

NRSM 595 Contested Knowledge: A Primer for Conservation Professionals

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Meetings: I enjoy working with students and am happy to meet with you outside of class to discuss the course, your graduate work, etc. Just let me know you want to meet and we will find a time in short order.

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Course Description

To what degree does knowledge matter in contemporary society? What role does knowledge play in influencing individual, societal, and governmental decisions and actions? In STEM-based academic programs like ours, usually when we consider knowledge in relation to these questions we are thinking about something we refer to as scientific knowledge. That is, knowledge produced by us or our peers through research practices we learn in advanced methods classes and/or through lab/field work that typically focus narrowly and use highly specialized techniques of observation and analysis. Sometimes the knowledge we produce through these means is used to address conservation problems and we are happy. But often the knowledge we produce does not influence the world in the way we believe it should and is even contested, leaving us instead frustrated and bewildered. In response, sometimes we fault various others for ignorance or selfishness or religious beliefs or partisanship or dishonesty or any number of other things. Occasionally we focus on ourselves with the idea that the solution is our need to learn to communicate science better.

Neither approach is adequate. Taken very far, seeking fault in others leads to unhealthy and unproductive scapegoating but no growth (in ourselves or in others) or change (unless maybe your political goal is to rally your troops). Communicating science better is more productive, but is best understood as a necessary but insufficient response to the issue of what role knowledge we produce

plays in informing societal actions. Beyond simply communicating better, a professional challenge we need to address is how to keep communities of specialist scientists integrated with the communities we hope both support and benefit from our efforts. The knowledge we produce is often publicly funded (hence the need for societal support) but it is not the only form of knowledge that vies for public attention in the political market place (nor is it reasonable for us to believe it could or should be). So beyond simply communicating our knowledge better, if we want our knowledge to be useful and influential we need to understand the broader array of societal realms involved in the production and translation of knowledge into societal action. And we need to recognize the limitations of our knowledge as well as the goals, processes, and place of other forms of knowledge. The purpose of this course is to provide an opportunity to collectively explore these issues with the ultimate goal of enhancing our professional ability to work with and serve others in helping society rise to the conservation, social, and environmental challenges facing contemporary life.

The course is comprised of 5 units.

(1) Unit 1: Conservation and Institutional Realms of Knowledge

Institutions (like our profession) are created in social contexts in response to the values, goals, and conflicts in a particular culture at a given point in time. But over time, the original social contexts that gave rise to institutions change as technology, values, goals, meanings, and problems change. As a result, institutions must also evolve and adapt if they are to continue to exist and function successfully in that society. This unit briefly explores various visions about the production, transmission, and role of knowledge in a democracy including the role various institutional players (scientists, the media, government, citizens) play (or ideally should play according to the underlying vision). The focus is on the United States, starting with the dawn of the 20th century and continuing into the 21st century. A lot of change has happened in those 120 years, what are its implications for knowledge processes in society?

(2) Unit 2: The Psychology of Knowledge and Belief

Democracies are made up of individuals who can vote (the majority of them do, though a sizable percentage don't for various reasons). And the history of conservation in the U.S. over the last 120 years has been one of increasing citizen involvement through mechanisms other than the polls. We hope the knowledge we produce influences these individuals, we often are frustrated by the results. Do we have a realistic understanding about what people outside our specialized professional culture consider knowledge, how they acquire and process it, and how aspects of their identity (like political affiliation) influence beliefs? The readings in this unit explore current theory and research on topics like cognition, emotion, motivated reasoning, confirmation bias, how people judge truth, how partisan identity influences beliefs, and conditions that promote radicalization and extremism.

(3) Unit 3: Mediated Knowledge

Media has long played an important role in formation and transmission of societal knowledge. The nature of social media and accessibility of information have changed dramatically in the last several decades. What does that mean for 20th century visions of media's role in knowledge production and transmission? This unit explores ideas relevant to the evolving nature of media in the 21st century including topics ranging from the difference in cultures between science and journalism to growing concerns about fake news to the role of social media in diffusion of information (and misinformation).

