Acknowledging Native Land Ethics & Uses in South-Central Puget Sound

(Washington State, USA)

A Community on Ecosystem Services
2024 International Conference
Austin, Texas, USA
December 9-12, 2024

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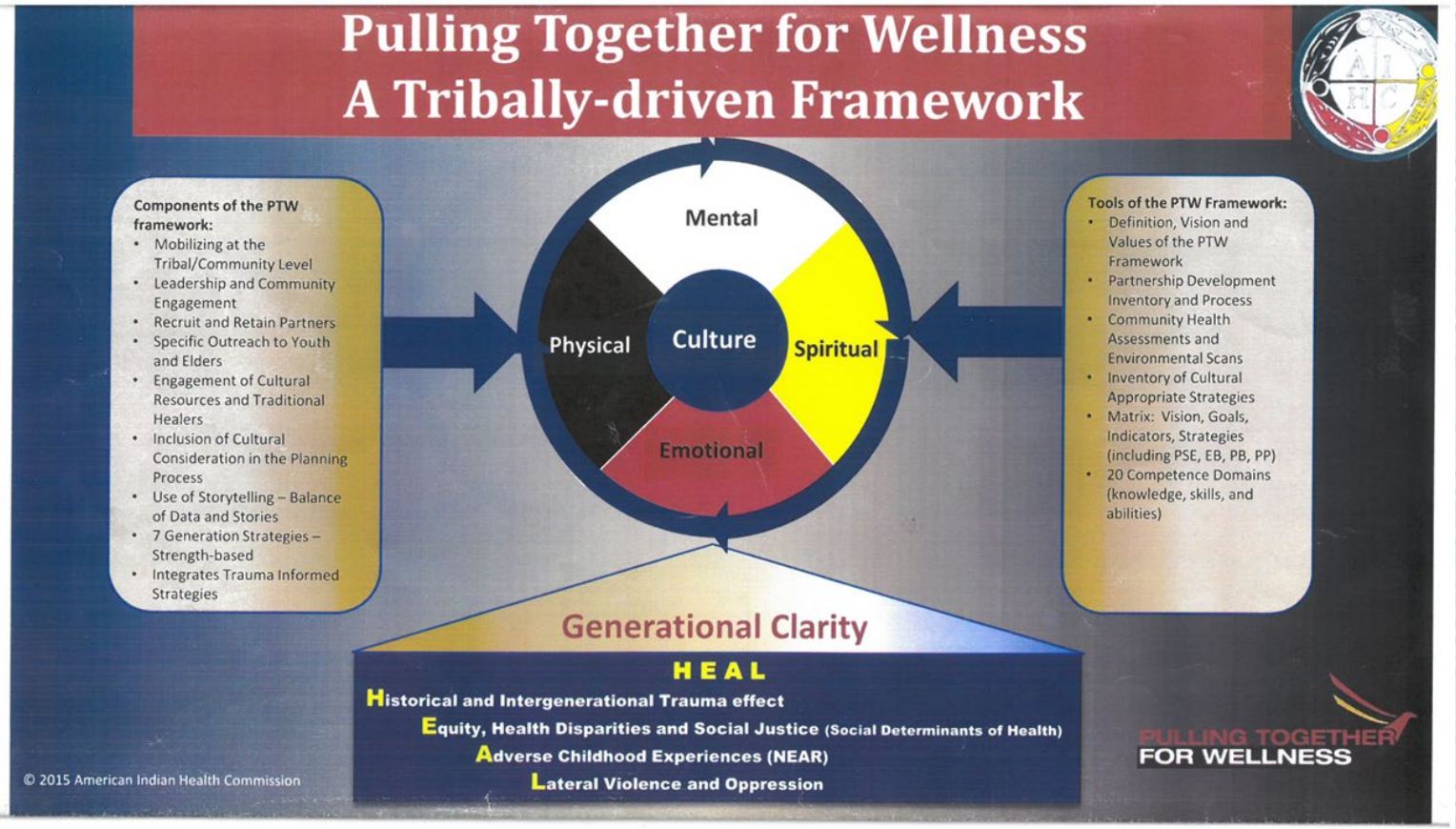
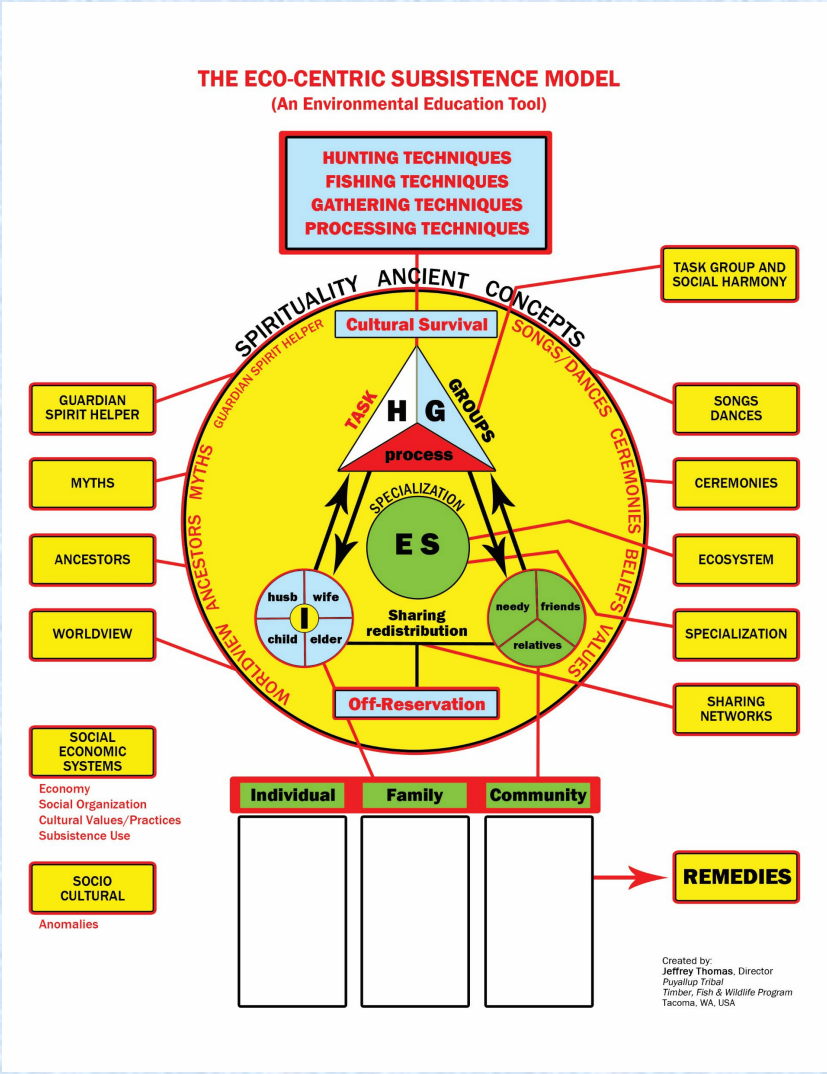
Puyallup Tribal Reservation (Est. 1856)
& City of Tacoma (Est. 1873)

1 -TRIBAL WELLNESS & RESILIENCE

Pulling Together for Wellness Model.
American Indian Health Commission (2015).



The Eco-Centric Subsistence Model: An Environmental Education Tool. PTFW Program (1992)



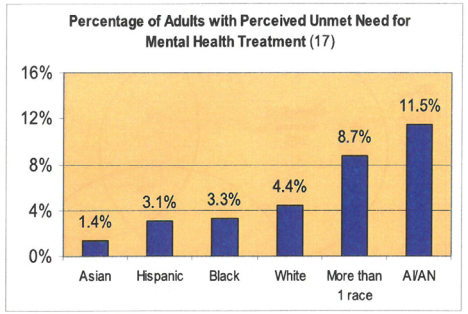
2 - HEALTH DISPARITIES IN URBAN INDIAN SERVICE AREAS

AI/AN Mental Health Traditional Healing, Strengths & Protective Factors.

American Psychological Association (2010).

Traditional Healing

- Traditional AIAN healing systems "focus on balancing mind, body, and spirit within the community context. Many American Indian groups have long practiced a holistic approach to healing involving a sense of connectedness with place and land, and contrary to the Western approach, generally don't try to isolate one part of the person and healing it, but rather look at the whole person. (11)
- Help seeking from traditional healers is common among American Indians. Research has found that American Indian men and women who meet the criteria for depression/anxiety or substance abuse are significantly more likely to seek help from traditional/spiritual healer than from specialty or other medical sources. (18, 19)



Source: SAMHSA, 2004

- In recent studies of AIAN, some 34 to 49% of those with diagnosed behavioral disorders used traditional healers and some 16% to 32% of AIAN people using biomedical services for emotional problems had also seen a traditional healer. (9, 11)

Protective Factors

Concepts that are key to the "cultural context, identity, adaptability, and perseverance of Native Americans include a holistic approach to life, a desire to promote the well-being of the group, and enduring spirit, and a respect for all ways of healing." (11) Some strengths and challenges common among AIANs are listed below.

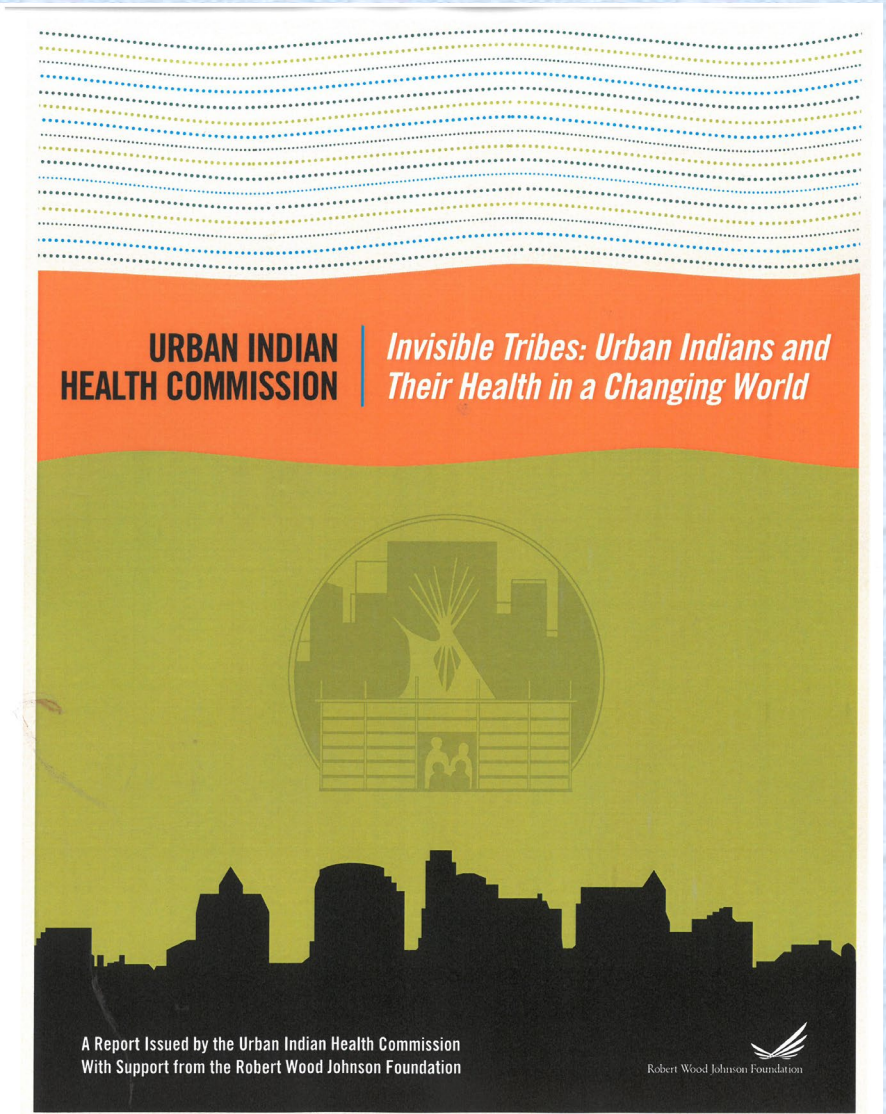
Strengths and protective factors:
- A strong identification with culture
- Family
- Connection with the past
- Traditional health practices (e.g., ceremonies)
- Adaptability
- Wisdom of elders

Challenges to health and well-being:
- Alcohol misuse
- Enduring spirit (stubborn, hard to accept change)
- Clashes between Indian and non-Indian views of mental health
- Long memories
- trauma is communal

Some key protective factors against suicide attempts among AIAN youth include (19&20)
- Discussion of problems with family or friends,
- Connectedness to family
- Emotional health
- Spiritual orientation

One study of American Indians living on reservations found that individuals with a strong tribal spiritual orientation were half as likely to report a suicide attempt in their lifetimes. (20)

"Invisible Tribes: Urban Indians and Their Health in a Changing World". Urban Indian Health Commission (2007).



