



Spirit of the Water Essay Contest

2017

Iowa Water Center
Spirit of the Water Essay Contest
2017

About the Spirit of the Water Essay Contest

Without water, there would be no life. Water serves as a medium in which we can grow healthy plants, innovate in industry, and play in the outdoors. From supporting our natural habitats to running through our kitchen faucets, it allows us to flourish as a community of living beings. It not only sustains us, but inspires us.

In fall 2016, the Iowa Water Center invited 9-12th grade students enrolled in Iowa-based public, private, and home school programs to share with us how water inspires them. The judging panel included representatives from water and natural resource management in Iowa. For this year's contest, we asked students to think of a body of water they are familiar with and the various kinds of benefits that it provides to the surrounding area. We asked them to write their essay illustrating why places like that are worth protecting.

This anthology includes the submissions for the prize-winning essays as well as an honorable mention for an essay that expressed creativity and engagement with this year's prompt.

This essay contest was made possible by a generous donation from Betty and Dennis Keeney.

The 2017 Spirit of the Water Judge Panel

Laura Crowell
State Public Affairs Specialist
Iowa Natural Resources Conservation Service

Betty Keeney
Spirit of the Water Essay Contest Benefactor

Dennis Keeney
Spirit of the Water Essay Contest Benefactor
Emeritus Professor at Iowa State University
Former Director of the Iowa Water Center
First Director of the Leopold Center for Sustainable Agriculture

Bill Northey
Iowa Secretary of Agriculture
State of Iowa

About the Iowa Water Center

Established in 1964, the Iowa Water Center is one of 54 federally-funded Water Resources Research Institutes; one institute located in each state and four U.S. territories.

These institutes are part of the National Institutes for Water Resources (NIWR) that serves the public by supporting research and providing community outreach. Since its inception, the Iowa Water Center has been located on the Iowa State University campus.

This land grant university provides the ideal environment for the Iowa Water Center to assist researchers in their pursuit of cutting-edge research and to inform the public about water resource issues.

The Iowa Water Center uses diverse expertise from researchers, communicators, and policymakers to address water-related issues. Our purpose is to identify research needs, fund water-related research, and connect research results to the public through outreach and education. We support building statewide research capacity and education services while serving as an incubator for water-related research projects. We inform decision-makers to help Iowans better manage their water resources. Although our work centers on issues of local importance, the outcomes often have regional and national implications.

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Foreword from the Iowa Water Center Director

In 1964, the Water Resources Research Act authorized the creation of the water resources research institutes, tasked in part with helping to train future water scientists and communicating research results to decision makers and the public. The Iowa Water Center, Iowa's Water Resources Research Institute, recognizes the importance of this charge and strives to build programs with efforts to achieve these goals. We currently organize a graduate student research grant competition; a student research poster contest and attendance scholarships to the annual Iowa Water Conference; a science communications internship program; support for the student-driven publication *Getting Into Soil and Water*, produced annually by the Iowa State University Soil and Water Conservation Club; and now a student essay contest addressing our water resources.

The essays in this anthology are the result of the inaugural Spirit of the Water essay contest, made possible by a generous gift from Dennis and Betty Keeney. Dennis, former director of the Iowa Water Center and the Leopold Center for Sustainable Agriculture, and his wife Betty wanted to tap into the curiosity of high school students by engaging them to think critically about water and the natural world. What better way to inspire future water scientists and communicators than to ask them to consider how water affects them, their families, their communities, and their country?

The contest submissions were certainly inspiring - not only for the youth who wrote them, but also for the Iowa Water Center staff and our team of judges: Dennis and Betty Keeney, Laura Crowell of the Natural Resources Conservation Service, and Iowa Secretary of Agriculture Bill Northey. While difficult to narrow down the top entries, we are pleased to present the top four entries that best answer the essay prompt:

Think of a body of water that you are familiar with and the different kinds of benefits that it provides to the surrounding area. Why are places like that worth protecting?

We hope you will enjoy this collection of essays, and that it might also inspire you to consider how water affects you and the world around you.



Dr. Richard Cruse
Director, Iowa Water Center
Professor of Agronomy, Iowa State University

Statement from Dennis and Betty Keeney

Betty and I were delighted to be a sponsor of this contest, to be a partner with the Iowa Water Center, and to see so many outstanding essays. We worked with Melissa Miller and Rick Cruse to help sharpen the focus.

We feel it is important to engage students while they are still selecting the university and the curriculum that will guide their careers. The essay contest is an excellent way to get high school student involvement in a meaningful way, and they get to brag about Iowa!

