

## Honors in Action Project Award (Chi Upsilon Chapter)

### Honors In Action Project Award

Provide a brief abstract or summary of your Honors in Action project including the following components: academic research into and analysis of sources related to the Honors Study Topic, action that addresses a need in your community that was discovered through your research and analysis into the Society's current Honors Study Topic, and the impact of your project. (NOTE: Recommended word count for the abstract is no more than 300 words.)

Through discussions, debates, and brainstorming, our chapter narrowed our Honors in Action project to focus on mitigation of flooding in McHenry County, which causes significant financial burden for citizens, businesses, and government agencies. The people of our county have been battling flooding for decades, since urbanization in the area destroyed the once vast wetlands. We concentrated our efforts on restoring these wetlands, which can then absorb more excess water. Wetland restoration directly reduces flood water levels. However, arriving to these decisions took months of research and investigation. In addition, our chapter has reached out to the state of Illinois to request approval of and support for better, more permanent solutions to flooding. State funding is needed for installation of culverts connecting Illinois nature preserves with wetlands. Flooding, which has created a substantial financial burden on residents and local government for decades, can be greatly reduced by restoring and therein transforming the foundation of the land we stand on.

What theme in the current Honors Program Guide did your chapter focus on?

Theme 2 - Economies of Everything

Summarize your project objectives. In other words, what did your chapter set out to accomplish in terms of its research, collaboration, and action?

After our initial research and decision on the theme, our chapter investigated the problem of flooding in McHenry County. The research led us to set the objective to mitigate economic and emotional damage from flooding. In addition, we aimed to increase number of people trained in flood response in order to improve emergency help to affected citizens and possible reduce damage. The goal was to have twenty-five participants in the complete project. The project involved collaborations with the McHenry County Conservation District, CERT (Community Emergency Response Team), college biology and ecology instructors, and our chapter.

Describe your academic research into the Honors Study Topic, your research questions(s), your analysis of your research findings, and your research conclusions.

Our project began with extensive research over the summer months. During this time, the chapter divided into research teams, and each team was assigned one theme from the Honors Study Topic to investigate. Teams presented examples of local issues related to their theme during a chapter brainstorming session. The group then narrowed our further research to the topics that the group found the most actionable and interesting to chapter members. Further research centered on immediate needs of our community, which led to our focus on the consequences of flooding.

Research ranged across a wide spectrum: flood maps, insurance claim data, sandbag technology and vendors, first responder techniques, humanitarian and economic support recently provided to flooded families and businesses, and the potential mitigation produced by wetland restoration.

Initial questions arose from discussion of our research, and over a few weeks, more targeted questions developed. A few questions emerged as having the most compelling and clear answers, and we therefore narrowed our focus:

- ?What can be done to reduce the number of people impacted by flooding in McHenry County?
- ?Who is working on the problem, among local organizations and government units, and what are they doing?
- ?What are the advantages and cost of the Sodium Polyacrylate bags versus sandbags?

The first conclusion from this research was that local residential areas are in danger zones. The obvious course of action would be to relocate homes out of the flood plains, but the time and cost involved makes that option unrealistic. Another possible solution would be to update the flood maps for more accurate flood insurance coverage in our area, allowing for better access to flood insurance and more accurate pricing. However, we learned that the government was already working on this after writing to FEMA for information. After investigating through our research process, we were interested to learn that super absorbent polymer flood control bags, filled with material similar to material found in disposable diapers, are available and have many advantages over traditional sand bags, but the cost of these better bags is prohibitive. Additionally, while sand found in sandbags can be reused for construction purposes, the polymer bags are not reusable due to biological and chemical contaminants found in flood waters.

As a result of our research, it became clear that the best course of action to prevent flooding is to build up natural wetlands. The wetland acts as a giant sponge, and McHenry County is mainly composed of areas that were previously wetlands. The county was approximately forty to fifty percent wetlands pre-settlement, but now is about ten percent wetland. The loss of wetlands increases local flooding. We learned there are four types of wetlands: bog, swamp, marsh, and fen. All of these are in abundance in our county. Since water normally flows through the wetland to become groundwater, flooding should not be a concern. Yet, with urbanization, the water now flows into neighborhoods and roads, then is dumped (often by sump pump) into sewers, and never becomes groundwater. Therefore, the wetlands in our county are not recharged with runoff, and groundwater is not replenished from the wetlands. The restoration of wetlands helps return some of the county's land to its previous, water-absorbing state. Extensive research helped guide our team through various obstacles and decisions to an action which could make a lasting impact on the flooding problem.

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<label class="control-label scholarship-form">List the 8 academic/expert sources that were most enlightening regarding multiple perspectives of the Honors Study Topic theme you selected. Briefly explain why these were the most important sources and what you learned from each of them as you researched your theme. (NOTE: Please use formal APA citations for your entry.)</label><p><br></p><span class="required" aria-required="true">\*</span>

Resource 1

Anderson, D., Interview, September 22, 2018.

