

## **Kansas and Germany: Two Places, One Slimy Problem**

### **Reflective Essay**

For our midterm project in German 530, The Cultural History of Nature, we were tasked with researching an ecological problem in Germany. To accomplish this, we researched the problem and any government initiative or stance held by a political party aimed at solving or mitigating the issue. We each went our separate ways, finding various issues across the scope of the environment, from nuclear power and fossil fuels, to deforestation and reforestation, and to invasive species. After presentations, we were tasked with choosing a topic to further study collaboratively and an outlet for the public to receive the information. First, we debated about our topic. We knew that we were aiming to connect the issue in Germany with Kansas, which helped narrow or possible topics down. One of the midterm projects was about a problem faced in Germany that Kansans also face: the invasive zebra mussel. Now that we had a topic that connects Germany and Kansas together, we had to decide on a medium for sharing this information with the public. Early ideas included an art piece, informative video showing, or yard sign placed on campus, although we ruled those out for lacking active engagement. This led to our idea of having a poster and giving a live presentation for our research. We eventually settled on this and began our more topic-specific research. We split off in our separate ways again, this time looking into the historical context of the zebra mussels, the impact that the infrastructure had on zebra mussel growth and spread, and the impact that the mussels have on local water quality in both Kansas and Germany. We were able to accomplish this through use of the K-State Library Services. Having access to the available databases and additional resources, we were able to find better and more thorough information in our research than a typical internet search would provide us with. We then reconvened in order to remove repeated information in each of our research, translate our findings into english, and format it all onto our poster.

Our German 530 class wanted to focus on an environmental issue that both Germany and Kansas face currently. Each student studied a number of pressing environmental topics in Germany, then our class as a whole came together and decided to focus on Wasserqualität or in English, water quality. The class brainstormed ideas on issues that face Kansas when it comes to water quality, one such issue that Kansas faced was the invasive zebra mussel. It came to our attention with extensive research through the Kansas State Libraries databases that Germany is also heavily affected by the non-native zebra mussel species, which affects the water infrastructure that is critical for obtaining clean water. Our class was then able to make a connection and bring together Kansas and Germany through this issue. An aspect we highlighted through this process was the interconnected nature of environmental issues that our world faces. Germany and Kansas have vastly different ecosystems, however, we were able to bring the two together in examining the zebra mussel problem. Our class then conducted research on ways to best prevent the zebra mussel from spreading and included the solutions in our research to better inform the public. We also found that Germany like Kansas obtains clean water through different types of filtration systems, which rely on extensive networks of wells along rivers and lakes. These wells in both Kansas and Germany are hindered by the invasive zebra mussel which clog the intake system of the well. This problem can be helped by hindering the spread of the invasive zebra mussel through proper cleaning of water apparatus after use. Our class hopes that this knowledge will help bring together both Germany and Kansas in a good solution.

For our end result, we knew we wanted it to be an outward-facing, interdisciplinary, humanities installation. We aimed to reach the public and spread awareness about the devastation caused by invasive zebra mussels. We connected our initial research, about German environmental initiatives, to concerns that the people of Manhattan, Kansas could relate to. Our class focused on getting everyday citizens to care about this issue. We researched to highlight the impact the species can and has caused on our local ecosystem and infrastructure - both of which are very expensive to restore. We brainstormed ideas to get our project out to the public and decided to participate in the Earth Day happenings on campus at Kansas State University. We reached out to Hale Library for assistance and they happily helped our effort. We utilized their Innovation Lab to print our poster and they lent us a table to set up camp outside of the main library entrance. On Tuesday, April 22nd, Earth Day, our class took shifts manning the table and talking to interested passerbyers about the project. We handed out pins promoting German Studies at K State and also passed out our fliers for the project. The fliers were designed with one side in English and the other in German. We answered questions from curious staff members and also briefed students on the work that we do in the Modern Languages Department.



# KANSAS AND DEUTSCHLAND

## Two Places: One Slimy Problem

**Zebra Mussels** are an invasive species that can improve the water's clarity, which may seem like a good thing but it actually causes many, many problems. They dominate the native species in the area, affect biodiversity, and clog infrastructure. All of these issues are very expensive to fix. Cities, companies, and farmers often end up paying the price.