The essays showed us that Iowa has an outstanding future with so many mature, talented, and dedicated students. It also shows us that we have to ensure continued support of higher education and research, especially for agriculture and the environment.

We look forward to continue our support of the essay contest.

Thanks Iowa Water Center and staff.

Dennis and Betty Keeney

2017 Spirit of the Water

Essays

First Place

Donald Gee

Grade: 12

Hometown: Johnston, Iowa

School: International Baccalaureate Program at Central Academy in Des Moines

Beaver Creek – A Living Laboratory

By Donald Gee

Beaver Creek is a living laboratory to me. Since I was young, I have spent a lot of time at Beaver Creek because I enjoy nature, it is a short walk from my home, and my family has never had video games or cable so I have always had to make my own fun.

Beaver Creek is the namesake for the Beaver Creek Natural Resource Area which is 156 acres of flood-prone wetland, prairie and woods located in Johnston. The Beaver Creek Natural Resource Area is not untouched nature but it is natural enough for me.

My earliest memory of Beaver Creek is walking beside the stream bank with my family. I remember geese taking off and making splash landings in the creek, the gurgling of the stream, and vocalizations of creatures. Exploring at Beaver Creek filled me with a sense of adventure.

I became fascinated by the sandbars covered with animal tracks, rocks, and plastic bottles. I would jump down the banks to hop onto a sandbar and peer into the water to find fish or some sort of creature I could try to catch.

I conquered piles of driftwood gathered at bends in the stream that were home to an amazing assortment of birds, insects, and plants that lived off the rotting trees in the water. The interactions of the living and inanimate forces sparked my interest in science. One of the things that fascinated me most was the drastic fluctuation of the stream level and how erosion altered the landscape. At different water levels certain sections of the stream bed were severely affected while other areas showed little degradation no matter the level of the stream.

The BCNRA also includes a variety of animals. I enjoy “deer herding” with friends especially in winter. We start at one end of the woods and slowly walk toward Beaver Creek until we spot deer. Then we chase them along the creek bed until they burst out into a large clearing. It’s an amazing sight to see a large herd of deer leaping through the snow. Our record was funneling about 25 deer into the clearing. Once while herding, I even found a 16-point set of antlers.

While exploring, I’ve also observed flocks of wild turkeys, fox, bald eagles, and more. I have even seen a beaver swimming in Beaver Creek and heard its tail slap the water with a

powerful whack as it dived under the water. Areas like Beaver Creek are worth protecting because experiences like these enrich people's lives, especially kids.

As a younger person, I appreciated Beaver Creek mainly for the adventures it offered. But as I grew, my understanding of how the benefits Beaver Creek contributes to my community grew as well. Beaver Creek protects neighboring towns, provides habitat for biodiverse ecosystems, improves water quality, and brings the community together.

During the Flood of 2008, the Beaver Creek Natural Resource Area was several feet underwater and was the only thing between flooding and many homes, including mine. It was amazing to watch the area quickly fill with water and then eventually recede. After the floods subsided I observed the changes that occurred. Whole sections of bike paths near the creek were gone and massive trees were washed out. Through this I began to better understand the incredible power of water and the importance of flood plains.

Beaver Creek and its surrounding area also increases biodiversity by providing habitat for flora and fauna that are vital to our ecosystem. For example, the area is full of monarch butterflies and other pollinators that survive off native plants that grow in the wetlands surrounding Beaver Creek. These pollinators are important to the success of gardens, flowerbeds, and croplands in and around Johnston.

To be truly dedicated to improving water quality, everyone must help. It is easy to blame farmers upstream for water pollution problems, however suburban runoff from yards, pavement, and other areas contributes to poor quality water. Beaver Creek and the surrounding area can help improve Iowa's water quality. The marshy area around Beaver Creek can act like a sponge and remove nitrates, phosphorus, and other chemicals from runoff, thus improving water quality. Plants, soils, and topography influence the land's ability to absorb chemicals so there is a need for projects dedicated to improving water quality.

For my Eagle Scout project, I created a small wetland, about 3,500 square feet, in the Beaver Creek Natural Resource Area near a drain pipe from my neighborhood. I seeded the small wetland with plants that can absorb pollutants from suburban runoff. Over 100 man hours were spent by fellow Scouts and friends in the making of the wetland. We won't know how successful this wetland will be until it matures in a few years, but hopefully it will have a

positive impact on water quality. Projects like these are important steps for communities to take to help protect Iowa's waterways.