(4) Unit 4: Indigenous Knowledge

Almost all of the research above focuses on WEIRD people (Western-Educated, Industrialized, Rich, and Democratic). In an intriguing and much discussed 2010 paper [Henrich et al.](#) note that this is the case for the vast majority of psychological research. They argue that this population is, well, WEIRD in the sense of not being representative of other peoples. Among other things WEIRD people are more likely to focus on self than on relationships, to think analytically rather than holistically, to categorize, and to treat objects as existing separate from their context (i.e., don't think contextually/ecologically) ([Haidt 2012:96-97](#)). Beyond these psychological differences, indigenous peoples have been on the short end of social justice including often not being accorded a seat at the political table. This section of the class focuses on knowledge in relation to Indigenous peoples in the U.S, considering both commonalities and diversity within Indigenous knowledge.

(5) Unit 5: Courting Science

Since the 1970's, courts have played a significant role in governance of natural resources. Case law is an arena in which legislative directives, agency interpretation and implementation, science, disparate social values, and conflict resolution all come together in a single, relatively compact, publicly observable forum. Knowledge and evidential processes function differently here than in academia. This final section of the class provides a brief introduction to knowledge processes in this institutional realm.

Student Learning Outcomes

By the end of the semester students should be able to:

- (1) Discuss past and contemporary visions of the production, transmission, and role of knowledge in a democracy and the relevance of these visions to conservation professionals;
- (2) Discuss the psychology of knowledge and belief and its relevance to pursuing conservation goals;
- (3) Discuss current thinking about the role of media in the 21st century in relation to knowledge and conservation goals;
- (4) Discuss differences in Indigenous knowledge versus WEIRD knowledge and implications that might have for defining goals and pursuing opportunities in conservation;
- (5) Discuss how knowledge and evidentiary processes in courts relate to knowledge processes in academia and the implications for conservation professionals;

But the most important learning outcome is the emergent one:

“... some of our most educational experiences occur when we purposefully engage in them and then figure out after the fact just what it was that we gleaned from them.” (Thomas Poetter, Professor of Curriculum, [2006](#))

This course explores a contemporary, enduring yet evolving, and challenging concern for which no one has “the answers”. Defining underlying complications in the context in which you are working and generating approaches to challenges they pose will be one of your most important opportunities for contribution across your career. This course seeks to provide a foundation and insights that will assist, but how the readings come together and what we glean from them is our collective work of the semester; the most significant outcomes are emergent, not predictable.

Required Texts:

There is no textbook for this course. See schedule of classes below for a list of assigned readings. These readings will be made available via the course's [Moodle website](#).

Prerequisites:

There is no specific course prerequisite. But you need to have graduate level reading, writing, and discussion skills; an interest in the subject; a willingness to thoughtfully read all assigned readings before class; and a

willingness to participate actively in class discussions and your learning.

Teaching/Learning Philosophy

For a graduate course of this nature, I believe my role as teacher is to use my past experiences and vision of future professional needs to layout the territory (readings) that students with an interest in contemporary challenges arising from contested knowledge will find a worthwhile use of their time to explore. My roles also include introducing tools that I have found helpful in exploring this territory, facilitating discussions, and offering the opportunity to engage in exercises that provide you the opportunity to work through and record emerging insights. Though I consider myself very “applied” in terms of my professional interests, students seeking “the answers” to the challenges of “contested knowledge” will not find them explicitly spelled out in this course. Nor do I expect you to have found the answers or to have mastered these issues by the end of this course. It is my belief this reflects the nature of professional life. There is no final answer to any but the most simplistic problems. In fact, conservation professionals spend most of their professional lives trying to better define questions, problems, and resolutions while working with the knowledge at hand. Therefore, the major goals of the course are to introduce different ways of thinking and problem solving and to provide you a foundation on which to continue to develop a greater understanding after you complete the class. The hope is that from this understanding you will be able to better define problems and generate resolutions as they arise in your professional life. Remember: life is not a quiz show; conservation professionals are not hired because they know the answers, but because they have the capacity to define problems and generate resolutions. (With thanks to one of my most significant mentors, Dan Williams, for this perspective on teaching.)

Learning is not just collecting information, the kind of learning you most need comes only when you are actively transformed. Transformation does not come easily – arduous (but exciting) are its ways, long and uphill is the task. It is nice to have someone who can give you a clue. That’s the teacher’s job – to structure an opportunity to learn and to offer a map, compass, and other support that their experience suggests can assist you. But the kind of insight that leads to transformation must come from within you. If you expect it to come from outside, you will seek in vain. Only through your own effort and engagement will you ever be transformed.

