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THEORY AND PRACTICE:
SELECTING AND IMPLEMENTING EFFECTIVE FRAMING TO PRESENT CLIMATE
SCIENCE TO A LAY AUDIENCE

By
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A thesis submitted to the faculty of The University of Mississippi in partial fulfillment of the requirements of the Sally McDonnell Barksdale Honors College.

Oxford, MS
May 2021

Approved By

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Reader: Professor Debbie Hall

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Lauren Wilson

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DEDICATION

I would like to dedicate this work to my loving family who has supported me throughout the past four years. Thank you!

ACKNOWLEDGEMENTS

I would like to thank the School of Journalism for providing me with this amazing opportunity and experience. I would also like to thank my thesis advisor and readers for their continued help and guidance throughout this process. Additionally, I would like to extend a special thank you to those who took the time to share their stories with me in order for this project to be made possible.

ABSTRACT

Lauren Wilson: Theory and Practice: Selecting and Implementing Effective Framing to Present Climate Science to a Lay Audience

(Under the direction of Charles Mitchell)

The purpose of this thesis is to explore the advantages and effectiveness of using storytelling in the form of narrative journalism to communicate the topic of climate science to a lay audience. The thesis combines personal experience with secondary research in order to support the claim that framing the issue in such a manner effectively communicates the severity and impact of climate change.

Through my research I discovered that storytelling is not only a social tool for humans, but a means to safely and efficiently pass on vital information to those unfamiliar with certain knowledge. The use of narrative has been proven to increase the ability for humans to grasp concepts quicker and easier than through the presentation of hard data alone. Additionally, by implementing local framing, journalists are able to increase awareness and belief in concepts previously disputed by or unknown to the audience. Thus, the use of narrative journalism provides the best vessel for communicating the complex topic of climate change.

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Introduction

This practicum was a yearlong project in which students utilized research and interviews to compile journalistic reports on the subject of climate change in Mississippi, and more importantly, how various sectors within the state are responding. Reports and other media were prepared and posted to a public website that would offer information on each category researched by students. These categories include but are not limited to ecosystems, energy, food, and health.

A. Purpose

The purpose of this practicum was to convey to Mississippians the reality and impact of climate change within their home state in a way that would be free and accessible. By using various methods of storytelling including written narrative, graphics, photographs, and video the project aimed to relay this information to the public in a manner that is understandable and comprehensible to a variety of audiences. Choosing to focus solely on events happening within the state of Mississippi framed the topic of climate change within a local lens. This, in turn, allows the audience to feel personally connected to the topic, and generate interest in those who may have considered the effects of climate change to not be relevant.

B. Method

The first semester of the practicum required a minimum of three stories to be produced from each student. To compose these stories, students were allowed to pick from a variety of subcategories within the greater topic of climate change. These categories included agriculture, manufacturing, tourism, health, and more. Students were allowed to explore specific topics within each of these subcategories. For example, within agriculture, the topic of how climate

change is impacting local bee populations was explored. The second semester consisted of a more comprehensive report which was to be done on a chosen or assigned topic.

Once a topic was chosen or assigned, students would begin by conducting background research on the subject to gain an understanding of the history and science behind what they were investigating. Next students contacted subjects within their respective fields of interest to conduct interviews. Interviews were conducted via phone call, Zoom call, or in-person. Email questionnaires were allowed but discouraged.

Reports were written in a structured format. First, background information on the topic was given to lay the groundwork for what the report would be about. Next quotes and information from the individual interviews were incorporated into the report's body to present first-hand accounts of the aforementioned topic. Rough drafts of reports were to be reviewed by the student's respective advisor and then revised by the student to comply with suggested edits. Visuals such as graphics, photos, and/or video were allowed to be submitted along with stories as well. Upon completion of the stories and final review, reports, and visuals could be submitted to be included on the website.

I: Connection Through Storytelling

For centuries humanity has passed down stories. Stories create an opportunity to bridge past and present, and to help us predict our future. Humans can connect on a much more intimate level with one another by sharing personal experiences, and historical accounts can be preserved through the passing down of these experience

1. How Humanity Utilizes Storytelling

In many ways, storytelling is an evolutionary advantage that humans have created to increase their ability to survive. Hunter-gatherer and nomadic communities benefited from the ability to access generational knowledge. Examples of this can be found in indigenous communities that have passed down information regarding hunting patterns, crop cycles, and medicinal practices through the use of narrative. Stories are also used to maintain the culture and carry-on traditions. This unique human behavior has encouraged cooperation within early communities. (Smith et. al, 2017)

A. *Communicating Survival Skills*

Storytelling offers a unique vessel to communicate information relevant to survival. Stories regarding this information allow listeners to learn from other skills to succeed in the social and natural world without participating in the risks which were needed to obtain the information and skills (Bietti, Tilston, & Bangerter, 2019). Biettie et al. (2019) offer an

example of this by referencing hunters who learn hunting strategy and animal behavior from the stories of older, more experienced hunters. By hearing these stories, they learn new skills while avoiding the potentially dangerous situations they would have had to experience to gain the knowledge firsthand.

Another reason information presented as stories is valuable to adaptation is its memorability (Bietti et al, 2019, p. 715). Stories contain a high level of descriptive scenes which produce visual imagery within the mind. These descriptions create what are called *event memories* which are mental constructions of a scene that can be experienced through the person recalling the memory or imagined by another person who hears the description of the memory (Rubin & Umanath, 2015). This form of memory is unique from other forms such as episodic or autobiographical because the subject does not need to experience the event themselves to form a depiction of it in their minds, rather this memory stems from humanity's unique ability to empathize with others to create these imagined experiences within our minds (Rubin & Umanath, 2015). In other words, empathizing with the protagonist of a story allows humans to place themselves in the position of the protagonist, experiencing the events of the story in first person and thus absorbing the lessons the protagonist learned within the story for themselves. These episodic memories are also able to be recalled with a high level of accuracy despite the narrative not happening to the individual, which is ideal for procuring knowledge while preserving physical fitness (Bietti et al., 2019).

B. Communicating social norms and Facilitating cooperation

A valuable aspect of storytelling is its ability to facilitate cooperation within society and inspire action within individuals. As children, one of the first ways humans foster connections with one another through the use of stories. These stories come in the form of memory expression which

is taught to them through parental communication (Wang & Blenis, 2015). By sharing memories with their children, parents not only teach children how to organize their memories but also teach them lessons regarding cultural values and norms. Additionally, variations in memory sharing conversation styles have been observed depending on the culture the subject was raised in.

Wang and Blenis (2015) observed that Euro-American mothers use high-elaborative conversation styles using specific, detailed episodes while Chinese mothers used low-elaborate styles which provided little detail to the episode.

Early childhood is when autobiographical memory starts to form (Wang & Blenis, 2015). Starting at around 15 years of age an interesting phenomenon known as the reminiscence bump occurs. This is created when older individuals are asked about their life stories, forcing them to recall past experiences which they consider to be significant to their individual life experiences (Greenberg, Deasy & Zasadisk, 2015). During the ages of 15-25, humans experience many several milestone events for the first time, and many consider these events to be central to their identity. These are often the stories used to connect with others by sharing common experiences, and by sharing these common experiences humans form new relationships and eventually integrate themselves into social groups (Beitti et al., 2019).

Within any community or social group cooperation and cohesion is essential to its maintenance and long-term success. This was especially true for early communities that relied on hunter-gatherer tactics as a means for survival. It is proposed that storytelling may have been a method of communication that effectively facilitated social norms necessary to organize effective community behaviors (Smith et. Al, 2017).