Another benefit of Beaver Creek is its ability to bring people together. Beaver Creek is a gem in the Johnston community where families, school children, outdoor enthusiasts, and others enjoy nature. The Crown Point Community Center is built overlooking the BCNRA and provides a community gathering place. Because of the aesthetic of Beaver Creek and the surrounding area, Johnston has a landmark that is an important part of many people's lives.

Protecting areas like Beaver Creek is important because it improves the quality of life for people today and for future generations. I want to help protect Beaver Creek so that I can come back with my kids to take walks with them, watch them jump from sandbar to sandbar, and help them learn from this living laboratory.

Second Place

Anna Kolln

Grade: 11

Hometown: Cedar Rapids, Iowa

Sponsoring High School Teacher: Nate Pruett, Iowa BIG Instructor

School: Cedar Rapids High School

Spoon Creek

By Anna Kolln

One of the most important bodies of water to me personally has been Spoon Creek, a small stream that runs through my neighborhood. As a kid, I would go to my friend's house, which was right by the creek, and play around it and in the woods. We would spend hours playing hide and seek or capture the flag among the trees.

Sometimes we were content to simply explore the woods. It was beautiful down in the ravine; spots of sunlight danced on the green flora and fauna, creating a picture-perfect scene. The air was clean and crisp and smelled of fresh leaves and rich soil. We would occasionally even venture into the miniature canyon created by the creek itself. I remember looking at the sides of the canyon and being fascinated by the different colored layers of dirt it revealed, each representing years or even decades during which the creek slowly had eroded away the ground; I never quite believed that the tiny creek had shaped so much land over the centuries. I was enthralled by the diverse plant and animal life that surrounded the creek as well; I learned much about the native wildlife. The most important thing I learned, however, is how to appreciate nature and be a part of it. I learned how to avoid damaging the environment, for example, by littering or killing plants, and why that is so vital to maintaining a healthy ecosystem. The pure beauty of the creek and its surrounding nature has had a long-lasting impact on my life.

Spoon Creek was not only a place for children to learn to love nature; it was also a haven for the wildlife in the area. The small stream, which feeds into the larger Indian Creek, was surrounded by woods full of native plants and animals, from squirrels and deer to ferns and mosses. This wildlife depends on the area around the creek for water, food, and shelter. These animals have faced a lot of habitat disruption in recent decades as humans have invaded more and more of their territory to build houses and roads. This makes it more important than ever to ensure the security of the areas where these animals have made a home.

Things changed significantly for the bodies of water in Iowa during the flood of 2008. In my hometown of Cedar Rapids, where the flood was perhaps the most destructive, enormous amounts of water rushed throughout our downtown, causing unprecedented property damage. Spoon Creek was unfortunately no exception to the effects of the flood. During the flood it rose

to its banks; it became deeper and more eroded. “We’re not allowed to play in there anymore,” I remember my friend telling me. “My parents told me it’s too polluted and dangerous.” The creek had turned from clear to brown as it filled with stinking oil and sewage; its small banks were littered with trash, including sharp and dangerous objects. I was devastated at seeing this. The creek that had once been a haven to us and the wildlife around us was now a dirty hazard. Even today, Spoon Creek bears the scars from this time. The destruction it and its surrounding habitat suffered exemplifies how important it is for people to contribute to flood protection and clean up. Flooding can impact every connected body of water in Iowa, big and small. It is essential that all waterways, regardless of their size, be protected because of this interconnection.

Spoon Creek is just one example of the countless bodies of water in Iowa worth protecting. Not only do places like it create a space for both children and adults alike to learn to love nature, they also are important habitats for Iowa’s wildlife. As humans continue to damage and destroy more and more of the environment to build our own infrastructure, the remaining pieces of pure nature are increasingly valuable. Nature, even the small pieces of it, is priceless in today’s world. Though Spoon Creek is just a small microcosm of the waterway system in Iowa, its conditions and changes reflect the network as a whole. All over the state there are kids who will, just as I did, play in their backyard waterways and fall in love with nature. There are people who are deeply connected to their local bodies of water, and who feel the same despair I did when they are damaged. Water and nature are important to every single person in the state in some way, which is why we need to do everything we can to preserve them.