They form dense carpets on the bed of rivers or lakes and feast on the phytoplankton. This reduces the food supply for zooplankton, which affects the fish that rely on them. Overall, biodiversity declines. Their waste also contributes to the buildup of organic material and when it decomposes, it depletes the oxygen levels at the bottom of lakes and rivers. They smother native mussel species and outcompete them, leading to population collapse. They also filter out many nutrients for aquatic plants and animals, like phosphorus and nitrogen. This leads to harmful imbalances and may promote algae blooms. Filtering out too much from the water allows damaging UV rays to destroy fish eggs.



<https://www.bayportmarina.com/zebra-mussels-invasive-species/>



<https://bcinvasives.ca/news/zebra-mussels-a-close-call-for-bc-waters/>

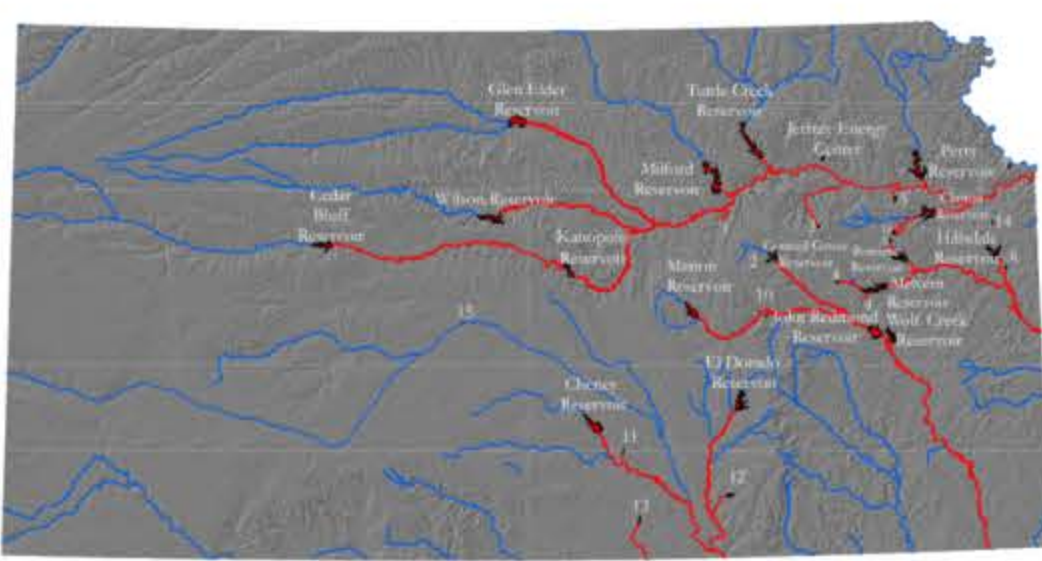
## KANSAS

### Background / History

## DEUTSCHLAND

The mussels arrived on ships to America in the 1980s, first appearing in Michigan and then arriving in Kansas in 2003, when spotted in the El Dorado Reservoir. There are no major solutions to the spread of the Zebra mussel yet, except to clean our boats. When one does clean their boat, you must wash it down with warm soapy water and be careful not to transport any water from one lake to another. If one does not do that, the mussels can spread and then clog pipes and water intake systems and have to be removed by hand. The spread of zebra mussels alone has cost Kansas 8 million a year to remove them.

Status of Zebra Mussels in Kansas



August 2024

<https://www.ksnt.com/kansasoutdoors/a-deep-dive-into-kansas-most-invasive-species/>



<https://www.kansas.com/news/state/article167933817.html>

While Zebra mussels first reached Germany in 1838, they began to spread in the 1880s, in correlation with an economic boom in the nation, involving increased trade. Zebra mussels attach themselves to hard surfaces, like boat hulls or concrete. This trait causes problems when water infrastructure and transportation are so important to a society. With the construction of canals, large ships were able to go to new port cities across Europe. The ships out of Russia, however, brought with them the zebra mussel. The mussels were stowed away in the ballast tanks of the ships, and when the ballasts were emptied, the mussels released to the new environment and fixed themselves to the surrounding concrete in the ports and other water infrastructure. This causes problems especially with hydroelectric dams and water treatment facilities. They build up in the water intake pipes and prevent water from being able to get through.