Smith et al. (2017) documented this phenomenon while listening to stories told to them by elders from the community of Agata in Palanan, the Philippines. Each story communicated

cooperation within specific social behaviors such as friendship, group cooperation, social acceptance, and sex equality. Additionally, Smith et al. (2017) found that “camps with a greater proportion of skilled storytellers were associated with increased levels of cooperation.” Skilled storytellers were also found to be more preferred social partners than those who were not. After surveying 291 Agta from 18 camps to see who within the community they would prefer to live with if a choice was required, Smith and colleagues found that skilled storytellers were twice as likely to be picked over non-skilled storytellers.

C. Application of Traditional Knowledge

Today, scientists are consulting indigenous knowledge acquired through stories passed through generations when conducting environmental assessments. Regarded in these studies is what is referred to as traditional ecological knowledge (TEK). TEK is “the cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of a living being with one another and their environment” (Berkes 1999, p.8). Various research methodologies have been utilized by indigenous communities to study the environment around them and document their findings which include oral tradition, storytelling, and phenomenology (Villegas, Nation, NPS.gov).

This knowledge has been applied to various research areas in many parts of the world because TEK can be found across the globe. Indigenous knowledge can provide needed context and complementary information regarding climate change in various regions of the world (Alexander et. Al, 2011). For example, in remote areas for which previous knowledge or temperatures or weather patterns are unknown, TEK could be used to provide estimations to form comparisons in future research (Drew, 2005).

In the case of one study involving forest management in India, an investigation comparing TEK from local harvesters from the BRT sanctuary against conventional ecological studies of the region found that the TEK provided information more effectively (Rist et. Al, 2010). Specifically, TEK on the phenology of mistletoe in the area which was gathered in approximately 70 hours through the use of interviews closely matched the data collected through field studies by ecologists over several months with approximately 288 hours of work (Rist et. Al, 2010). Additionally, local harvesters interviewed were able to list twice as many species of trees present in the forest as the ecologists had listed in their surveys. While discrepancies did exist at times between TEK from the region and data collected by the ecologists, the results provided examples of how TEK can be a valuable and efficient means to compare scientific findings.

While native peoples make up a small percent of the world's population, they maintain and use a very large percent of the planet's land (Robbins, 2018). Therefore, climate changes affect native populations in a much more intense way than other populations. It is for this reason that it is often debated whether native populations themselves are by default conservationists considering how they apply TEK to determine when they should impose practices such as harvest/hunting limits and resource rotation to avoid over-processing their environment (Drew, 2005). This can be especially important when discussing environmental issues. Knowing how the land and atmosphere behaved historically compared to the present-day allows us to understand how our climate is changing.

Traditional Knowledge passed down through generations via storytelling has also worked to preserve cultural practices and societal norms which is especially true within Indigenous communities which maintain very close ties to their ancestral origins. As Iseke (2013) explained,

"Storytelling is a practice in Indigenous cultures that sustains communities and validates the experiences and epistemologies of Indigenous peoples...provides opportunities to express the experiences of Indigenous peoples... and nurtures relationships and the sharing of Indigenous knowledge and cultures." Elders within these communities are often the ones responsible for preserving and sharing these stories with new generations. These stories pass down life lessons as well as sacred information regarding spiritual practices and beliefs and can even be revealed as a means to initiate members of the community into a higher level in society (Iseke, 2013).

D. Stories as a Catalyst for Social Change

On a more radical level, the transmission of stories has been used as an agent for social change by protestors and activists. As Polletta (2006) states, "Stories elicit sympathy on the part of the powerful and sometimes mobilize official action against social wrongs." Movements created to elicit social change have relied on the circulation of stories from individuals affected by various issues to raise awareness for their cause. These stories not only had the power to appeal to sympathy but also to inform the public on an issue of which they previously were unaware.

An example of this in action is the 1970 antirape and child protection movement. Before this movement, adult survivors of sexual assault in their childhoods were discouraged from sharing their stories due to the risk of becoming considered culturally taboo, and because of this, it was rare that survivors received counseling or justice for what was done to them. Essentially, before the start of the movement victims were silenced and invalidated. Once the movement began, survivors were encouraged to share their stories which encouraged believing and validating victims of child sexual abuse. Informed, the majority of the public grew ready to do whatever was necessary to protect children from predators (Polletta, 2006). These stories created

what is known as *moral shock*, which is the ability of a story or event to be so emotionally moving that even the most previously disinterested people became compelled by their morality to seek solutions to the presented problem (Wisneski & Skitka, 2017).

One of the most famous accounts of a story sparking action was the story of Rosa Parks. In 1955, Parks and three other black passengers on a city bus were asked to give up their seats to accommodate white passengers. While the others complied, Parks refused to give up her seat resulting in the police being called and her arrest. The story led to the Montgomery Bus Boycott which lasted more than a year and eventually led to the bus company going out of business. The boycott was so influential it led to the U.S. Supreme Court ruling the de jure segregation of Montgomery's buses illegal. Today, Parks' story is taught to grade school students to provide context for their understanding of the Civil Rights Movement. However, the story has been communicated in such a way that omits some of the truths of the situation. A common misconception was that Parks was an ordinary woman who just happened to become a civil rights icon. In reality, her refusal to give up her seat was part of a planned protest to create a singular event that organizers could use to drum up support within the community for the bus boycott. By creating the narrative of Parks being a frail, tired woman instead of an activist, it was easier for people to sympathize with her story and admire her bravery (Polletta, 2006).

In the story of Parks' experience, there was some exaggeration and some omission of relevant details, perhaps to make the story more compelling. Even so, the model of story-telling – especially stories that relay human experience – is validated as effective in educating and communicating complex topics. In this project, we depend on storytelling to facilitate discussion of scientific issues, particularly environmental issues such as climate change, to an audience in a manner that both educates and advocates for action

2. Communication of Scientific Data in Narrative Form

In today's world, narrative can be a helpful tool in communicating scientific data to an audience of nonexperts in a way that is both digestible and entertaining for them. It is important for those hoping to communicate scientific findings with non-scientists to do it in a manner that will be understandable. While mainstream media continues to capture the attention of the overall population, science communicators can use the same tactics to raise awareness for new findings. Therefore, in this context it is important to shift the method of communication to properly fit the desired audience.

To understand the advantages of narrative communication, it is important to understand how this differs from basic scientific communication. As Dalstrom (2014) explained, there are three areas in which these two forms of communication differ: "their direction of generalizability, their reliance on context, and their standards of legitimacy."

Science-based communication relies on "abstract truths" which readers can use to generalize the subject and understand it, whereas narrative communication appears to work backward by providing the subject for which the reader must infer what the truths must be. Dalstrom (2014) explains this more plainly by stating that scientific information follows deductive reasoning while narrative information follows inductive reasoning.

Additionally, a major difference in narrative communication in contrast to purely scientific communication is the presence of context. Scientific communication rarely presents context when providing information while narrative communication is dependent on context (Dalstrom, 2014). Essentially, rather than relying on lists of facts and data, narrative

communication provides a cause-and-effect structure to paint a much clearer picture of the concepts presented.

Another difference is in the legitimacy of claims made within the communication. Science-based communication is expected to be able to back up its claims with empirical data to establish the truth of the claims, but narrative claims are much harder to establish as concrete truths because they are largely based upon experiential information that that is often subjective (Dalstrom, 2014).

