

A STUDY ON GLOBAL WARMING AND ITS EFFECT ON WILDLIFE

Aarthy.G

B.A., B.L (HONS) L.L.M., MSc Psychology

Assistant Professor, School of Law,

Sathyabama Institute of Science and Technology

Best Citation - Aarthy.G, *A STUDY ON GLOBAL WARMING AND ITS EFFECT ON WILDLIFE*, 1 (2) LIU & 1 (2022)

Abstract

We have heard of a climate change risk assessment for a city, state or country, how extreme weather conditions could impact a country's structure and economy. It is now a contemporary issue where there is such assessment done for wildlife. This is an emerging field of study, which is climate change adaptation program. The historic threats to species, like habitat destruction and overexploitation falls under this subject matter. And while addressing those threats remains vital, it's becoming increasingly clear that we need to understand how climate change could harm the various species we're trying to protect. It is to be noted that climate change encompasses rising average temperature, extreme weather conditions, shifting wildlife population and habitats, rising sea level and so on. It is evident that global warming can occur naturally as a result of variation in the amount of solar energy reaching earth, the Intergovernmental Panel on Climate Change (IPCC) has concluded that climate change of the past three decades is largely attributed to a human caused increases in greenhouse gas emissions. Global warming is affecting the Earth at an alarming rate and changes must be made to reduce these effects. Global warming has proven harmful to many of the Earth's species. If this issue is left unattended there could be catastrophic situations which would bring unprecedented issues in this home that we live in.

Keywords: Climate change risk assessment, Greenhouse gas emissions, Global warming, Species

Introduction

We live in the crucial times, where climate change is reshaping global biodiversity. Unsustainable mortal conditioning increases accumulation of hothouse feasts and hampers the natural balance of the ecosystem. Rising swell-situations could drown littoral territories and stem the inflow of nutrients from the ocean to the terrestrial ecosystems. Altered climate administrations directly affects wildlife, their behaviour, migration, rustling, growth and reduplication. Climate change could disturb the dynamic equilibrium of terrestrial ecosystems by affecting ecosystem productivity, biomass product, hydrological balance, and trophic relations.

Among the various researches conducted by scientists, they declare that Global warming is responsible not only for shrinking ice caps but also for a [surge in extreme weather](#) that is causing heat waves, forest fires, and droughts. Nevertheless, researchers agree that even small changes in temperature are enough to threaten hundreds of already struggling animals.

The key impact of global warming on wildlife is habitat disruption, in which ecosystems, places where animals have spent millions of years adapting, rapidly transform in response to climate change, reducing their ability to fulfil the species' needs. Habitat disruptions are often due to changes in temperature and water availability, which affect the native vegetation and the animals that feed on it. All these affected wildlife populations can sometimes move into new spaces and continue to thrive. But concurrent human population growth means that many land areas that might be suitable for such "refugee wildlife" are fragmented and already cluttered with residential and industrial development. Cities and roads can act as

obstacles, preventing plants and animals from moving into alternative habitats. It is evident that not all refugee animals make it to the new spaces or survive.

There is already undeniable evidence that animals, birds and plants are being affected by climate change and global warming in both their distribution and behaviour. Unless greenhouse gas emissions are severely reduced, climate change could cause a quarter of land animals, bird life and plants to become extinct. Climate changes create new challenges for humans and wildlife, most common are cloudbursts, dry spells, increasing sea level, thawing permafrost, salinization, increased wildfires, reduced agricultural yields, water diminish, health problems due to high temperature in cities, and ablation.

Objective

1. To know about the various factors which lead to global warming.
2. To know whether people are aware of global warming which is affecting wildlife.
3. To analyse various methods to reduce global warming.
4. To spread awareness among the people about global warming affecting wildlife.

Methodology

The research method followed here is an empirical research method. A total of 210 samples have been taken out of which is taken through convenient sampling. The sample frame taken by the researcher is through online publishing and sharing of questionnaires due to the impacts of COVID-19.

The independent variable taken here is age, gender, educational qualification and occupation. The dependent variables are reasons behind the rise in sea level, risks involved in the rise in the sea level and adverse effects of climate change on wildlife. The statistical tool used by the

researcher is percentage analysis under complex graph analysis.

