

Mutton Consumption Survey

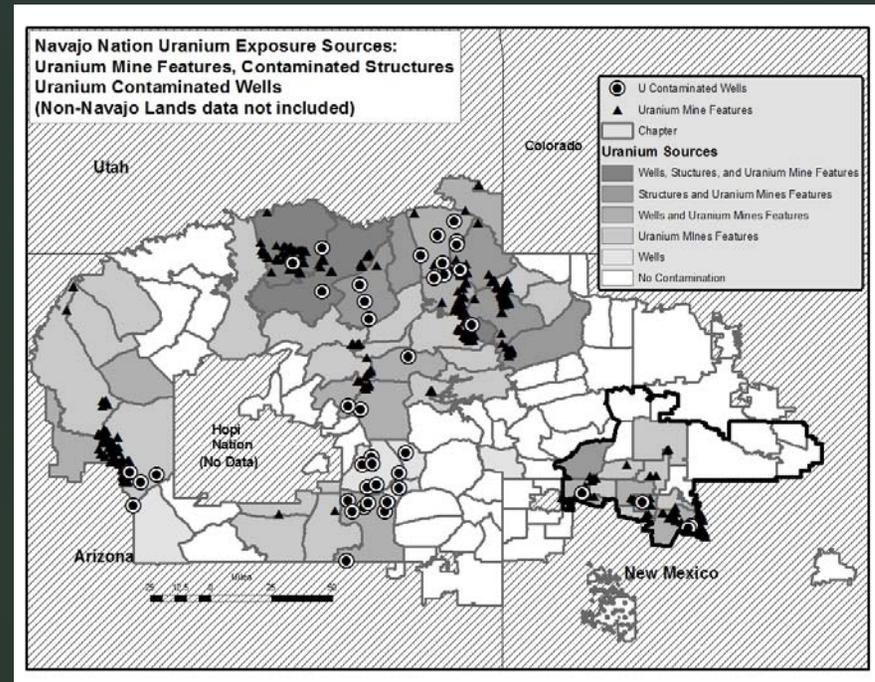


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Introduction: Uranium Mining

- Approval of Manhattan Project – 1942
- Uranium mining boom – Mid to late 1900's
- Mining activity on Colorado Plateau – Near Four Corners area, in AZ, NM, UT, and CO
- Navajo people facing serious health consequences