In a study conducted to see whether narrative or expository approaches to communication produce better recall, it was concluded that narrative texts have a better chance than do expository texts. The study also revealed that adults can read narrative passages faster than expository texts, while still comprehending the information presented in them. This finding was considered impressive since the average time spent both initially reading and rereading expository passages were much higher, suggesting a higher intent to understand the information presented, yet the information presented in narrative form was still recalled better with a lower initial reading and rereading time (Zabrucky & Moore, 1999).

Harkening back to the discussion on storytelling and narrative being a beneficial adaptation to humankind, results such as the ones found in the Zabrucky & Moore study suggest that human cognition has evolved to comprehend narrative more efficiently than other genres of text. Following this conclusion, it would appear narrative is the best way to communicate topics of science, especially those surrounding environmental issues.

While scientists may be accepting of the validity of climate change after reviewing empirical data presented by other scientists, the public may be apprehensive to accept pure

science evidence regarding the environment. Martinez-Conde and Macknik (2017) expand on this idea arguing, "Simply providing more information about a given issue won't necessarily change minds or prompt, for example, a skeptical audience to accept the science of climate change." Additionally, new scientific findings and discoveries may fail to generate public excitement and thus go unnoticed. A major reason for this is because non-scientific audiences are not equipped to understand or appreciate the worth of these discoveries or recognize how they affect other areas of their personal lives. This creates the need for two steps: to translate scientific jargon into plain-speak and generate emotion within the reader.

3. Communicating the Topic of Climate Change Using Environmental Journalism

Journalists have become one of the most effective communicators when it comes to bridging the gap between science and the general public. In particular, environmental journalists are helping to educate audiences on specific environmental issues affecting the world today by weaving scientific findings into a narrative form. In addition to this, environmental journalism is becoming increasingly popular around the globe, making it a good competitor with traditional topics in mainstream media. Stories involving these topics have the power to evoke strong emotions within those who read them, creating the possibility for them to be sensational but also requires them to be factual and accurate.

A. *Ethics*

Narratives within journalism provide the opportunity to persuade audiences to take interest in topics to which they previously did not pay much attention and even sway beliefs about certain

topics. However, it is important to avoid persuasion from becoming too obvious should the audience feel they are being manipulated.

In a study conducted by Dahlstrom (2010), it was concluded that assertions placed into narrative provided an increase in perception of the truthfulness of the information. This leads to the conversation of the need for ethical consideration to be adapted when producing narrative works for communicating science-based topics.

A legitimate ethical concern regarding science-based journalism is the possibility to perpetuate misinformation. Because narratives can often be subjective and thus do not require the same level of objective truth as science-based communication, there exists the possibility that information presented in narrative form can be accepted as fact by the public when in reality there is little scientific backing for the claims made within the story. A relevant example of this exists within the anti-vaccine controversy. While scientific studies have yet to produce data proving that there is any link between childhood vaccines and autism, anti-vaccine groups have produced persuasive narratives insisting that the link exists (Dahlstrom, 2012).

To produce ethical reporting, Dahlstrom (2012) proposes three questions to consider when using narratives to communicate controversial science findings. These questions are: *1) Is the underlying goal for the use of narrative for persuasion or comprehension, 2) What levels of accuracy need to be maintained in the narrative, and 3) Should narrative be used at all?*

To elaborate on this, the first question requires that communicators decide if their narrative will be used to inform the public of a topic or persuade the public's opinion of a topic. Depending on what the goal is will drive forward the exact qualities the narrative will possess. Next, the communicator must decide what the level of accuracy must be. This will depend on what the overall goal is. For example, if the goal is to inform then the communicator should strive to

include a high level of accuracy. However, if the communicator chooses to present a hypothetical or fictional story to illustrate a concept, they may do so as long as the science presented within the example is accurate and realistic. Dahlstrom (2012) gives an example of this by suggesting a fictional narrative of how an imagined individual in the future may live in the sea levels continue to rise as predicted due to climate change. While this imagined person does not exist, the topic within the story is derived from what scientists predict future sea levels will be based on the current data of present sea level increase. Lastly, it must be considered if the use of narrative is appropriate at all. If the narrative can be considered manipulative, for example in the case of proposed disastrous results of climate change being used as a fear-mongering tactic to inspire immediate action by the public, then it could be considered unethical.

B. Standards

While concrete objective standards for environmental journalism have not been laid out, certain criteria should be met to ensure that the narrative presents accurate information to the readers. A study involving both professional environmental journalists and student journalism was conducted to attempt to establish what would be considered criteria for good environmental journalism which would lead to more clear and ethical evidence-based reporting (Rogener & Wormer, 2015). Following this study 10 criteria were established (See Figure 1).

Table I. Criteria in environmental journalism and general criteria in journalism.

| Criteria in environmental journalism | |
|--------------------------------------|--|
| 1 | No scaremongering/no trivialisation Risks and opportunities are neither exaggerated nor minimised. |
| 2 | Documentation/evidence The presentation of studies, facts and figures on environmental issues elucidates the evidence. |
| 3 | Experts/transparency of Sources/conflicts of interest The sources of factual claims and assessments are named; their degree of independence and objectivity is elucidated and core statements are backed up by at least two sources. |
| 4 | For and against The essential, relevant views are presented appropriately. |
| 5 | Press release The information contained in the report and the presentation go well beyond that of a press release/press material |
| 6 | Novelty The report makes it clear whether it deals with a new or newly discovered issue, an innovative environmental technology or a novel potential solution/regulation or similar, or whether this has been in existence for some time. |
| 7 | Potential solutions and paths of action / no greenwashing The piece outlines ways of solving or avoiding the environmental issue, if and where appropriate. |
| 8 | Geographical dimension (local – regional – global) The geographical scale of an environmental problem and the connection between local and global perspectives are presented. |
| 9 | Temporal dimension (sustainability) The temporal scale of an environmental problem or phenomenon is presented |
| 10 | Context/costs In addition to scientific, health and technical aspects, political, social, cultural or economic aspects of an environmental topic are also considered |
| General criteria in journalism | |
| J1 | Choice of theme The theme is topical or the piece picks up on a theme that is relevant or original irrespective of how topical it is. |
| J2 | Presentation Elucidating complex environmental relationships. |
| J3 | Factual accuracy The report presents the essential data and facts correctly. |

See Appendix II for a more detailed description.

Fifty stories were scored based on their ability to meet this criterion and the study found that a majority of them did not satisfy the criteria. The areas found to be most lacking were the ability to provide contextual information and the ability to provide enough evidence to back up the cause of events reported on. While it was decided that equal weight should be given to each

of the 10 criteria, considering that these two criteria were found to be lacking the most it should be emphasized that journalists become aware of including these in their work.

C. Methods

Since it is important to know and understand the audience a journalist is writing for, attitudes about climate change must be examined. The topic of climate change has become a politically polarizing topic to many, and because of this, it can be hard to present to certain audiences. While studies from 2017 show that 71 percent of the United States believed the climate was changing and 54 percent believed that a majority of the change was the result of human activity, opinions regarding what should be done about this remain split. For example, Democrats are more alarmed by climate change and felt convicted to act to slow or prevent it while Republicans remain largely dismissive of its effects (Armstrong et al., 2018).

It should not be assumed that merely providing information will move people to action or sway beliefs. Instead, it should be recognized that the public is incredibly diverse, and because of that people have different values and worldviews which can influence their feelings of various topics (Hagen, 2015). A way to accommodate this is by framing the story in a manner that best appeals to the target audience.

