

The impact of climate change on medicinal plants of the Northern American tribes

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The importance of medicinal plants in indigenous cultures

Medicinal plants have been an essential part of the indigenous cultures for hundreds of years. They are used to cure the body as well as the mind. Indeed indigenous people believe that the two are connected and must be healed together for more efficiency. Medicinal plants are therefore a matter of health but also of spirituality. They occupy an important place during healing ceremonies.



Photograph by Howard Terpning

The effect of climate change on medicinal plants

Climate change is believed by scientists and traditional ecological knowledge holders to have 3 main impacts:



Photograph from the National Park Services

1. A shift in phenology

This means a change in the plants' cycle. Climate change brings earlier springs that cause plants to bloom earlier, and expose their buds to late freeze that can cause the plant's death.

Huckleberry (on the opposite image) blooms now 2 to 3 weeks earlier than a century ago.



Photograph from erboristeriabilio.com

2. A shift in location

With the warming climate, many plants started a slow northward migration in order to find a place with their original climate features which allows them to thrive.

This movement perturbs ecosystems, and can be a competition for local plants, such as *Rhodiola rosea* (on the opposite image).



Photograph from University of Alaska Anchorage, College of engineering

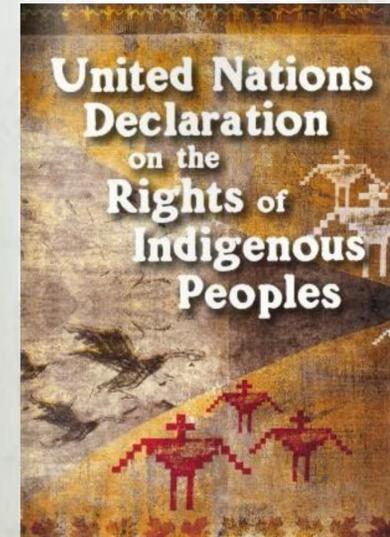
3. Erosion & population displacement

When it is not the plant that moves, it might be the indigenous people because of erosion or other natural disasters due to climate change. By being forced to move from their native lands, tribal members lose access to many important cultural resources, including medicines.

The impact on tribal sovereignty and self-determination

Losing access to herbal medicines represents for the tribes a loss of sovereignty and self-determination. It threatens their ability to decide on their « good health » by threatening their ability to harvest medicinal plants they need for traditional healing remedies.

The right to the medicine of their choice has been recognized to indigenous people in the UN Declaration, and should be enforced by the federal government because of the trust responsibility. It means the federal government has the obligation to protect the rights and lands of Native Americans.



A few examples of tribal responses to climate change



Photograph from the 13 moons garden website :
The Indigenous Plants and Healing garden

To respond to the loss of medicinal plants due to climate change, tribes can:

- Summarize traditional ecological knowledge
- Educate their community and the rest of the people
- Create conservation gardens
- Develop formal or informal agreements with other tribes
- Ask from the federal government to ensure their rights

No matter which action they take, it must be done in deep respect to their own beliefs and tradition, in a cultural adaptation framework.

The cedar tree : a study case to better understand the impact of climate change on medicinal plants



Photograph from Forest Academy website

The « **Tree of Life** » is very important in many tribes throughout the Northwest American coast because of its many healing properties. The cedar leaf is indeed a powerful antimicrobial, reinforces the immune functions, improves blood flow, and was believed to be efficient to get rid of external forces.

Although most of the use Native Americans do of the cedar tree doesn't require to cut down the tree, they are less and less cedar tree alive. Scientists wondered for a bit what was the cause of the cedar disappearance until Paul Hennon, a member of the USDA Forest Service, published a paper about this in 2012.

He declared that if cedar trees were dying it was because of earlier snow melting, due to climate change. Indeed the roots of the cedar need snowpack to be protected against the frost, otherwise they die and the tree too. Current dynamic conservation strategies proposed include searching for suitable cedar habitat by looking at presence of snow pack and soil drainage. But this is still likely to affect the ability of some tribes to access cedar tree if it is not anymore suited for their lands.

Below : Photograph of dying cedar trees; from Paul Hennon (used in his paper about cedar death causes).



Sources/Bibliography:

- Courtney Cavaliere, *The effects of climate change on medicinal and aromatic plants*, 2009
- Swinomish Indian Tribal Community, *Swinomish Climate Change Initiative: Climate Adaptation Action plan*, 2010
- Hennon & al., *Shifting Climate, Altered Niche and a dynamic conservation strategy for Yellow-cedar in the North Pacific Coastal Rainforest*, 2012
- *United Nations Declaration on the rights of Indigenous people*, 2007