Our interview with Mr. Anderson, volunteer steward of Boger Bog, one of the local wetlands in need of restoration, included significant background information and the statistic that approximately 40-50% of the county was wetland prior to settlement, but that the county is now only 10% wetland. We also learned that restoring the wetlands expands native plantings, improves multiple aspects of the local ecology, and reduces flooding in the area.

Resource 2

Bannon, L., Interview, October 20, 2018.

At a field work day and related interview with Mr. Bannon, volunteer steward of Exner Marsh, another local wetland where restoration efforts are underway, we learned about the importance of native, deep-root plants in cleaning the air as well as the water in a marsh.

Resource 3

FMIX Inquiry #2549148 - [FMS] - Student questions regarding support system in mapping zones for FEMA, personal communication, July 6, 2018.

The FEMA office replied to several questions we had about the mapping of flood zones and how the mapping is completed. The federal government keeps floor zone maps, but the local government is involved in creating and updating the maps.

Resource 4

Jones, M. (September 3, 2017) McHenry County agencies spend about \$3.6M on Fox River flooding cleanup. Northwest Herald. Retrieved from: <http://www.nwherald.com/2017/08/30/mchenry-county-agencies-spend-about-3-6m-on-fox-river-flooding-cleanup/amg701b/>.

Our chapter learned about some of the local flooding costs for government and individuals from this article. Of particular interest was information from McHenry County Emergency Management Agency Director David Christensen that FEMA assistance does not cover all expenses and is capped at specific amounts. The payments to flooded homeowners often provide only a small part of the funds needed to rebuild and recover.

Resource 5

Kick, E. L., Fraser, J. C., Fulkerson, G. M., McKinney, L. A., & De Vries, D. H. (2011). Repetitive flood victims and acceptance of FEMA mitigation offers: an analysis with community-system policy implications. *Disasters*, 35(3), 510–539. <https://doi.org/10.1111/j.1467-7717.2011.01226.x>

This article discussed repetitive flood victims and FEMA mitigation offers and offered an analysis of the FEMA process and community-system policy implications. Flooding is common in our communities and our state, and many areas deal with flood disasters regularly. This article discusses how our communities could mitigate the disaster and be prepared in the future.

Resource 6

McHenry County Illinois Emergency Management, (n.d.) Retrieved from: <https://www.mchenrycountyil.gov/county-government/departments-a-i/emergency-management/volunteers>

According to the county, the Illinois Emergency Management Agency heavily depends on volunteers to prepare for, respond to, or recover from the impact of disasters. Training is available and volunteers are always needed during emergencies.

Resource 7

Opperman, J. (January 31, 2018.) Nature knows best: How working with wetlands can reduce flood risks in cities. Retrieved from: <https://medium.com/@WWF/nature-knows-best-how-working-with-wetlands-can-reduce-flood-risks-in-cities-dfb19fca28f5>

This article made clear the connection between wetland health and flood minimization. The natural buffer of the wetlands soaks up excess runoff. When wetlands are destroyed or damaged, the flooding becomes more extreme.

Resource 8

Parke, D. (September 2016) The Economics of Natural Disasters: Mitigating the Impact. Fire Engineering 169(9).75-80. Retrieved from: [search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=117957914&site=ehost-live&scope=site](http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=117957914&site=ehost-live&scope=site).

This article brought to light the extent of the damage caused by natural disasters and the related costs. We learned how natural disasters can disrupt industries and agriculture, and therefore the local economy. The article also gave our chapter ideas for mitigating these impacts.

Describe the service or "action" components of this Honors in Action project that were inspired by

and directly connected to your Honors Study Topic research. (Action can also include promoting

awareness and advocacy.) Be sure to include information about the people and/or groups with whom you collaborated, why you chose these collaborators, and the impact they had on the outcomes of the project.

Our team had become interested in preventing flooding rather than helping with relief or rescue efforts. We found this approach to be more long-term and sustainable. Therefore, we investigated the best way to mitigate a flood, which was restoring natural wetlands. To reach out to our campus and community, we spoke with the professors of biology and horticulture at our college. We encouraged them to invite their students to attend and assist in our service project. Additionally, we collaborated with our college's student life department to advertise our volunteer project via the student life newsletter. Most significantly, we collaborated with the McHenry County Conservation District, the supervisory agency for the wildlife areas that we were seeking to restore. The chapter reached out to two stewards: Ders Anderson from Boger Bog, who has been the steward for ten years, and Len Bannon from Exner Marsh, who has been the steward for six years. It is notable that Boger Bog is actually a Fen; the name is a result of requested alliteration from the Boger family, who donated the land. We spent hours at each wetland, Boger Bog and Exner Marsh, clearing out the invasive species to make room for the native to grow back. We marked saplings of native species with ribbon to ensure that, when volunteers returned in the winter to burn invasive species, the native saplings would be protected. Invasive species removed included buckthorn, tulip trees, burdock, common reed, and mulberry. By removing these, the native species, such as jack-in-the-pulpit, oak trees, hickory trees, and various species of fungi, could thrive and return the soil chemistry to its natural state. The entire process of restoring these areas started years ago, and will continue to restore the land to its original condition. The lasting impact that can be achieved by the environmental change is crucial.