3 - LAND AND NATURE AS SOURCES OF HEALTH AND RESILIENCE

Incorporating Cultural Dimensions into Socioecological Conservation (Figure 2).

Poe et al. (2014).

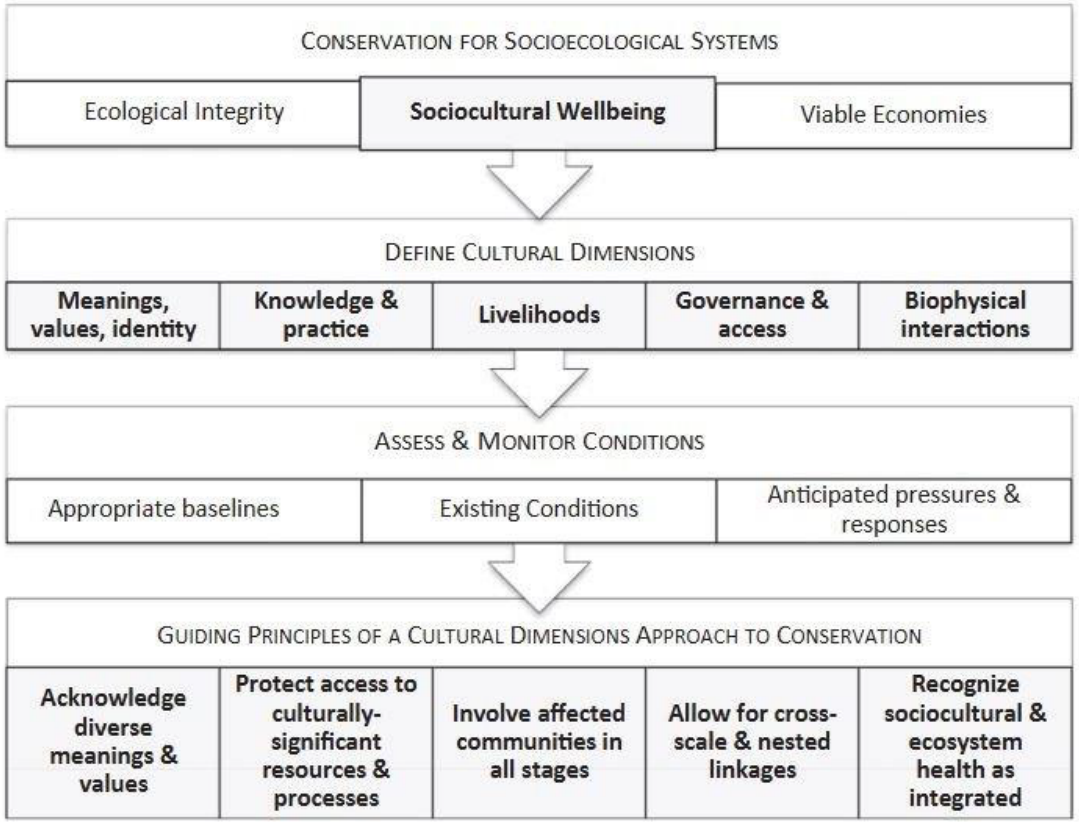


Figure 2 Incorporating cultural dimensions into socioecological conservation.

A Spectrum of Forms of Nature Contact (Figure 1).

Frumkin et al. (2017)

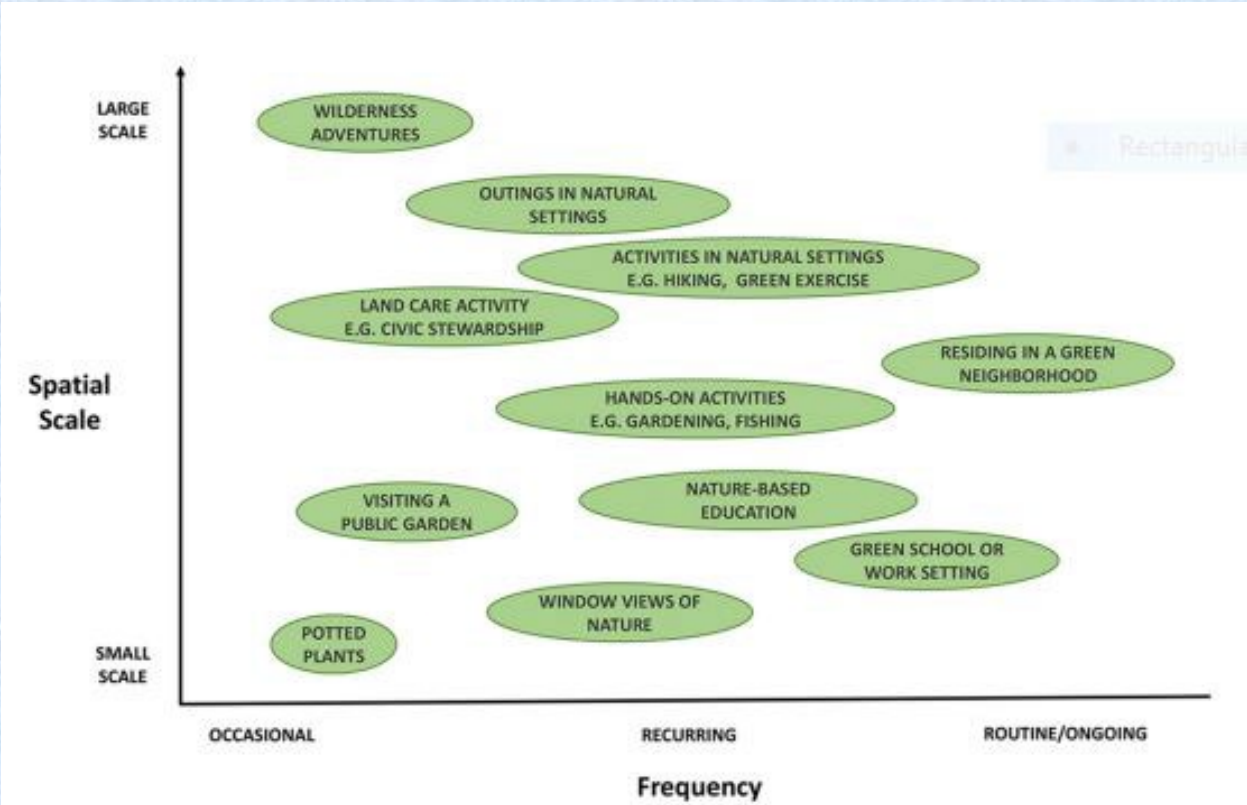


Figure 1. A spectrum of forms of nature contact.

4 - EVIDENCE-BASED HEALTH BENEFITS OF NATURE CONTACT

Summary of Evidence-Based Health Benefits of Nature Contact (Table 1). Frumkin et al. (2017).

Table 1. Summary of evidence-based health benefits of nature contact.

No.	Health/well-being benefits	References
1	Reduced stress	Berto 2014; Fan et al. 2011; Nielsen and Hansen 2007; Stigsdotter et al. 2010; van den Berg and Custers 2011; van den Berg et al. 2010; Ward Thompson et al. 2016
2	Better sleep	Astell-Burt et al. 2013; Grigsby-Toussaint et al. 2015; Morita et al. 2011
3	Improved mental health:	
	Reduced depression	Astell-Burt et al. 2014c; Beyer et al. 2014; Cohen-Cline et al. 2015; Gascon et al. 2015; Kim et al. 2009; Maas et al. 2009b; McEachan et al. 2016; Nutsford et al. 2013; Sturm and Cohen 2014; Taylor et al. 2015; White et al. 2013
	Reduced anxiety	Beyer et al. 2014; Bratman et al. 2015a; Maas et al. 2009b; Nutsford et al. 2013; Song et al. 2013; Song et al. 2015
4	Greater happiness, well-being, life satisfaction	Ambrey 2016; Fleming et al. 2016; Larson et al. 2016; MacKerron and Mourato 2013; Van Herzele and de Vries 2012; White et al. 2013
5	Reduced aggression	Bogar and Beyer 2016; Branas et al. 2011; Kuo and Sullivan 2001a, b; Troy et al. 2012; Younan et al. 2016
6	Reduced ADHD symptoms	Amoly et al. 2014; Faber Taylor et al. 2001; Faber Taylor and Kuo 2009; Faber Taylor and Kuo 2011; Kuo and Faber Taylor 2004; Markevych et al. 2014b; van den Berg and van den Berg 2011
7	Increased prosocial behavior and social connectedness	Broyles et al. 2011; Dadvand et al. 2016; de Vries et al. 2013; Fan et al. 2011; Holtan et al. 2015; Home et al. 2012; Piff et al. 2015; Sullivan et al. 2004
8	Lower blood pressure	Duncan et al. 2014; Markevych et al. 2014a; Shanahan et al. 2016
9	Improved postoperative recovery	Park and Mattson 2008; Park and Mattson 2009; Ulrich 1984
10	Improved birth outcomes	Reviewed by Dzhambov et al. 2014
11	Improved congestive heart failure	Mao et al. 2017
12	Improved child development (cognitive and motor)	Fjørtoft 2001; Kellert 2005
13	Improved pain control	Acutely (Diette et al. 2003; Lechtzin et al. 2010) and chronically (Han et al. 2016)
14	Reduced obesity	Bell et al. 2008; Cleland et al. 2008; P. Dadvand et al. 2014a; Lachowycz and Jones 2011; Sanders et al. 2015; Stark et al. 2014
15	Reduced diabetes	Astell-Burt et al. 2014a; Bodicoat et al. 2014; Brown et al. 2016; Thiering et al. 2016
16	Better eyesight	French et al. 2013; Guggenheim et al. 2012; He et al. 2015
17	Improved immune function	Li et al. 2006; Li et al. 2008a; Li et al. 2008b; Li et al. 2010; Li and Kawada 2011
18	Improved general health:	
	Adults	Brown et al. 2016; de Vries et al. 2003; Kardan et al. 2015; Maas et al. 2006; Maas et al. 2009b; Stigsdotter et al. 2010; Wheeler et al. 2015
	Cancer survivors	Ray and Jakubec 2014
	Children	Kim et al. 2016
19	Reduced mortality	Coutts et al. 2010; Gascon et al. 2016b; Hu et al. 2008; James et al. 2016; Takano et al. 2002; Villeneuve et al. 2012
20	Asthma and/or allergies (studies show both improvements and exacerbations)	Andrusaityte et al. 2016; Dadvand et al. 2014a; Fuertes et al. 2014; Fuertes et al. 2016; Lovasi et al. 2013; Lovasi et al. 2008; Ruokolainen et al. 2015

Note: ADHD, attention-deficit hyperactivity disorder. The references in Table 1 are illustrative rather than exhaustive; they include both recent reviews and research reports and older, widely cited publications.