Third Place

Tyler Buman

Grade: 11

Hometown: Harlan, Iowa

Sponsoring High School Teacher: Linda Peterson, English

School: Harlan Community High School

America's Hardest Working River

By Tyler Buman

The Colorado River is a 1,450-mile-long behemoth, snaking through seven American states and into the Gulf of California in Mexico. The beating heart of the Southwest is responsible for billions of dollars in economic profits. Passing through arid environments, it supplies the water for thirty million people to survive (Zielinski, 2016). However, the river now faces some of the most extreme challenges than at any other point in its six-million-year history. The waters no longer reach the Pacific Ocean but run dry miles from it. Massive over-consumption of the resource puts not only the river and its ecosystem in jeopardy, but also the entire region that depends on its waters. The causes and subsequent effects of unrestricted exploitation can be clearly seen on the bathtub-ringed walls of places like the Grand Canyon, Lake Mead, and Lake Powell.

In 1922, the Colorado River Water Compact was ratified to divide the water supplies between the states bordering the river. This agreement was based upon water analysis conducted during one of the wettest ten-year periods in the recorded history of the region. This meant that the water supply was likely overestimated and could result in too much being used. States lobbied to be allocated as much water as possible for their own economies. Many states now take far too much water out of the river, which results in less water for people downstream, less water for native plants and animals to live, and critically low reservoirs for future generations to depend on. The boom in population in the Southwest after the compact was ratified has added to the stress on the river.

In the 1930s and 1940s, massive engineering projects took place under the New Deal to bring water and power to the underdeveloped region around the Colorado River. The result was several large dam projects such as the Hoover and Glen Canyon dams, creating the two largest water reservoirs in the United States. These large reservoirs are currently being stretched to the breaking point. Major cities in the desert like Las Vegas, Phoenix, Los Angeles, and San Diego draw water from these lakes. Water is used for everything from legitimate purposes like drinking and shower water, to illegitimate ones such as washing cars and watering lawns.

The dam projects have changed the properties of the river itself. In years past, the Colorado was infamous for having major floods almost every year. These dams halted the annual floods of the river, which allowed invasive plants to populate the banks and outcompete native

species which are accustomed to using limited amounts of water. Invasive plants crowding the shores help contribute to the water shortage. The water used to be warm and rich in nutrients and carried tons of silt through its fast flowing channels. The water no longer carries silt because the reservoirs allow it to settle to the bottom, and the dams slow down and control the flow speed, keeping it constant and reducing the erosion. Temperatures in the river water are now very cold because the water let out by the dams comes from the cold, dark bottoms of the reservoirs. Native fish can no longer thrive in the altered environment and cannot swim through the dams.

Water diversion projects help collect even more water from the river to feed massive farming enterprises in the desert. The success of agriculture near the river calls for more workers and families to continue to flood into the region to further stress the water resources. Seventy percent of all the water in the Colorado River is siphoned off for use in cropland (Zielinski, 2016). In a desert environment that had little growing in it naturally, it is no surprise that operating huge farms there is too much for just one river to handle.

Climate change is an especially foreboding threat for water-stressed areas like the Southwest and the overtaxed river. Warming temperatures will increase evaporation rates, leading to more water loss. Changing weather patterns will result in less rain and snow in the Rocky Mountains, which supply most of the water. Climate change is expected to reduce the water flow of the Colorado by ten to thirty percent by 2050. These effects have major impact hundreds of miles downstream.

In Mexico, just north of the Gulf of California, the Colorado River Delta used to be 3,000 square miles of forests and backwaters that provided a habitat for a huge diversity of plants and animals. Today, the river often ends as far as fifty miles north of the ocean, and the delta has been reduced to 250 square miles. The only water that ever flows through it is runoff from nearby agricultural operations. Giant mudflats and huge tracts of dry river bed filled with invasive species now stand where forests used to be (Zielinski, 2016). Lack of nutrient-rich freshwater flowing into the Gulf of California has caused massive reductions in biodiversity and populations among fish and shrimp. This has resulted in many fishermen being unable to make as living or provide for their families. Thus, more water is used for farming to make up the difference, exacerbating the problem.

A century of manipulation, over-allocation, and climate change now threaten the Colorado River and the thirty million people it supports. This is a river worth protecting, both for

the cosmetic effect it has, and for the health of the ecosystem which it supports. Humans rely on this river being strong and its reservoirs full. To achieve this, we must make fundamental changes in the methods we use for agriculture in the arid climate and be cognizant of our own personal water usage by making sure to conserve wherever possible. America's hardest working river can help fuel prosperity in the Southwest for generations to come, but only if we are resourceful with it.