One method of framing is emphasis frames which use specific wordage to appeal to particular audiences. For example, instead of using words like "global" or "world-wide" incorporate more location-specific language such as specific names of states or areas. This frames the impacts of climate change to be a more local issue making it more personal to the reader. Another method of framing, equivalency framing, emphasizes specific parts of information to affect perception. An example of this would be saying when people include statements like "98 percent of scientists agree" rather than saying "2 percent of scientists

disagree.” This creates the ability to frame facts in a more positive light, thus leading the reader to view them within this frame as well.

Shortcomings journalists have faced and possible reasons why their work has not aided in proper communication of these topics could be due to professional norms that journalists adhere to known as first-order norms consisting of personalization, dramatization, and novelty and secondary norms consisting of authority and balance (Hagen, 2015).

Personalization, dramatization, and novelty can negatively affect public perceptions of climate change by encouraging journalists to produce stories that only focus on large, disastrous events that impacted only a small portion of the population. While these stories are exciting and likely to gain lots of attention, they create the illusion that while climate change is a serious threat, it most likely won't be a threat to the average household. This also creates a disconnect between impacts and causes, removing from the issue its sense of urgency and making it appear as though the actual effects are yet to be seen and won't be observable anytime soon. Worse than these norms are the norm of balanced reporting. While facilitating debate can be productive to problem-solving, it can cause backsliding when opposing arguments are provided for why a climate change effect has occurred. Essentially, this form of reporting allows for the opinions of skeptics to be presented as a legitimate opposition to the cause or even the existence of climate change. Hagan (2015) references a study conducted in 2015 which revealed that the majority of media reporting allowed for equal attention to contradicting arguments such as "(a) climate change is caused by human behavior and (b) that natural functions alone can explain the rise in the average temperature" which resulted in "the public misconception that the reality and dangers of climate change are still highly debated within the scientific community.

D. Effective Reporting

Effective reporting on climate change requires a variety of different criteria. Robert Wyss (2019) discusses a few goals journalists should set to create successful coverage on climate change. First, he recommends gaining a fundamental and clear understanding of the science behind the specific topic. To translate the research to an audience, the journalist must have a clear understanding of it. This may require reaching out to various credible sources such as an information officer from a research institution to gain insight on the topic. However, he stresses the importance of finding the right sources. The public already has trouble trusting the media, so finding credible sources that are not politically charged or acting under self-serving motives is a necessity (Painter, 2019). For example, climate change has become a polarized topic within the political world due to differing beliefs between political parties as to what should be done regarding public policy. Therefore, consulting with government agencies can be risky depending on which political party is in charge. A case of this happening can be observed when under the Trump administration, the EPA removed several informational resources about climate change from its website and often refused to comment on it, but under the Obama administration, these resources were kept intact (Wyss, 2019).

Next, Wyss encourages journalists to take time to compile a comprehensive report. While climate change can appear to be a massive, overarching topic that is complex and global, it is possible to break it down into locally relevant stories. Wyss (2019) explains, “One does not need to go to Greenland where glaciers are melting to find a story; it might be there on the eroding coast of New Jersey or the absence of bees in an English cottage garden.” By focusing on local stories, the issue of climate change is transformed into a personal issue. Painter (2019) expands on this by stating that journalists should be “telling local stories, inspiring community-

level resistance and transformations, and amplifying counter-narratives for people who are becoming active citizens".

Lastly, he advises that to effectively report, journalists should take the time to go out and visit sites and speak in person with those affected by events. After all, those wishing to cover environmental issues must be willing to go out into the environment themselves. He recalled a colleague who, despite a pressing deadline, took the time to hike for two hours around the scene he was covering to fully express in vivid details what was happening.

4. Summary

Storytelling is a uniquely human adaptation that has existed to connect humans on a level other forms of communication are unable to. From its early uses to facilitate cooperation and foster relationships within communities, to its more modern applications in mainstream media reporting which has the potential to reach and influence the masses, stories are a powerful tool for communication. Narrative has proven to be an effective tool for activists and protestors alike. Complicated and controversial topics are framed in an easy to comprehend and appeal to personal convictions when woven into personal narratives of firsthand experiences. In the case of climate change, journalists have an especially opportunistic position to communicate the issue. Through the use of effective, ethical reporting and adaptation of specialized criteria, the beat of environmental journalism has the potential to not only inform the public on the science of climate change but compel them to care about an issue they may have previously overlooked. Effective science communication through narrative and storytelling breaks down hard to grasp science into simple jargon and provides situational context to the

facts. By focusing on local stories, reporters can shift the scope of environmental issues from being perceived as a global event to a personally felt and experienced phenomenon.

II. Articles

Bees Bothered by Unsettled Seasons

Honeybees rely on specific weather cues to know when to come out of their winter slumber. With rising temperatures and shorter winters, the time bees become active has fallen out of sync with when flowers and crops begin to bloom. This mix up in phenology can cause problems for both the bees and those who rely on them for pollination. The U.S. Environmental Protection Agency predicts that in the coming years Mississippi will experience 30 to 60 days with temperatures above 95 degrees compared to today with only about 15 days a year on average. Not only do these increased temperatures affect plants and bees, but increased rainfall does as well. When fields are flooded, farmers are unable to plant crops during ideal growing times. Since then, the state has experienced above-average rainfall for several years in a row as well as vast flooding of backwater flooding of cropland in 2019.

On average farmers in the state expect there to be around 14 inches of rain per year, however, in 2018 North Mississippi experienced 7.5 more inches and 6 inches more in 2019 according to local weather reports.

Mississippi ranks 28th in honey production among the nation and there are 12 full-time commercial beekeepers who collectively produce 2.25 million pounds of honey for sale each year. The Mississippi Beekeeper's Association (MBA) is one of the oldest agricultural organizations in the state and has over 500 members. For some, beekeeping is a livelihood; for others it is a treasured hobby.

Mardis Honey Farm, located in Taylor, sells honey it harvests to distributors across Mississippi. The farm's owner, Andrew Lafferty, has experienced increased complications for his bees due to a combination of climate factors.

"I partner with farmers," Lafferty explained about how his bees are distributed. "I have 20-30 hives that I have placed in cotton fields around Lafayette County. The farmers' crops provide food for my bees and my bees pollinate their crops."

"The bees become active when temperatures are around 50-60 degrees," Lafferty said. "Normally we expect this to begin happening around March, however, just last weekend on February 2 the high was 70 degrees, so naturally, the bees would think spring is here. So, on days like that, we have bees flying around burning lots of their own energy but not having any outside food sources."

"The bees don't starve, not immediately. The bees hoard honey from last season and use that to live off of during the winter," Lafferty said, "but it is only enough to get them to the first days of spring. When they come out of hibernation and the crops haven't bloomed yet I have to go out into the fields and hand-feed the bees a mixture of sugar and water in order to keep them alive."

This mix-up not only causes issues for the keepers' hives but also for wild bee colonies as well and is one reason that wild honey bee populations have been in decline across the state as shown in a recent study by Mississippi State University. While there is a growing concern for how parasites and disease can hurt honey bees, the key to maintaining the integrity of the hive is to keep the bees healthy.

“A strong hive will be able to defend itself,” said Barrie Whisenant a member of the University of Mississippi Beekeepers Club. “If the bees are strong and healthy they can defend themselves from outside threats such as parasites, but in order to stay healthy the bees of course need a plentiful food source.”

All around, increased rainfall and flooding can prove to be detrimental to the agricultural sector of beekeeping. In fact, Mardis Honey Farm almost experienced the loss of a few hives due to flooding last year.

“Last year I had to trudge through a flooded field in order to save some of my own hives. There was a beekeeper I know who worked in Sardis that actually had to close his business because his hives were flooded out.”