Prevalence Rates per 1000 in Living Environments with 10% and 90% Green Space for Different Disease Clusters (Table 4). Maas et al. (2009).

Table 4 Prevalence rates per 1000 in living environments with 10% and 90% green space for different disease clusters

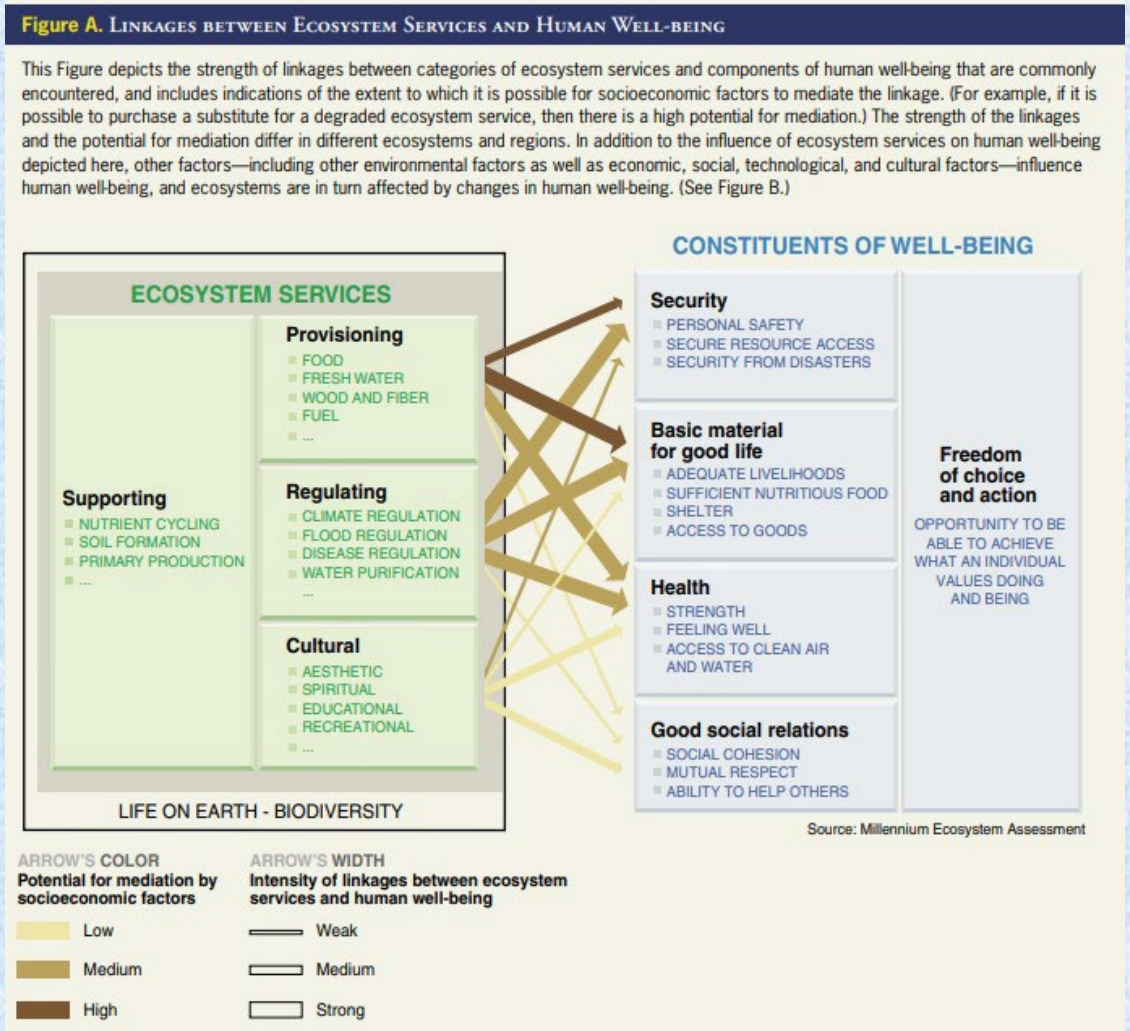
Cluster	Prevalence per 1000	
	10% green space	90% green space
Cardiovascular		
High blood pressure	23.8	22.4
Cardiac disease	4.7	4.0
Coronary heart disease	1.9	1.5
Stroke, brain haemorrhage	0.92	0.76
Musculoskeletal		
Neck and back complaints	125	106
Severe back complaints	99.2	85.8
Severe neck and shoulder complaints	75.6	63.3
Severe elbow, wrist and hand complaints	23.0	19.3
Osteoarthritis	21.8	21.3
Arthritis	6.7	6.2
Mental		
Depression	32	24
Anxiety disorder	26	18
Respiratory		
Upper respiratory tract infection	84	68
Bronchi(oli)tis/pneumonia	16.0	14.7
Asthma, COPD	26	20
Neurological		
Migraine/severe headache	40	34
Vertigo	8.3	6.6
Digestive		
Severe intestinal complaints	14.9	12.3
Infectious disease of the intestinal canal	6.5	5.1
Miscellaneous		
MUPS	237	197
Chronic eczema	5.5	4.9
Acute urinary tract infection	23.2	19.4
Diabetes Mellitus	10	8
Cancer	4.9	4.4

This table is based on results from multilevel logistic regression analysis controlling for demographic and socioeconomic characteristic and urbanicity that were centred around the average.
COPD, chronic obstructive pulmonary disease; MUPS, medically unexplained physical symptoms.

5 - INTEGRATING HUMAN HEALTH & WELLBEING W/ ECOSYSTEM SERVICES

Illustration of Linkages between Ecosystem Services and Human Well-being (Box Figure A).

Millenium Ecosystem Assessment (2005).



Incorporating Tribal Health into Climate Adaptation Plans Webinar (Announcement)

- Institute for Tribal Environmental Professionals (2019).

Webinar: Opportunities for Engaging in and Learning about How to Incorporate Tribal Health into Climate Adaptation Plans

Presented by the Institute for Tribal Environmental Professionals (ITEP)

Climate Change Program

Date: Wednesday, August 7

Time: 9 AM (HI) 10 AM (AK) 11 AM (PDT) 12PM (MDT) 1 PM (CDT) 2 PM (EDT)

This webinar is an installment of the *Topics in Climate Change Adaptation Planning* webinar series hosted by the Institute for Tribal Environmental Professionals (ITEP) Climate Change Program http://nau.edu/tribalclimatechange.

Over the past year, we have had the honor of hearing from Drs. Shasta Gaughen and Jamie Donatuto about their efforts to develop accessible tribal health resources and tools. Both have debuted new platforms specific to the impacts of climate change on tribal health, informed by different approaches and lessons learned from previous projects.

Just a day after the first webinar of the Tribal Climate & Health Adaptation Webinar Series, Dr. Gaughen will provide an overview of the Tribal Climate Health Project and how it informed the modules in the current and (just beginning) webinar series. In addition, she will preview the module topics slated for the next 9 webinars. Next, we will hear from Dr. Donatuto, who led a project adapting the Centers for Disease Control's Building Resilience Against Climate Effects (BRACE) framework to better reflect and assess climate change impacts to health based on Indigenous Health Indicators (IHI). Jamie will share the project's findings, online educational modules about the IHI in BRACE, and a new project applying the health modules by also engaging tribal representatives.

For many who are working on their tribal climate change adaptation plan and haven't considered including tribal health, here's your chance to learn how to do so. Remember these resources take time to build on your own but with the help from these experienced tribal environmental professionals you will be a step ahead and on your way in building your capacity to address the health impacts of climate change in your community.

Presenters:

ITEP is honored to have two speakers join us for this webinar:

- **Dr. Shasta Gaughen**: Environmental Director, Pala Band of Mission Indians
- **Dr. Jamie Donatuto**: Community Environmental Health Program, Swinomish Indian Tribal Community

6 -HEALING OURSELVES AND MOTHER EARTH

Traditional Indian Medicine Spiritual Growth Training Program (Announcement). Carondelet St. Mary's Hospital and Health Center "Traditional Indian Medicine Program (1988).

TRADITIONAL INDIAN MEDICINE OFFERS A TRAINING PROGRAM IN A UNIVERSAL FORM OF PRACTICAL SPIRITUAL GROWTH

July 29—August 19, 1988 Tucson, Arizona

B E N E F I T S

- Experience practical training which will enhance reaching expanded spiritual horizons
- Experience in-depth didactic and experiential learning with a faculty of Traditional Indian Medicine practitioners
- Learn to utilize meditation as an avenue toward personal and professional growth
- Self actualization through an expanded spiritual consciousness
- Learn in-depth and expanded spiritual facilitation skills
- Learn to identify the dynamics of spiritual growth

"What I knew in my head I now have in my heart. I have never been given so much!"

C O N C E P T

Participants will experience individual growth through expanded self-improvement. (Former participants' comments are included throughout this brochure.) This opportunity for spiritual expansion gives you the ability to be what you feel you want to be, personally and professionally. Changing your life to have a greater sense of peace and balance can occur, as expressed by previous participants who desired change in life. Throughout the three phases of the workshop process, if you choose, you will experience your own growth and learn how to facilitate spiritual growth with others. The focus is on self and how each person affects their own healing process and that of others. This workshop is suitable for all individuals, e.g. health care professionals; counselors; clergy; teachers; managers and administrators; or anyone seeking an understanding of the healing process and how to grow spiritually.

"My understanding of myself and clients has expanded, from my heart and my soul. I can now reach out to better my life and my job."

This international workshop is a part of the ongoing Traditional Indian Medicine Program of Carondelet St. Mary's Hospital, Tucson, Arizona. This three week training is for people who work with people, seeking a way for spiritual enhancement in their life. This training workshop is the result of a seven year developmental process, and is presented in three components, each one week in length.

The major emphasis is on spirituality within one's self and how to recognize your own growth and development of the Spirit.

Before one can help others, one must work with self first.

F A C U L T Y

The workshop and faculty are under the direction of Edgar Monetathchi, Jr., M.Ed., Comanche Medicine Man, Executive Director, Traditional Indian Medicine Program, Carondelet St. Mary's Hospital and Health Center.

The additional core faculty is A. Paul Ortega, Mescalero-Apache Lead Medicine Man.

Other support faculty to be announced.

"This is the ultimate 'burn-out' prevention mechanism!"

Complex Relationships between Altered Environmental Conditions and Human Health (Figure 1). Myers and Patz (2009).

