

CLIMATE CHANGE IMPACTS ON TRIBAL RESOURCES

Introduction

Climate in the Pacific Northwest (PNW) is shaped by natural climate fluctuations occurring on seasonal, year-to-year, and decadal scales. In addition to this natural variability, long term climate trends have been observed in the 20th century. These trends include an increase in average annual regional temperature, decreased snowpack, earlier spring runoff and declining trends in summer stream flow (CIG, 2006). These changes are expected to affect the Tulalip Tribes' legally protected rights to economic, cultural and spiritual uses of natural resources.

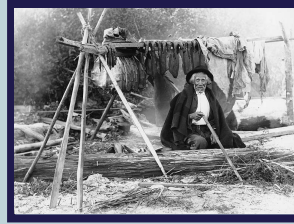
Climate Change Predictions in Tulalip Tribes' Usual and Accustomed Areas (U&A)

Temperature

Greenhouse gases (particularly carbon dioxide, methane, and nitrous oxide) trap much of the energy radiated from the Earth's surface, warming the atmosphere and Earth's surface in a natural process known as the "greenhouse effect". Rapid increases in the amount of greenhouse gases in the atmosphere since the 1700s are affecting this natural balance, leading to an increase in average global temperature beyond what can be expected from natural variability alone (IPCC, 2001). The PNW has not been immune from these changes. Average annual PNW temperature increased 1.5°F during the 20th century and regional scientists expect average annual temperature to increase an additional 1 to 4°F by the 2040s (Mote et al., 2005).

Precipitation

Projected changes in precipitation are less certain than changes in temperature. Most models project a slight increase in winter precipitation but this increase would still fall within the range of variability observed in the PNW during the 20th century. However, more



Photos courtesy of University of Washington

winter precipitation is expected to fall as rain rather than snow due to warmer winter temperatures.

Implications for Resources Significant to the Tulalip Tribes

Water

Despite the Treaty of Point Elliot and subsequent court decisions that uphold the Tribes' reserved right to water, the quantification of Tribal water rights continues to be a controversial and litigious issue. Climate change will intensify this conflict given projections for lower stream flows and increased competition for water during the late summer and fall when fish and humans need it the most (CIG, 2006).

Ecotone Shifts

As global warming shifts the timing and quantity of water across Tulalips' U&A, some native species will shift to follow their preferred habitat and bioclimatic conditions. Other native species may be unable to adapt and will instead become locally extinct. Evidence exists of major ecosystem shifts resulting from climate change over the past 10,000 years (Houser, 2001). As local species of plants and animals change, some will be replaced by new, invasive species. This shift would result in the loss of economic, cultural, and religious use of native species for the Tulalip Tribes that would not be replaced by incoming species.

Degraded Habitats

Currently, salmon populations are diminished by poor water quality, decreased suitable habitat, inadequate flows due to over allocation of water and changes in stream flow timing. Climate change will exacerbate these conditions. Higher flood peaks in fall and winter will elevate the risk of redd scour while decreased base flows in summer and early fall will reduce rearing and spawning habitat and water quality. Lower stream flows and increased air temperatures are also expected to contribute to



warmer stream temperatures, particularly during the summer months, adding another stress to rearing juveniles and migrating adults that use regional streams in summer.

Treaty Concerns

Treaty Boundaries

For the Tribes, range shifts in native species will threaten their cultural existence. The treaty-protected rights of tribes to hunt, fish and gather traditional resources are based on reservation locations and usual and accustomed areas on public lands. These locations were chosen to ensure access to culturally significant resources, whose locations were thought to be fixed. If the traditionally significant plants, animals, and aquatic species shift out of these areas, Tribes will no longer have the same legal rights to them. Even if rights to these species could be secured, without proximate access, the use of these species will be virtually impossible.

Traditionally, Tribes relied on moving residence based upon seasonal availability of food and water sources. Modern Tribes are unable to relocate to cope with shifts in the availability of cultural and religious sources. Few Tribes have can afford the purchase of large territories of new land, and federal laws prohibit the transfer or expansion of tribal jurisdiction.

Baselines for natural resource management and Treaty Rights

As each generation of environmental managers updates recovery goals, there is often the debate of whether to set targets to historical conditions or to some more 'attainable goal'. The use of an attainable goal as a recovery target allows for a gradual degradation of the resource over time. With the threat of climate change, the degradation will become more drastic, tempting managers to make allowances for attainable goals under current conditions. Under this regime, resource recovery goals cannot be met.



Tulalip Adaptation and Mitigation Policy Frameworks for Climate Change

In order to cope with current environmental changes, we must stop treating the natural world as static and instead incorporate policies and law in planning and management that allow us to sustainably maintain healthy, resilient human communities in the face of change. These policies and law need, among other things, to be:

- 1. Integrated** - involve multiple independent sectors in the creation of holistic solutions that address a full range of natural and social factors.
- 2. Cross-scale** - address problems at multiple scales, and devise scale-appropriate actions, working to ensure policies and actions do not defeat measures taken at any one scale;
- 3. Adaptive** – monitor and respond to the effectiveness of efforts and advances in scientific and local knowledge, adapt objectives when necessary;
- 4. Restorative** - use historical baselines for mitigation goals for processes that maintain healthy watersheds and communities;
- 5. Participatory** - recognize stakeholder equity by including federal, state, tribal and local governments, businesses and citizens in the transparent development of baselines, objectives, and mitigation and adaptation measures;
- 6. Sustainable** – design objectives and actions on a basis of ecological and cultural sustainability, and include mechanisms to ensure the sustained financial and administrative support for their implementation.

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