Overview

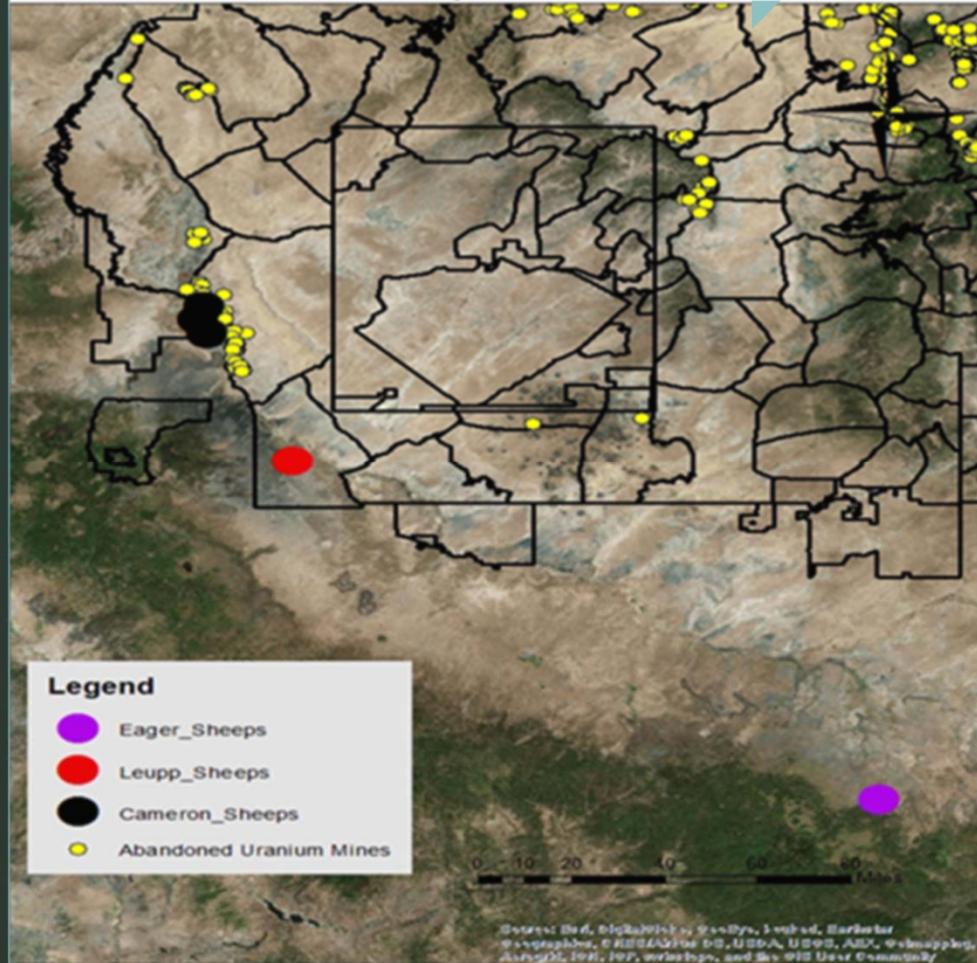
- Aim One: Characterize the extent of inorganic contamination in culturally significant food and water sources for two Navajo communities.
- Aim Two: Model dietary metal exposure and utilize the Indigenous Health Indicator to Assess Health Impact.
- Aim Three: Development of a Community-Participatory Multi-Level Policy Intervention Model.

▸ Aim One

- ▀ Characterize the extent of metal contamination in culturally significant food and water sources for two Navajo communities.