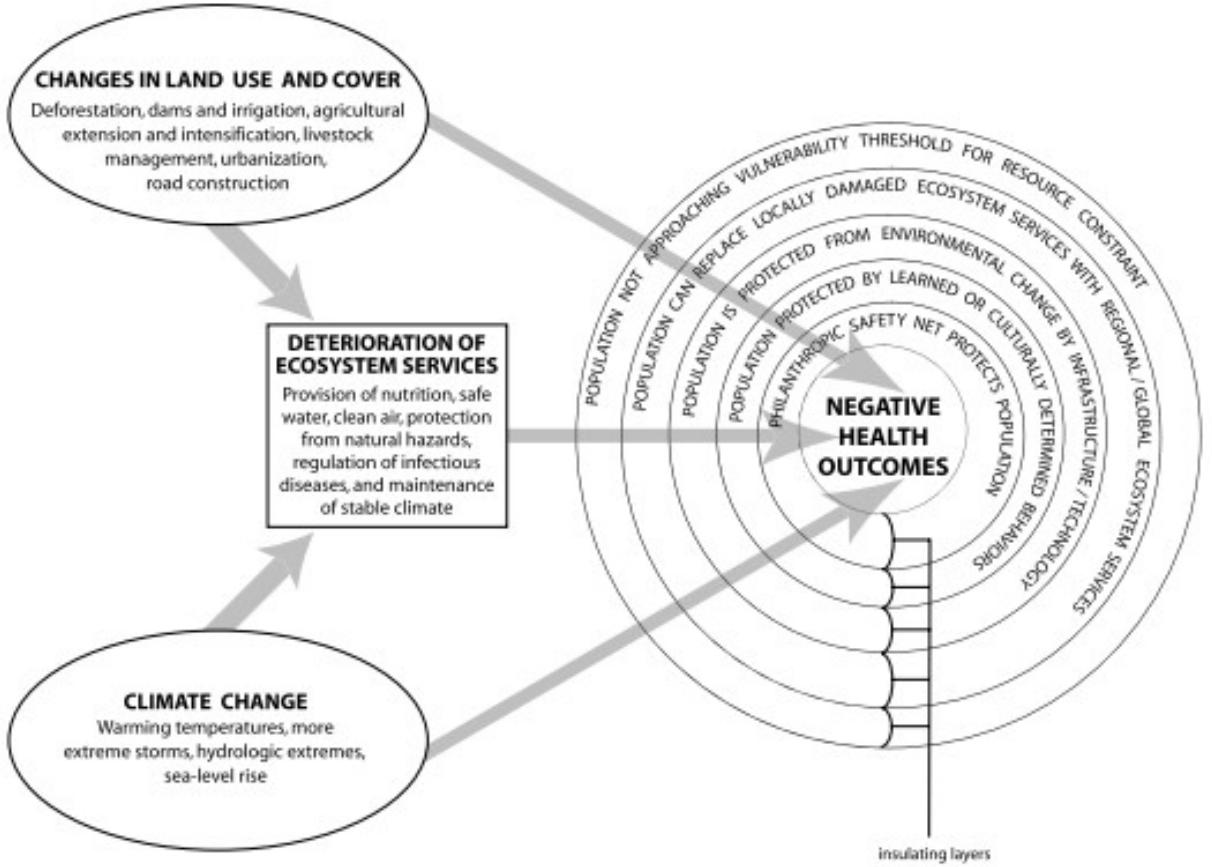


Figure 1

A schematic of the complex relationships between altered environmental conditions and human health. Drivers of global environmental change (e.g., land-use change or climate change) can directly pose health risks or impair ecosystem services that subsequently influence health. For hazards that affect human health, however, exposures will be modified by multiple layers of social or infrastructure barriers that can buffer or eliminate risk. Together, all components must be considered to achieve realistic assessments of population vulnerability.

7 - NON-PHYSICAL ASPECTS OF HEALTH (Part 1)

Indicators of Native Health Losses, Southwestern British Columbia (Table 1).

Gregory et al. 2016).

Table I. Indicators of Native Health Losses, Southwestern British Columbia

Value	Description	Measure/ Scale
Physical health	Eating salmon, physical activity of harvesting and processing fish	Poor—great
Ceremonial quality	Availability of fish for village ceremonies and funerals and feasts	Lacking—fulfilling
Psychological health	Absence of frustration and anger	Angry—satisfied
Emotional health	Absence of embarrassment, shame	Embarrassed—proud
Fairness / equity	Being treated differently by government regulators	Treated unfairly—fairly
Trust	Confidence in government decision making and management	Uncertain—confident
Economic cost	Cost of replacement foods	Dollars ($)
Cultural and traditional opportunities	Lost opportunities to teach, learn, share, or process foods	Few—many opportunities
Social and community togetherness	Prospering as a group, looking after each other	Isolation—working together

Source: Personal communication, EcoPlan International.

Table II. Coast Salish Indicators of Indigenous Health

Community connection: Members actively participate in community functions and help each other, particularly in connection with the harvest, preparation, storage, and sharing of natural resources (work, sharing, family)

Natural resources security: Local natural resources (air, water, land, plants, and animals) are abundant, accessible, and support a healthy ecosystem(s) and healthy human community (quality, access, safety)

Cultural use: The community is able to perform its cultural traditions in a respectful and fulfilling way using the local natural resources (respect/stewardship, practice)

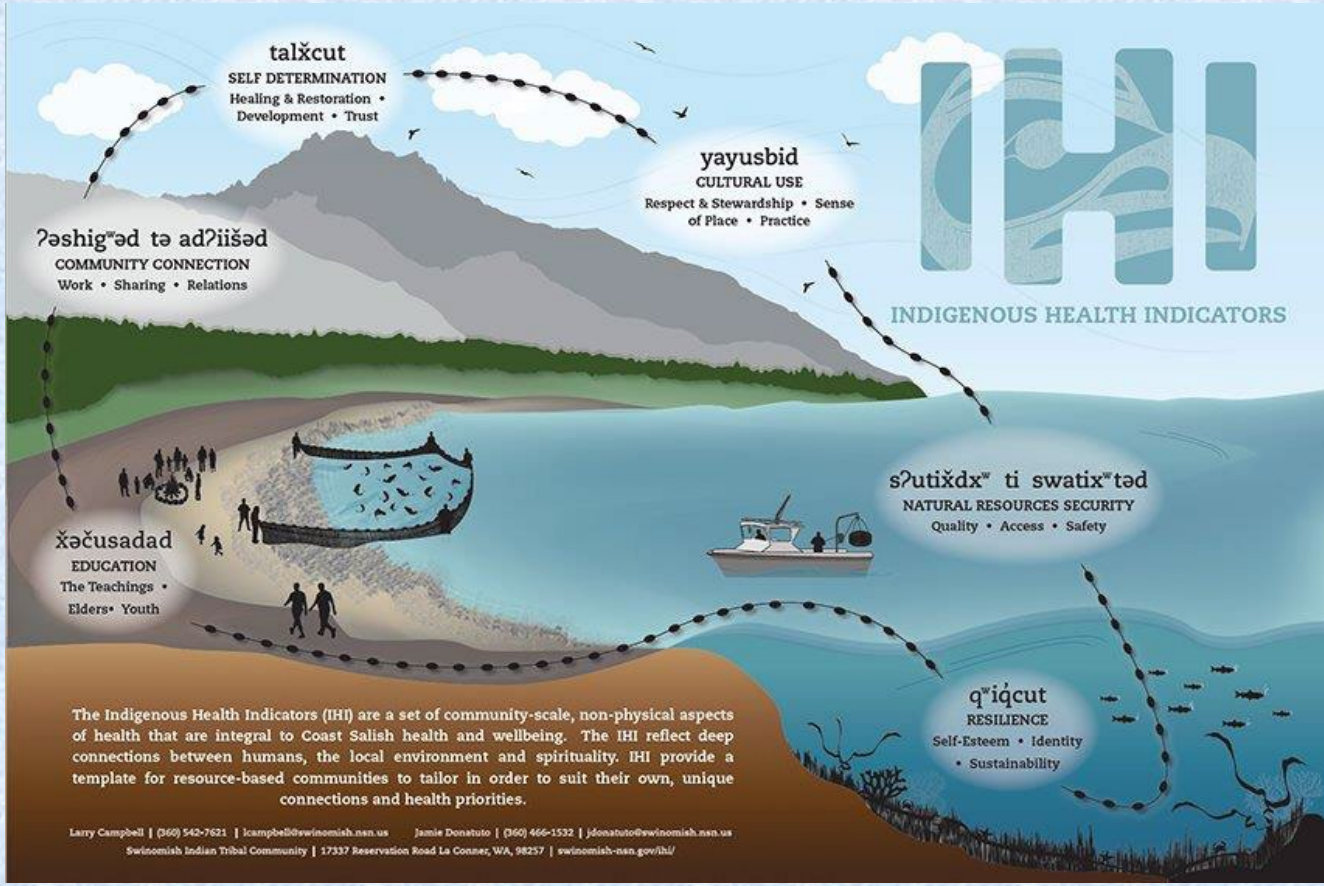
Education: Knowledge, values, and beliefs are actively passed from elders to youth (knowledge, elders, youth)

Self-determination: Communities develop and enact their own healing, development, and restoration programs; the community trusts and supports its government (healing/restoration, development, trust)

Balance: Community members maintain connections to meaningful locations, confident that their health and the health of the next seven generations can voluntarily adapt to changes, temporary or permanent, and strongly connect with who they are in positive ways (sense of place, identity, resilience)

Note: All indicators are shown using constructed scales, e.g., poor to excellent.
Source: http://www.swinomish-nsn.gov/ihi/

Swinomish Indigenous Health Indicators - Beach Representation (Figure 2). Donatuto et al. (2020).



7 - NON-PHYSICAL ASPECTS OF HEALTH (Part 2)

Reef Net Wellness Model (Figure). Native Transformations Project (2015).

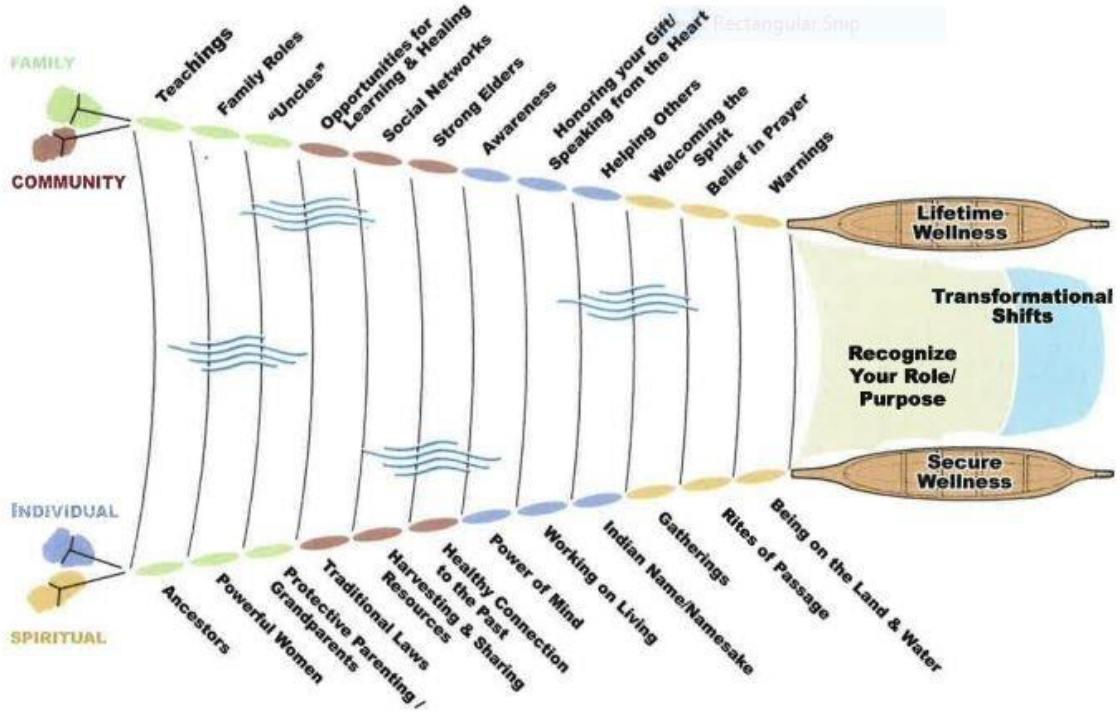
In Coast Salish oral traditions, salmon were once people, and people just like the salmon today, are most drawn to swim with the currents. The forces in people's lives; their families and communities can be like currents pulling and carrying them in different directions. Properly set reef nets can guide the salmon on either ebb or flow of the tide.