During our service at Boger Bog, we learned that the structure of Cherry Valley Road, adjacent to Boger Bog, is currently disrupting the ecology of Boger Bog and the adjacent wetland Gladstone Fen. The most promising permanent solution would be to build multiple drainage culverts under Cherry Valley Road. Our team saw another opportunity to take action and met again with Ders Anderson, who encouraged us to write a letter of concern to the agencies who might fund such a project. The proposed culverts would allow the water to flow more freely and provide the necessary nutrients for these two important Illinois Nature Preserves. We drafted a letter to John Nelson, geologist at the Illinois State Geological Survey, seeking his opinion and support for the culverts. Once John Nelson approved our request, the second letter we drafted was sent to Bull Valley Township, Illinois Nature Preserves Commission, and the McHenry County Conservation District. The goal is to facilitate discussion among of these parties in order to implement a permanent solution for Boger Bog. We will stay as involved as possible to help move the project along. This type of conversation could set a precedent and encourage more cooperation and future actions to restore our nature preserves.

Our chapter members will continue to volunteer and to encourage awareness and volunteering among others. While we had some interest in our chapter in emergency flood response training, it was difficult to schedule such a high level of involvement for our busy students. However, the effects of even one field day of volunteering were impressive and encouraging. Our chapter learned that a seemingly small effort can have a long-term impact.

What are the quantitative and qualitative outcomes of your project? What impact did your project have on the problem addressed and on opportunities for chapter members and others to grow as scholars and leaders.

Our project was successful in achieving our objectives with a greater impact than expected. Fifteen students participated in two service field days, including some students outside of our chapter, recruited through the biology department and the horticulture department. Additionally, we were able to directly transform Boger Bog and Exner Marsh. The restoration field days resulted in clearing out multiple invasive species from a substantial square footage in the target areas. Mr. Anderson, the steward of Boger Bog, commented that it would have taken him weeks to clear invasive species from the same area that our team cleared in a few hours. The work done will increase the amount of absorption within the wetland during upcoming rains and in turn decrease the threat of flooding in the community around Lake in the Hills and Bull Valley. Those communities are now safer, and the residents are less likely to experience financial devastation caused by flooding. Although this transformation is hidden in the ground and landscape, and many residents will never even know of these efforts, the effects of a firmer and better-draining ground are profound and will last indefinitely, as long as informed citizens take action to preserve what has been gained. Our chapter members are now some of those informed citizens.

Additionally, our chapter members and other participants had the opportunity to grow and learn as scholars and leaders. Through research and action, we gained detailed knowledge regarding local flooding causes and responses, the county's wildlife ecology, and financial stresses caused by flooding. Chapter members also learned through research; knowledge was then reinforced at the restoration sites with the guidance of the stewards.

Leadership development was also abundant. The chapter meeting with Ders Anderson to draft the letter requesting further action included Mr. Anderson walking the members through the process of writing a professional letter to a state employee, including the tone and language appropriate for the situation. We also learned how to incorporate enough details of the project to stimulate state agency interest. In addition, Mr. Anderson reviewed our letter for scientific accuracy.

Through our project, chapter members saw that even short-term volunteering provides meaningful support to organizations, intellectual interest and awareness, and a rewarding sense of contribution. Notably, all chapter members, even those unable to attend the field days, were drawn in to the project and reaped some of the rewards of knowledge and satisfaction, as weekly chapter meetings included detailed reports of activities and progress. A particularly spectacular example of the value of volunteering was that one chapter member heard about the events in biology class and attended the Exner Marsh work day and clipped invasive species despite the fact that the student is blind. With guidance from a family member, this student was able to remove the invasive species and contribute to the project. This not only served as a meaningful experience for the blind student, but served as an inspiration to the chapter and to others, including members of the college board of trustees, who were informed of the chapter's work and project in the monthly faculty report.

Overall, our Honors in Action project impacted our campus, community, and chapter members. Through building awareness, outreaching and cooperating with community members, and acquiring scientific knowledge and skills through the action portion of our project, our chapter was able to achieve our objectives with success.

Opt out of consideration for inclusion of your chapter's Honors in Action entry in the 2019 issue of Civic Scholar: Phi Theta Kappa's Journal for Undergraduate Research