Lafferty said he has begun the process of relocating his hives in order to save his business from suffering the same fate. When asked if he thought climate change was a cause for the issues his business is experiencing he said, “I’ll put it like this. If five people are walking down a train track and four out of five of them say that a train is coming, it’s probably wise for you to take action and get off the track, especially if those four people are experts on trains.”

<http://msclimatereport.com/2020/11/17/bees-bothered-by-unsettled-seasons/>

Newer Toyota Factory Assembles Cars, Plants Trees and Gardens

Mississippi is home to several large manufacturing plants that employ many of its citizens. One plant, however, stands out from the rest in its environmental efforts. While all manufacturers are required to abide by state regulations, Toyota Mississippi has gone above and beyond to reach its goal of being sustainable and environmentally friendly. When built, the Blue Springs plant was set apart to be an eco-friendly model plant, and their efforts towards that have certainly shown.

Sean McCarthy is one of two senior environmental specialists that work for the Toyota plant in Blue Springs, Mississippi. His main job is to keep the plant in compliance with state regulations. He explained some of the ways that the Blue Springs plant is working towards Toyota's environmental goals.

“We have some of the newest technology which helps us a lot,” McCarthy said. “For example, our painting process has changed. Instead of the old method which would involve spraying on a primer then sending the car through an oven to bake it on then spraying color then baking again, we instead use a water-based paint applied in a continuous burst and then send the car through a heated flash zone which only has to heat up to 200 degrees. This saves a lot of energy since we don't have to use as much heat and we don't have to operate two ovens.”

McCarthy explained that the plant is always looking for opportunities to cut their emissions and energy usage. One way is through eliminating “non-production energy”. This means shutting off all non-essential equipment during off shifts in order to avoid wasting resources. As a company, Toyota strives to be zero waste at all of their facilities, meaning they do not send their waste to landfills. However, due to a county ordinance, they are required to send waste that they cannot recycle to the local landfill. Despite this, the plant attempts to

recycle as much as it can in order to avoid a large footprint. The plant also benefits from having a small physical footprint.

“We have a very small footprint compared to other Toyota plants”, McCarthy said.

“Here we have only about 2 million square feet under roof. Of course, here we only make one car so it’s easier for us to be a smaller plant.”

In addition to making changes within the plant, Toyota Mississippi performs conservation work within the community. Most recently a team of workers and volunteers planted 2,050 trees in an open field near the plant, but their effort have gone far beyond this.

“We have planted pollinator gardens near our front parking lot,” McCarthy said. “The gardens are full of wildflowers native to Mississippi. We are working with an ecologist at Mississippi State University to help us properly pick the best selection for the native pollinators. This summer we are also hoping to install several bat boxes to help our native bat population.”

The plant has also gone off-site to do conservation work around the community. In 2013 the Blue Springs plant partnered with a local Boy Scouts of America troop to install 20 wood duck nesting boxes.

“Each nesting box yields up to 10-15 eggs,” McCarthy explained. “The birds have been coming back every year for the past seven years. The year before last we counted over 150 eggs.”

All of the plant’s efforts are in response to Toyota’s larger environmental goal. In October of 2015, Toyota announced its goal of the 2050 Environmental Challenge, a 6-step challenge to help them reach their ultimate goal of reducing their environmental burden and getting as close to zero CO2 emissions as possible.

In addition to their own efforts, the plant hopes to encourage other manufacturers in the state to consider taking measures to become more environmentally friendly. One way they are doing this is by participating in a program called enHance. EnHance was created by the Mississippi Department of Environmental Quality to encourage organizations that participate to commit to environmental improvements. The project provides resources to the organizations that sign up such as providing energy audits in order for them to see where their business or plant has the potential to improve.

“A lot of companies mean well but don’t have the professionals to truly do their best”, said McCarthy. “Smaller companies may not have the ability to hire someone like me whose main job is to focus on environmental problems, and then they look at companies like Toyota which are much larger and have a lot more money and think that it is impossible to become more sustainable. EnHance provides a way for them to gain access to resources that can help them realize that most of these changes do not require a tremendous amount of effort or money.”

<http://msclimatereport.com/2020/11/24/newer-toyota-factory-assembles-cars-plants-trees-and-gardens/>

2C Mississippi Offers, Encourages Climate Education

While climate change impacts Mississippi in many different ways, it is often hard for policy change to occur when there is little education on the subject or opportunities for action available in the state. Dominika Parry is the founding president of 2C Mississippi, a climate-conscious organization that is committed to helping Mississippi become climate kind by working to increase climate education and action.

“When I came to Mississippi seven years ago I had trouble finding organizations that would be interested in my line of work,” said Parry. “So, I started exploring other options. I started consulting nationally and it made me realize how Mississippi differs from the rest of the country with respect to approaches to climate change and climate education.”

After working with areas in the lower Mississippi river estimating the cost and benefits of changes in the river and realizing the lack of acknowledgment for how climate change is currently affecting the state, Parry decided to take matters into her own hands.

“I decided that if no one is going to work on climate change in Mississippi or talk about it openly then I will,” said Parry.

She started by working with the Citizens’ Climate Lobby, an organization that focuses on national policies to address climate change by voicing concerns to local and national representatives. After working with the organization on a national level she then worked to create chapters of it throughout Mississippi and serves as the chapters’ state coordinator. While this was a rewarding start, it pointed out a clear hole which was education.

“People in Mississippi, even those who wanted to be active and do something about climate change, didn’t really have much knowledge about what it was, what the damages from it

are, how it's caused and what it's related to," said Parry. "So, we needed to step up and provide education to them."

With this realization, she decided to start her own organization.

"I started 2C Mississippi, as in 2 degrees Celsius, which is the goal of the Paris agreement," said Parry. "I hope that the name is obvious to people who are environmentalists, but if not, it will prompt them to ask what it means, and I can explain what the Paris agreement is."

2C Mississippi has one main goal which the organization approaches from two sides: education and action. Education is an important tool in continuing the conversation about climate change. Recently the organization has developed a climate science curriculum that can be used in schools across Mississippi and is fully aligned with the new standards from the Mississippi Department of Education.

"We realized that this issue is very politicized and often audiences that want to listen to us have already decided that climate change is an issue and want to do something about it, but we wanted to figure out how we can talk about it across the aisle," said Parry. "So, we came up with an audience that does not have a political preference, which is children. We had two wonderful high school teachers help us write a climate science curriculum that can be adapted to both private and public schools. We also offer teacher workshops and financial aid for supplies in order to help provide these lessons."

The other branch of their mission is climate action which focuses on working with communities, businesses and municipalities within the state that are interested in implementing climate-kind strategies. Perry admits that the push back against enacting climate laws in

Mississippi at a state level has been very large, so working within individual communities has yielded better results.

“We started working with the city of Jackson last summer,” said Parry. “The city had actually mentioned “climate neutrality” as one of its goals in its new mission statement it released when their new mayor took over, but there were so many other pressing needs that they didn’t have the opportunity to work on it. So, we have worked to create a task force made of up a group of organizations and individuals who are interested in supporting those goals. We have members from both sides of the aisle, representatives from the NAACP climate change department, local business owners, physicians and more. Within that we are working on ways to reduce our carbon footprint by accounting for our emissions. We have applied for a new service provided by Google which uses Google Maps to help cities estimate their footprint by calculating traffic emissions and energy used by buildings. We are still on the waiting list but once we get it we will be able to measure our carbon footprint and better work towards making it better. We are also developing a heat preparedness plan. We know that certain temperatures are deadly, and we know that lots of individuals in Jackson, especially in low income areas, die because of heat stroke due to this. We are developing a plan for the city to locate cooling centers; places people can go and spend their day or nights when it gets really hot and an alert system to announce when there would be a heat emergency.”