The course emphasizes critical thinking skills such as analysis, evaluation, synthesis, and integration across readings/discussion topics rather than simple memorization of definitions and methodological rules. I promise to never give you an assignment requiring you to regurgitate anything from memory. So, don’t waste time memorizing things – you’ll always be able to look at your notes, revisit readings, etc. But please also note this is a graduate course and I have high expectations about the level of effort and quality of work that goes with a course of this nature.

I expect you to do every reading assigned for the course before you come to that class. There are different levels at which one can potentially do the readings: (1) ***reading to be familiar*** with what the author says; (2) reading ***to analyze and interpret*** what the author says (every reading assigned has a deeper message than just the data and definitions presented); and (3) reading critically ***to synthesize/integrate*** this reading ***with previous readings***/class discussions ***and to find something to say about the reading in a discussion***. I expect you to read at all three levels. To accomplish this, you should do readings ahead of time; highlight key points; and review these highlights an additional time before class, making notes of points worth discussing, things that are confusing, and links to topics being covered in the class. ***If you fall behind, the material will overwhelm you*** because later material often builds on earlier material. Class discussions will help prevent that, we’re a team seeking insights and trying to resolve confusion together. Just be sure you do the ground work required for you to contribute to the effort.

Course Requirements

Class Participation – 40%

Because of its importance to the design of the class, participation is a substantial portion of the grade. The course will operate primarily as a discussion rather than lecture format; therefore, the success of the class depends on the quality of your preparation and participation. Come to class ready to contribute to the discussion through questions, observations, or insights (see above section).

This approach is intended to recognize/acknowledge your efforts. It is not meant to be stressful (I hope you enjoy coming to class to talk about the ideas we are exploring, I do). And it certainly is not meant to be competitive between students (e.g., student A commented more times than student B therefore gets a better grade). We're a community contributing to each other's learning, it is not a competitive game. With this in mind I determine grades for this aspect of the course based on the following three assessments: 1) did you proactively contribute to class discussions (this isn't a number counting thing, some people enter conversations more easily than others and quality of contributions matters), 2) the extent to which you demonstrate that you consistently read and thought about course materials, and 3) the extent to which your contributions help you and us grow (remember, sharing questions or articulating the nature of confusion are equally as valuable as sharing other kinds of insights).

I treat absences as a separate dimension. Active engagement during the class sessions is one of the core teaching/learning principles underlying design of this class, class discussions are a forum where a lot of our learning emerges. If you are not present and contributing during these sessions, at some point you let your colleagues as well as yourself down. So, regarding attendance, perfect attendance is most desirable; missing more than 3 classes represents an excessive number of absences (at that point you have missed nearly 15% of the class). So, after 3 absences I start reducing the grade at a rate reflecting the percent absences.

This attendance dimension is intended to emphasize the learning principles underlying the design of the class, not to be blindly punitive. Hopefully not, but sometimes life happens making more than 3 absences necessary. If you know going into the class that this is the situation, please consider taking the class another semester, you will get a better return on your investment that way. If a situation emerges during the semester that creates challenges for your presence in class; please let me know in as timely a manner as you are able, and we'll figure out how to work through it. Communication is key here, don't be scared to reach out.

Finally, if at any point during the semester you feel that the class sessions/discussions are not valuable learning opportunities, please let me know; it is a failure that we want to redress.

Written Assignments - 60%

I am open to input before making a final decision about what form this will take. Right now I envision 3 types of written assignments. (1) Something like an annotated bibliography where you write a paragraph for each paper that identifies take home messages for each reading. This would likely be done after the class discussion and posted for the whole class to read. (2) I have set aside at day after each of the first 4 units for a recap/synthesis discussion. Currently I'm envisioning that a subset of students working together write a synthesis integrating ideas across reading for that unit which the rest of the class then reads and either peer reviews or writes commentary responses to (all journals do the former, a few also do the latter). (3) A final collectively written end of the semester paper that captures our insights and thoughts about a path forward. I will have a more specific statement of these possible assignments for discussion on the first day of class and two of the three readings on day 2 will provide concrete illustrations of directions the final collaborative paper could go. Based on all that information, you can provide suggestions on the structure/approach you feel would be most beneficial and I will finalize the details of the writing assignments at the start of week 2.

Grading Scale: See separate handout posted on Moodle.

