

## Obolensky Field School Scholarship Final Report

Audrey Urbach, Summer 2025

From May 24 through June 14 2025, I lived in Old Town Nessebar, Bulgaria, a UNESCO World Heritage Site, and participated in the Balkan Heritage Foundation's field school for underwater archaeology in the Black Sea. When we first arrived, our instructors gave us a tour of the peninsula, both above and below the sea! The town is home to restored and preserved sites from as old as the 5th century, which we were lucky enough to see and learn about every day. Because of sea level rise, many structures such as breakwaters and fortification walls along the Black Sea coast are now underwater, and archaeologists must don 7mm thick wetsuits to work on them – for three weeks this summer, I was among them.

The first couple of weeks, we worked on excavating a Hellenistic defensive wall on the SE side of the island, at around 7-8 feet of depth. We learned how to clean the stones of algae, seaweed, and sediment buildup using a trowel, and used an excavator (an underwater vacuum powered by a pump on the boat) to relocate debris and clear out the site (*Fig. 1*). Eight of us worked in pairs for 45 minute shifts with our supervisors every morning for two weeks, and during this time we uncovered a cluster of vertical wooden posts alongside the wall that had never been excavated before (*Fig. 2*). We guessed that they were part of a support structure. After our instructor conducted a photogrammetric survey of the excavated site, we covered it up with rocks and sediment again in order to help preserve it for future study.

In the afternoons after our dives, we learned about the history and theory of underwater archaeology, both unique to the region and more generally, as well as specific techniques. I got to learn about ship graffiti (images of ships that were intentionally carved on surfaces) in four of Nessebar's churches and try my hand at recording some using Reflectance Information Imaging.

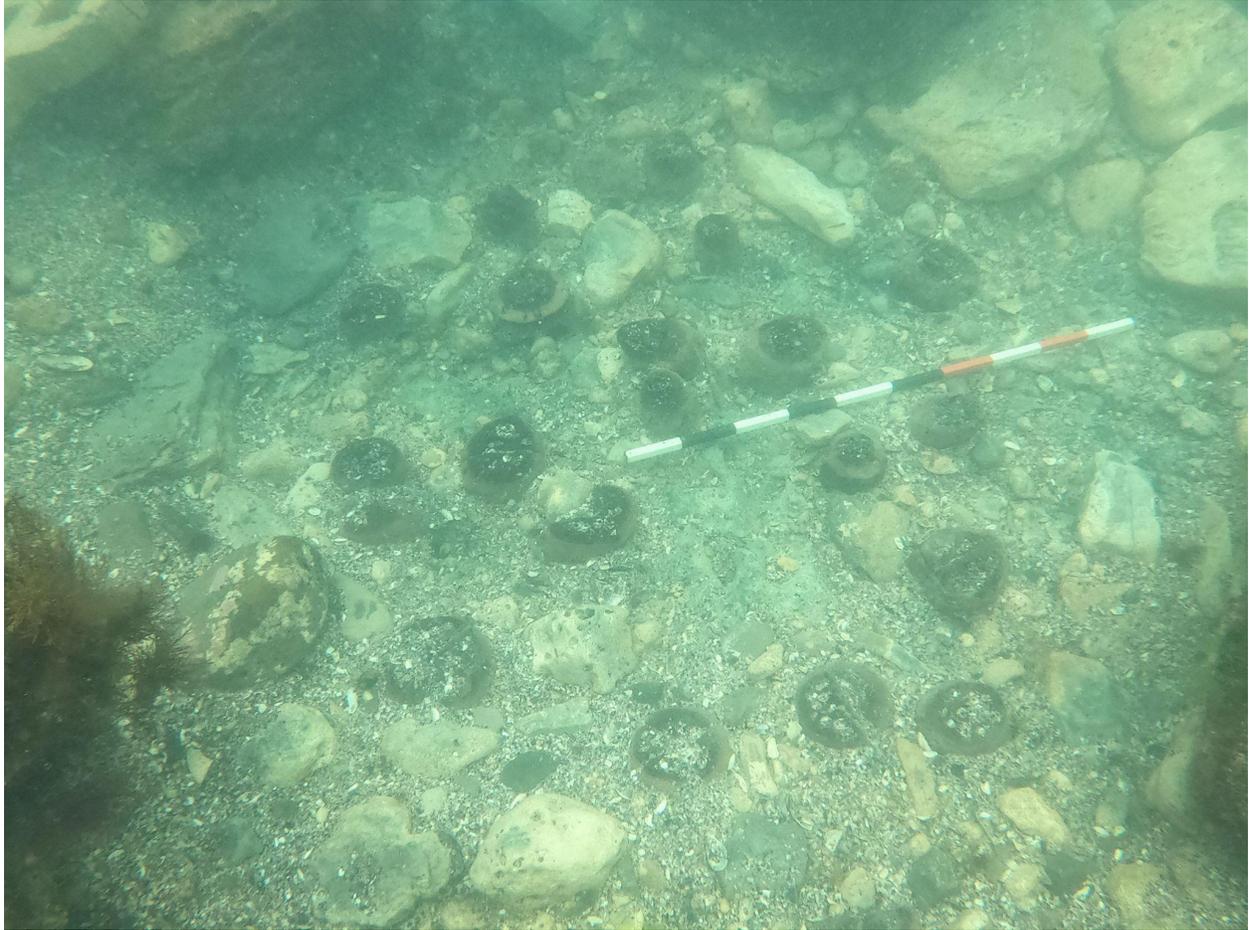
We also had a workshop on marine geophysics and were able to interpret outputs from various scanning instruments on a survey around western Sozopol, another Bulgarian coastal town south of Nessebar. We toured several local museums, including the Archaeological Museum of Nessebar, the Archaeological Museum of Sozopol, the Museum of the Anchor in Ahtopol, and the “Secrets of the Seafloor” exhibition in Kiten.