Perry hopes that in the long run her organization’s efforts will help Mississippi realize that becoming more climate kind can be economically beneficial to the state, as well as beneficial to the environment.

<http://msclimatereport.com/2021/02/04/2c-mississippi-offers-encourages-climate-education/>

Trees Essential to Environment, Economy

Forests are an integral part of Mississippi's ecosystem and economy. Change may come slowly and quietly but is no less profound.

Data published by Mississippi State University reports that more than 65 percent of the state's land area is wooded, and the timber industry is worth in excess of \$1 billion. From harvesters to drivers to timber cruisers and mill personnel, trees supply more than 70,000 jobs in the state. Environmental issues such as fire, drought, pests and invasive species all threaten the overall health of the state's forests.

"I think one of the reasons people have a problem identifying with trees versus other agricultural products is, for example, if you plant corn and you get too much rain and it floods your field it's easy to see that your corn didn't make it," said State Forester Russell Bozeman. "But with trees it could be years before the effects of climate events are ever realized. It's an interesting challenge that we have as foresters when dealing with those events and how they impact forestry."

The Mississippi Forestry Commission manages 480,000 acres of forest in the state. The commission works with the Mississippi Tree Farmers Association and others to provide protection, management and research information to the state and landowners.

MARKET DIVERSIFICATION

"One of the biggest issues for forest owners is forest markets," Bozeman said. "The forests here are heavily owned by non-industrial private forest landowners. How the forest owners choose to manage their forests and how much management they apply to that forest largely dependent on the opportunity for return on investment. Since 2008 we have lost a lot of mills in the state, so there's not a lot of options for landowners to sell their wood."

This presents not only an economic problem but an environmental one as well. Many of the forests planted for harvest back in the 1970s and 1980s are now due for harvest, but if the landowner has no one to sell to, they won't harvest. This can lead to overcrowding of that forest that can harm the health of the trees.

And it's not only the private and corporate forest owners who feel the effects of prices and markets. Starting back in 1785 - before Mississippi was a state - one 640-acre section of each six-mile by six-mile surveyed township of land - was reserved for public ownership. Specifically, each "16th Section" was declared School Trust Land to generate revenue for public schools. The majority of Mississippi's 16th Section land is timber and farmland.

“Right now, we have about \$15 million in timber sales that go directly to the school boards, which they greatly appreciate,” Bozeman said. They then put back 15 percent of that amount to put toward reforesting the area which was harvested.”

Traditionally, soft woods are harvested to make pulp for paper products and hardwoods are harvested for construction and furniture-making. Some wood byproducts, bark and sawdust, have been used in energy production - and that could increase.

At Mississippi State University, faculty members in the School of Forestry have been researching ways to convert trees into a renewable form of energy.

“We have several faculty members who are interested in short rotation woody crops, which are trees that grow really fast and can be used as a renewable, carbon-neutral form of energy,” said Dr. Courtney Siegert, an associate professor at MSU. “We’re looking at the ecosystem services that they could provide for water quality improvement and soil carbon storage so that we can understand and quantify those services monetarily which would allow us to get bioenergy to a more comparable price point to fossil fuels.”

SUSTAINABILITY INCENTIVES

With 75 percent of forests in the state privately held, it is important that landowners be equipped with the resources to learn and use best practices. The Mississippi Tree Farm Committee, a part of the American Tree Farm System, is dedicated to helping woodland owners manage their forests in a sustainable way. Landowners can voluntarily apply to become a Certified Family Forest. The certification recognizes forest owners for making the commitment to be good stewards of their land and grants them access to the program's resources which help to adopt a proper forest management plan.

"There are eight standards to meet in order to be certified," said Mississippi Tree Farm Committee Administrator John Auel. "With any certification we want to make sure the owners are balancing three things: the environmental, social and economic aspects of sustainability." Each year the committee recognizes a Mississippi Tree Farmer of the Year, identified as a Family Forest owner who has gone above and beyond in commitment to standards of sustainability.

"The Tree Farmer of the Year is nominated from our four districts of the state," Auel said. "The winner can then go on to compete for the American Tree Farm System's national farmer of the year."

THREATS

Fall and spring are Mississippi's forest fire seasons. The weather conditions for those seasons present conditions which can heighten the possibility for fires.

"Most people aren't aware that Mississippi has well over 1,000 wildfires every year." Bozeman said. "Our five-year average right now is 1,263 fires which consume about 21,600 acres of forest annually." Almost all of these fires are unintentionally caused by humans, he said,

which is why the commission strongly encourages and educates the public on safe burning practices.

Another issue plaguing the state's forests are pests and invasive plant species. The Southern Pine Beetle is the most common pest found in the state and has the potential to cause the most harm.

"The way climate affects the pests and allows them to cause problems is through stress on trees," Bozeman said. "This stress can be caused by storms, excessive rainfall, drought and other environmental stressors. There have been outbreaks in the past few years but the best way to mitigate that is through healthy forest management practices."

"We saw this play out at the De Soto National Forest," Siegert said. "There were stands there that needed to be thinned out, and because they didn't tend to them, they had a massive outbreak of southern pine beetle. This only occurred in the stands that were not managed correctly."

Siegert also shared facts about an invasive pest that could cause serious devastation to Mississippi's population of ash trees.

"The emerald ash borer hasn't entered Mississippi yet, but they are in most of the surrounding states," Siegert said. "In the states where the pests are currently, they have killed off all of the ash trees. Our native ash trees have no natural defense against these invasive pests, so eventually they could remove all of the ash trees from our forests."

ECOSYSTEM

For hundreds of years, it has been known that trees and vegetation are essential to other life forms on Earth. In the natural phenomenon known as photosynthesis, leaves use solar energy to absorb carbon dioxide from the atmosphere and release oxygen as a byproduct.

A lesser-known part of forestry is the forest's connection to water quality. People don't often think about forests and water quality, but they should. The forests have the ability to both slow and filter runoff, which helps to drastically cut down on water pollution. Dr. Siegert who concentrates largely on forest hydrology explained the connection.

“Maintaining healthy forests is crucial to maintaining proper water quality, especially for people who drink service water from a reservoir,” Siegert said. “When precipitation moves through forested soil it does so slowly and those soils are able to filter out any types of pollutants, and the canopies are able to capture atmospheric pollutants as well. Water that originates from healthy forests is much cleaner than water that falls in an urban area.”

<http://msclimatereport.com/2020/11/24/trees-essential-to-environment-economy/>

Mississippi Forest Products Industry

2010

Total Industry Output

| | | |
|-----------------------|-----------|--|
| Logging | \$1.5 B | |
| Solid Wood Products | \$2.7 B | |
| Pulp and Paper | \$2.9 B | |
| Wood Furniture | \$3.8 B | |
| Total Industry Impact | \$10.38 B | |

The Logging sector includes cutting timber, transporting timber and producing wood chips.

The Solid Wood Products sector includes sawmills and wood preservation, veneer and plywood manufacturing, reconstituted wood product, and all other wood work and product manufacturing.

The Pulp and Paper sector includes pulp mills, paper mills, paperboard mills, packing paper factories, and all other paper product manufacturers.

The Wood Furniture sector includes wood windows, doors, cabinet, countertops, and other wood furniture manufacturing.