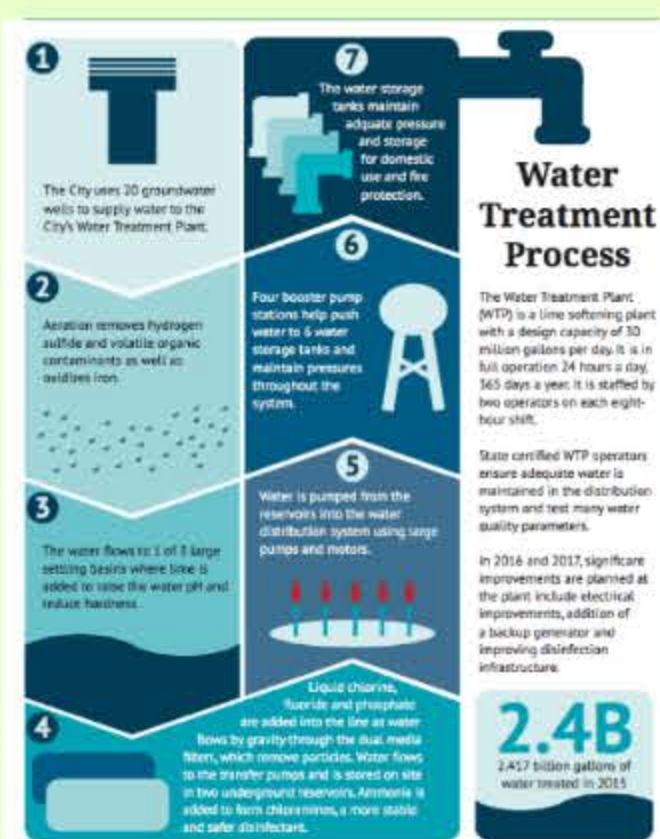
### Water Infrastructure in Manhattan

**History:** "1901: City water system switches from Blue River to wells".

- "1913: New sanitary sewer built at cost of \$87,000 and outhouses begin to disappear as 10-12 houses hook on daily".
- "1952: Construction begins on Tuttle Creek dam".
- "1955: Construction resumes on Tuttle Creek dam after controversy stopped construction 1953".
- "1959: Closure ceremony at Tuttle Creek Dam site. The course of the Blue River redirected through Tuttle Creek control tower outlet tubes". (rileycountysky)
- "In 2009, the City of Manhattan contracted Walters-Morgan Construction, Inc. to upgrade their 8.7 million gallons per day plant to 11 million gallons per day, and to also conform the plant to meet new regulatory requirements. Construction of the \$23,700,000 plant began in March 2010 and was completed in December 2013. Major components of the project included: A new grit and fine screenings facility New selector basin Two new aeration basins New blower building Three new final basins New MLR/RAS pump station New peak flow holding basin Upgrades to the UV system". (waltersmorgan.com)
- Today:** "The City of Manhattan's water supply consists of 20 supply water supply groundwater wells along the Big Blue River. Water distribution and meter staff also maintains more than 280 miles of water mains, valves, pressure-reducing valves, fire hydrants, and water meters" (cityofmhk)



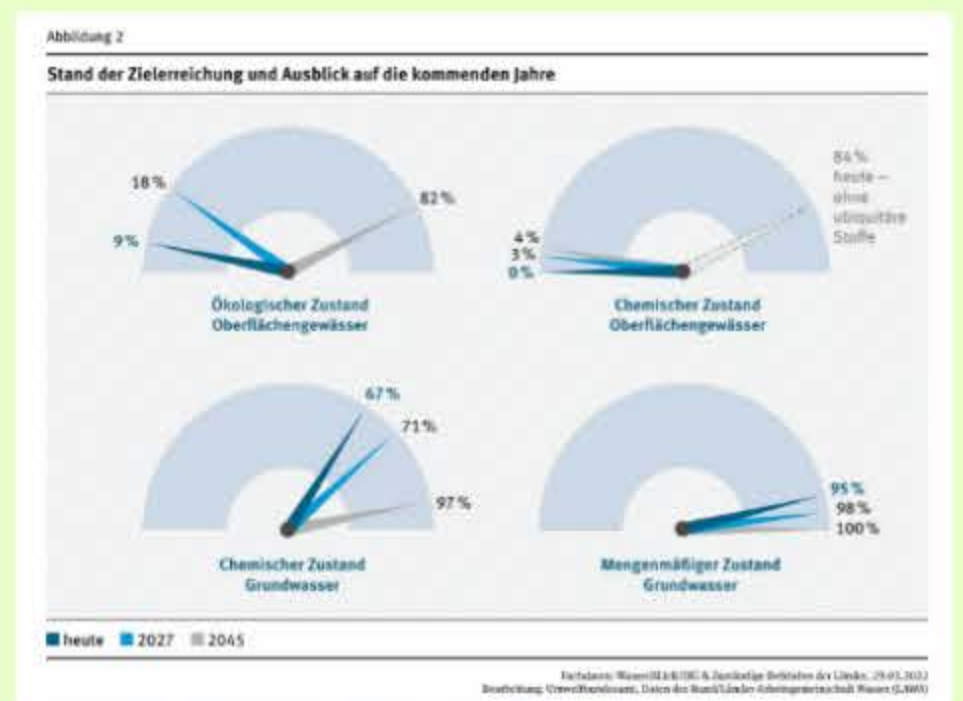
(johnmarvigbridges.com)  
<http://johnmarvigbridges.org/new/bridge.php?id=1384>