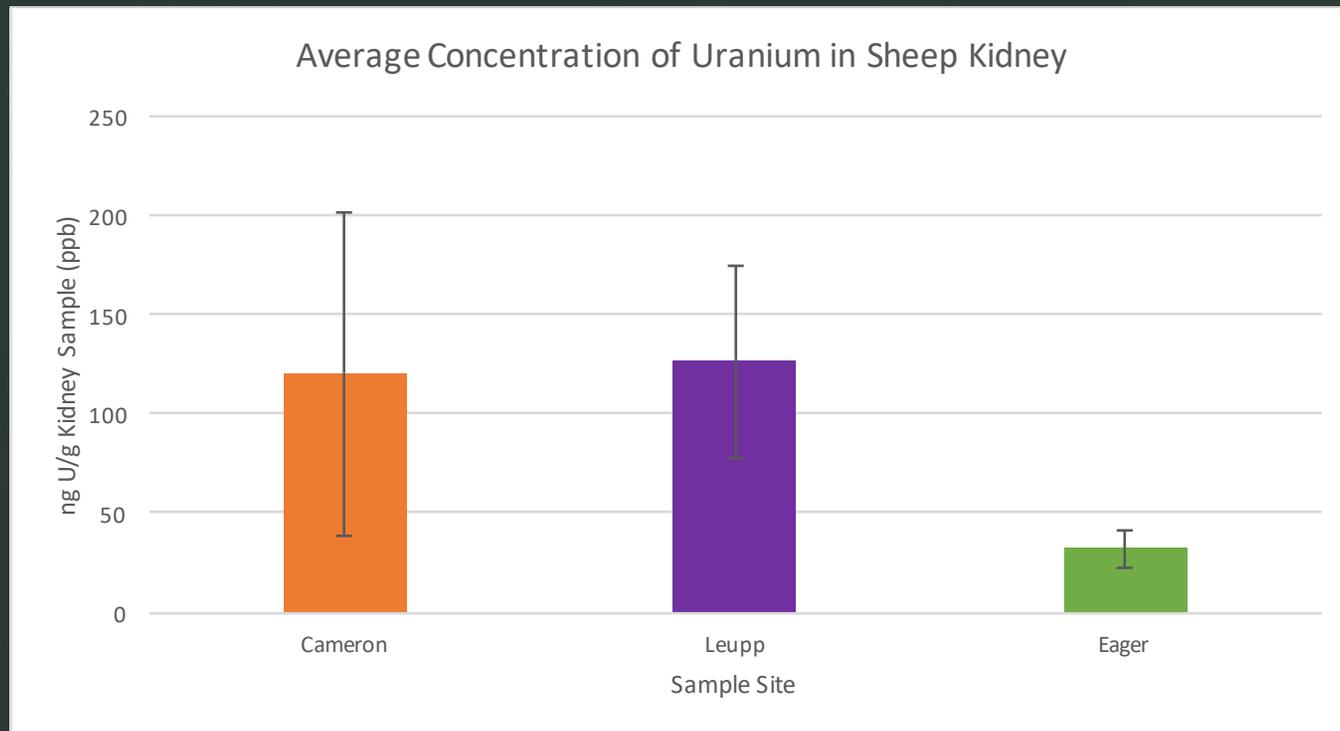


Sheep Locations

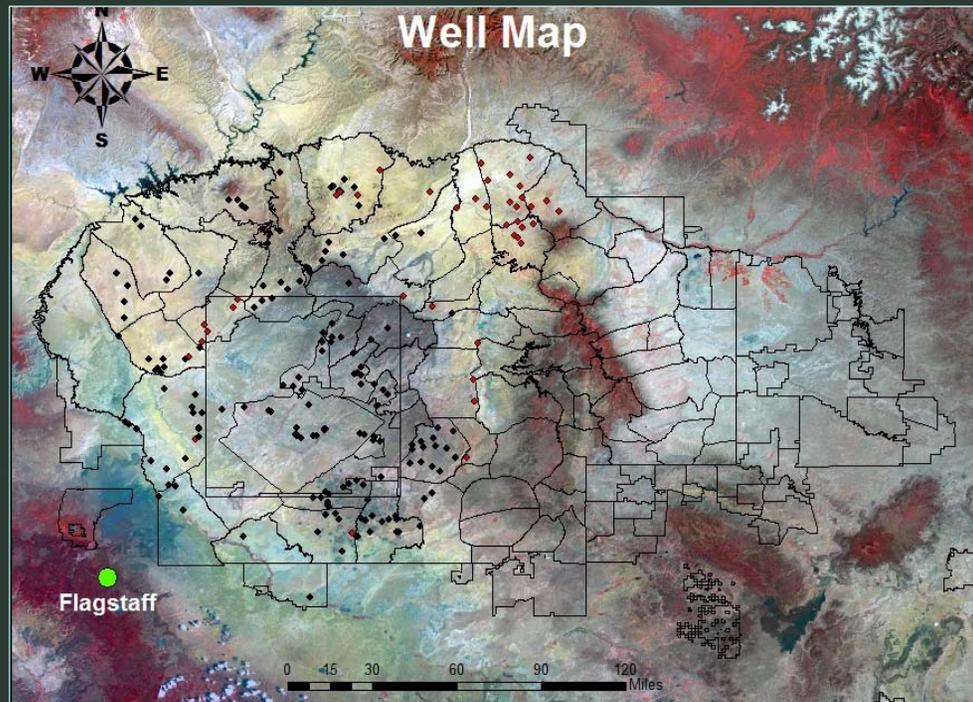
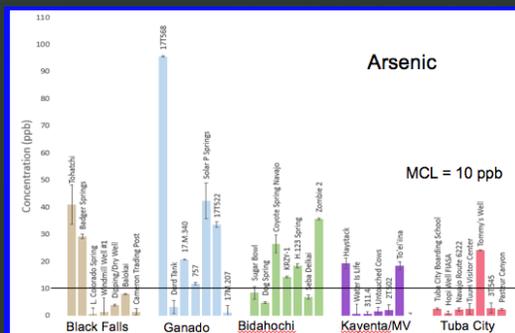
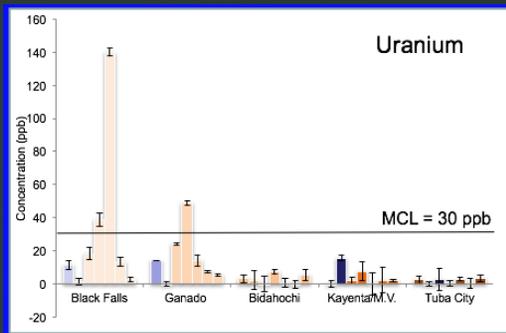


Results

- Cameron, AZ (Navajo, Mining Site)
- Leupp, AZ (Navajo, No Mining)
- Eagar, AZ (Off Reservation, No Mining)



Water Research – Over 200 wells sampled



▲ Aim 1 - Next Steps

- Mutton Study – work through statistical analysis of results
- Water Study - Investigate other analytes in samples (Fe, S, Pb, Se, Ni, Mn, etc)
- Provide results to communities
- Work with group of University of New Mexico to provide Navajo Nation with complete water information pertaining to U and As – Joe Hoover, University of New Mexico and Jonathan Credo, University of Arizona med student

▲ Aim Two

Model dietary
metal exposure
and utilize the
Indigenous
Health
Indicator to
Assess Health
Impact.



Aim Two

Objective

- Determine the consumption of mutton among the members of the Cameron Chapter as well as gain insights into the cultural significance of mutton to the community.



Approach

- Collaborated with Donatuto and Campbell with the Swinomish Tribe to develop survey based on their work with contamination of shell fish in the Columbian Basin



Community Support

Cameron Chapter Resolution (December 2016)

Western Agency Resolution (December 2016)

Tuba City Regional Health Board (January 2017)

Northern Arizona University Institutional Review Board (February 2017)

Navajo Nation Human Research Review Board (February 2017)

AIM Two

Model for dietary metal exposure, utilizing Indigenous Health Indicator (IHI) developed by the Swinomish to assess health impact.

Question	Please Circle Answer
1. Do you own sheep? If yes, approximately how many? _____	Yes No
2. Would you like to eat more mutton than you do now?	Yes No
3. If you butcher sheep, do you give some of it to family and/or friends for ceremonial use?	Yes No Sometimes
4. Do you think mutton is important for traditions?	Yes No
5. Would ceremonies be changed if there was no mutton?	Yes No
6. Would some ceremonies be impossible to perform if there was no mutton?	Yes No
7. Do you ever think or worry whether it's safe to eat mutton?	Yes No Sometimes
8. If you buy sheep, where do you most often buy it?	Cameron Leupp Tuba City Bashas Flea Market Other: _____
9. At what events do you eat sheep? Circle all that apply	Regular meal Ceremony Holiday Family Gathering Community Event
10. Do you think people ate more mutton in your childhood compared to today?	Yes No