Student Conduct Code

All students should be familiar with the [Student Conduct Code](#). All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University.

For Students with Disabilities

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the Office for Disability Equity (ODE). If you anticipate or

experience barriers based on disability, please contact the ODE at: (406) 243-2243, ode@umontana.edu, or visit www.umt.edu/disability for more information. As your instructor, I will work with you and the ODE to implement an effective accommodation, and you are welcome to contact me privately if you wish.

Student Well-being

Students can experience stressors that can impact both your academic experience and your personal well-being. These may include academic pressure and challenges associated with relationships, mental health, alcohol or other drugs, identities, finances, or other things.

If you are experiencing well-being concerns, seeking help is a courageous thing to do for yourself and those who care about you. If the source of your stressors is academic, please contact me so that we can find solutions together. For personal concerns, UM offers many resources to support student well-being. Below are some of the resources. If you are not sure where the boundary between academic and personal is, please know that I care, wish to be approachable, and will help guide you to the best available resource I know.

- [Curry Health Center Counseling](#)
- [Student Advocacy Resource Center \(SARC\)](#)
- [UM Equal Opportunity and Title IX Office](#)
- [UM Student Wellness Advocates](#)
- UM [Food Pantry](#)
- Other [Food Resources](#)
- [Emergency Housing Options](#)
- Providence St. Patrick Hospital [First STEP](#) (dedicated to reducing trauma and promoting healing for child victims of abuse and adult victims of sexual assault)

Class Readings Schedule

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Please Note: All readings are posted in Moodle, but where possible I have often tried to include the DOI (all journal articles and many book chapters are available to you through Mansfield Library). An entry with **page numbers in red** means that I am asking you to read only a subset of the pages. Usually (though not always) I have given you the complete reading, so you will want to look before you hit “print” if you read from printed rather than digital copies. When I included the “whole” reading but am asking you to read only portions, I used **green highlighting** to indicate where I’d like you to start and **red highlighting** to indicate where to stop. (You can, of course read the whole article if you wish, but I have no expectation that you will.). All but the last unit have a “recap/discussion” day with a date that is “out of sequence” but listed in order. We will discuss as a class how we approach those days (see section above on written assignments). Note that on two days in Unit 4 two of the “readings” are YouTube videos, so plan ahead.

Introduction

1. Tuesday January 18
 - a) Course Syllabus

Unit 1: Conservation & Institutional Knowledge Realms

2. Thursday January 20
 - a) Ludwig, D. (2001). The era of management is over. *Ecosystems*, 4, 758-764.
 - b) Patterson, M. E. and Williams, D. R. (2006). Negotiating the Changing Social Contract in the US. Unpublished Manuscript. 19 pp.
 - c) Goldstein, J. E., Paprocki, K. and Osborne, T. (2019). A manifesto for a Progressive land-grant mission in an Authoritarian Populist era. *Annals of the American Association of Geographers* 109(2):673–684. DOI: 10.1080/24694452.2018.1539648.
3. Tuesday January 25
 - a) Ezrahi, Y. (2004). Science and the political imagination in contemporary democracies. In S. Jasanoff (Ed.), *States of Knowledge: The co-production of science and social order* (pp. 254-273). London: Routledge. (**Read Pages 254-264**)
 - b) Graber, D. (2004). Mediated politics and citizenship in the twenty-first century. *Annual Review of Psychology*, 55, 545-571. DOI: 10.1146/annurev.psych.55.090902.141550 (**I have crossed out some sections of the reading – you can skip those sections**)
4. Thursday January 27
 - a) Kahan, Dan (2017) On the sources of ordinary science knowledge and extraordinary science ignorance. In: Jamieson K. H., Kahan, D. M., and Scheufele, D. (eds) *The Oxford Handbook of the Science of Science Communication*. New York: Oxford University Press, pp. 35–49.
 - b) Jenkins, E. W. (1999). School science, citizenship and the public understanding of science. *International Journal of Science Education* 21(7):703-710.
5. Tuesday February 1
 - a) Nisbet, Matthew C. and Scheufele, Dietram A. (2009). What’s next for science communication: Promising directions and lingering distractions. *American Journal of Botany* 96(10): 1767–1778. DOI: 10.3732/ajb.0900041
 - b) Brüggemann, M.; Lörcher, I.; and Walter, S. (2020). Post-normal science communication: Exploring the blurring boundaries of science and journalism. *Journal of Science Communication* 19. DOI: 10.22323/2.19030202.