(cityofmhk.com)  
<https://cityofmhk.com/305/Water#:~:text=The%20City's%20water%20supply%20consists,fire%20hydrants%20and%20water%20meters.>

### Infrastructure and Mussels in Germany

They originally came to Germany on trading ships, infecting the waters from there. Today, there is an issue with these growing numbers. Water quality and infrastructure both contribute to this problem, as Zebra mussels can consume large quantities of pollutants in water, while native species often cannot: "Because of their filter feeding habit, [...] these mussels can bioaccumulate organic pollutants in their tissues by as much as 300,000 times [...] compared to concentrations in the water [...]" says the Center for Invasive Species Research of the University of California. The relationship between this information and infrastructure lies in the reality of Germany's horrible water quality. Today, only 10% of Germany's water is ecologically intact and it has many pollutants (great for the Zebra Mussels)! The reason for this horrid water quality lies in the history of Germany's architecture and infrastructure. "According to BUND, much of today's [ecological] problems are because of mistakes made in the past. [...] Germany has invested [...] into developing drainage basins, building dams and straightening rivers. These investments have been made mainly to allow ever-larger container ships to travel the largest rivers, as well as to prevent major flooding incidents," says David Martin from DW.



<https://www.umweltbundesamt.de/publikationen/die-wasserrahmenrichtlinie-gewasser-in-deutschland-text>

**Solutions:** Several institutes are researching how to stop and remove them, for example in Lake Waco Texas, they used plastic tarps to cover small patches of mussel, as it can suffocate and overheat the mussels, ultimately killing them. The only problem with this, it only works in small places. Other experiments include using chemical solutions, such as copper or chlorine, and non-chemical solutions, such as boat coatings or UV light treatments. All in all, though, **Prevention is the best solution.** Recognizing and reporting zebra mussels early on is an important step in stopping the spread. Updating our water infrastructure to withstand these invasive species is vital. Otherwise, the mussels will continue to destroy our water infrastructures and ships.



OUR SOURCES!





# ZEBRAMUSCHELN

Deutsch

## Warum sind sie ein Problem?

- Sie filtern zu viel aus den Wasserquellen heraus
  - dezimiert das Phytoplankton
  - reduziert die Artenvielfalt
  - UV-Strahlen können nun tief unter Wasser eindringen und Fischeier zerstören
- konkurrieren heimische Arten
- verstopfen die Infrastruktur

## Wie werden sie verbreitet?

- Ein einziges Zebra muschel kann bis zu 1 Million Eier pro Jahr produzieren, so dass die Populationen schnell explodieren können.
- Erwachsene Muscheln hängen sich an Boote, Docks und Ausrüstung und können, mehrere Tage außerhalb des Wassers überleben.

## Hintergrund

- Heimisch im Schwarzen und Kaspischen Meer
- Die Population ist erst in Deutschland in den 1880er Jahren gewachsen.
- Sie können in verschmutzten Gewässern überleben und und vertreiben die einheimischen Arten

## Was können wir tun?

- die beste Lösung ist die Prävention
  - die Boote reinigen, entwässern und trocknen
- Es werden verschiedene experimentelle Lösungen versucht
  - Plastikplanen, um sie zu erdrücken
  - chemische Bootsverkleidungen





# ZEBRA MUSSELS

English

## Why are they a problem?

- They filter out TOO much from water sources
  - depletes phytoplankton
  - reduces biodiversity
  - UV rays can now penetrate deep underwater and destroy fish eggs
- Outcompete native species
- Clog infrastructure

## Background

- Native to the Black and Caspian Seas
- Arrived on ships to America in the 1980s, first appearing in Michigan.
- They arrived in Kansas in 2003, first spotted in the El Dorado Reservoir.

## How do they spread?

- A single female zebra mussel can produce up to 1 million eggs per year, allowing populations to explode rapidly.
- Adult mussels attach to boats, docks, and equipment, surviving out of water for several days depending on humidity and temperature.

## What can we do?

- Clean, Drain, Dry!
- There are no major solutions to the spread of the Zebra mussel yet, except prevention.
- You must wash it down with warm soapy water and dry it to be careful not to transport any water from one lake to another.
- There are a few solutions being tested:
  - chemical boat coverings
  - plastic tarp suffocation
  - UV light treatments



Unser Kurs / Our Course  
**GRMN 530 Kulturgeschichte der Natur**  
**Cultural History of Nature**

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This course has looked at Germanic peoples' understanding of nature over time, as well as how Germanic people have seen themselves in relationship to nature. Here are some highlights!

**in English**

Antiquity: The Germanic tribes spread over much of Europe over the course of thousands of years and lived in small settlements. The Romans described them as “forest people” and saw themselves in contrast to the Germanic peoples as more “civilized” city-dwellers. Archeological findings suggest that the Germanic peoples worshiped nature, and some tribes also worshiped the Norse gods.

The Medieval Period (ca. 500–1500): The Christianization of German-speaking lands led to a new sense of people's place with respect to the natural environment. Cities were also established after the Roman model, which led to a sense of separation from nature. Increased trade between cities meant that nature was seen as a source of material for the production of objects for trade, thus establishing the early commodification of nature.

The Early Modern Period (ca. 1500–1700): The world was rapidly expanding for most Europeans. With the invention of the printing press, increased literacy, religious revolutions, movements towards modern science, and new trade with the Americas, nature, especially forests, became a resource for shipbuilding and commodity production for trade.

The Enlightenment and Modernity (ca. 1650-): With advances in science such as the scientific method, positivism, and encyclopedias, nature came to be something to study through observation and categorization. Enlightenment philosophers believed that the world could be understood primarily through rational thought and logic.

Romanticism (late 1700s–mid 1800s): The philosophers, poets, and artists of the romantic period sought to explore the irrational side of human nature—our emotions, drives, desires, and impulses—as an objection to the harsh rationalism of the Enlightenment. In romantic poetry, prose, and art, nature came to be seen as our connection with a larger spiritual world and a reminder of what is singular and ephemeral in the human experience.

**auf Deutsch**

die Antike: Die germanischen Stämme verbreiteten sich in Europa im Verlauf tausender Jahren und lebten in kleinen Siedlungen. Die Römer beschrieben sie als „Waldmenschen“ und sahen sich selbst in Kontrast zu den Germanen als „zivilisierte“ Stadtbewohner. Archäologische Funde zeigen, dass die Germanen die Natur, und auch manche Stämme die nordischen Göttern, verehrten.

das Mittelalter (ca. 500–1500): Die Christianisierung der deutschsprachigen Länder führte zu einem neuen Verständnis der Position der Menschen mit Bezug auf der natürlichen Welt. Städte wurden nach römischer Gestaltung gegründet, was zu der Wahrnehmung führte, dass man getrennt von der Natur lebe. Handel zwischen den Städten stieg und deswegen wurde die Natur zu Rohstoffen für die Herstellung von Waren, was die frühe Kommodifizierung der Natur verursachte.

die Frühmoderne (ca. 1500–1700): Die Welt wurde schnell größer für die meisten Europäer. Mit der Erfindung der Druckerpresse, wachsender Bildung, religiösen Revolutionen, Fortschritten Richtung moderner Wissenschaften und neuen Handelsmärkten in den amerikanischen Kontinenten, wurde die Natur, besonders Wälder, zu einer Ressource für Schiffbau und die Herstellung neuer Handelswaren.

die Aufklärung und die Moderne (ca. 1650-): Mit Fortschritten in den Wissenschaften wie die wissenschaftliche Methode, Positivismus und Enzyklopädien, wurde die Natur zu etwas, was durch Beobachtung und Kategorisieren zu studieren war. Philosophen der Aufklärung glaubten, dass die Welt hauptsächlich durch Vernunft und Logik zu verstehen war.

die Romantik (das späte 18. – frühe 19. Jahrhundert): Die Philosophen, Dichter und Künstler der Romantik haben die irrationale Seite der menschlichen Natur untersucht—unsere Emotionen, Triebe, Begehren und Impulse—als Widerspruch zu dem harten Rationalismus der Aufklärung. In der romantischen Poesie, Prosa und Kunst wurde die Natur als unsere Verbindung zu einer größeren spirituellen Welt angesehen und eine Erinnerung daran, was einmalig und vergänglich in der menschlichen Erfahrung ist.

The era of nation building: The late 19<sup>th</sup> and early 20<sup>th</sup> century marks the turn toward a politicization of nature in the German context. In reaction to the modernization and urbanization of German society, a massive youth movement called the “Birds of Passage” formed to get young people hiking in nature. This movement was paralleled by a “homeland movement” that fostered pride in local and national culture.

The Nazi period (1933-1945): The Nazis would soon disband “Birds of Passage” groups and instead filter many of their members into the Hitler Youth. The Nazis drew selectively from Germany’s myths and legends for their political purposes, for example claiming a special protective status for German forests and even forbidding Jews from entering some of them. Some branches of the Nazi party began initiatives to protect certain trees and animals that they saw as distinctly German. These protections were not innocent but instead were loaded with racist political messaging of what could count as “German.”

Divided Germany (1945-1990): West German nature politics centered on a fear of nuclear power and nuclear waste in the context of Cold War politics, as well as the fear of widespread death of forests due to monoculture planting. While East Germany had environmental protections codified in its constitution, in reality there was immense pollution in the water, earth, and air due to unregulated industrial production, especially of chemicals.

In the 21st century: Issues of sustainability, ecological and social justice, and climate change have become world-wide challenges. German people and their politicians debate sharply on the issues of atomic energy, the health of forests, and the pros and cons of clean energy initiatives. It is clear that any notion that people exist separately from nature is false. Our own survival depends on the survival of a healthy planet.

die Gründerzeit: Das späte 19. und frühe 20. Jahrhundert markiert eine Wendung zur Politisierung der Natur im deutschen Kontext. Als Reaktion zu der Modernisierung und Urbanisierung der deutschen Gesellschaft entwickelte sich eine massive Jugendbewegung, „der Wandervogel“ genannt, die junge Menschen in die Natur fürs Wandern brachte. Parallel zu dieser Bewegung entwickelte sich die „Heimatsbewegung“, die Stolz auf die lokale und nationale Kultur förderte.

Nationalsozialismus (1933-1945): Die Nazis haben bald die Wandervogel-Gruppen aufgelöst und viele ihrer Mitglieder in die Hitlerjugend gebracht. Die Nazis nahmen manche deutsche Mythen und Legenden in Anspruch für ihre politischen Zwecke, zum Beispiel haben sie die deutschen Wälder einen besonderen „Schutzstatus“ gegeben und sogar Juden manchmal verboten in Wälder zu gehen. Manche Zweigen der Nazi-Partei begann Initiativen, bestimmte Baumarten und Tiere zu schützen, die sie als ausgeprägt „deutsch“ sahen. Diese Schutzmassnahmen waren nicht unschuldig, sondern waren mit rassistischen politischen Implikationen beladen, wer und was als „Deutsch“ zählen durfte.

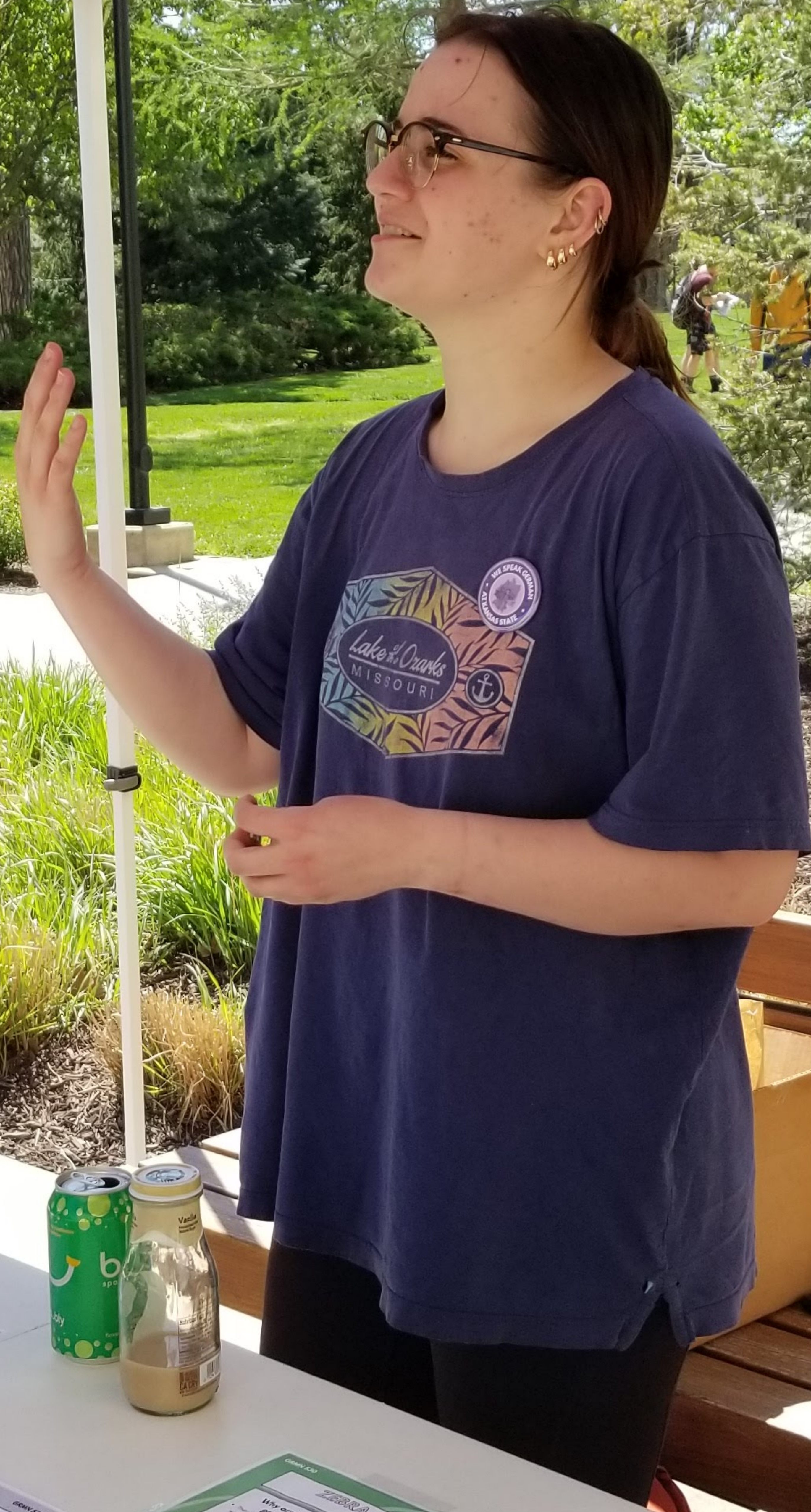
Im geteilten Deutschland: Die Umweltpolitik der Westdeutschen fokussierte sich auf Atomkraft und Nuklearabfall im Kontext des Kalten Krieges und eine weitverbreitete Angst vor Waldsterben wegen Monokulturen. Wobei Ostdeutschland Umweltschutz in der Landesverfassung festgeschrieben hatte, gab es in der Realität enorme Verschmutzung des Wassers, der Erde und der Luft wegen unregulierter industrieller Herstellung, besonders von Chemikalien.

Im 21. Jahrhundert: Probleme wie Nachhaltigkeit, ökologische und Sozialgerechtigkeit und Klimawandel sind zu weltweiten Herausforderungen geworden. Deutsche und ihre Politiker debattieren über Atomkraft, die Gesundheit der Wälder und die Vor- und Nachteile von grünen Energieinitiativen. Es ist klar, dass die Idee, dass Menschen getrennt von der Natur leben, ist falsch. Unser Weiterleben liegt an dem Weiterleben eines gesunden Planets.

In addition to learning about German cultural history through Germanic peoples’ views of nature over time, as evidenced in stories, poems, archeological finds, news reports from different historical periods, and historical readings, our class investigated a current ecological problem that affects both Kansas and Germany.

Taking a modern language can expand your world, leading to unexpected connections and discoveries!











## Kansas and Deutschland: Two Places, One Slimy Problem

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