

Expression of one hypothalamic gene (*gnrh*) and three pituitary genes (*gh1*, *fshb*, and *lhb*) was assessed following atrazine exposure in the zebrafish during two different developmental periods. *gh1* expression was increased in the 0.3 and 30 ppb treatment groups at 72 hpf (A) and in the 3 and 30 ppb treatment groups at 120 hpf (B). *fshb* expression was decreased in all three atrazine treatment groups at 72 hpf (C), while no differences were observed at 120 hpf (D). No changes in expression were seen for *gnrh* or *lhb* at either time point (data not shown). $N = 4-6$ replicates (pools of 40 zebrafish). Error bars are standard deviation. * $p < 0.05$ compared to 0 ppb negative control treatment.

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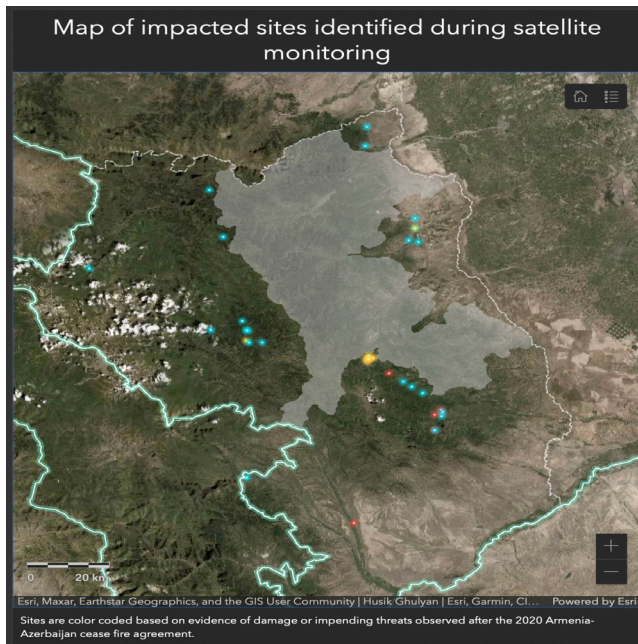
Monitoring of Caucasus Heritage Sites Facing Cultural Genocide

Student researcher: Peyton Edelbrock, Junior

In 2020, the Second Nagorno-Karabakh War broke out between Azerbaijan and Armenia over the disputed area of Nagorno-Karabakh. The outcome of this war included the transfer of several provinces previously under de facto Armenian control to Azerbaijani jurisdiction, including hundreds of Armenian heritage sites under a Russian-brokered ceasefire agreement.

The transfer of centuries-old heritage properties leaves them vulnerable to the Azerbaijani government's expressed threat to erase Armenia's historical presence in the region by marking their monuments as either nonexistent or reinscribing them as "Caucasian

Albanian" instead of Armenian. In response to this heightened threat, the nonprofit and nonpartisan organization Caucasus Heritage Watch was created by a team of archaeologists from Cornell and Purdue Universities, including Professor Ian Lindsay of Purdue's Department of Anthropology. This project utilizes the intersection of technology and archaeology to monitor heritage sites to document the destruction happening to Armenian culture. Through the Caucasus Heritage Watch, we use high-resolution satellite imagery in a GIS (geographic information system) program called ArcGIS Pro to monitor over 270 heritage sites over an area of 12,000 kilometers in Nagorno-Karabakh. These historical sites include churches, monasteries, mosques, bridges, and cemeteries. We task satellites to take images on a seasonal cycle and assess whether a location is threatened, damaged, or destroyed. Through this project, our goal to use our discoveries to hold those seeking to destroy Armenian heritage sites within the region



This image shows a map of Nagorno-Karabakh, taken from the Caucasus Heritage Watch monitoring dashboard. Monitored locations are highlighted on the map with blue, yellow, and red dots. Blue dots represent sites that are threatened, yellow represents sites that are damaged, red represents sites that are destroyed. Image credit: Caucasus Heritage Watch. Used with permission.

accountable for their actions, to inform the public about the silent erasure of these sites, and to deter perpetrators from further destruction of these sites.

Research advisor Ian Lindsay writes: “Peyton made important contributions to monitoring historic cultural heritage sites threatened by ongoing territorial conflicts and created StoryMaps to bring these issues to the public. He applied new STEM-centered skills in geospatial technologies, including satellite remote sensing and GIS, to his background in history and anthropology to address real-world geopolitical crises.”

Laughter and Madness: The Comic Horror of *Evil Dead II*

Student researcher: David Gowan, Senior

Infamous for its gruesome, gory, blood-soaked imagery—and still banned in certain countries—the low-budget horror film *The Evil Dead* saw modest box office success in 1981, launching director Sam Raimi’s



*In one of the film’s iconic scenes, Ash has a mental breakdown and laughs into the camera, breaking the fourth wall. Still taken from *Evil Dead II* (StudioCanal, 1987).*

career. With his 1987 sequel, Raimi opted to push the series in another direction, expanding upon some of the darkly comic elements of the original to develop *Evil Dead II* as a horror comedy.

This research sought to interrogate the interaction between comedy and horror within *Evil Dead II* by using different theoretical approaches to comedy. The two main comedic theories applied in this analysis were the incongruity theory of comedy, which suggests that comedy stems from the connections formed between seemingly incompatible or incongruous ideas, and the superiority theory of comedy, which holds that comedy stems from the audience’s perceived superiority over the “victim” of a joke. An in-depth analysis of the film was undertaken, and various scenes were dissected and examined.

Throughout *Evil Dead II*, laughter is intertwined with insanity and evil. The demonic spirits that torture the protagonist, Ash, do so in juvenile, Chaplinesque ways, for amusement—both theirs and ours. Only when Ash is pushed to the limit and has a psychotic break does he begin to fully appreciate his circumstances—that he is the butt of some cosmic joke—and join in laughing, becoming part of the madness. In this regard, the comedy of *Evil Dead II* builds another dimension to the film’s horror, enhancing the story, rather than undermining it.

Research advisor Elena Coda writes: “David drew on various comedic theories to offer a nuanced understanding of the film’s use of visual gags and grotesque imagery. He successfully demonstrated how the film’s use of irony and parody subverted traditional horror tropes, and presented