6. Thursday February 3

- a) Scheurich, James J. and Young, Michelle D. (1997). Coloring epistemologies: Are our research epistemologies racially biased? *Educational Researcher* 26 (4):4-16. <https://www.jstor.org/stable/1176879>
- b) Simpson, Leanne R. (2004). Anticolonial strategies for the recovery and maintenance of Indigenous Knowledge. *American Indian Quarterly* 28(3/4): 373-384.
- c) Neimark, B.; Childs, J.; Nightingale, A. J.; Cavanagh, C. J.; Sullivan, S; Benjaminsen, T. A.; Batterbury, S.; Koot, S. and Harcourt, W. (2019). Speaking power to “Post-Truth”: Critical political ecology and the new authoritarianism. *Annals of the American Association of Geographers* 109(2): 613–623.

7. Thursday February 17 Note: Peer Review Discussion of Unit 1 out of sequence

- a) TBA

Unit 2: The Psychology of Knowledge and Belief

8. Tuesday February 8

- a) Haidt, J. (2012). *The Righteous Mind: Why Good People are Divided by Politics and Religion*. New York: Vintage Books. (Read Pages 44-51, 67-71, 74-92).
- b) Pennycook, Gordon, Fugelsang, Jonathan A., Koehler, Derek J. (2015). What makes us think? A three-stage dual-process model of analytic engagement. *Cognitive Psychology* 80:34-72. DOI: <https://doi.org/10.1016/j.cogpsych.2015.05.001> (Read Pages 34-42, 60-68)

9. Thursday February 10

- a) Lilienfeld, S. O., Ammirati, R., & Landfield, K. (2009). Giving debiasing away: Can psychological research on correcting cognitive errors promote human welfare? *Perspectives in Psychological Science*, 4(4), 390-398.
- b) Epley, Nicholas and Glovich, Thomas. (2016) The Mechanics of Motivated Reasoning. *Journal of Economic Perspectives* 30(3): 133–140. DOI: 10.1257/jep.30.3.133
- c) Smith, Gary A. (2020). Motivated reasoning and persuading faculty change in teaching. *To Improve the Academy* 39(1):95-135. DOI: <http://dx.doi.org/10.3998/tia.17063888.0039.105>

10. Tuesday February 15

- a) Brashier, Nadia M. and Marsh, Elizabeth J. (2020) Judging truth. *Annual Review of Psychology* 71:499-515. DOI: <https://doi.org/10.1146/annurev-psych-010419-050807>
- b) Li, Nan, Stroud, Natalie Jomini, and Jamieson, Kathleen Hall (2017) Overcoming False Causal Attribution: Debunking the MMR-Autism association. In: Jamieson KH, Kahan DM and Scheufele D (eds) *The Oxford Handbook of the Science of Science Communication*. New York: Oxford University Press, pp. 433-443.

Note Thursday February 17 is above – Peer Review Discussion of Unit 1.

11. Tuesday February 22

- a) Van Bavel, Jay J. and Pereira, Andrea (2018). The Partisan Brain: An Identity-Based Model of Political Belief. *Trends in Cognitive Science* 22 (3):213-224. DOI: <https://doi.org/10.1016/j.tics.2018.01.004>
- b) Goya-Tocchetto, Daniela; Kay, Aaron C.; Vuletich, Heidi; Vonasch, Andrew, and Payne, Keith. (2022). The partisan trade-off bias: When political polarization meets policy trade-

offs. *Journal of Experimental Social Psychology* 98(2022) 104231. DOI: <https://doi.org/10.1016/j.jesp.2021.104231>

12. Thursday February 24

- a) van den Bos, Kees. (2020). Unfairness and radicalization. *Annual Review of Psychology* 71:563–88. DOI: <https://doi.org/10.1146/annurev-psych-010419-050953>

13. Tuesday March 1

- a) Peters, Ellen (2017). Overcoming innumeracy and the use of heuristics when communicating science. In: Jamieson, K.H.; Kahan, D. M. and Scheufele, D. (eds.) *The Oxford Handbook of the Science of Science Communication*. New York: Oxford University Press, pp. 389-398.
- b) Said, Nadia; Fischer, Helen; and Anders, Gerrit. (2021). Contested science: Individuals with higher metacognitive insight into interpretation of evidence are less likely to polarize. *Psychonomic Bulletin & Review* Published On-line 29 October 2021. DOI: <https://doi.org/10.3758/s13423-021-01993-y>.

14. Thursday March 10 Note: Peer Review Discussion of Unit 2 out of sequence

- a) TBA

Unit 3: Mediated Knowledge

15. Thursday March 3

- a) Peters, Hans P. (2014). The two cultures: Scientists and Journalists, not an outdated relationship. *MÉTHODE Science Studies Journal* 4:163-169. DOI: 10.7203/metode.80.3043
- b) Rödder, Simone (2019). Organisation matters: towards an organisational sociology of science communication. *Journal of Communication Management* 24(3):169-188. DOI: 10.1108/JCOM-06-2019-0093
- c) Kwan, Victoria. (2019). First Draft's essential guide to: Responsible reporting in an age of information disorder. FIRSTDRAFT. <https://firstdraftnews.org/long-form-article/first-drafts-essential-guide-to/> (Read pages 6-23)

16. Tuesday March 8

- a) Pennycook, Gordon and Rand, David G. (2019). Who falls for fake news? The roles of bullshit receptivity, overclaiming, familiarity, and analytic thinking. *Journal of Personality* 88:185-200. DOI: <https://doi.org/10.1111/jopy.12476>
- b) Pennycook, Gordon and Rand, David G. (2019b). Lazy, not biased: Susceptibility to partisan fake news is better explained by lack of reasoning than by motivated reasoning. *Cognition* 188(July):39-50. DOI: <https://doi.org/10.1016/j.cognition.2018.06.011>
- c) Sindermann, Cornelia; Cooper, Andrew; and Montag, Christian. (2020). A short review on susceptibility to falling for fake political news. *Current Opinion in Psychology* 36:44-48. DOI: <https://doi.org/10.1016/j.copsyc.2020.03.014>

Note Thursday March 10 – Peer Review Unit 2

17. Tuesday March 15

- a) Wang, Yuxi; McKee, Martin; Torbica, Aleksandra; and Stuckler, David. (2019). Systematic literature review on the spread of health-related misinformation on social media. *Social Science & Medicine* 240: 112552 DOI: <https://doi.org/10.1016/j.socscimed.2019.112552>

- b) Furini, Marco. (2021). Identifying the features of ProVax and NoVax groups from social media conversations. *Computers in Human Behavior* 120:106751 DOI: <https://doi.org/10.1016/j.chb.2021.106751>

18. Thursday March 17

- a) Jang, S. Mo (2014). Seeking congruency or incongruency online? Examining selective exposure to four controversial science issues. *Science Communication* 36(2):143-167. DOI: 10.1177/1075547013502733.
- b) Xiao, Xizhu; Borah, Porismita; and Su, Yan. (2021). The dangers of blind trust: Examining the interplay among social media news use, misinformation identification, and news trust on conspiracy beliefs. *Public Understanding of Science* 30(8):977–992. DOI: 10.1177/0963662521998025.

Spring Break Tuesday March 22

Spring Break Thursday March 24

19. Tuesday March 29

- a) Shin, Jieun; Jian, Lian; Driscoll, Kevin; and Bar François. (2018). The diffusion of misinformation on social media: Temporal pattern, message, and source. *Computers in Human Behavior* DOI: <https://doi.org/10.1016/j.chb.2018.02.008>
- b) Bryanov, Kirilland and Vziatysheva, Victoria (2021). Determinants of individuals' belief in fake news: A scoping review determinants of belief in fake news. *PLoS ONE* 16(6): e0253717. <https://doi.org/10.1371/journal.pone.0253717>

20. Thursday April 7 Note: Peer Review Discussion of Unit 3 out of sequence

- a) TBA

Unit 4: Indigenous Knowledge

21. Thursday March 31

- a) McNally, Michael D. (2004). Indigenous pedagogy in the classroom: A service learning model for discussion. *American Indian Quarterly* 28(3/4):605-617. (Read pages 604-612)
- b) Pete, Shandin H. (2020). Seliš ontological perspectives of environmental sustainability from oral traditions. *Current Opinion in Environmental Sustainability* 43:71–76. DOI: <https://doi.org/10.1016/j.cosust.2020.03.003>.
- c) Aikenhead, Glenn and Ogawa, Masakata. (2007). Indigenous knowledge and science revisited. *Cultural Studies of Science Education* 2:539-620. (Read pages 551-566, 582-583).

22. Tuesday April 5

- a) Burkhart, Brian Yazzie. (2004). What Coyote and Thales can teach us: An outline of American Indian epistemology. In Waters, Anne (ed.) *American Indian Thought: Philosophical Essays*. Malden, MA: Blackwell. pp. 15-26.
- b) Cajete, Gregory. (2004). Philosophy of Native science. In Waters, Anne (ed.) *American Indian Thought: Philosophical Essays*. Malden, MA: Blackwell. pp. 45-57.

Note Thursday April 7 is above – Peer Review Unit 3.

23. Tuesday April 12

- a) Kimmer, Robin W. (2013). The fortress, the river, and the garden: A new metaphor for cultivating mutualistic relationship between scientific and traditional ecological knowledge. In Kulnieks, Andrejs; Longboat, Dan Roronhiakewen and Young, Kelly (eds.) *Contemporary Studies in Environmental and Indigenous Pedagogies: A Curricula of Stories and Place*. RotterDam/Boston/Taipei: Sense Publishers. pp. 49-76.
- b) Kimmer, Robin W. (2017). Reciprocity. 28th Headwaters Conference topic Science, Story and Justice. Held by the Center for Environment and Sustainability at Western State Colorado University on October 6, 2017.
<https://www.youtube.com/watch?v=wisxnOgOlFo> (52'30")

24. Thursday April 14

- a) Waters, Anne. (2001). Language matters — A metaphysic of NonDiscreet NonBinary dualism. *APA Newsletter on Native American and Indigenous Philosophy* 1(2):5-14.
- b) Waters, Anne. (2021). Where We Belong: Life - Land - Spirit. Scripps College Humanities Institute Lecture Series April 8, 2021. <https://www.youtube.com/watch?v=0E8IJkXNMA> (56'10")

25. Tuesday April 19

- a) McGregor, Deborah. (2004). Coming full circle: Indigenous knowledge, environment, and our future. *American Indian Quarterly* 28(3/4):385-410.
- b) Arsenaault, Rachel; Bourassa, Carrie; Diver, Sibyl; McGregor, Deborah; and Witham, Aaron. (2019). Including Indigenous knowledge systems in environmental assessments: Restructuring the process. *Global Environmental Politics* 19(3):120-132.
<https://doi.org/10.1016/j.cosust.2020.01.007>

26. Thursday April 21

- a) Walker, Polly O. (2004). Decolonizing conflict resolution: Addressing the ontological violence of Westernization. *American Indian Quarterly* 28(3/4):527-549.
- b) Hill, Rosemary et al. [32 co-authors]. (2020). Working with Indigenous, local and scientific knowledge in assessments of nature and nature's linkages with people. *Current Opinion in Environmental Sustainability* 43(April):8-20. DOI:
<https://doi.org/10.1016/j.cosust.2019.12.006>

27. Thursday April 28 Peer Review Discussion of Unit 4 - Note out of sequence

- a) TBA

Unit 5: Courting Science

28. Tuesday April 26

- a) Rosenbloom, D. H. and O'Leary, R. (1997). *Public administration and law*. New York:M. Dekker. Chapter 9. (Read pages 305-310)
- b) Jasanoff, Shelia. (1995). Chapter 1: The Intersections of Science and Law. In Jasanoff, S. *Science at the bar: Law, science, and technology in America*. Cambridge, MA: Harvard University Press. pp. 1-23.
- c) Haack, S. (2008). Of truth, in science and in law. *Brooklyn Law Review*, 73, 985-1008.

Thursday April 28 Note: Peer Review Discussion of Unit 4 out of sequence

29. Tuesday May 3 FL Panther

- a) *National Wildlife Federation v. Norton*, 332 F.Supp.2d 170, DDC 2004 (MS Word file) (Florida Panther)
- b) Conroy, M. J., Beier, P., Quigley, H., & Vaughan, M. R. (2006). Improving the use of science in conservation: Lessons from the Florida Panther. *Journal of Wildlife Management*, 70(1), 1-7.

30. Thursday May 5 Makah

- a) *Metcalf v Daley*, 214 F.3d 1135, 9th Circuit 2000 (Makah Whaling)