The anchors of the net are like the individual and spiritual characteristics of a person. Some anchors do not carry enough weight to keep the net strong, but with time the right amount of weight can be added to hold the line and shore up the passage.

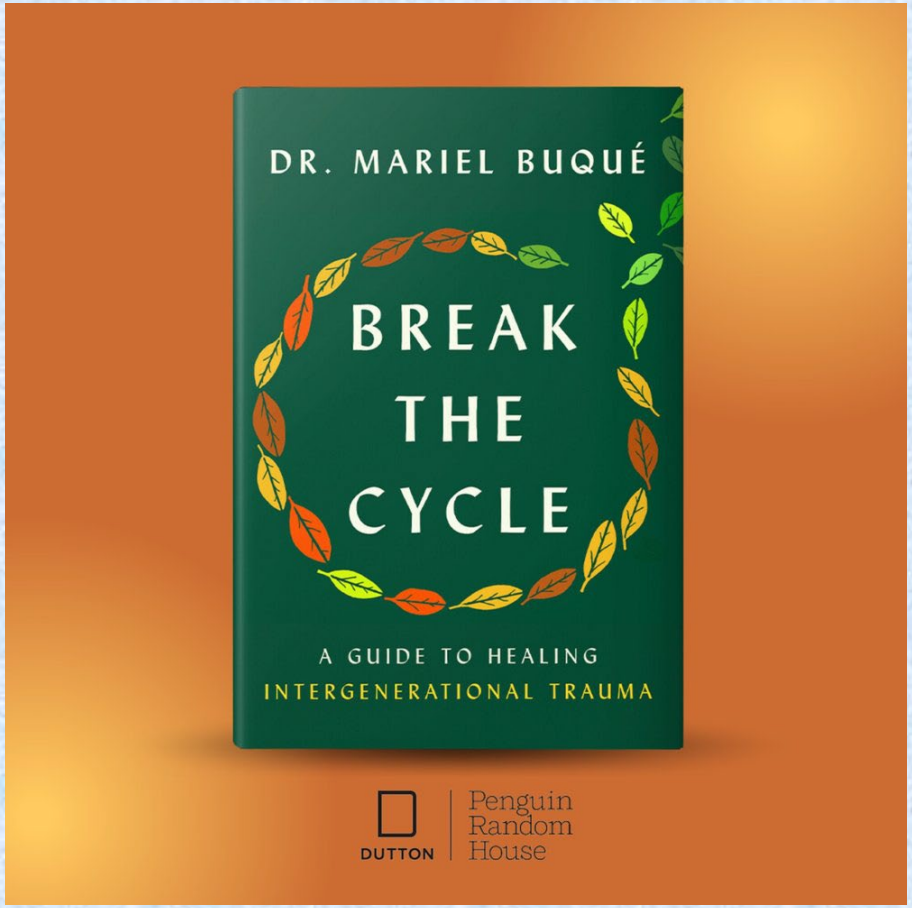
Protective factors, like floats on a net, help keep a person, family and community open to wellness, and provide for safe passage through life's ebbs and flows.

The net, like a mother's womb, represents life and transformation, outcomes of a safe passage.

Watchmen in the cedar canoes keep lookout for salmon entering the net. At the right moment the net is pulled into the inshore canoe and fish are deposited in the shore canoe. The people on the canoes each know their place and purpose as part of the crew. And working together, they support the net from both sides.



Break the Cycle: A Guide to Healing Intergenerational Trauma. Buque (2024)



8 - HEALTH DISPARITIES DRIVEN BY SOCIAL & ECONOMIC INEQUITIES

Health Disparities Driven by Social and Economic Inequities (Figure 1). Ndugga & Artiga (2023).

Figure 1

Health Disparities are Driven by Social and Economic Inequities

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Camp Rosey [Native Grief & Loss] Logic Model (Figure). August/TIC (2024).

Camp Rosey Logic Model

Inputs	Activities	Outputs	Short Term outcomes	Intermediate Outcomes	Long Term outcomes
Youth experience family member loss Funding YMCA Camp Seymore Site TIC infrastructure Rose Island Farms Herbalist Supplies Elders Mental Health specialist Traditional teachers Food FPIC, data sov, and traditional knowledge protection Previous feedback Indigenous methodologies Youth stipend Transportation Guest speaker	Cultural Activities Beading Weaving Ledger Art Formline Regalia Making Connection to Land Herbalist service Medicine making Harvesting Canoe Practice Nature walks Mentorship/Elders Storytelling Songs Food Sov/Feasting Connection to ongoing culture services Social Services Sharing Circles Individual Emergency NWIC? Counselors Early childhood Native Science STEM and Traditional Science activities Surveys	# Youth who go through program Projects and workshops completed by youth Emergency "cultural float" patch. Warm hand offs to Local School PSESD Native ed coordinator, local Tribe culture dept, Native and BIPOC youth non-profits. Pairwise ranking of activities and suggestions from youth	Help navigating grief through cultural activities and supportive relationships. Help prevent secondary trauma (suicide ideation, self-medication, mental health crisis) of original death. Increase positive feelings acknowledgment of strengths around Native self-identity. New or ongoing exposure to traditional knowledge and skills and connection to land.	Improved social and emotional well-being of Native youth. Ongoing connections and belonging to Native community. Previous Camp participants become future role-models and mentors. Increased resiliency to navigate trauma events. Keep students engaged in school and Native Science Story data	Increase community network for Native youth through school Native education, Tribal cultural community centers, Native non-profits, and Native mental health and crisis supports. Reduce Native suicide and self-medication rates. Preserve and connect Native culture to those who did not have an opportunity to learn. Increase grey literature and conversations with funders on traditional services as public health. Greater non-Native awareness of tradition used for healing and Indigenous methodologies. Increased HS grad rates and TCU enrollment

9 - SOCIAL AND ECOLOGICAL SYSTEMS FOR RESILIENCE AND STABILITY

Simplified Fishery Social Impact Assessment Model (Figure 2). Pollnac et al. (2006).

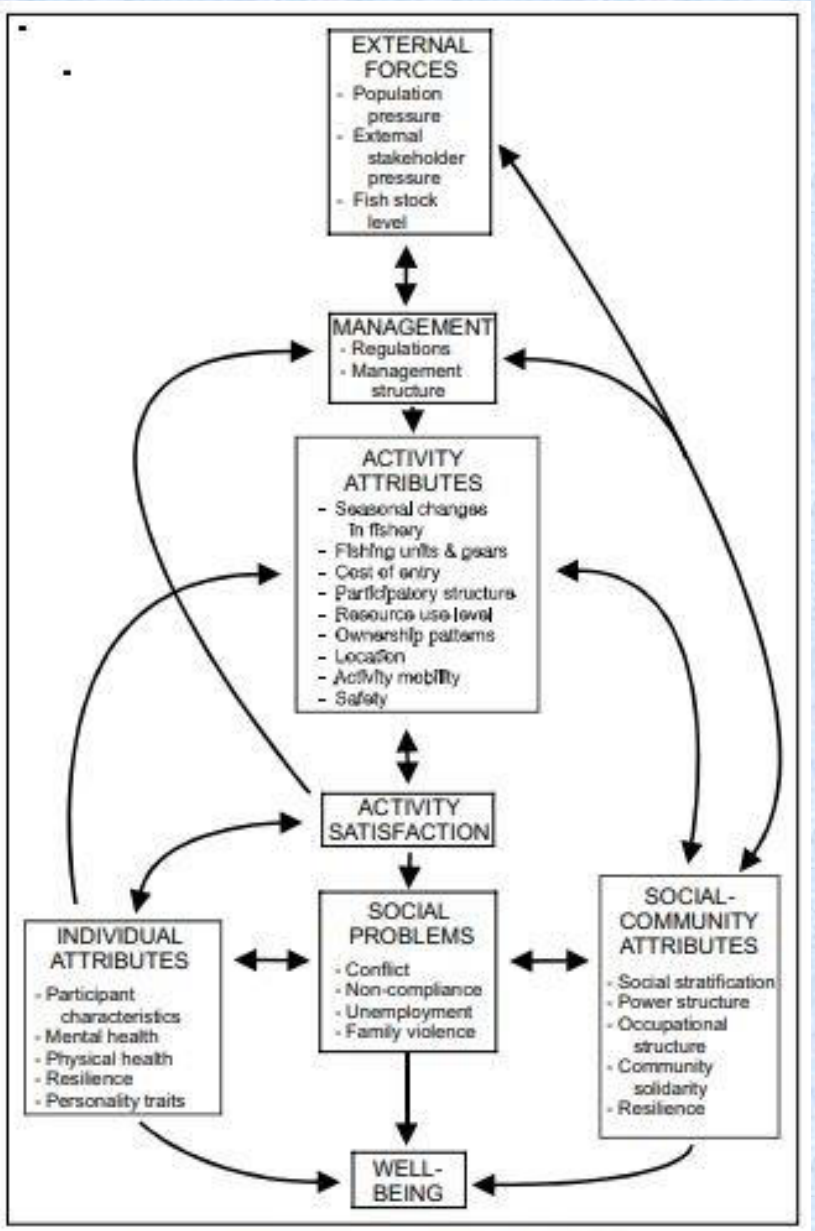

Figure 2.—Simplified fishery SIA model with selected indicators.

Social-Ecological Practices and Mechanisms for Resilience and Sustainability (Table 16.1). Folke et al. (1998).

From: Linking Social and Ecological Systems

CH. / Ecological Practices and Social Mechanisms for Building Resilience and Sustainability

418 Carl Folke, Fikret Berkes & Johan Colding

Table 16.1. *Social–ecological practices and mechanisms for resilience and sustainability*

1. Management practices based on ecological knowledge
Monitoring change in ecosystems and in resource abundance
Total protection of certain species
Protection of vulnerable stages in the life-history of species
Protection of specific habitats
Temporal restrictions of harvest
Multiple species and integrated management
Resource rotation
Management of succession
Management of landscape patchiness
Watershed management
Managing ecological processes at multiple scales
Responding to and managing pulses and surprises
Nurturing sources of renewal

2. Social mechanisms behind management practices

a) Generation, accumulation and transmission of ecological knowledge
Re-interpreting signals for learning
Revival of local knowledge
Knowledge carriers/folklore
Integration of knowledge
Intergenerational transmission of knowledge
Geographical transfer of knowledge

b) Structure and dynamics of institutions
Role of stewards/wise people
Community assessments
Cross-scale institutions
Taboos and regulations
Social and cultural sanctions
Coping mechanisms; short-term responses to surprises
Ability to re-organize under changing circumstances
Incipient institutions

c) Mechanisms for cultural internalization
Rituals, ceremonies and other traditions
Coding or scripts as a cultural blueprint

d) Worldview and cultural values
Sharing, generosity, reciprocity, redistribution, respect, patience, humility

10 - RELATIONSHIP BETWEEN ECOSYSTEM SERVICES AND WELLBEING

A Partial List of Goods and Services Ecosystems Provide as Commonly Viewed by Western Scientists and Those Proposed for Ecocultural Value (Table 1).