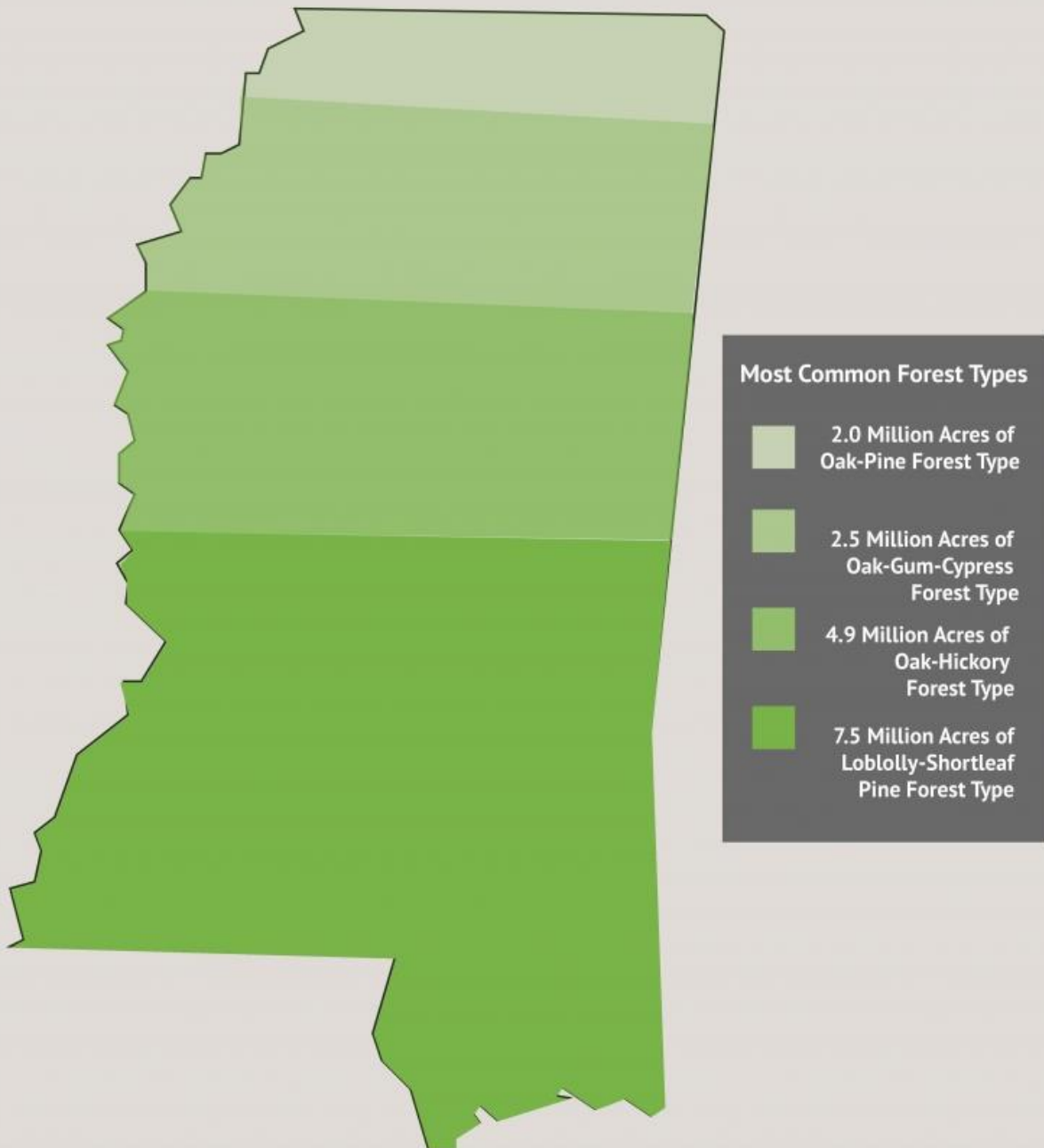
2.42% of total employment in the state
\$1.63 billion in wages
\$45,183 average annual wage
2nd largest agricultural commodity

63,365
Jobs



Lauren Wilson/sourced from: https://www.fwrc.msstate.edu/pubs/forestryinmississippi_2020.pdf

Mississippi is Home to 19.4 Million Acres of Forested Land and 113 Species of Trees



Lauren Wilson/sourced from <https://www.srs.fs.usda.gov/pubs/48580>

Growth of Harvest Values 1940-2019



Lauren Wilson/sourced from <http://extension.mstate.edu/content/harvest-forest-products>

III. Constructing the Articles

1. Preparation for Articles

Before beginning the process of conducting interviews on respective article topics, it was important to do preliminary research to gain insight and understanding of the topic at hand. For example, in the case of the article on honeybees, research into the biology of honeybees as well as the process of beekeeping. Information regarding the beekeeping, the honey industry, and bee populations in Mississippi was also conducted to understand the regional significance of the topic. This research helped me to prepare possible questions for interviews as well as find candidates for the research. While this beginning research provided possible examples of what factors of climate change could be affecting the topic, I avoided drawing any conclusions before I was able to get the full story provided by the interviewees. This was done to avoid guiding the interviewee away from what he or she might wish to discuss or missing an important piece of information because I had misrepresented or misunderstood the scope of the topic in my questioning.

After the research was completed the search for interviewees began. Interviewees were chosen based on their ability to speak from experience on the topic at hand. For instance, in the case of my article on forestry in Mississippi, I sought out people who both worked for the state's forestry department as well as those who researched forestry within the state. However, these

people needed to have personal experiences regarding forestry, so I sought out individuals who had worked in these professions for an extended period, who had acquired positions within the industry that required a certain level of expertise and experience, or who were recommended to me by reputable sources.

For the first semester of the practicum, students were allowed to come up with topics, if approved by their advisor, to report on. For the first paper, some topics were suggested to us to pick from but for the last two, it was encouraged to search for relevant stories. This at times proved to be an issue and forced me to be more creative in my research. Since climate change is a global issue, it is hard to find in-depth data or reporting on issues within a place like Mississippi. This provided me with the challenge of finding stories in not-so-obvious places. Instead of making a blanket search for climate change issues in Mississippi, I researched sectors within the state that were important to its ecosystem and or economy. This is what pointed me in the direction of stories such as Toyota's efforts towards new environmental goals. While the plant provides a large number of jobs to the state and helps the economy, it also aims to help the environment as well. Subsequently, this also led me to find the organization 2C Mississippi that, among other things, advocates for and provides climate education to schools within the state.

2. Conducting Interviews

The structure for interviews would depend largely on the individual, their involvement in the particular topic's sector, and my previously acquired research on the topic. Questions were designed to be open-ended to encourage the interviewee to divulge as much as they could about the topic. Any topics that sparked an interest to the interviewer during the initial response were asked about using more in-depth questions to encourage them to elaborate more. Often the

interviewee came prepared with a story to tell, so not every pre-prepared question was needed. Many interviewees requested questions before the interview to prepare research they had personally done on the topic or to meditate on a personal experience which they could share in better detail with preparation.

While general questions were prepared before the interviews it was expected that the interview would build off of information provided by the interviewee to ensure that the full, relevant story was captured and that irrelevant information/questions did not take precedence over this. For example, for my article on honeybees, while my prior research led me to believe that increased temperatures would be the leading factor contributing to negative effects on honeybees, Lafferty informed me that the increased rainfall experienced in recent years was the most detrimental to his hives and profits. By allowing the interviewee to take the lead, the full story was able to unfold. It can also be noted that many of the individuals who were interviewed were excited to tell their stories. It was rare that the interviewee could not provide sufficient context for a given topic and if this problem arose, I would simply ask them if they were aware of a topic that they felt was more relevant.