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Honorable Mention

Maggie Langenfeld

Grade: 12

Hometown: Earling, Iowa

Sponsoring High School Teacher: Linda Peterson, College English

School: Harlan Community High School

Live to Bathe, Bathe to Live

By: Maggie Langenfeld

One of the most sublime feelings in the world is when the head is slightly submerged under water and minuscule bubbles collect at the nape of the neck then slowly make their way up to the surface, tickling every centimeter of the skin on the way. A bath is a body of water that can benefit the body and mind. People throughout history have connected with water on a day-to-day basis and will continue to. This crucial resource is worth protecting. Bathing has been around for centuries, it has done wonders for the body, and it has helped maintain impeccable hygiene.

During Roman times, the rich had luxurious bathhouses. Bathing was all the rage. The wealthy would host parties and have social activities in their private bathhouses. This was not just a fad for Romans either; it was popular with Egyptians and Greeks too. When pondering building a city, engineers first consider water. The Egyptians chose to settle near the Nile, Mesopotamia was land between the Tigris and Euphrates rivers, and Chinese were located by the Yellow and Yangtze river basins. Cities were built depending on the amount of available fresh water. The usage of water back then led us to the advanced treatments that we have today. Hydrotherapy was a well-known treatment in ancient times and is still conducted today. It is a therapy that uses water to relieve discomfort and promote physical well-being. A type of hydrotherapy that is used quite often today is whirlpool baths. Pressurized bubble baths can be helpful with burns, sores, and infected wounds. When a person gets frostbite, there is a step called “unroofing” where the patient soaks in a whirlpool bath while doctors have to cut the dead or infected skin off so that new healthy skin can grow. This is a very painful but necessary procedure. The remarkable thing is that anyone can use water as a remedy. Most Americans have a bathtub at home that can be used as their own personal treatment center. If the tub has any type of pressurized jets, those can increase organ function.

Everyone has his or her own way to wind down after a long, strenuous day, but the most beneficial way to unwind is to take a warm bath. It improves not only physical health but also mental health. Soaking in the tub for fifteen to twenty minutes can help with cold or flu symptoms, sore muscles, and blood circulation. The steam from the water moisturizes nasal passages and opens them up while the heat boosts the immune system. Heat to muscles is pain relief because the heat is blocking the pain sensors. After an intense basketball practice in the frigid winter, it is calming to come home to a nice, hot bath to soak sore muscles in. It is more advantageous to take these baths at night before bed because the bath acts as a sleep aid. What triggers the melatonin, a hormone that induces sleep, is a drop in body temperature. Artificially heating up the body can jumpstart the cooling process (Thorpe, 2015). The warm sensation of the water opens up veins and arteries, allowing room for blood flow, hence lowering blood pressure.

All of the physical benefits are great, but the most important positivity to bathing is for the mind. Everyone is given only one brain in a lifetime, and it is crucial to keep it sane. Having time alone to just sit and relax is more beneficial than people believe. Bathing can increase brainpower and reduce stress. It was proven in 2002, “that a daily bath, usually at the end of the day, significantly improved the mood and optimism of the participants, which was attributed to a combination of bodily comfort, warmth, isolation, and body positioning” (Thorpe, 2015). Another survey was conducted at Yale University that showed, “there is one activity that one can benefit from if he or she is suffering from a mental illness: taking a bath” (Independent Home Walk-In Baths, 2016). People should not underestimate the powers of a warm bath.

The world needs water. We need it to hydrate, to clean ourselves, and to do almost anything. Everyone washes his or her hands once a day if not more. Less than one percent of the water on Earth is fresh and usable. There is no doubt that people take water for granted because,

after all, it has been around since the beginning of time. Without water there is no hygiene, and nobody likes a smelly person. Bacteria burgeons in sweat that has yet to be cleaned off the body. In time, that dried-on sweat will begin to smell like foul body odor. Hair is also important to wash. Without proper care the scalp will become dry, itchy, and pungent. Also when not washed, hair will continue to store the attracted dirt it comes across. This is all just one small part of everyday life.

In the end, it all boils down to one key factor in life, water. There are many natural resources that humans rely upon for life, but the most significant natural resource is H₂O. In Roman, Egyptian, and Greek times people bathed for not only hygiene but luxury. As time went on, they also discovered water could be used to heal. Soaking in a bath can treat cold and flu symptoms, help with sore muscles, and circulate the blood more efficiently. Those are not the only benefits of hopping in a tub; it can also be a real stress reliever. Humans need to be clean, healthy, and happy. If we did not have water, people would be none of those. Nothing would be of existence. Without water there would be no warm embrace of a bath or soft tickle of bubbles on the skin.

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