Introduction Outline

* **Why is fire important**
  + Historically ran on frequent-low intensity regime (McGranahan and Wonkka 2020). Currently runs on an infrequent, high-intensity regime (Fuhlendorf et al. 1996 And Margolis 2014).
  + Prior to Euro-american settlement, indigenous peoples used fire to promote new growth of grasses, removed old grasses, manage game, and other cultural reasons (Courtwright 2007; Anderson 2006; Pyne 2017)
  + Fire and grazing promotes heterogeneity (Toledo et al 2014)
  + Removes invasives... increases forage quality (Toledo et al 2014)
  + Introducing fire back onto the landscape is the most effective ways to control woody plant encroachment and restore grassland avifauna (Fuhlendorf et al. 2017)
  + Upper great plains are fire suppressed and largely unburned (Umbanhowar 1996).
  + Prescribed burns limit and reduce wildland fuel that can lead to uncontrollable wildfires, controlling woody invasion, and non native species, enriching habitat and forage both wildlife and livestock, gently enhances native species diversity and heterogeneity in grasslands (Clark et al. 2022a)
* **What do we know about social science?**
  + In general
    - Societal or social norms tend to highlight the attitude many community members have (Hechter and Opp 2015)
    - “Feelings of moral obligation to perform or refrain from specific actions” (Schwartz and Howard 1981:191)
    - Social science can help managers identify and evaluate management plans based off social and ecological tradeoffs (Charnley et al. 2017), make decisions that are better for humans and the environment (Liu et al. 2015)
    - Zube (1987) explained how human perceptions about landscapes are formulated in our cognitive mind.
    - Combining social and ecological components, could help shift management decisions (Brunson 2012).
  + Northern Great Plains/ Ranching (small town) communities
    - social norms weigh heavily on decision making for ranching communities (Sliwinski et al. 2018; Yung and Belsky 200)
    - weigh on government and private agencies as well, often limiting how often they choose fire as a management tool (Schohr et al. 2020; Harr et al. 2014; Haines et al. 2001; Quinn-Davidson and Varner 2011)
    - Ranching communities in the Southern Great Plains, recognized a problem, declining biodiversity and livestock production, and formed a prescribed burn association to address the problem (Twidwell et al. 2013)
    - ~~Increase in PBAs could help change social norms and beliefs on fire (Weir et al. 2019)~~
    - Transtheoretical model of behavior change notes that intentional behavior changes have 5 stages, ND ranchers seem to be in the first 2 stages (Pre-contemplation and contemplation), as they had a split between results of if fire was beneficial or not (Bendel et al. 2020).
    - Being a good steward!!!
      * People develop stewardship for landscapes, as these are a basic component of our natural and cultural heritage; they contribute to the formation of local cultures and provide ecosystem services both for the benefit of individual and societal wellbeing (Bieling et al. 2014).
      * In North America, working landscape partnerships foster effective stewardship and conservation of land through active human presence and management (Huntsinger and Sayre 2007, Abrams and Bliss 2012).
      * Landscape stewardship comprises all ‘efforts to create, nurture and enable responsibility in landowners and resource users to manage and protect land and its natural and cultural heritage’ (Brown and Mitchell 2000, p. 70)
      * ‘Stewardship’ is not only a management approach but – perhaps even more – an ethic that emphasizes responsibility, collaboration, participation and communication in the planning and management of land resources (Gundersen and Makinen 2009)
      * manages environmental features, especially those important for wildlife and sustains these for future generations (Huntsinger and Sayre 2017)
* **Barriers in general** 
  + Social barriers include societal norms and attitudes, liability, and education, knowledge and training. Whereas physical barriers include labor, equipment, money, or government restrictions (Clark et al. 2022 a and b)
  + Barriers included a range of social, informational, practical, and regulatory concerns (Clark et al. 2022a)
  + Barriers inside their local community (microsystem), other potential fire practitioners (exosystem), and other members of the state or country (macrosystem) --- if a negative attitude is present that can limit if they use fire (Clark et al. 2022b)
* **Perceptions** (go off figures)
  + Trust vs use (agencies)
  + Members of the community generally believe that fire...
    - Possess risk to
      * Nearby property
        + Ranchers as well as community members agreed that there was potential for negative effects when a prescribed fire was on their neighbor's property (53% agree, 32% disagree; 47% agree, 26% disagree) (Bendel et al. 2020)
      * Human safety
        + Prescribed burns have significantly less accidents that crop and animal production (Twidwell et al. 2015)
        + Between 1963 and 2013 only 6 deaths were reported to be from prescribed burns (Twidwell at al. 2015)
    - Harmful smoke
      * Increased smoke in the community is a barrier as it can potentially harm people, limiting landowners (Morton et al. 2010).
    - Loss of forage
      * Participants in Harr et al. study outlined that fire did not directly benefit ranching operations as it benefitted wildlife, and oftentimes destroyed food for their cattle
    - Soil erosion
      * Soil erosion can be of concern after a fire, as until vegetation grows and covers the site, soil erosion and surface runoff may occur (Wade and Lundsford 1990)
    - Negative impacts to wildlife
      * Prescribed fire is proven to improve wildlife habitat, but should recognize nesting seasons and other biological requirements (Wade and Lundsford 1990)
      * Possible negative effects on wildlife could be nest destruction, and possible mortality, but it is very uncommon (Wade and Lundsford 1990).
  + Liability
    - liability as being the largest barrier stated for landowners, including risk of an escaped fire, legal trouble, causing harm to neighbors, community and their own personal property and safety (Schohr et al. 2020; Harr et al. 2014; Morton et al. 2010; Bendel et al. 2020; Polo et al. 2020)
    - Weir et al. infers that people often fear the perception of liability “Inaccurate perception of the danger and severity of liability is a greater barrier to prescribed fire than that of the actual danger and liability”, insinuating that the actual risks of fire are not the same as the perceived risks.
    - ND has burner strict liability, which means burner is always responsible for damages even if they took precautions (Yoder et al. 2004)
  + I personally believe...
    - Burning is a poor management option that shouldn't be used
      * Respondents do not agree that fire (prescribed) is a beneficial and legitimate land management practice, 2/44 studies noted that over 50% of their participants agreed that it was beneficial, equaling to only 5% of the studies (Clark et al. 2022a)
      * PBA members have a more positive stance on fire (Clark et al. 2022a)
    - Used in limited circumstances
    - Only used by professionals
    - Training
      * North Dakota does not contain any prescribed fire associations, but does hold a prescribed fire cooperative that helps conduct training, education, and training burns, the North Dakota Prescribed Fire Cooperative
    - I can burn frequently as I want
    - Beneficial tool for rangelands
      * (See above- burning is a poor management option that shouldn't be used)
    - Management plant includes rx fire
    - I am prepared to use Rx fire if i choose
  + Affects my decision....
    - Previous generations
      * Promise to protect and care for the land, passed from generation to generation (USFWS) *How do we use the want of being a good steward to our benefit with fire?*
      * Thought of continuing stewardship taught by previous generations
    - Professional advice
      * Extension offices are often trusted by ranchers (Liffmann et al. 2000) and could possibly be the ones to introduce ranchers and scientists.
    - Scientific research
    - Neighbors
      * Ranchers often relied on neighbors and cattleman's associations for information (Liffmann et al. 2000)
* **We are going to study this and doing it here because... there is not a lot of research in the northern great plains... review of what we will talk about**
  + This study aims to outline why landowners are hesitant to burn on their land and their overall feelings of fire, to hopefully begin working with landowners and community members to introduce prescribed fire as a management tool back on to the grasslands.
  + Clark et al. 2022a talks about how most research and papers have been from the southern great plains, as the northern plains do not have a pro-fire culture, with roughly 79% of papers and information coming from the southern great plains.
  + Landowners' hesitancy to burn on their property as well as grasslands

Discussion Notes

* + - Increase in PBAs could help change social norms and beliefs on fire (Weir et al. 2019)