Burger et al. (2008).

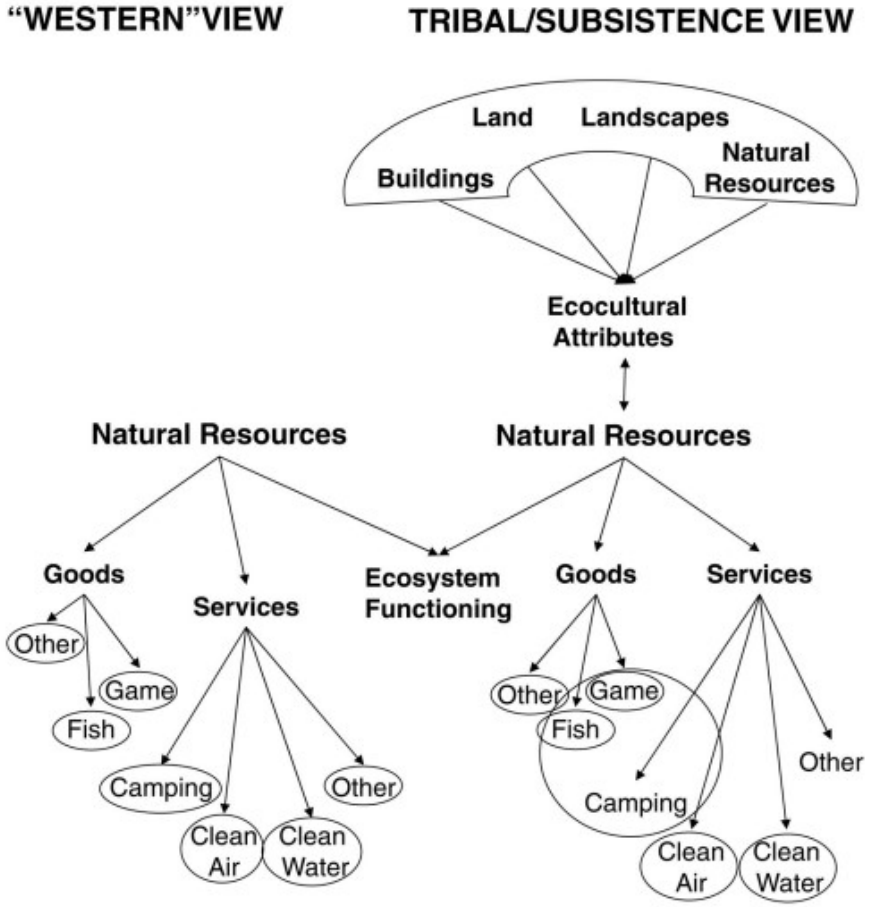

Fig. 1.
Schematic of a "Western" view of what is provided by natural resources, and a subsistence and tribal view.

Relationship between Ecosystem Services and Well-being (Figure 3.2).

Kofinas & Chapin III (2009).

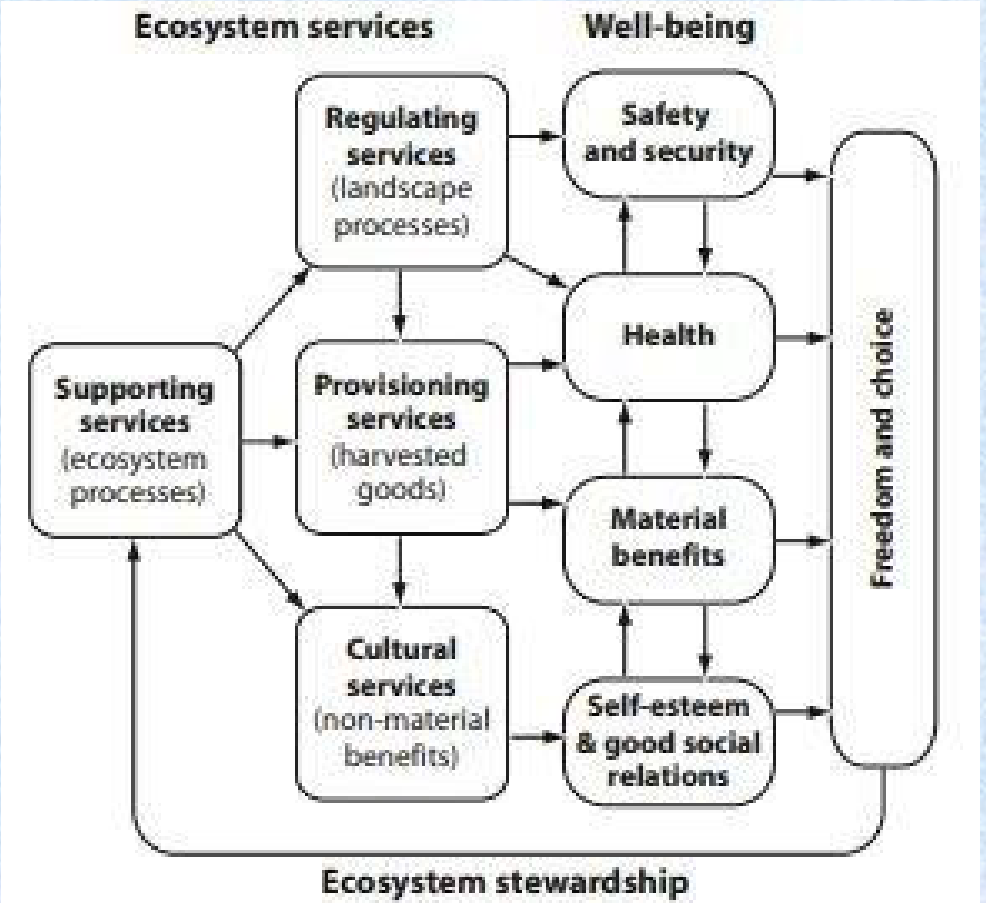

FIGURE 3.2. Relationship between ecosystem services and well-being. Adapted from the framework developed by the Millennium Ecosystem Assessment (MEA 2005d).

11 - ECOCULTURAL HEALTH & IDENTITY (Part 1)

Brief History of Ecosystem Health and Eco-Cultural Health: 1941-2010 (Table 2). Rapport & Maffi (2011).

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Appendix

Table 2 Brief history of ecosystem health and eco-cultural health: 1941–2010

Year	Event/Key publications	Details/References
1941	Essay by Aldo Leopold on "Land Sickness"	Leopold (1941)
1974–79	Statistics Canada develops a comprehensive framework for environmental statistics, integrating human activities and the environment; adopted by the OECD as "Pressure/State/Response" (PSR) framework	Rapport and Friend (1979)
1979–81	Linking medical diagnostics to ecosystem assessment	Rapport et al. (1979); Rapport and Regier (1980); Rapport et al. (1981)
1984–89	Early publications on ecosystem health and medicine	Rapport (1984), Schaeffer et al. (1988), Rapport (1989b)
1985	Identification of an "Ecosystem Distress Syndrome"	Identification of common signs of ecosystem breakdown under anthropogenic stress (Rapport et al. 1985)
1986	1st Canadian State of Environment Report; application of PSR framework	Bird and Rapport (1986)
1991	1st International Workshop on Ecosystem Health	University of Illinois, Allerton Park. Co-Chairs: David Rapport and David Schaeffer
1991	Formation of the International Society for Ecosystem Health (ISEH)	David Rapport, President (1992–2000); Robert Costanza, President (2000–2002)
1992	First book on ecosystem health	Costanza et al. (1992)
1992–Present	Governments and international organizations incorporate ecosystem health principles and goals in mandates and monitoring programs	Beginning with the adoption of Principle 7 of the Rio Declaration[a], ecosystem health appears in statement of goals of a number of leading international organizations including WWF, UNEP, IUCN, WHO
1993	NATO Advanced Research Workshop on the Health of Large-Scale Ecosystems	Chateau Montebello, Quebec. Co-convenors: D. Rapport and P. Calow
1994	1st International Symposium on Ecosystem Health and Medicine	Ottawa, Ontario. Co-chairs: D. Rapport and R. Costanza; 800 participants from more than 30 countries
1995	Establishment of Ecosystem Health Program by the International Development Research Centre (IDRC), Ottawa, Ontario	IDRC initiates a program in ecosystem health with a focus on ecosystem approaches to human health
1994–97	Agro-ecosystem Health program at the University of Guelph (Canada)	Sponsored jointly by the three national science councils (Tri-Council) of Canada and D. Rapport
1994–97	1st University Chair in Ecosystem Health	Sponsored by the three national science councils (Tri-Council) of Canada—awarded to the University of Guelph and D. Rapport
1995	Publication of NATO Advanced Research Workshop papers: Evaluating and Monitoring the Health of Large-Scale Ecosystems	Rapport et al. 1995 (eds) Springer-Verlag, Heidelberg. 454 pp.
1995	Launch of the first international peer-reviewed journals in ecosystem health	Ecosystem Health (Blackwell Science), Journal of Aquatic Ecosystem Health and Management (Kluwer)
1996	1st Eco-Summit	Copenhagen, Denmark. Co-convenors: D. Rapport and S. E. Jorgensen
1997	Ecosystem health introduced in Canadian veterinary schools	Ribble et al. (1997)
1998	1st Ecosystem Health Program in a medical school, at the University of Western Ontario (London)	Co-founders: D. Rapport and J. Howard
1998	1st graduate textbook on ecosystem health	Rapport et al. (1998c)
1999	International Congress on Ecosystem Health	Sacramento, California. Co-chairs: D. Rapport and W. Lasley
2000	International Symposium on Ecosystem Health	Brisbane, Queensland. Co-Sponsored by ISEH
2002	International Symposium: Healthy Ecosystems, Healthy People: Linkages Between Biodiversity, Ecosystem Health and Human Health	Washington DC. Co-sponsored by ISEH, Conservation International, World Health Organization, and the United Nations Environment Programme. R. Costanza, Chair
2002	Indo-Pacific Conference on Ecosystem Health	Perth, Australia. Sponsored by Edith Cowan University
2002	White Oaks Symposium on "Conservation Medicine: ecological health in practice"	Aguirre et al. (2002)
2003	Publication of *Managing for Healthy Ecosystems*	Proceedings of the International Congress on Ecosystem Health. Rapport et al. (eds) (2003)
2003	International Symposium on Ecosystem Health "Airs, Waters, Places": Transdisciplinary Conference on Ecosystem Health	Newcastle, Australia. Albrecht (2003)
2003	"International Forum on Ecosystem Approaches to Human Health"	Montréal, Quebec. Sponsored by International Development Research Centre, Ottawa. Co-chairs: D. Rapport and D. Mergler. See Rapport and Mergler (2004)
2004	*EcoHealth* launched (successor journal to *Ecosystem Health*)	An international peer-reviewed journal published by Springer. B. Wilcox, editor
2000–04	Ecosystem Health Programs in professional schools	Rapport et al. (2004)
2006, 2008	EcoHealth Conferences (Wisconsin and Mexico) under the newly formed International Association for Health and Ecology	Following the dissolution of ISEH (2002), some members proceeded to form a new association more exclusively focused on the intersection of health and ecology
2007–10	Principles of eco-cultural health	Presented at University of Tokyo, campus-wide seminar, April 2007 (D. Rapport & L. Maffi); also at Symposium "Sustaining cultural and biological diversity in a rapidly changing world", American Museum of Natural History, New York, April 2008 and at World Conservation Congress, October 2008. Rapport and Maffi 2010; Rapport 2010

[a] Principle 7 of the Rio Declaration on Environment and Development (1992) reads: "States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystems. In view of the different contributions to global environmental degradation, states have common but differentiated responsibilities." (Johnson 1993)

Conceptual Model of the Linkages between Cultural Ecosystem Services and Cultural Landscape Research (Figure 1). Tengberg et al. (2012).