The final week was spent preparing to conduct an underwater photogrammetric survey of our own. Photogrammetry involves taking overlapping images of an object or site and then using those images to construct a three-dimensional model. We learned the basics of how to photograph objects and landscapes by walking a particular path and ensuring proper overlap between images, how to place GPS marker targets and scale bars around a site, and then how to process the images to create 3D textured models and orthomosaics using Agisoft Metashape software. After practicing with found objects and sites on land, I was able to set up my underwater survey of the Hellenistic wall we’d previously excavated and create my own orthomosaic (*Fig. 3*).

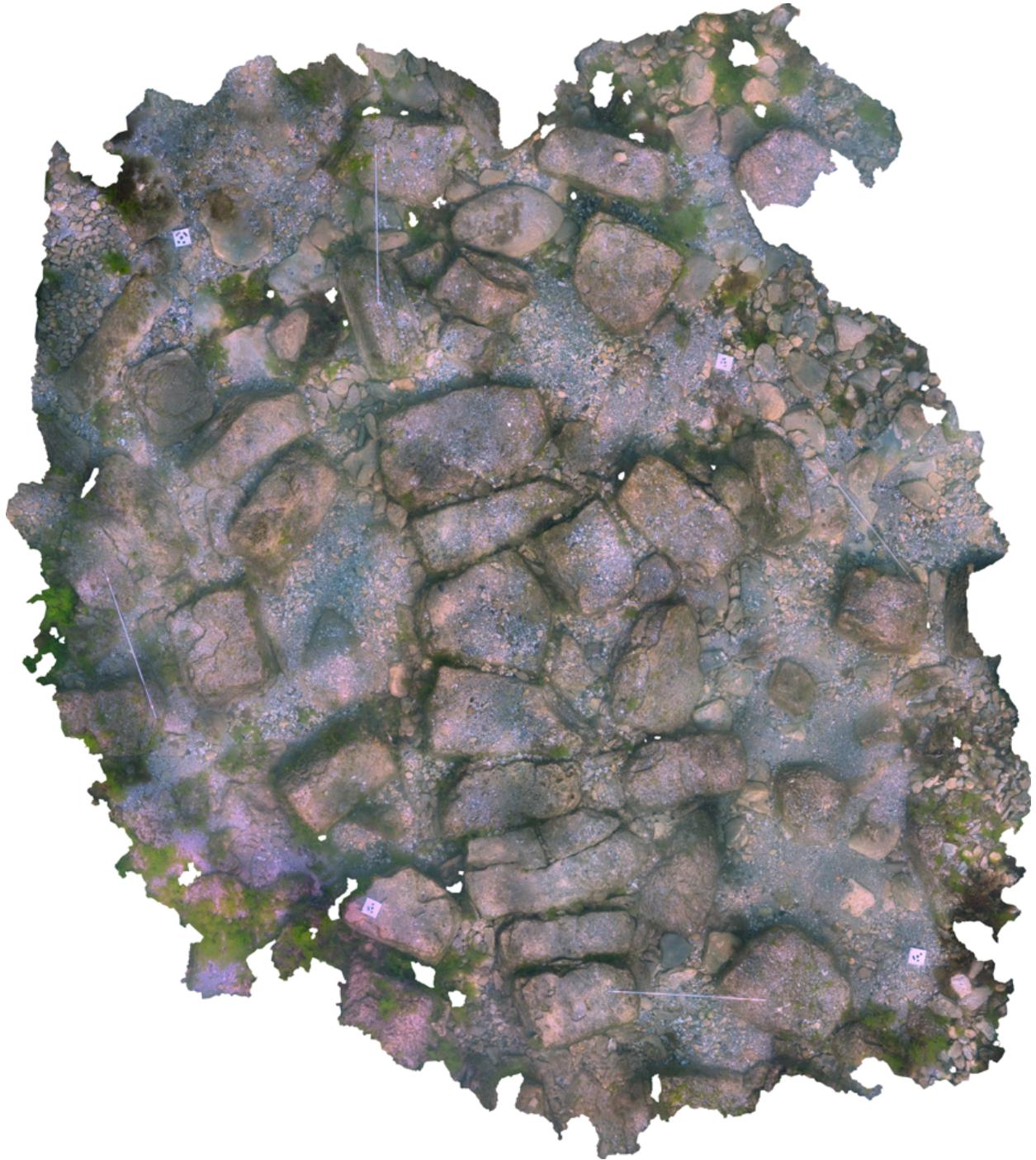
Over the course of these three weeks, I completed eleven dives, the longest of which was an hour and twenty minutes! I was able to pick up a few Bulgarian phrases here and there, sample a lot of local cuisine at group dinners and tastings, and spend time wandering around town learning about the rich history of the region. I was able to grow as both a diver and an underwater archaeologist, and learn many important techniques that will help me in my career. The Obolensky Field School Scholarship helped me enormously by funding my flights, local accommodations, and field gear.



*Figure 1.* Me excavating the Hellenistic wall off the SE coast of Nessebar. Photo credit @CUABulgaria on Instagram.



*Figure 2.* The vertical wooden posts we uncovered with a 1m scale bar for reference.



*Figure 3.* My final orthomosaic of the Hellenistic wall from the survey I conducted on June 12 with GPS markers and scale bars. The original file is 169.1MB.



*Figure 4.* The Center for Underwater Archaeology, Sozopol's research vessel at our excavation site in Nessebar. Photo credit @CUABulgaria on Instagram.