Dietary History and Food Frequency Questionnaire for Mutton Consumption

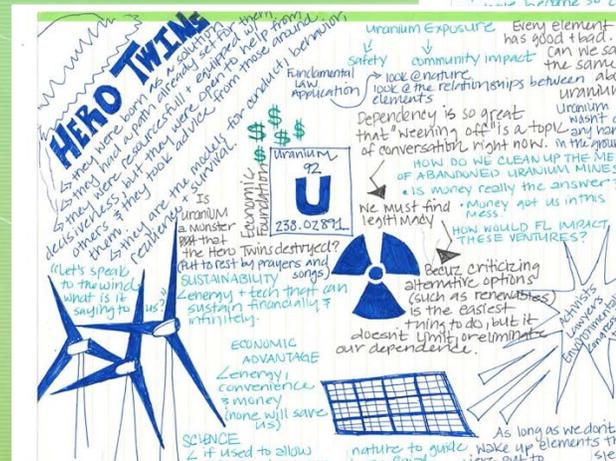
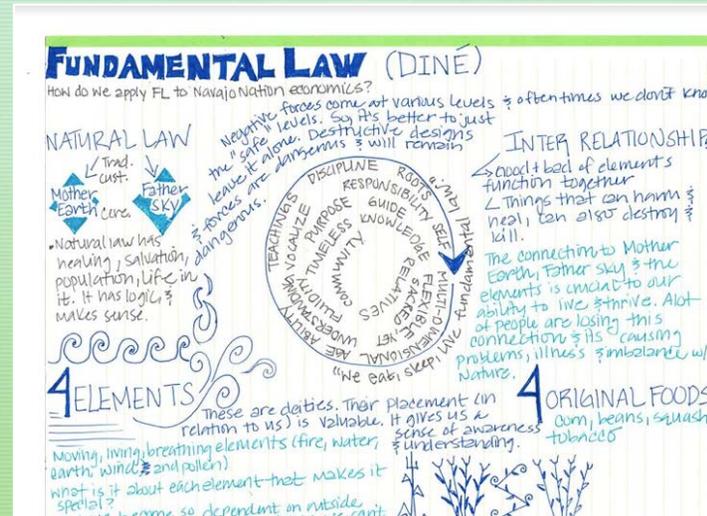
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▲ Aim Two - Next Steps

- Complete survey work – currently we have 72 surveys complete.
- Analyze survey results
- Provide results to communities
- Present results at the Navajo Research Conference sponsored by the Navajo Nation Human Research Review Board (October 18 & 19, 2017)

▀ Aim Three

- Collaborating with Elders to form policy on contaminated traditional food
- Meeting with tribal elders/knowledge holders to gain insights in Navajo Fundamental Laws
- Focus of Tommy Rock, doctoral candidate, dissertation work



Scribing Art – Notes capturing discussions with Traditional Knowledge Holders

▲ Aim Three - Next Steps

- Meet with Traditional Knowledge Holders to discuss culturally relevant policy around traditional foods
- Develop guidelines for mutton consumption

Present guidelines

- Cameron and Leupp Communities
- Traditional Knowledge Holders
- Tribal Leaders

Acknowledgments

Technical Assistance

- Dr. Michael Ketterer – ICP/MS (Metro State)
- Dr. Jamie Donatuto and Larry Campbell (Swinomish)
- Ingram Lab
- Dine' College

Collaborators

- Cameron and Leupp Chapters
- Jessie Roger, Eager Rancher
- Diné Hataalii Association
- Tuba City Health Board
- Navajo Nation Human Research Review Board

Funding

- National Institute of Environmental Health Sciences (NARCH and CIEHR)
- National Cancer Institute - Native American Cancer Prevention Program
- National Institutes of Health – Training Grants at NAU
- US EPA

Questions???



- Summer students from NAU, Dinè College (Navajo tribal college), Northland Pioneer College, Arizona Western College, and community members working together on sheep work

▶ Mutton Consumption Survey

- We want to determine Navajo consumption of mutton in order to develop policy with respect to traditional food
- Worked with the Swinomish Tribe, their elder Larry Campbell, and Jamie Donatuto, PhD (environmental health analyst) - to develop tools to assess consumption of mutton
- Swinomish have concerns about contamination of their traditional foods - shell fish – and have developed instruments to better understand consumption and cultural importance
- We currently have collected 56 mutton consumption surveys in the Cameron, Arizona community in southwest Navajo – we are aiming for 100 surveys completed