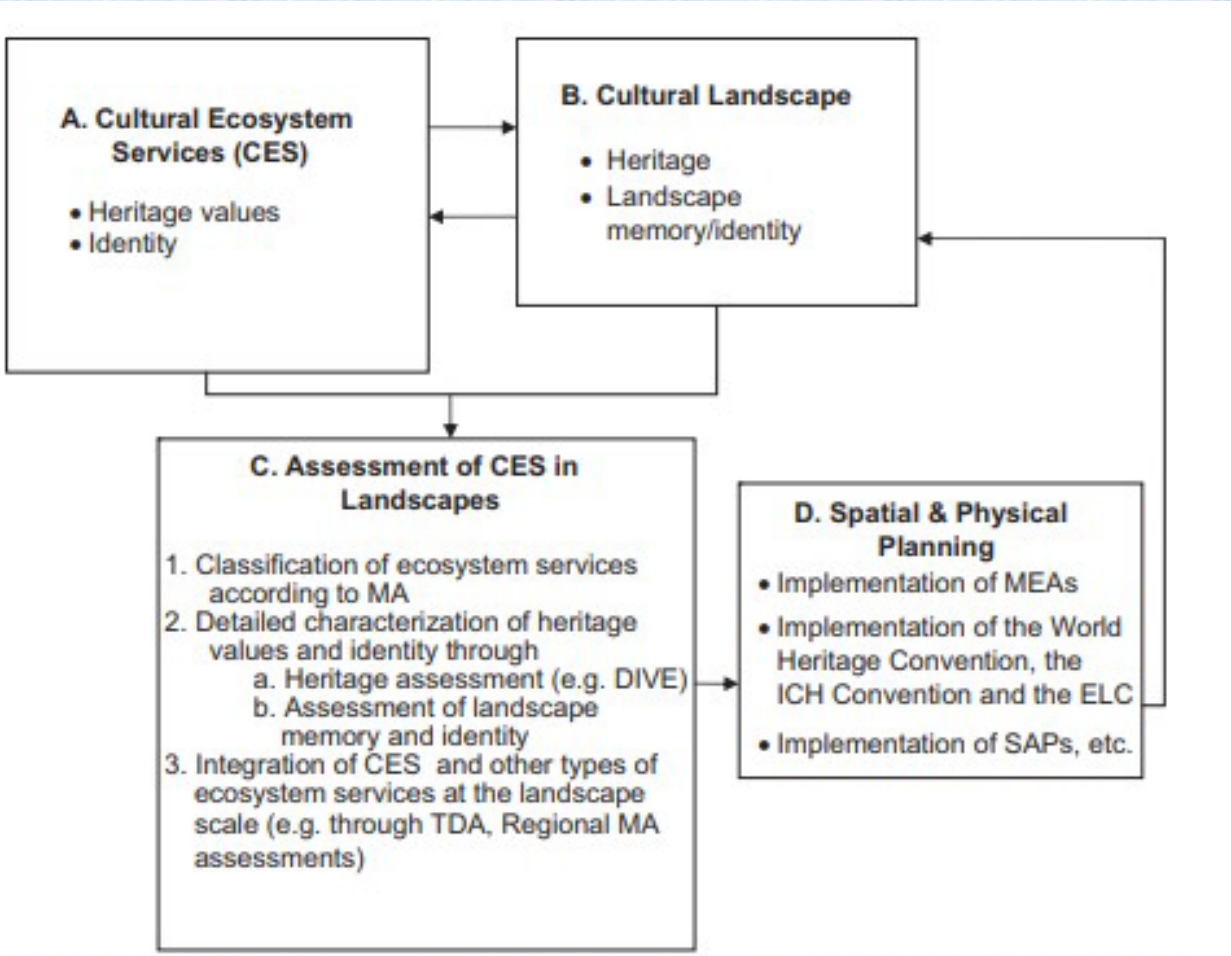
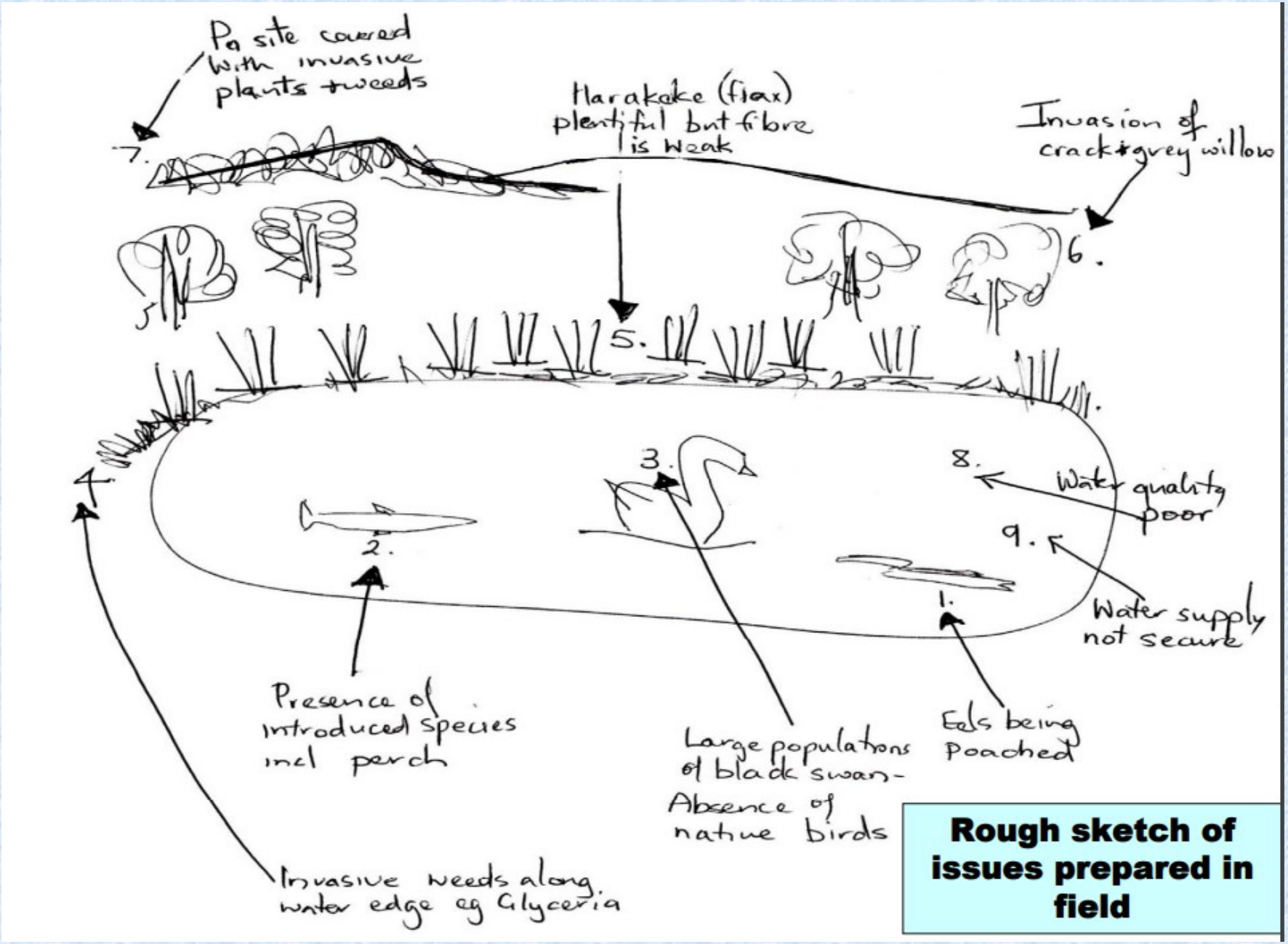


Fig. 1. Conceptual model of the linkages between Cultural Ecosystem Services and Cultural Landscape research.

11 - ECOCULTURAL HEALTH & IDENTITY (Part 2)

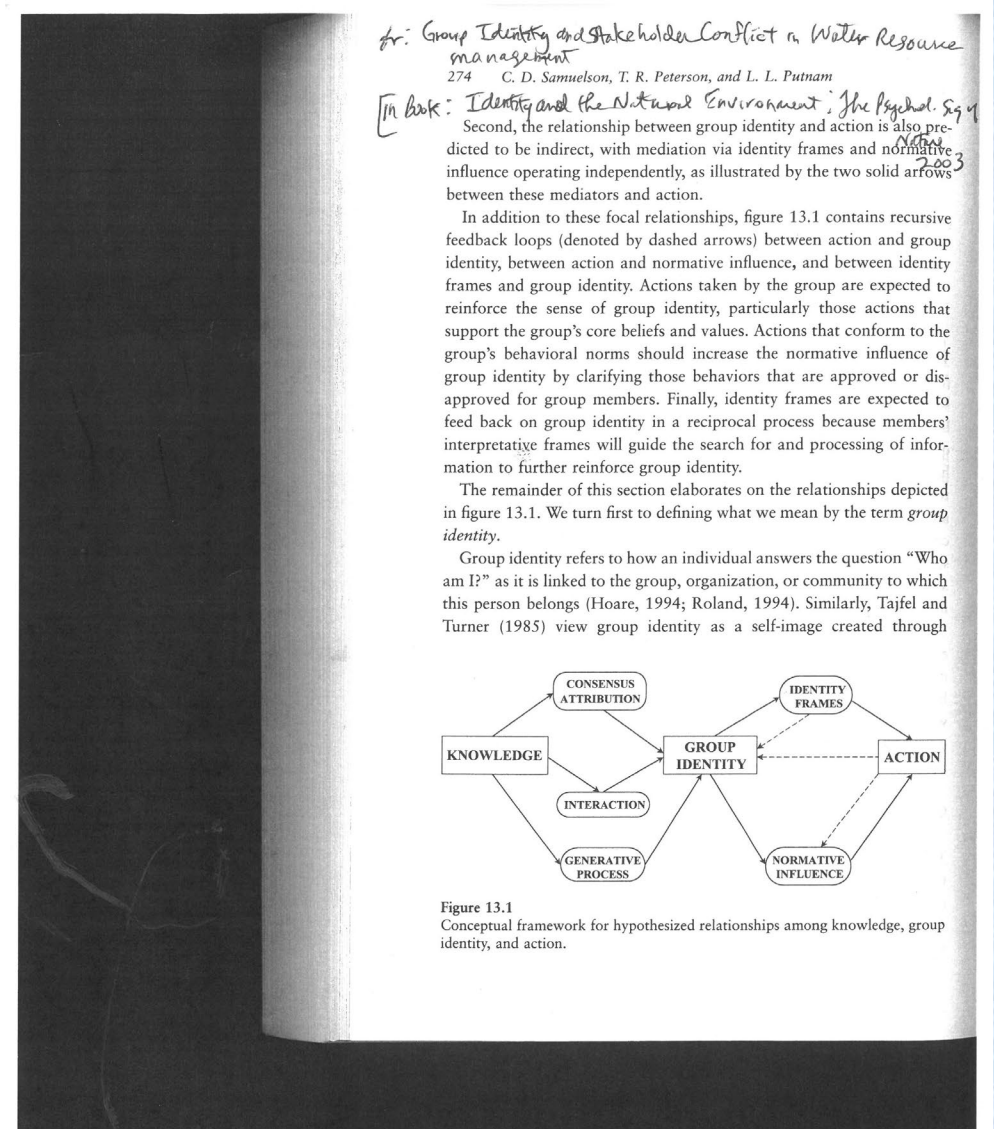
A Sketch of Issues Associated with a Site of Significance (Figure 3).