Literature Review

Caroline van Hebert, Paul L. Flint (2015) in his study states that Arctic natural world species face a dynamic and increasingly novel environment due to weather warming and the associated increase in human activity. Both marine and terrestrial environments present rapid environmental shifts, which includes loss of sea ice, permafrost degradation, and altered biogeochemical fluxes.

Forecasting natural world responses to weather alternatively can facilitate proactive selections that stability stewardship with aid development.

Zachary A. SmithJohn Freemuth (2016) in his study states that the Native American tribes strengthen sovereignty over the control and improvement of tribal herbal assets. We are searching to advance our collective information of tribal herbal resource control and development in the context of tribal sovereignty by way of clarifying two critical concepts the effect the Bureau of Indian Affairs (BIA) sub-government choice-making surroundings has on the ability of tribes to claim sovereignty over their natural resources.

Lochran W. Traill, Matthew L. M. Lim (2010) in this study states that, the mechanisms in the back of atmosphere functions, the processes that facilitate electricity transfer along meals webs, and the fundamental techniques that permit the cycling of carbon, oxygen and nitrogen, and use case research to show how those have already been, and could remain, altered by way of worldwide warming. Increased temperatures will affect the interactions between heterotrophs and autotrophs.

Caroline Van Hemert, John M Pearce (2014) in their study states that there is an association environmental changes have an increasing number of links to rising infectious illnesses in flora and fauna. The Arctic is facing a major ecological transition that is expected to extensively affect animal and human fitness. Changes in phenology or environmental situations that result from weather warming may promote novel species assemblages as host and pathogen stages expand to formerly unoccupied areas.

Tara J. Zamin, Steeve D. Cote, Jean-Pierre Tremblay(2017) says that Global declines in caribou and reindeer (Rangifer) populations have drawn interest to the myriad of stressors that these Arctic and boreal forest herbivores currently face. Arctic warming has resulted in increased tundra shrub increase and consequently Rangifer forage amount. However, its outcomes on forage quality have now not yet been addressed although they may be important to Rangifer body circumstance and fecundity.

Sharon L. Deem, William B. Karesh and Wendy Weisman (2001) says that Infectious and non-infectious diseases are being diagnosed through conservation biologists as a growing challenge to the conservation of flora and fauna. These changes encompass human populace boom, habitat fragmentation and degradation, the isolation of populations of species, and a multiplied proximity of humans (and their home animals) to wildlife.

Ines Ibanez, Richard B. Primack, Abraham J. Miller-Rushing,(2010) says as a result of warming temperatures around the world, spring and autumn phenologies had been transferring, with corresponding modifications in the duration of the developing season. Our information of the spatial and interspecific version of these adjustments, but, is restricted. Not all species are responding further, and there may be widespread spatial version in responses even inside species.

S. J. Kutz, E. P. Hoberg, L. Polley (2005) says Global climate trade is changing the ecology of infectious sellers and driving the emergence of ailment in humans, domestic animals, and flora and fauna. We present a unique, empirically primarily based, predictive version for the effect of climate warming on improvement fees and availability of a crucial parasitic nematode of muskoxen inside the Canadian Arctic, a vicinity that is specifically susceptible to climate change.

Richard Hasler ,Botswana Notes and Records (1999) says Network based wildlife control in the Okavango Delta wishes to be analyzed and understood within the broader political, ecological and monetary traits affecting Botswana as a whole. A variety of troubles, which includes international economics, competing land use strategies, tenure regimes, worldwide climate change, village economics and agreement styles, the function of donor organizations and the financial and political.

Michael R. Conover and Denise O. Conover (2001) tries to convey that there are 3 philosophies that fluctuate in that they don't forget the last aim of natural world management and for whom we are managing flora and fauna. The philosophy, "guy is the measure of all things," is based totally on writings inside the Old Testament and the historic Greek logician, Protagoras. It argues that the goal of wildlife control is to satisfy immediate human wishes and desires and that the natural world has no price besides to fulfill human desires.

Nina-Marie Lister, Marta Brocki and Robert Ament (2015) says the Climate exchange is predicted to alter both natural world movement and distributions. Despite mounting evidence that flora and fauna-crossing infrastructure gives a dependable, bodily method to the related issues of wildlife street mortality and habitat fragmentation, pervasive limitations -from monetary to

governance structures -prevent the sizable advent of an infrastructure community.

L. E. Rustad, J. L. Campbell (2001) Climate alteration due to greenhouse gas emissions is predicted to raise the mean international temperature. The direct and oblique outcomes of this capacity boom in temperature on terrestrial ecosystems and ecosystem approaches are probably to be complex and exceptionally varied in time and space. The Global Change and Terrestrial Ecosystems core venture of the International Geosphere-Biosphere Programme has lately launched a Network of Ecosystem Warming Studies, the dreams of which are to integrate and foster research on ecosystem-stage outcomes of rising temperature.

Julia A. Klein, John Harte and Xin-Quan Zhao (2007) says We investigated experimental warming and simulated grazing (clipping) consequences on rangeland quality, as indicated by means of flowers manufacturing and nutritive excellent, in iciness-grazed meadows and summer season-grazed shrub lands on the Tibetan Plateau, a rangeland machine experiencing climatic and pastoral land use changes. Warming decreased general aboveground net number one productivity.

Finis Dunaway (2009) Journal says about Contemporary environmental artists are increasing their attention to climate exchange. Focusing on an exhibition curated by means of the famend art critic this essay places selected works in talk with mass media framings of environmental problems to show how contemporary artwork can generate new methods of seeing international warming.

Helen M. Cox (2007) Author says Global warming is nearly clearly the most crucial problem addressed through the atmospheric community today and has currently ended up one of the hottest on the political agenda. Because it's far from any such tremendous and complicated trouble, the bulk of atmospheric researchers are conducting

investigations on a few things. The outcomes of those studies are assimilated in computer-intensive worldwide move fashions to simulate the earth's weather.

Michael J. Manfred, Tara L. Teel and Kimberly L. Henry(2009) Author says Studies of attitudes and values can make important contributions to rising multi-degree, interdisciplinary methods to environmental issues. We test a multi-degree model using records from a 19-state examination on the public mind closer to the natural world in the western United States. Methods. Data had been accumulated via mail survey administered to citizens in every kingdom.

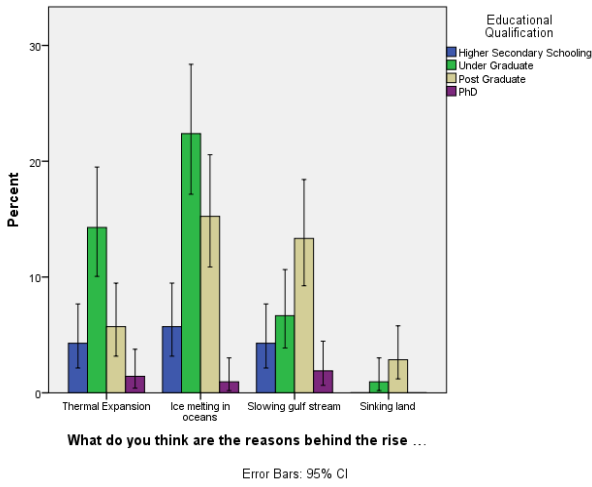
David King (2005) says globally we are facing serious demanding situations from the consequences of weather exchange. The causal link between worldwide warming and increased greenhouse gasoline emissions is properly established. Carbon dioxide ranges are at a better stage than at any time within the beyond 750 000 years at least, and it's miles too late to prevent further warming and consequent impacts on UK and international societies. Here I summarize the present day clinical evidence for anthropogenic worldwide warming and outline strategies for adapting to its impacts and mitigating the results inside the long term.

Madeleine Doiron, Gilles Gauthier and Esther Levesque (2014) explains that in many arctic herbivores, the boom of young depends upon a synchrony between hatching date and seasonal change in plant nutritive. If flora reply greater quick than herbivores to climate warming, this can cause a mismatch between the availability of amazing food and the hatching of young. This study examines the effect of experimental warming on the main food vegetation of an arctic herbivore, the extra snow goose

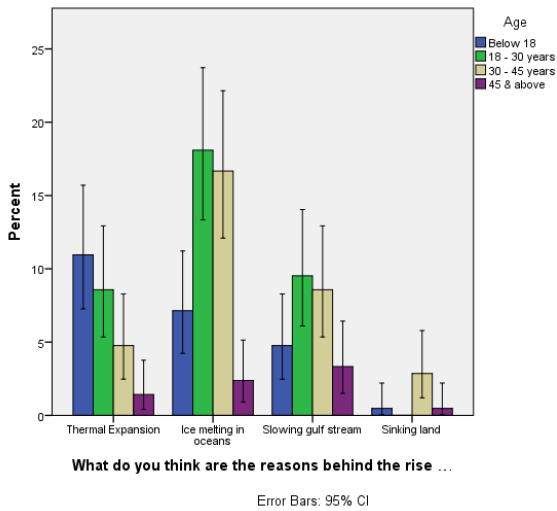
Julie A. Blanchong, Stacie J. Robinson, Michael D (2016) says Wildlife diseases could have full-size impacts

on flora and fauna conservation and management. Many of the pathogens that have an effect on wildlife additionally have vital implications for domestic animal and human fitness. However, management interventions to prevent or manage wildlife disorder are hampered by uncertainties about the complex interactions among pathogens and loose-ranging flora and fauna.

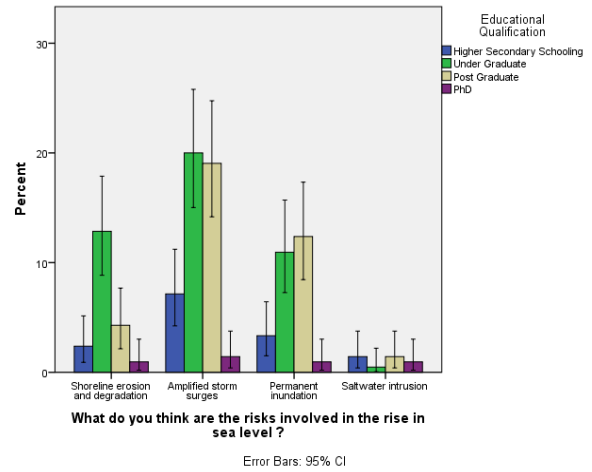
Analysis



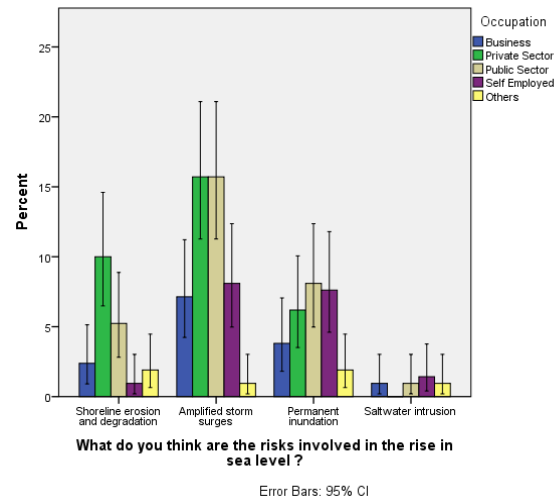
Legend: The Fig.1 shows Educational Qualification with respect to the reasons behind the rise in sea level.



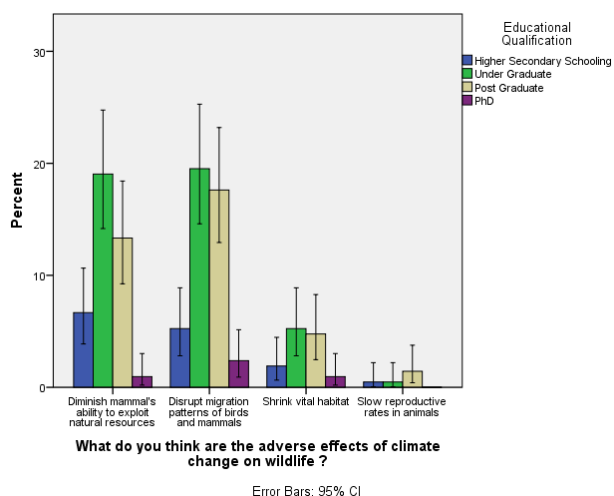
Legend: The Fig.2 shows about the Age with respect to the reasons behind the rise in sea level.



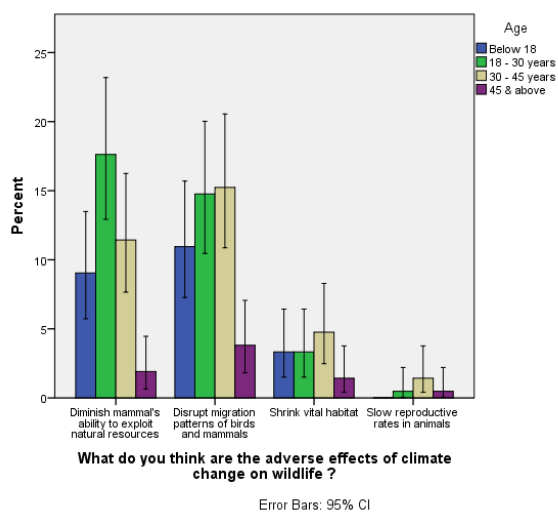
Legend: The Fig.3 shows the Educational Qualification with respect to risks involved in the rise in the sea level.



Legend: The Fig.4 shows the Occupation with respect to risks involved in the rise in the sea level.



Legend: The Fig.5 shows the Educational Qualification with respect to adverse effects of climate change on wildlife.



Legend: The Fig.6 shows about the Age with respect to adverse effects of climate change on wildlife.

Results

In Fig.1 we could see that people who completed Higher Secondary Education, Undergraduate and Postgraduate have stated that Ice melting in Ocean is the major reason behind rise in sea level whereas people who have completed

the PhD have stated that slowing Gulf Stream is the major reason behind rise in sea level.

In Fig.2 we could see that people in all the age groups below 18, 18-30 yrs., 30-45 yrs and above 45 have stated that Ice melting in the ocean is the major reason behind the rise in the sea level.

In Fig.3 we could see that people who have completed their Higher Secondary Schooling, Undergraduate, Postgraduate and PhD have stated that amplified storm surges is the risk involved in the rise in the sea level.

In Fig.4 we could see that people who are doing business, working in Private Sector, Public Sector, Self Employed have stated that Amplified Storm Surges is the risk involved in the rise in the sea level whereas others have stated that shoreline erosion and degradation is the risk involved in the rise in the sea level.

In Fig.5 we could see that people who have completed their Undergraduate, Postgraduate and PhD have stated that climate change disrupts migration patterns of birds and mammals whereas people who have completed their Higher Secondary Schooling have stated that climate change diminishes mammal's ability to exploit natural resources.

In Fig.6 we could see that all the people in the age group of below 18, 18-30 yrs., 30-45 yrs. and above 45 have stated that climate change disrupts the migration patterns of birds and mammals.

Discussion

In Fig.1 we could see that people who completed Higher Secondary Education, Undergraduate and Postgraduate have stated that Ice melting in Ocean is the major reason behind rise in sea level whereas people who have completed the PhD have stated that slowing Gulf Stream is the major

reason behind rise in sea level. This is because the heating up of the earth's atmosphere and the depletion of the ozone layer are the major reasons behind the melting of the ice glaciers in the Antarctic region which results in the rise in the sea level which is at an alarming state.

In Fig.2 we could see that people in all the age groups below 18, 18-30 yrs., 30-45 yrs and above 45 have stated that Ice melting in the ocean is the major reason behind the rise in the sea level. This is because the heating up of the earth's atmosphere and the depletion of the ozone layer are the major reasons behind the melting of the ice glaciers in the Antarctic region which results in the rise in the sea level which is at an alarming state.

In Fig.3 we could see that people who have completed their Higher Secondary Schooling, Undergraduate, Postgraduate and PhD have stated that amplified storm surges is the risk involved in the rise in the sea level. This is because the increase in the low pressure areas across the oceans have resulted in the huge number of cyclones hitting the coast and the storm surges affecting the low lying coastal areas causing those areas to be flooded and causing huge damage to life and property.

In Fig.4 we could see that people who are doing business, working in Private Sector, Public Sector, Self Employed have stated that Amplified Storm Surges is the risk involved in the rise in the sea level whereas others have stated that shoreline erosion and degradation is the risk involved in the rise in the sea level. This is because the increase in the low pressure areas across the oceans have resulted in the huge number of cyclones hitting the coast and the storm surges affecting the low lying coastal areas causing those areas to be flooded and causing huge damage to life and property. Moreover the shoreline erosion and degradation due to the dumping of sewage in the shores and sea causing huge damage to the shoreline areas as well as the aquatic life in those regions.

In Fig.5 we could see that people who have completed their Undergraduate, Postgraduate and PhD have stated that climate change disrupts migration patterns of birds and mammals whereas people who have completed their Higher Secondary Schooling have stated that climate change diminishes mammal's ability to exploit natural resources. This is because the adaptable climatic conditions for the birds and mammals are being exploited by the human activities resulting in the change in the migration patterns of the birds and mammals and also the exploitation of the resources by the human beings have resulted in the mammal's ability to exploit natural resources.

In Fig.6 we could see that all the people in the age group of below 18, 18-30 yrs., 30-45 yrs. and above 45 have stated that climate change disrupts the migration patterns of birds and mammals. This is because the adaptable climatic conditions for the birds and mammals are being exploited by human activities resulting in the change in the migration patterns of the birds and mammals.

Limitations

The major limitation here is that only by looking into the 210 sample frame we will not be able to come to a conclusion. Through the opinion of individuals we would only be able to draw a narrowed down conclusion and not a broader one. The restrictive area of sample size can be helpful in future aspects.

Conclusion

From the above analysis it is very much to be taken into the consideration of the opinions from different segments of the society and the results from observing the age, gender, educational qualification and occupation reveal that the heating up of the earth's atmosphere and the depletion of the ozone layer are the major reasons behind the melting of

the ice glaziers in the Antarctic region which results in the rise in the sea level, increase in the low pressure areas across the oceans have resulted in the huge number of cyclones hitting the coast and the storm surges affecting the low lying coastal areas causing those areas to be flooded and causing huge damage to life, adaptable climatic conditions for the birds and mammals are being exploited by the human activities resulting in the change in the migration patterns of the birds and mammals and also the exploitation of the resources by the human beings have resulted in the mammal's ability to exploit natural resources. Therefore necessary steps has to be taken in order to reduce the temperature of the earth's atmosphere and to foresee that the ozone layer does not deplete further and measures has to be taken and stringent laws has to be implemented in order to stop that exploitation of the natural resources by the human beings, which will ultimately help in preventing the climate change.

Bibliography

- HEMERT, CAROLINE VAN, et al. "Forecasting Wildlife Response to Rapid Warming in the Alaskan Arctic." *Bioscience*, vol. 65, no. 7, 2015, pp. 718–728. JSTOR, www.jstor.org/stable/90007319. (Van Hemert et al. 2015)
- Smith, Zachary A., and John Freemuth, editors. *Environmental Politics and Policy in the West*, Third Edition. University Press of Colorado, 2016. JSTOR, www.jstor.org/stable/j.ctt1c3spbt. (Environmental Politics and Policy in ...)
- Traill, Lochran W., et al. "Mechanisms Driving Change: Altered Species Interactions and Ecosystem Function through Global Warming." *Journal of Animal Ecology*, vol. 79, no. 5, 2010, pp. 937–947. JSTOR, www.jstor.org/stable/40835556. (Traill et al. 2010)
- Van Hemert, Caroline, et al. "Wildlife Health in a Rapidly Changing North: Focus on Avian Disease." *Frontiers in Ecology and the Environment*, vol. 12, no. 10, 2014, pp. 548–556. JSTOR, www.jstor.org/stable/43187701. (Van Hemert et al. 2014)
- Zamin, Tara J., et al. "Experimental Warming Alters Migratory Caribou Forage Quality." *Ecological Applications*, vol. 27, no. 7, 2017, pp. 2061–2073. JSTOR, www.jstor.org/stable/26600050. (Van Hemert et al. 2014; Zamin et al. 2017)
- Deem, Sharon L., et al. "Putting Theory into Practice: Wildlife Health in Conservation." *Conservation Biology*, vol. 15, no. 5, 2001, pp. 1224–1233. JSTOR, www.jstor.org/stable/3061477. (Zamin et al. 2017; Wildlife health monitoring and diseases...)
- Ibáñez, Inés, et al. "Forecasting Phenology under Global Warming." *Philosophical Transactions: Biological Sciences*, vol. 365, no. 1555, 2010, pp. 3247–3260. JSTOR, www.jstor.org/stable/20753012. (Ibáñez et al. 2010)
- Kutz, S. J., et al. "Global Warming Is Changing the Dynamics of Arctic Host-Parasite Systems." *Proceedings: Biological Sciences*, vol. 272, no. 1581, 2005, pp. 2571–2576. JSTOR, www.jstor.org/stable/30047869. (Kutz et al. 2005)
- Hasler, Richard. "The Okavango Delta and the 'End of Progress': Global Transformation and Community Based Wildlife Management." *Botswana Notes and Records*, vol. 31, 1999, pp. 93–100. JSTOR, www.jstor.org/stable/40980241. (Gaodirelwe et al. 2020)
- Conover, Michael R., and Denise O. Conover. "For Whom Do We Manage Wildlife: The Resource, Society, or Future Generations?" *Wildlife Society Bulletin (1973-2006)*, vol. 29, no. 2, 2001, pp. 675–679. JSTOR, www.jstor.org/stable/3784194. (conover and Michael 2001)
- Lister, Nina-Marie, et al. "INNOVATIONS IN THE FACE OF CLIMATE CHANGE: Integrated Adaptive Design for Wildlife Movement under Climate Change." *Frontiers in Ecology and the Environment*, vol. 13, no.

- 9, 2015, pp.493–502., www.jstor.org/stable/44000945. (Lister et al. 2015)
12. L. E. Rustad, et al. “A Meta-Analysis of the Response of Soil Respiration, Net Nitrogen Mineralization, and Aboveground Plant Growth to Experimental Ecosystem Warming.” *Oecologia*, vol. 126, no. 4, 2001, pp. 543–562. JSTOR, www.jstor.org/stable/4222885. (Rustad et al. 2001)
13. Klein, Julia A., et al. “Experimental Warming, Not Grazing, Decreases Rangeland Quality on the Tibetan Plateau.” *Ecological Applications*, vol. 17, no. 2, 2007, pp. 541–557. JSTOR, www.jstor.org/stable/40061876. (Klein et al. 2007)
14. Dunaway, Finis. “Seeing Global Warming: Contemporary Art and the Fate of the Planet.” *Environmental History*, vol. 14, no. 1, 2009, pp. 9–31. JSTOR, www.jstor.org/stable/25473326. (Lippard et al. 2007)
15. Cox, Helen M. “Current Issues in Global Warming and Mitigation Efforts: Focus in California.” *Yearbook of the Association of Pacific Coast Geographers*, vol. 69, 2007, pp. 115–132. JSTOR, www.jstor.org/stable/24043270. (Cox 2007)
16. Prieto, Patricia, et al. “Changes in the Onset of Spring Growth in Shrubland Species in Response to Experimental Warming along a North-South Gradient in Europe.” *Global Ecology and Biogeography*, vol. 18, no. 4, 2009, pp. 473–484. JSTOR, www.jstor.org/stable/40205697 (Prieto et al. 2009)
17. Manfredo, Michael J., et al. “Linking Society and Environment: A Multilevel Model of Shifting Wildlife Value Orientations in the Western United States.” *Social Science Quarterly*, vol. 90, no. 2, 2009, pp. 407–427. JSTOR, www.jstor.org/stable/42940594 .(Bogomolov 1982)
18. King, David. “Climate Change: The Science and the Policy.” *Journal of Applied Ecology*, vol. 42, no. 5, 2005, pp. 779–783. JSTOR, www.jstor.org/stable/3505737. (King 2005)
19. Doiron, Madeleine, et al. “Effects of Experimental Warming on Nitrogen Concentration and Biomass of Forage Plants for an Arctic Herbivore.” *Journal of Ecology*, vol. 102, no. 2, 2014, pp. 508–517., www.jstor.org/stable/24541280 (Doiron et al. 2014)
20. BLANCHONG, Julie A., et al. “Application of Genetics and Genomics to Wildlife Epidemiology.” *The Journal of Wildlife Management*, vol. 80, no. 4, 2016, pp. 593–608., www.jstor.org/stable/24764993 (Blanchong et al. 2016)