After the interview, additional research and follow-up questions were asked if needed to clarify or provided needed explanation for topics mentioned. For example, when interviewing senior environmental specialist Sean McCarthy for my article on Toyota's environmental goals there were several mentions of technology, such as the process and equipment used during the painting process on the cars' assembly line, I was not familiar with. I was able to clarify what these were during the interview to fully understand and find the best way to communicate this to an unfamiliar audience in simple terms. I also encouraged interviewees to remain in contact if they thought of anything after the interview that they wanted to add or if a new development/

discovery had been made regarding the topic. This was done to ensure that all information provided by the interviewee was as accurate and up-to-date as possible. Recorded audio from the interview was then transcribed and quotes that contained important information or impactful substance were highlighted.

3. Complications due to COVID-19

In the face of the COVID-19 pandemic, interviews had to be conducted in a manner that complied with guidelines suggested by the CDC and state government. This meant that in-person interviews were turned down in favor of virtual interviews via Zoom or over the phone. Since virtual interviews were prone to the possibility of technical difficulties, I made sure to have a backup form of communication planned as well as an additional means to contact the interviewee.

Additionally, to comply with social distancing guidelines, tours of locations were not available. This made it difficult to gather visual aids and have the first-hand experience with the environment itself. For example, in the case of the Toyota article, plans were made to take a tour of the facility to view and take pictures of the wood duck boxes and pollinator gardens and to witness firsthand their new technology in action. However, the state issued its first shut-down due to the pandemic the following week, and consequently, the plant canceled all public tours. To overcome this, the plant's environmental specialist recommended to me some videos the plant had published to YouTube which showcased and further explained the purpose of the duck boxes and gardens. While this was not an equal substitution for an in-person experience as recommended by Wyss's goals for successful coverage, it was beneficial nonetheless (2019).

Another problem that arose was the scheduling of the interviews. There were many instances in which it would take several days to hear back from potential candidates to interview, and in some cases, I would receive no response at all. To remedy this issue, for each article I made a list of primary candidates whom I would contact first and then a list of secondary candidates that I would contact in the event a primary candidate did not reply or their interview fell through. There were also instances where an interviewee would have to reschedule last minute. To stay on schedule, I would try to reschedule the interview at their earliest convenience.

4. Writing

As previously stated by Robert Wyss, there were certain guidelines I needed to meet to compose an article that would be both informative and understandable to a general, nonprofessional audience (2019). These guidelines being clear communication of the topic and comprehensive reporting. Additionally, as noted by Hagen, there was a need to properly frame each topic to emphasize that it was a local issue instead of a global one.

Format for the articles consisted of an introduction to the topic in which relevant information discovered during primary research is presented to provide context as to the scope and severity of the issue. After the introduction, the core story including quotes and commentary was added. Quotes were chosen from the aforementioned highlighted ones. Care was taken to avoid adding anything that could be inaccurate or biased. Additionally, as advised by the guidelines suggested by Rogner and Wormer (2015), no language that exaggerated the issue or could cause fear-mongering was used. While the varying severity of the issues was communicated, adequate solutions to the climate issue, if available and deemed appropriate, were included as suggested by those interviewed.

The framing of the articles was important since the focus of the project was the effects of climate change in Mississippi. While climate change is a global issue, the issues pertaining to it within the articles had to be narrowed down directly to how it affected Mississippi in particular. Sometimes it was appropriate to provide brief commentary on how the specific climate change issue affected the world on a large scale and then narrow down to the events happening in the state, but other times this was not effective.

Communicating the more scientific ideas relayed by the interviewees was a more difficult task. As Wyss noted, to properly communicate what was reported on I needed to fully understand what was being discussed. For example, when mentioning the mechanical system used to apply paint to cars on the assembly line and when discussing “non-production energy” in the Toyota Article, I had to ask for a more thorough breakdown of what each part of the machinery did to translate that into comprehensible language for audiences outside that field of expertise. Such as in the case of speaking to the researcher at MSU, much of the language and concepts were unfamiliar to me and required further research or clarification from the interviewee.

5. Graphics

To create visuals for the website to accompany my article, information from primary research as well as important topics discussed in the interviews. Forestry proved to be a multifaceted industry in Mississippi creating jobs, being fundamental to the state's economy, and promoting research. The topics of the forest products industry, timber harvest profits, and species numbers were chosen to inspire graphics considering these topics were the ones discussed in the interview as important but not expanded upon enough. Thus, the graphics were intended to

provide supplemental information to readers to understand how impactful and profitable forestry is to the state. The language within the graphics avoided any jargon that the general public would be unfamiliar with and aimed to provide a simplified visual aid to explain the various topics discussed.

Information for the graphics was obtained through credible resources from both government websites and data published by Mississippi State University (MSU). It was important to find data that was as up-to-date and accurate as possible. However, after studying trends in timber prices published by MSU, it was revealed that prices had remained fairly consistent over the past decade. Thus, the decision was made to include information from the in-depth comprehensive report that was most recently released to the public from 2010.

The creation of the graphics was done in the Adobe programs Photoshop and InDesign. While my skills in these programs were adequate, I consulted with Hannah Vines, the graphic designer working to help design the website, to produce graphics that would be of good quality. Vines supplied me with a color scheme that was chosen based on colors that were to be used on the finished website and templates which were chosen based on the best way to display the information. Completed rough drafts were sent to Vines for suggested edits. Upon completion of the graphics, a final draft was sent to my advisor for approval.

6. The Website

The overall goal of the project was to compile the articles onto a website that would serve as a resource for those who are interested in learning more about how climate change is affecting Mississippi and what the response has been to it. The MS Climate Report site is public and easy to navigate with features that allow readers to search for specific topics. Additional resources

regarding article topics are hyperlinked at the bottom of the article's page and quick facts with attributed sources are displayed at the top of the page.

The site also features a "contact us" link which encourages readers to follow up with any additional questions they might have regarding the project or a specific topic discussed in any one of the articles. When the site is publicized, we plan to be available to answer questions regarding the stories. Public engagement with the site will be a great indicator of success for the project and encourage the continuation of awareness regarding the topic.

Conclusion

Storytelling in the form of narrative journalism provided to be a sufficient vessel to produce a fruitful project. The field of journalism presents an opportunity to communicate unique stories that the public could be unaware of. During the course of this practicum, it was not uncommon to make revelations and form connections between the interviewees and current events that I, and likely many others, had not previously considered or paid attention to. Additionally, it was thrilling to witness how passionately those whom I interviewed were willing and ready to share their stories with me.

Overall, I produced four articles and three graphics to be published on the MS Climate Report Website. My first three articles were completed during the first semester of the practicum. For this semester each student was expected to compile three articles from topics of their choosing. These articles were usually around three pages in length and included just one interviewee. The stories focused on a wide variety of climate change issues and responses regarding ecosystems, wildlife, manufacturing, energy efficiency, activism, education, and conservation.

During the second semester of the practicum, we were assigned a single topic at the beginning of the semester and asked to do a much more in-depth report on it. My assigned topic was forestry which prompted me to do preliminary research into the topic as well as reach out to multiple individuals for interviews. This article focused on both the economic impact forestry had on the state as well as research being done within the sector. This report in comparison was much longer than my previous articles and had more interviewees than previous ones.

While the restrictions due to the pandemic might have impacted the practicum by enabling travel and in-person interviews, I managed to still build a comprehensive report. By

sticking to a premeditated plan, I was able to stay on schedule and produce articles that were constructed to the best of my abilities. The website is live and is due to be publicized soon. I look forward to seeing the public response to it and am excited about the potential impact that it will have.

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