Tipa & Nelson (2008).



12 - NATIVE HEALTH, RISK & JUSTICE: TRUTHS & RECONCILIATIONS (Part 1)

Conceptual Framework for Relationships among Knowledge, Group Identity, and Action (Figure 13.1). Samuelson et al. (2003).



fr: Group Identity and Stakeholder Conflict in Water Resource management

In Book: Identity and the Natural Environment, The Psychol. Sig of Nature 2003

Second, the relationship between group identity and action is also predicted to be indirect, with mediation via identity frames and normative influence operating independently, as illustrated by the two solid arrows between these mediators and action.

In addition to these focal relationships, figure 13.1 contains recursive feedback loops (denoted by dashed arrows) between action and group identity, between action and normative influence, and between identity frames and group identity. Actions taken by the group are expected to reinforce the sense of group identity, particularly those actions that support the group's core beliefs and values. Actions that conform to the group's behavioral norms should increase the normative influence of group identity by clarifying those behaviors that are approved or disapproved for group members. Finally, identity frames are expected to feed back on group identity in a reciprocal process because members' interpretative frames will guide the search for and processing of information to further reinforce group identity.

The remainder of this section elaborates on the relationships depicted in figure 13.1. We turn first to defining what we mean by the term *group identity*.

Group identity refers to how an individual answers the question "Who am I?" as it is linked to the group, organization, or community to which this person belongs (Hoare, 1994; Roland, 1994). Similarly, Tajfel and Turner (1985) view group identity as a self-image created through

Figure 13.1
Conceptual framework for hypothesized relationships among knowledge, group identity, and action.

Five Practices for Decolonizing Ecology (Figure 2). Trisos et al. (2021).

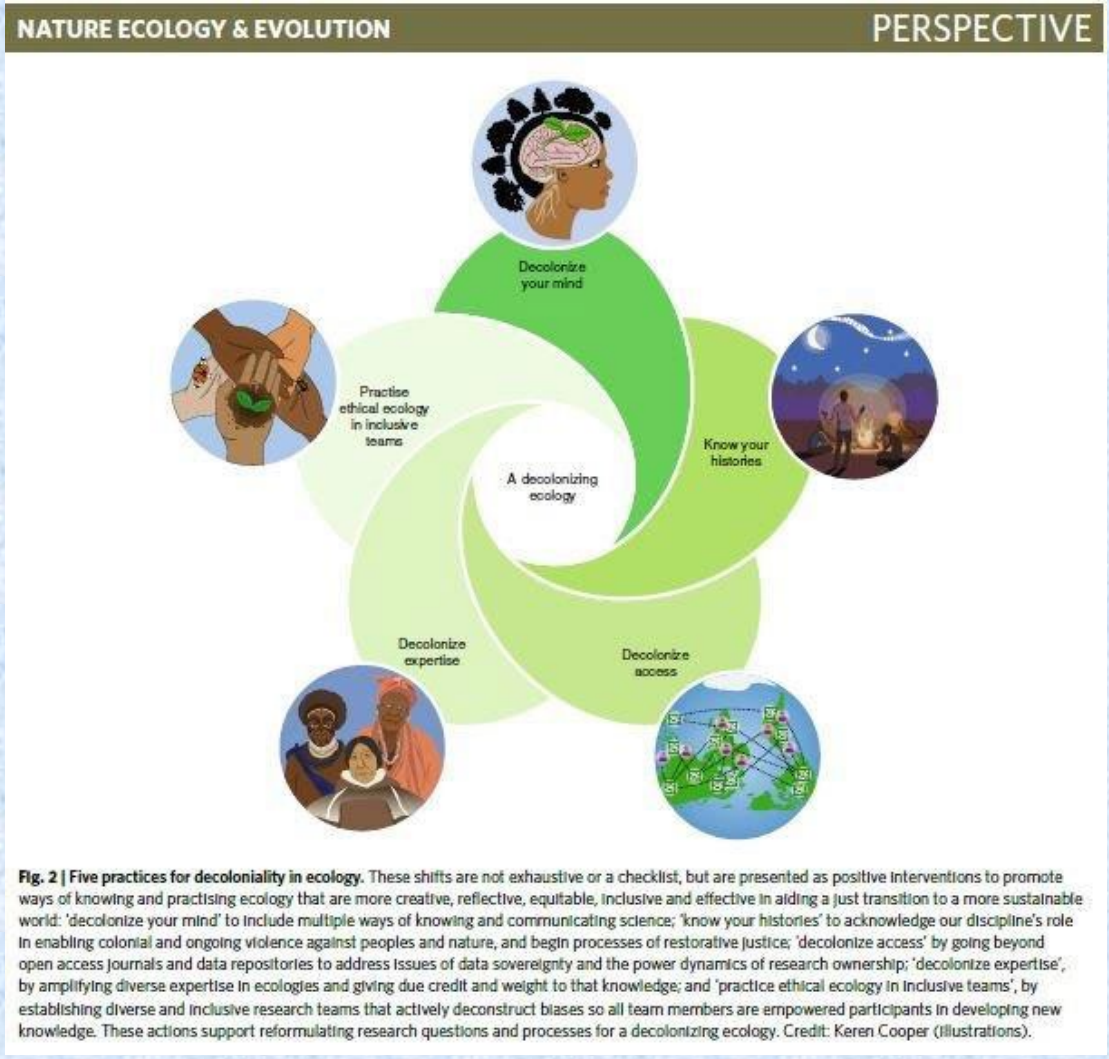


Fig. 2 | Five practices for decoloniality in ecology. These shifts are not exhaustive or a checklist, but are presented as positive interventions to promote ways of knowing and practising ecology that are more creative, reflective, equitable, inclusive and effective in aiding a just transition to a more sustainable world: 'decolonize your mind' to include multiple ways of knowing and communicating science; 'know your histories' to acknowledge our discipline's role in enabling colonial and ongoing violence against peoples and nature, and begin processes of restorative justice; 'decolonize access' by going beyond open access journals and data repositories to address issues of data sovereignty and the power dynamics of research ownership; 'decolonize expertise', by amplifying diverse expertise in ecologies and giving due credit and weight to that knowledge; and 'practice ethical ecology in inclusive teams', by establishing diverse and inclusive research teams that actively deconstruct biases so all team members are empowered participants in developing new knowledge. These actions support reformulating research questions and processes for a decolonizing ecology. Credit: Keren Cooper (illustrations).

12 - NATIVE HEALTH, RISK & JUSTICE: TRUTHS & RECONCILIATIONS (Part 2)

Strategic Approach to River Management that Integrates Indicators, Endpoints, and Values (Figure 8.8).

D. Stafford Smith et al. (2009).

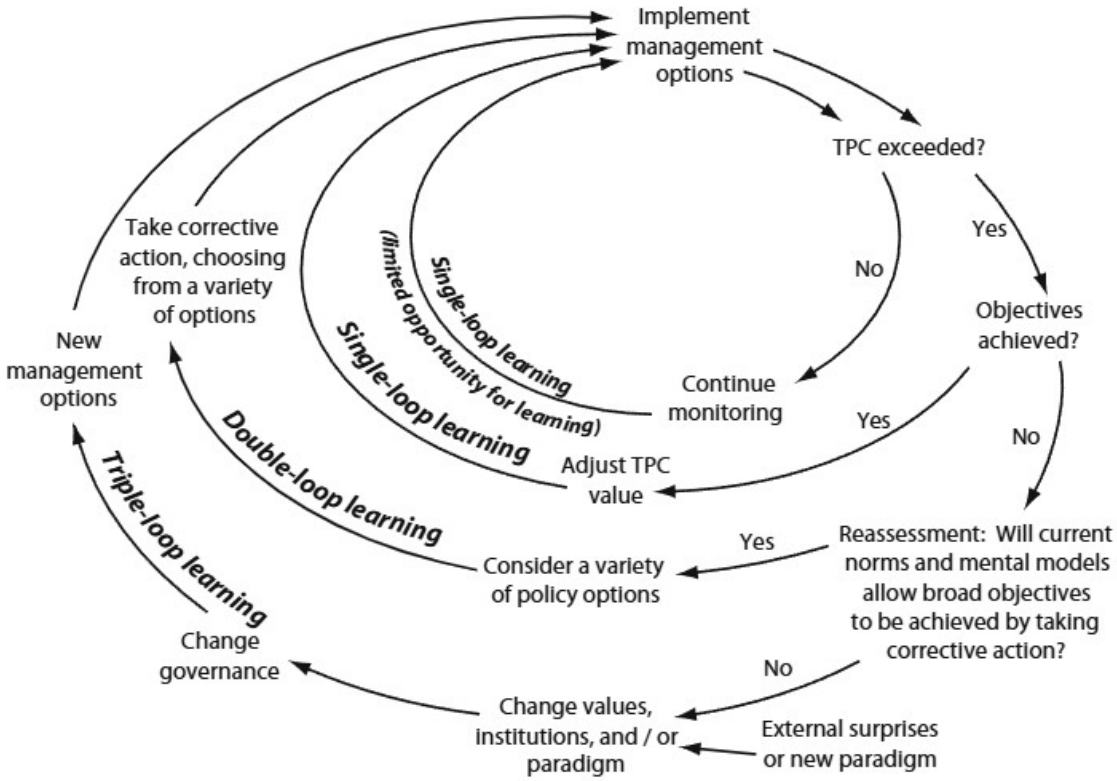


FIGURE 8.8. Strategic approach to river management that integrates indicators, endpoints, and values in the Kruger National Park. Thresholds of probable concern (TPCs) define the acceptable levels of heterogeneity. If the system remains within these limits, monitoring continues. If management objectives are met despite the TPC being exceeded, the threshold value is changed, but monitoring continues. If the TPC is exceeded and management fails to meet its objectives, a more fundamental reassessment occurs, leading to a modification or invention of new management strategies. Sometimes this reevaluation leads to an entirely new paradigm or new understanding, especially if the process has been triggered by unexpected events or is considered in the context of a new paradigm. These more fundamental reevaluations often require a change in governance, involving new sets of actors (Biggs and Rogers 2003). See also Fig. 5.1 on single-, double-, and triple-loop learning.

The "Ecocultural Spiritual Health Identity" Model

Jeffrey Thomas, 2024

Do The Presentation Themes|Images Offer Useful Guidance?

PUYALLUP TIMBER FISH & WILDLIFE PROGRAM

&

TAHOMA INDIAN CENTER

2025 Native Health Equity Partnership Goals & Objectives: