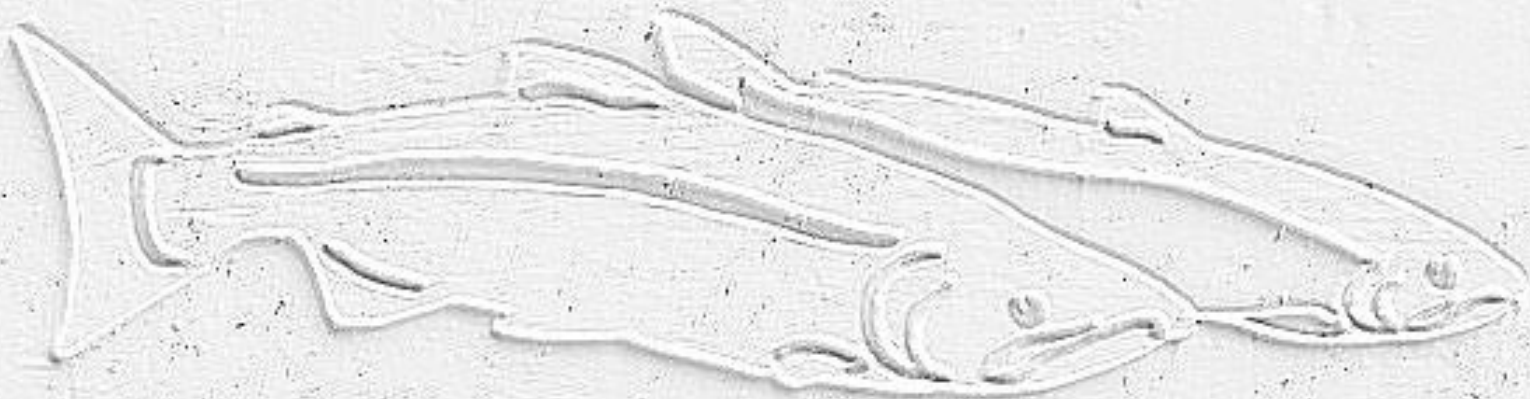


Tribal Perspectives on Exposure Assessment



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Tribal Consultation

- **Executive Order 13175 – Consultation and Coordination with Indian Tribal Governments:**
 - acknowledges the rights of Tribes as sovereign governments with plenary powers and rights of self-determination,
 - acknowledges the federal government's trust responsibility to Tribes
 - “EPA works with Tribes on a government-to-government basis to protect the land, air, and water in Indian country.” *EPA Indian Policy*
- **EPA has a mixed record on tribal consultation, especially regarding risk assessment; recently some big problems and ineffective mechanisms.**
- **Great differences between individuals and regions.**

Requirement -- Driving Factors

There are primary legal drivers:

- ↔ **Federal Fiduciary Trust Obligations**
- ↔ **Treaties between Indian Nations and the US Government – “*supreme law of the land*”**

There are many recent drivers:

- ↔ **Health and Environmental Protection laws**
- ↔ **Cultural Resource Protection and Access laws
(Natural Resources = Cultural Resources)**
- ↔ **Executive Orders (e.g. 12898-EJ/subsistence)**
- ↔ **Tribal Codes and Standards**

Larger Context – Environmental Health

EPA's Comparative Risk Manual

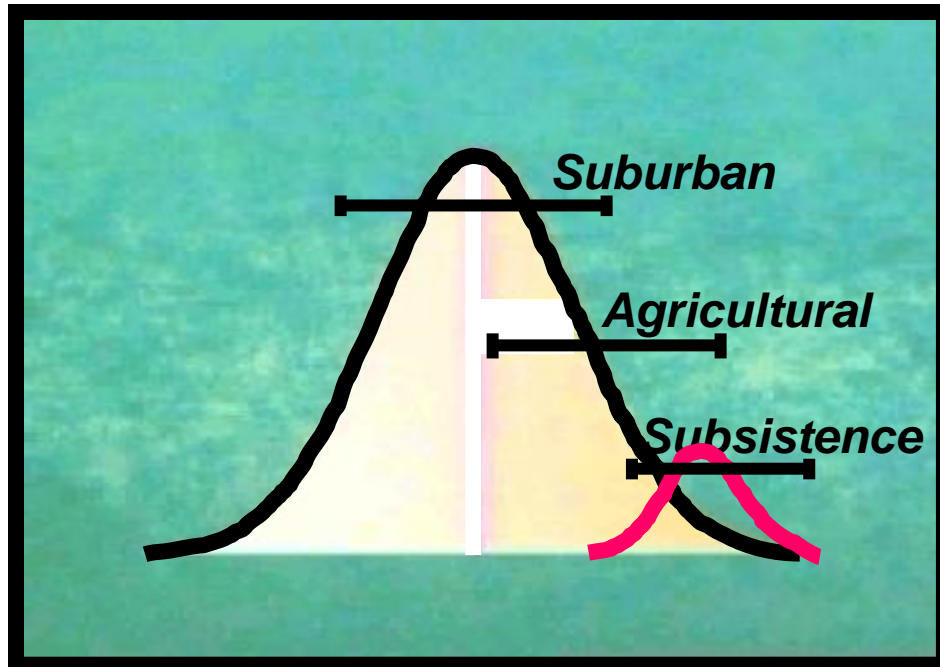
*“A Guidebook to Comparing Risks and Setting
Environmental Priorities” EPA 230-B-93-003 (1993)*

Human – Ecological - Quality of Life.

Public Health and community well-being in Tribal communities must include human health, a healthy ecology, cultural health, support for sovereignty, basic infrastructure, language, education, religion.

**Clusters of co-risk factors increase sensitivity.
e.g., underlying health, poverty, health care.....
risk = exposure x toxicity x sensitivity**

Evaluate vulnerable groups with disproportionate exposure



Traditional lifestyles are not just the extreme tail of a general population exposure range, but a discrete LIFESTYLE.

Know Your Community

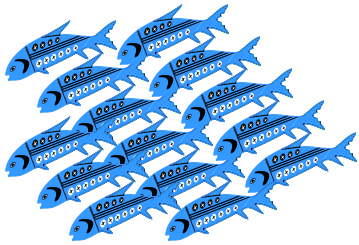
**Know the tribal history,
especially regarding
natural resources use.
Rich, diverse, complex,
nuanced, observant.**

**Tribal communities may
be quite diverse if
federal government
forced tribes together.
Tribes can have many
subgroups – may not
be appropriate to
average them together.**

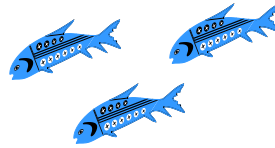


**Many people (temporarily)
eat less fish due to lost
access, prosecution, lack of
time and transportation,
awareness of contaminants.
Refugee psychology,
internalized oppression,
pervasive.**

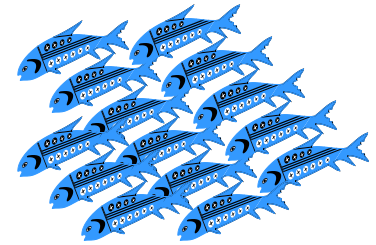
Defining the temporal scope of the scenario



Past



Present



Future



***Original
conditions***



***Current
(contaminated
and reduced)***



***Restored
(and subset
of current)***

Not past vs present; but how many people are in which group at present

Ask the Right Question – **Fish Consumption Rate Example**

- 1. Do you want to know current average (suppressed) rates for public health and risk assessment?**
- 2. Do you want to know about the subsistence group or other groups within the Tribe?**

This is not a ‘high-end tail’ of the tribal average, but a unique and specific lifestyle.

There is not a single “tribal” average lifestyle.

- 3. Do you want to document the true traditional, subsistence, Treaty-protected rate?**

Ask the right question *properly*.

- Strangers demanding answers and recording them or entering them into a computer are alarming. Need extra protection like substances of abuse research.
- History of misuse of information, sting operations.
- There may be no compelling reason to give accurate answers, even to another tribal member. This is a western, test-taking psychology.
- Problem with lack of phone, address, transportation, especially in the more traditional groups.
- Ways of communicating and teaching are oral and involve demonstration and correcting the student as s/he attempts the task and learns the context, history, stories, language, and traditional knowledge.

Tribal Subsistence Exposure Scenarios and Exposure Factors

- **Active, outdoor lifestyle in all climates with greater environmental contact rates.**
- **Direct exposure factors probably same in all climates; activity pattern & nutrition research to fill data gaps.**
- **Every diet will be different, based on the natural resources present and the unique cultural uses.**
- **Exposure scenarios –**
 - **“whole-life” full time residential, NOT recreational**
 - **nutritionally complete diet(s)**
 - **3 complete and 5 in progress.**

Catalog or Inventory **Approach:**

**Lists of every plant eaten
with amounts of each;**

**Lists of “important”
species (typically >200);**

Lists of every place visited;

**Statistical surveys and
“real” tribal data.**

**Intrusive, data-intensive,
always incomplete.**

Holistic Overview **Approach:**

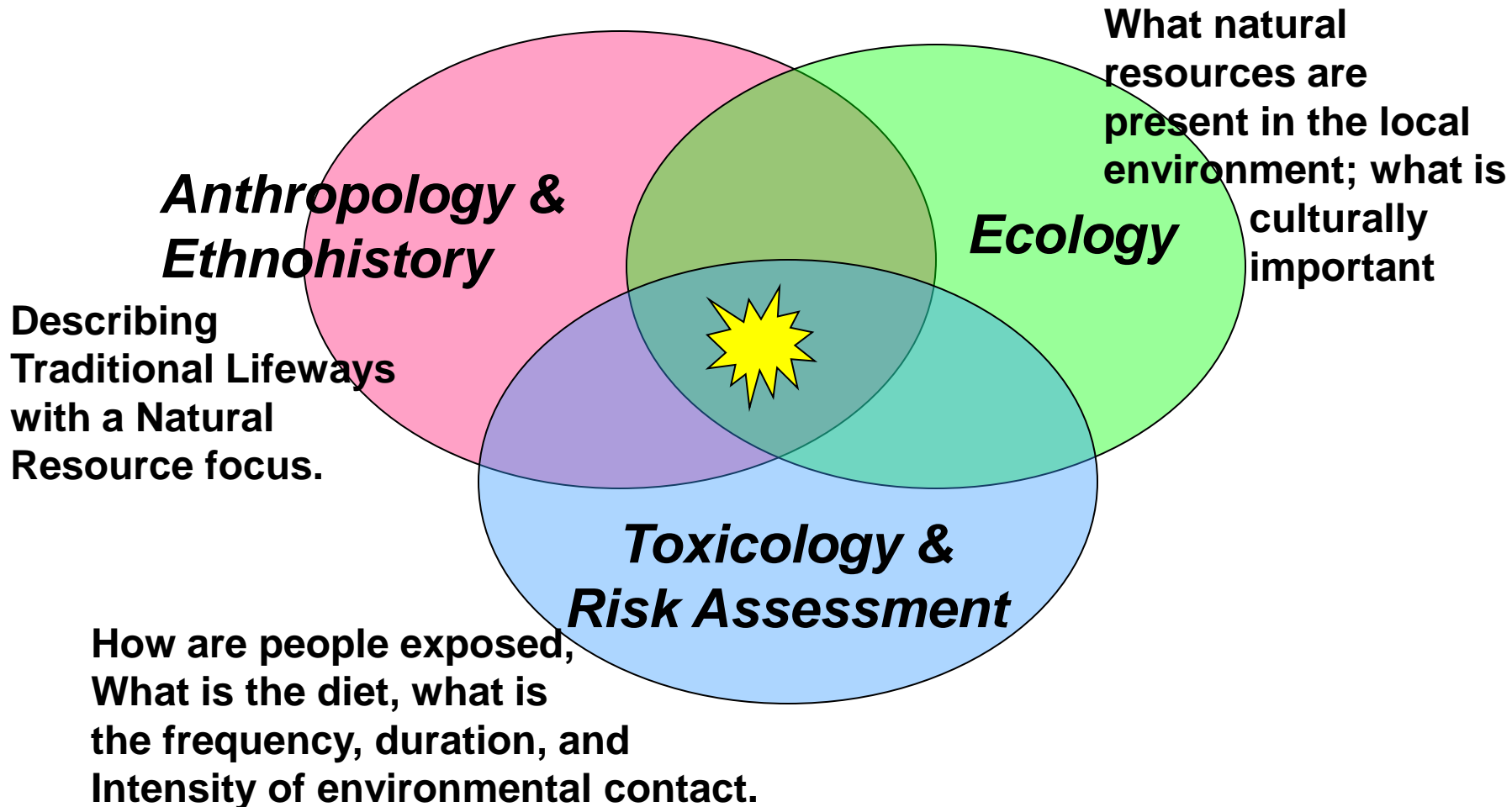
**Major food groups with
total calorie estimates**

**Indicators & Surrogates,
start with ecological web.**

**General understanding of
cultural activities for
development of
exposure factors**

**Less probabilistic but more
complete and accurate.**

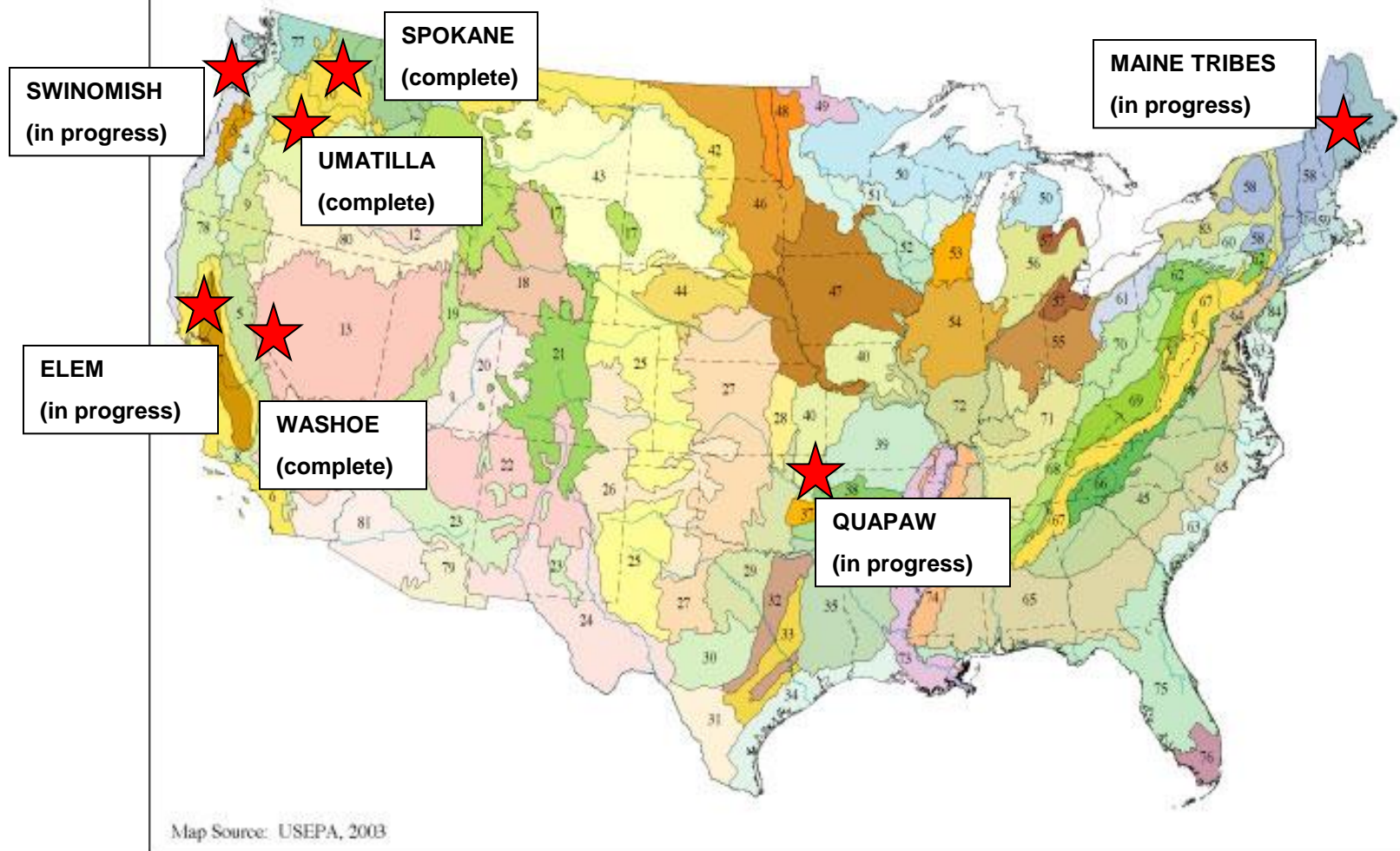
Tribal Scenarios or Exposure Factors are at the intersection of three areas:



Need to Use Combination of Methods with Multiple Lines of Evidence

- **Even for current information, questionnaires and data-intensive (statistical or probablistic) and intrusive methods do not work well in Tribal communities.**
- **Ethnographic methods are well-validated and widely used, but more open ended and time-intensive. They are just as “scientific” and probably more accurate.**
- **Ethnohistory to document traditional Treaty-based rates requires archival research and anthropological literature, as well as eco-historical research.**
- **Follows *Daubert* rules of evidence and the scientific method – repeatable, verifiable, testable.**

Level III Ecoregions of the Conterminous United States



Rates within a Tribe are likely bimodal

Salmon example

Walker, Hunn,
Hewes, Anastasio,
Harris-Harper,
Many others and
many lines of
evidence.
Recognized by Boldt

620-1000 gpd

**Subsistence
rates**

Traditional members,
fishing families, non-
participants, labeled as
“outliers” giving false or
unreliable information.

Suquamish
Tulalip-Squaxin

CRITFC

EPA
recommendations
(6.5 or 17.5 gpd)

Approx 1 pound
per day (454 gpd)

63 gpd average

6.5 gpd

Suppressed rates, as well
as upland tribes, hunting
clans, people who have
time to answer questions
rather than get food,
politically correct
answers, younger
members, etc.

Grams eaten per day

**Treaty-Based and Current Subsistence
Fish Consumption Rate = 620 grams/day, or 500 pounds/year**

***Cited by Boldt, 1974, as a defensible and reasonable Treaty-based rate;
documented as currently valid for a subset of tribal members.***

Multiple lines of evidence:

- Early observers/trained naturalists (Lewis & Clark, etc)
- Missionaries (amateur anthropologists) – direct observation of fish catches and human population counts, storage & traded amounts.
- Pre-dam fish buying records, fish catch records
- Post-dam fishing site use & catch records, through 1950s (Walker)
- Reviews of early survey data (Hewes, Boyd, Anastasio, others)
- New ethnographic survey data from current traditional fishers (Walker, Harris); not captured in CRITFC survey.
- Nutritional ethnography and reanalysis of older data (Walker, Hunn)
- Nutritional, physiologic evaluation, with foraging theory data (Harper-Harris, others)
- Supporting evidence of health data; paleomedicine; archaeology; etc.

Ethics & Informed Consent

Try It. You'll like it.

TRUST ME

This Won't Hurt a Bit

I know just what you need

Federal Institutional Review Board rules require extra effort to explain benefits and disadvantages of collecting different kinds of data, using various methods, participating in various studies.

This should be a discussion at multiple levels of Tribal authority, not a sales pitch.

The Tribe must have ownership of the project & data.

Environmental Justice

- Combination of disproportionate exposures *and* higher sensitivity – combined in tribal communities.
- “Choice” vs Identity, Heritage, Religion, Hunger.
“This is our food, whether it’s contaminated or not.”
- Chemical Assimilation. Chemical Badge of Courage.
(vs bad parent and labeled stupid to eat polluted fish)
- Risk-Benefits must be evaluated differently – Tribes are already in a cultural deficit due to lost lands, damaged resources, loss of fish, and many other reasons.
- Existing body burdens (‘cumulative’ risk; RSC; ‘all fish’).
- Indian Wars are still waging; Indian fighters are alive and well. Every day there are dozens of battles to protect lands, rights, religion, health, and resources. Everyone is affected. Tribal budgets have to support legal, social, housing, roads, drinking water, economic, utilities, environmental issues, with very minimal staff.

Identify what is "At Risk"

- Cultural Ecosystems & Stories
- Resources & Eco-cultural Systems at risk
- Human systems and uses at risk
- Existing Stressors

*NEPA does this;
CERCLA doesn't;
other acts don't*

**INTEGRATED
CUMULATIVE**

Hazard Identification

- probability
- severity

Fate and Transport

- contamination of media,
- contamination of resources

Ecological
Exposure

Ecological toxicity
and sensitivity

Human
Exposure

Human toxicity and
sensitivity

Cultural
Exposure

Cultural toxicity
and sensitivity

Characterize Risk
to the Affected People and
their Eco-Cultural Systems
and Traditional Lifeways