastructure; increase overall competitiveness of region.
5. Information Needs and Data Gaps.
    a. Complete economic analysis of the impacts from implementing the Staney Community Forestry Project.
    b. Determine the number of jobs and economic activity expected from the natural resources sector and develop a work plan based upon the results.
    c. Establish monitoring program to determine effectiveness of projects and use of local employees and determine ways to increase competitiveness of region

<u>Timber Supply Sector</u>

Young Growth

1. Managed for a variety of products, with a variety of treatments, over a variety of rotation ages.
2. Is currently being managed and on schedule for future timber supply. In the interim, intermediate silvicultural treatments will be driven by Terrestrial Habitat and Subsistence DFCs.
3. Whenever possible, byproducts from treatments will be made available for utilization.
4. Managed for a consistent, sustainable supply of wood for a range of products from fast growing, low value fiber production (e.g., biomass) to slower growing, tight grained, clear wood production (e.g., music wood).
5. Create different aged stands and produce a variety of products that will lead to an integrated timber industry, with:
    a. More opportunities for local residents.
    b. Better utilization of harvested wood.

Old Growth

1. Supply will be consistent and sustainable over a 100-year period (from present).
2. Supply will come from the realistic, economic timber base.
3. 10% of this economic base can be harvested per decade. (After 100 years, some young growth will be ~150 years old and attaining old growth wood characteristics and value.)
    a. Some years more than the decade rate will be harvested.
    b. Some years less than the decade rate.
    c. No more than 10% of economic base harvested per decade.
    d. Long rotations will ensure that old growth quality wood is maintained over time
4. Produce old growth value products into the distant future.
5. Multiple silvicultural techniques (e.g., clear cut, selective, variable retention, etc.) will be prescribed to allow for economic opportunity and continuance of stand functions.
6. When feasible, use partial harvest techniques (e.g., helicopter selective, ground-based variable retention, etc.) that help meet Terrestrial Habitat and Subsistence DFCs.
7. It is recognized that every Sector will get something, no Sector will get everything.
8. Temporary roads, and trails with forwarders, should be used to mitigate impacts.

Road closures will be planned and timed to ensure access for future timber harvest and other timber and vegetation management activities.

Data Gaps: Volume calculation of a realistic, economic old growth unit pool.

1. Stands
2. Acres
3. Volumes
4. Species Mix
5. Accounting for all costs
    a. Logging Systems – helicopter, cable, shovel, etc.
    b. Roads – construction, re-construction, brushing, etc.
    c. Logging costs – felling, hauling, etc.

d. Harvest types – clear cut, selective, variable retention, etc.
e. Manufacturing costs
f. Other costs.

Considerations: Large and small operators bid on 2-3 MMBF State of Alaska sales. They should be able to bid on similar-sized FS sales after a NEPA document has cleared the realistic, economic timber base.

Lessons Learned

The Staney Community Forestry Project process went well from beginning to end. The Working Group addressed all issues and met all of the goals that the Staney Steering Committee had developed at the beginning of the process. The Working Group developed descriptive desired future conditions for the five Sectors to inform the Forest Service on how this group wants the Staney Area managed into the future.

Restoration was the area of overwhelming agreement during the process. There was agreement across the board that there is a need for resource restoration in the Staney Area. There also is a broad-based desire to make restoration work and jobs available for economic and social benefits of surrounding communities. The other overall area of agreement is that consistent, sustainable economic development, planning, and scheduling are much preferable to "boom and bust" economic scenarios.

The area of most disagreement was in the interaction of old growth timber harvest and maintenance of the existing wildlife habitat and ecosystem functions. This was resolved by extending the harvest period of old growth harvest until significant young growth would be mature enough to provide habitat and function and to utilize partial harvest prescriptions in old growth units critical for habitat and function. The other area of disagreement was in road closures. Closing un-needed roads can protect resources and save money, but it can also be problematic for resource management and subsistence access. This was addressed by timing the ATM closure activities to complement management and subsistence activities.

What worked:

- The collaborative approach works. People with diverse interests and opinions can identify common interests across a variety of management issues. Individuals demonstrated a willingness to compromise some of their interests for the benefit of the Working Group's interests. The participants operated with the mutual understanding that every interest should get something from the process and agreement, but that no one interest should get everything.
- Using an integrated resource management approach with a focus on five Sectors worked well. The Working Group chose to focus the process on Subsistence, Terrestrial Habitat, Aquatic Habitat, Economics, and Timber Supply. This format allowed the Group to work through issues and desires for a variety of resources. The Group recognized the value of each Sector and worked to define conditions that would benefit the other sectors as well.
- The planning process was simple and effective. The process is a six-step approach Step one: Where are we and where have we been? This question was addressed by defining the historic and present conditions of the Staney Area. Step two: Where do we want to go? This question was addressed by defining the desired future conditions for each Sector. Step three: How do we get there? This was addressed by discussion of potential funding, implementation schedule, and potential types of treatments. Step four: who wants to come along? This was addressed at the final workshop in Coffman Cove, where participants agreed on a ratification process. Steps five and six: Are we on

track and are we there yet? These will be addressed through a monitoring plan and adaptive management strategy as the monitoring begins to provide feedback on the effectiveness of projects and treatments.

- Facilitation by a neutral, experienced facilitator was critical for moving the process forward. Marcus Kauffman's experience in working with stakeholders kept the group from getting bogged down in conflict and polarization. It was good that Marcus was from another state and had no reputation and little prior history with the Working Group.
- Meeting in a variety of communities ensured a steady stream of new participants. The Working Group lost individuals between each workshop, but they were replaced by new participants from the community that was hosting the current meeting. This not only kept participation steady, but it also added to the variety of interests and input made available to the Working Group and to the process.
- Outreach was an important piece of the process. The Working Group desired open, local-dominated participation. This could only be accomplished by a concentrated outreach effort. The Working Group did not get participation across all interest groups, but everyone and all interests were aware that the Staney Collaborative work was going on and that they could participate if they wished.
- Leadership from an NGO helped bolster support and boost participation from a variety of individuals and entities. The Nature Conservancy shouldered the responsibility of organizing, planning, and conducting the workshops. This allowed the TNF to participate as a part of the Working Group in plan development rather than their typical role of presenting and defending their internally developed projects and plans. This also encouraged participation from individuals that were tired and/or weary of attending more government-sponsored meetings. This NGO sponsored format was something new and some thought worth attending, just to see if it had merit. The verdict is still out.

What did not work:

The length of the process was too long. Some participants got frustrated with how long the process took and dropped out. It would have been better to start the process in early November as the work season was slowing down and end the process at the end of March as the work season was beginning to pick up. This concentrated time period would have helped to keep enthusiasm and work momentum higher.

- The weekday schedule of the workshops did not work for several participants. All workshops should have had evening and/or a weekend session.

- Local community participation across all sectors and interests did not happen. In spite of an intense outreach effort, not all interests participated in the process. There was minimal or no participation from the large timber processors, the outfitter/guide sector, or the Native sector. It would have been of benefit to the Staney Group and perhaps to them if they had chosen to participate.

- On May 14, 2010, the USFS Region 10 office submitted a proposal requesting **Collaborative Forest Landscape Restoration** (CFLR) funding for the potential restoration work coming out of the Staney Community Forestry Project. This work would include road storage, red pipe repair, habitat thinning,

riparian thinning, stream restoration, and pre-commercial thinning. The proposal competed with over thirty other proposals nationwide for a portion of a $10 million restoration fund. A national CFLR Committee reviewed the proposals and selected up to 2 from each region to receive CFLR funds. The Staney Community Forestry Project was the only proposal submitted by Region 10. The Staney proposal did not make the final selection. The review committee seriously considered only proposals from fire dominated ecosystems with wildfire and fuel concerns. The Staney proposal can be viewed at www.staneycreek.org.

Next Steps

A core group of Staney participants will continue to collaborate after the last workshop. This group will continue to provide input and feedback as specific projects are designed, implemented, and monitored into the future. This collaborative group will be especially important for any Stewardship contracts that may come about in the Staney area. There will be an ongoing effort by some participants to identify and access funding for the many projects that could potentially come out of the Staney area.

The first scheduled meeting of this core group will be October 14 – 15, 2010. At this meeting the group will meet with an Interdisciplinary Team to develop a purpose and need and scope of project for the Staney NEPA planning process. This is the first step in implementing new projects in the Staney area.

Monitoring and Research Plan

The purpose of a monitoring plan is to evaluate the effectiveness and progress of implementing management actions toward achieving desired conditions. This process of community dialog has defined a suite of desired conditions (outcomes) across a range of ecological, social, and economic sectors. This scientific framework for monitoring will help facilitate learning and adaptation as the plan is implemented, and provides a means to better respond to changing ecological conditions (such as climate change), and scientific understanding.

A comprehensive monitoring plan should track progress on multiple levels, including tracking of both implementation and effectiveness. This not only provides a tool for learning and adaptive management, but also demonstrates accountability to funding institutions and decision-makers.

1) Implementation: Did the proposed actions occur (e.g., $$ raised, acres treated, culverts replaced)
2) Effectiveness: Was the management action successful in achieving the desired outcome (e.g., jobs created, timber produced, fish and wildlife habitat enhanced, subsistence goals met).

Because many aspects of forest ecology and the changing social and economic conditions for local communities are not well understood, the Staney Community Forestry Project also provides a unique opportunity for research on integrating multiple objectives in forest management within a collaborative framework. This will require that all parties in this collaboration be involved in the assessment and learning from the results of these management actions. Ideally this monitoring will involve the collaboration of scientists with managers in the technical design, as well as analysis and presentation of data to scientific and general audiences. Collection of information for this monitoring will involve technical staff from land management agencies and their scientific partners as well as from members of local communities ("citizen scientists"). All of the parties involved in this plan have much to learn and contribute to this process, and their involvement will be key to its ultimate success, both in terms of technical implementation but also as a means to engage the broader community. An important element of our monitoring will include feedback from stakeholders on Prince of Wales Island, including community members, municipal planners, small business owners, and natural resource professionals, as well as engagement of the broader community including public schools, and people outside the field of natural resource management. We plan to communicate these results via small workshops, interactive websites, social media, research briefs, and technical as well as general publications.

Specific topics for monitoring and research related to desired conditions within each forest sector are described below.

Timber supply and harvesting

Our monitoring and research work relating to timber supply and harvesting will be based upon the desired future condition (DFC) of providing a sustainable, even flow of wood products from the Staney Project Area over time. These include a suite of products such as high-value old growth, young-growth

products from commercial thinning or second rotational harvest, as well as efficient utilization of byproducts for wood energy applications such as cord wood and biomass. An understanding of the costs and benefits of the various combinations of old growth and young growth timber, the rates at which each can be sustainable over time, and tracking utilization will be important topics of research and monitoring for this sector. In particular, continued investigation of optimal solutions that both provide wood products and meet desired conditions for other sectors (e.g., maintain complex canopy structure) is a valuable topic of research. Under certain scenarios, biomass products could become an important component of young growth management. Therefore, an underlying theme of our work will be to consider the full spectrum of ecosystem services, and how timber production could influence the value and availability of these services. Specific topics include:

1) Inventory of old-growth timber and appraisal of values and logging costs for planning sustainability and economic viability of harvest over time.
2) Inventory of current condition and projected availability of young-growth stands for commercial thinning and harvest.
3) Measure costs and benefits of a range of silvicultural techniques to meet objectives for multiple sectors, including timber production, local economic benefit, fish and wildlife habitat, and subsistence.
4) Numerous data sources could be used to evaluate and monitor timber supply from Staney area forests, including Forest Service FIA data, harvest and silvicultural treatment data, ongoing field measurements, and data from Forest Service projects (for example TWYGS (the Tongass-wide young growth study).

Economics

The desired condition within this sector is that resources from local forests will provide tangible and sustainable economic benefit for local communities. The purpose of monitoring and research will be to evaluate the effects of forest management actions and opportunities for the benefit of local communities, including long term and year round job opportunities, use of local contractors for projects, economic contribution of recreation, hunting and commercial fishing, and potential opportunities for wood biomass. Monitoring and research results will be presented to managers and community stakeholders in a timely manner, providing a feedback loop for future research. This could be done through community forums and/or other collaborative meetings designed to engage community members. Key topics for research and monitoring include:

1) Tracking employment and other benefits of forest management to local communities.
2) Comparison of silvicultural treatment costs and benefits in relation to wildlife, fisheries, subsistence, and overall ecosystem services.
3) Assess wood products industry infrastructure, and labor force and how it is being influenced by the implementation of the Staney Watershed plan.
4) Investigate economic feasibility of using by-products from restoration activities to offset use of fossil fuels for home and industrial heating.
5) Evaluate economic contribution of a range of ecosystem services to local communities as a tool for forest planning.

Subsistence

Desired conditions for subsistence activities and resources within the Staney landscape relate to maintaining ecological functions of: (1) population abundance of fish, wildlife, and other resources to provide a surplus for harvest, and (2) access to these resources for use by local residents. In this way, desired conditions within this sector are in many ways complementary to objectives within the Terrestrial Habitat, Aquatic Habitat, and Community Economics sectors.

For Sitka black-tail deer as a subsistence resource, the desired condition is to maintain habitat quality in the context of ongoing successional changes in the age structure of young-growth forest stands. Monitoring of deer and salmon populations are detailed under terrestrial and freshwater habitats. Thus, monitoring efforts for subsistence should focus on use of these resources by local residents:

1) Monitor hunter activities (hunter effort, success) in the Staney project area, particularly in relation to restoration treatments and other management actions in the Staney Creek watersheds.
2) Monitor changes in local residents' uses of fisheries and other aquatic resources and how they are related to forest management actions in the Staney Watershed
3) Apply methods to estimate economic value of subsistence resources to residents and communities.

The desired conditions in terms of access and hunter success in relation to management activities can be monitored as part of the ongoing work by Alaska Dept. of Fish and Game to monitor the distribution of hunting effort and rates of success within the Game Management Unit 2 on Prince of Wales Island.

Terrestrial Habitat and Wildlife

Desired conditions for terrestrial habitat focus on the restoration and maintenance of (1) complex canopy structure, (2) understory productivity, and (3) connectivity characteristic of old-growth forests for which native species and a wide range of ecological functions are naturally adapted. In addition it will be essential to monitor populations, and spatial patterns of key wildlife species to determine how well these changes in habitat are meeting overall management goals. This presents a number of challenges for management as well as monitoring because the effects of management actions are difficult to measure, are influenced by many factors, and can be slow to change. Research and monitoring of progress toward attainment of desired conditions with regard to terrestrial habitat will thus involve a range of statistics on:

- Inventory forest types with regard to tree size, stand density, and age structure;
- Estimate canopy and understory diversity and productivity associated with forest types sufficient for estimation of changes in habitat value for deer and other species;

- Identify lands with high value for connectivity, winter range, or other ecological functions as priority for young-growth treatments, and use techniques such as DNA analysis of deer pellets to evaluate influence of management actions on movement patterns.
- Evaluate effectiveness of management prescriptions to meet desired conditions for canopy complexity and understory productivity.
- Monitor effectiveness of habitat management on wildlife habitats, and coordinate with ADF&G population monitoring, particularly for deer, bear, marten, and in the long term, endemic species.

Freshwater Habitat and Fisheries

Within the freshwater environment, the desired conditions were related to the restoration and maintenance of the basic hydrologic processes within their natural ranges of variability characteristic of coastal forest watersheds including: (1) hydrologic connectivity, (2) sediment regime; (3) flow and flood regime; and (4) riparian and instream habitat structure. The monitoring of activities related to implementation of treatments will be relatively easily accomplished (e.g., was funding successfully raised to replace culverts and manage roads?). A more challenging task will be to monitor the effectiveness of these treatments over time, particularly in the face of substantial inter-annual variability and uncertainty related to historic conditions. Nonetheless, the freshwater habitat and fisheries sector in Staney Creek is an extremely valuable resource, and efforts made to better understand the conditions and trends of hydrologic systems and fish populations will be important over time. Key research and monitoring questions will include:

- Track measures of hydrologic condition over time, including water quantity, quality, and temperature;
- Map the full distribution of anadromous and resident fish within the watershed.
- Track the population status of steelhead and coho salmon over time.
- Investigate influences of management actions on likelihood of salmon die-offs during summer periods of low flow.
- Periodic monitoring of indicators of ecological function such as aquatic macroinvertebrates, and habitat variables such as coarse woody debris, channel structure, and riparian vegetation in relation to management treatments and untreated control areas.

Staney Community Forestry Project

Appendix A - List of Participants

Alaska Department of Fish and Game

- Kyle Moselle
- Steve Bethune
- Mark Minnillo

Alaska Department of Natural Resources, Division of Forestry

- Clarence Clark
- Pat Palkovic

C&C Enterprises, Coffman Cove

- Mariana Carter
- Neil Carter

Coffman Cove, City of

- Elaine Price

Craig, City of

- Millie Schoonover

Craig Community Association

- Steve Mc Curdy
- Brian Holter

Klawock Community Association

- Don Nickerson
- Dennis Nickerson

Klawock Watershed Council

Klawock (POW) Hatchery

- John Bruns

Naukati

- Gregg Parsley
- Brandy Prefontaine

Organized Village of Kasaan

- Sam Thomas

POW Biofuels

- Keith Landers

POW Conservation League

- Mike Mc Kimens

Southeast Alaska Roadbuilders

- Roger Schnabel

Sharp Lumber Company

- Ron Sharp
- Jacob Sharp

Sitka Conservation Society

- Scott Harris

Southeast Alaska Conservation Council

- Bob Claus
- Buck Lindekugel

The Nature Conservancy

- Norm Cohen
- Keith Rush
- David Albert
- Michael Kampnich
- Rob Bosworth
- Dustin Solberg

The Wilderness Society

- Karen Hardigg
- Evan Hjerpe

Trojan and Sons

- Rich Trojan

USDA Forest Sciences Laboratory, Pacific Northwest Station

- Mike Mc McClellan
- Bob Deal
- Trista Patterson

- Allan Brackley
- Dave Nicholls
- Linda Kruger

USDA Forest Service

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- Angela Coleman
- Mike Anderson
- Patrick Tierney
- Delilah Brigham
- Jason Anderson
- Ray Slaton
- Greg Killinger
- Cindi Lagoudakis
- Sheila Spores
- Mary Beth Nelson
- Sheila Jacobsen
- Brandon Naples
- Steve Paustian
- Gary Lawton
- Billy Steele
- Mike Sheets
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USDA Natural Resource Conservation Service

- Paul Coffey

US Fish & Wildlife Service

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- Karen Petersen

University of Montana

- Paul Alaback

- Sonya Germann

University of Wyoming
- Liz Flaherty

Wood Cuts, Whale Pass
- Bill Thomason
- Carolyn Thomason

Wood Marine, Klawock
- Larry Trumble

Other Interested Individuals
- Mike Ausman
- James Williams
- Marcus Kauffman
- John Mathis
- John Mathis Jr.
- Amy Taylor
- Laurie Dedman

Staney Community Forestry Project
Appendix B - Climate Considerations

In the face of unknown implications from climate change, projects resulting from the Staney Community Forestry Project will require a strong monitoring program. Climate change significantly increases the need for long-term monitoring. Monitoring is only worthwhile when the objectives, metrics, and expected outcomes are very clearly defined up front. This will require predicting likely future conditions in the undisturbed ecosystems, as well as in areas affected by harvest and other activities. For example, given our knowledge today and our best projections of likely changes to physical factors, such as air temperature, changes in the hydrologic cycle, potential increase of fire as a significant disturbance factor, etc., what plant communities are likely to dominate Southeast Alaska and where will these be located? Will alpine habitats on Prince of Wales Island largely disappear and become forested? Will tree species typical of a warmer climate, such as Douglas fir, become more important? Will the mix of current tree species change? These types of changes are not the same as invasive species.

In the face of projected vegetative changes, is it reasonable to expect that management of second growth can maintain deer populations at current levels? (The question is important even without the influence of climate change). For example: 1) how would conversion of alpine habitat (important summer habitat for deer) to forest affect deer populations? 2) How would reduced snow accumulation below 500 feet elevation affect deer populations (remember that this is not just direct mortality, but also might include vegetation changes)?

Aquatic habitats are addressed in a broad context. They need to address the question of overall climate-related changes. The current DFCs address fish habitat changes, but are not specific enough to identify the key questions, such as what the major potential impacts on fish and fish habitat will be from hydrologic changes (e.g., stream temperature, stream flow, flow pulse timing, water availability, etc.)? For example, the DFCs identify stream temperature as a data gap, but do not address any reason why this is important (Staney has a history of temperature-related fish kills).

Decisions need to be made on what to do with the wide array of possible new species (all species both terrestrial and aquatic) that may arrive, but that are not invasive in the sense of being unnaturally out of place and introduced by actions of man? These might include not only insects and diseases, but also trees and other plants, establishment of populations of mammals such as the mountain lion and wolverine, etc. From the climate change DFC standpoint, it does not make sense to say that the current terrestrial or aquatic conditions will be maintained, when the climate-related factors that created these conditions are significantly changing. The difficulty is trying to predict what is likely to happen. We are left with predicting as best we can, monitor to see where our predictions seem to be close; and where we are wrong, and adapt.

Snow accumulation at various elevations will change as climate change progresses. This will affect plants and animals, creating new habitat and niches for some and reducing habitat and niches for others. Again, management decisions will need to be based on the best predictions with strong monitoring to adapt and adjust as real changes become apparent.

Forest managers need to project potential changes to forest species makeup and consider how to work these into expectations for forest outputs. A very likely change, depending on how temperature and moisture work out, is that the easy and immediate regeneration of spruce and hemlock might fail more often due especially to lack of consistent soil moisture in summer and consequent seedling mortality.

The Tongass National Forest contains approximately 8% of the carbon stored in the Forest System nationwide. Most of this carbon is stored in the soils, with a lesser, but significant amount stored in plants (mostly trees). A Carbon DFC could be written that future management will result in no net loss of carbon storage and/or the Tongass will be managed as a carbon sink.

The expected hydrologic changes in our coastal watershed include:

- Increased frequency and magnitude of storm events together with increased flood and wind throw disturbances .
- Reduced magnitude of spring peak run-off.
- Exacerbated summer low-flows.
- Increased frequency of mid-winter peak flow events.

DFCs to help mitigate and buffer climate change effects should focus on maintaining and enhancing riparian functions particularly in key Flood Plain Process Group Riparian Management Area's:

- Maintain riparian stand conditions for natural rates of Large Wood recruitment (for flood plain connectivity, habitat complexity, flood and low-flow refugia).
- Remove or replace flood plain road segments/drainage structures that impair riparian functions.

Staney Community Forestry Project
Appendix C - Maps

Maps can be viewed at www.staneycreek.org

Maps prepared by Dave Albert, The Nature Conservancy

Staney Community Forestry Project
Appendix D - Bibliography

Alaback, P. 2010. An evaluation of canopy gaps in restoring wildlife habitat in second growth forests of Southeastern Alaska Final Report.

Albert, D., Baker, L., Howell, S., Koski, K., Bosworth, R. 2008. A Framework for Setting Watershed-scale Priorities for Forest and Freshwater Restoration on Prince of Wales Island, The Nature Conservancy.

Brock, M., Coiley-Kenner, P. 2009. A Compilation of Traditional Knowledge about the Fisheries of Southeast Alaska. Technical Paper Number 332. Alaska Department of Fish and Game, Subsistence Division.

Ellanna, L.J., Sherrod, G.K., 1987. Timber Management and Fish and Wildlife Use in Selected Southeastern Alaska Communities: Klawock, Prince of Wales Island, Alaska. Technical Paper Number 126. Alaska Department of Fish and Game, Subsistence Division.

Howell, S.; Tierney, P.; Slayton, R. 2008. Staney Creek Young Growth Vegetation Management Strategy. U.S. Department of Agriculture, Tongass National Forest, Thorne Bay Ranger District.

Langdon, S.J. 2006. Traditional Knowledge and Harvesting of Salmon by *Huna* and *Hinyaa* Tlingit. Fisheries Service Information Service (FIS) Project 02-104. U.S. Fish and Wildlife Service and Central Council of Tlingit and Haida Indian Tribes of Alaska.

_____. 2009. Environmental Assessment, Staney Creek Enhancement & Restoration Project #1. U.S. Department of Agriculture, Tongass National Forest, Thorne Bay Ranger District.

_____. 2009. Environmental Assessment, Staney Creek Enhancement & Restoration Project #1, Decision Notice Finding of No Significant Impact. U.S. Department of Agriculture, Tongass National Forest, Thorne Bay Ranger District.

_____. 2006. Prince of Wales Island Young Growth Treatment Strategy. U.S. Department of Agriculture, Tongass National Forest, Craig and Thorne Bay Ranger Districts.

_____. 2009. Staney Creek, Integrated Resource Management Plan, Proposal for Action. U.S. Department of Agriculture, Tongass National Forest, Thorne Bay Ranger District.

_____. 2009. Staney Creek Watershed Restoration Plan. U.S. Department of Agriculture, Tongass National Forest, Thorne Bay Ranger District.