

A GIS OF *MUREX* DYE PRODUCTION SITES

FROM THE LATE ROMAN REPUBLICAN PERIOD TO LATE EMPIRE

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ABSTRACT

Murex shells were popular in antiquity because they were used to create the famed “Tyrian Purple” dye. During the Roman Republic and Empire, the dye was expensive

and employed to display social status among the ruling elites. Senators, emperors, and victorious generals all had distinctive elements of *murex* dye on their clothing. Archaeologists have attempted to find the locations of *murex* dye production sites, but there are many discrepancies in the field. Because the snails were also used for decoration, food, and cheaper dye (using smaller quantities of shells), it is difficult to properly identify a production site. This project identifies the characteristics of a production site, maps their locations and length of usage, and then relate this information to Roman economics.



The carnivorous snails were caught with baskets baited with meat. The hypobranchial vein was extracted and boiled in a lead vessel with salt.



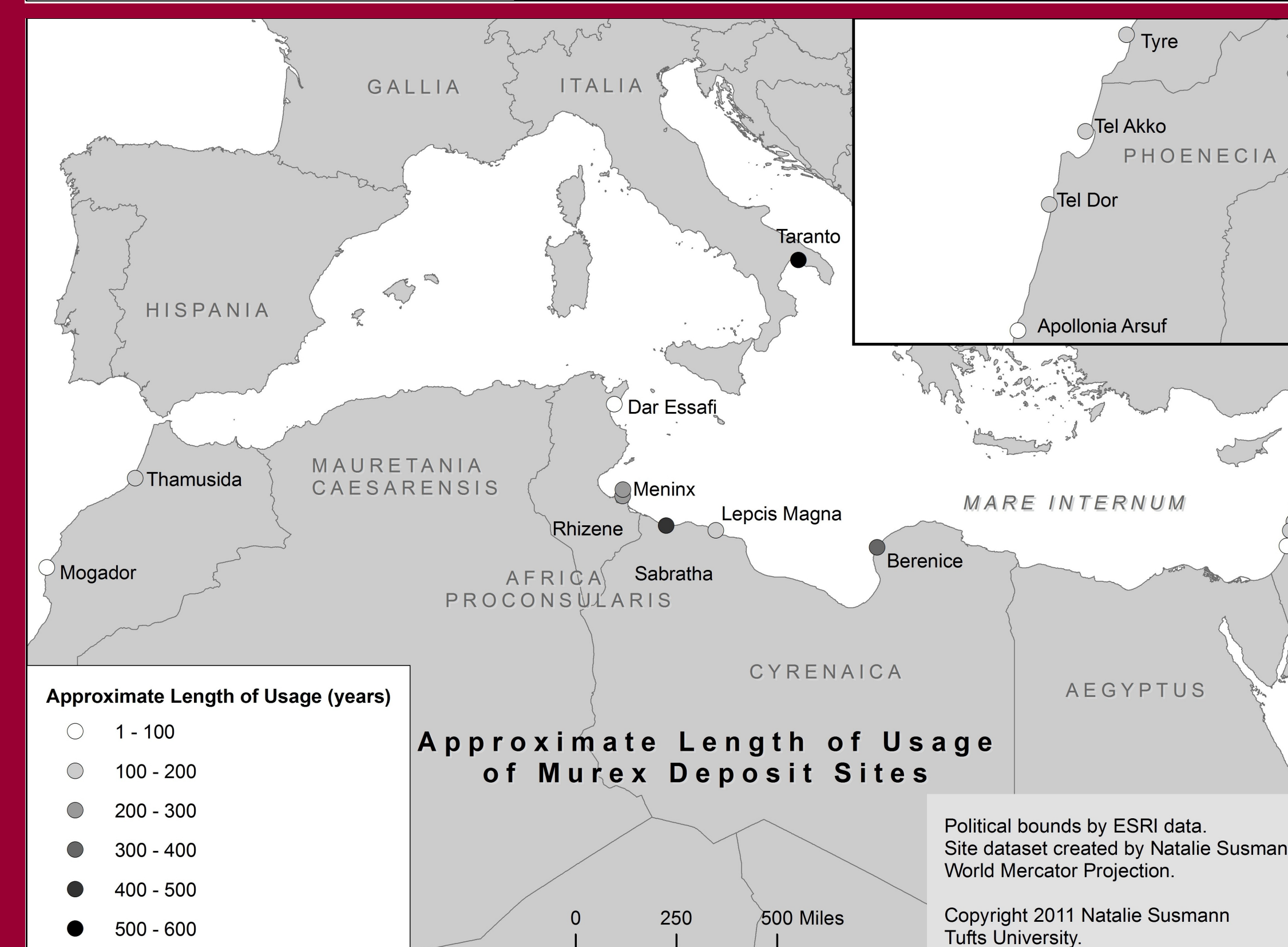
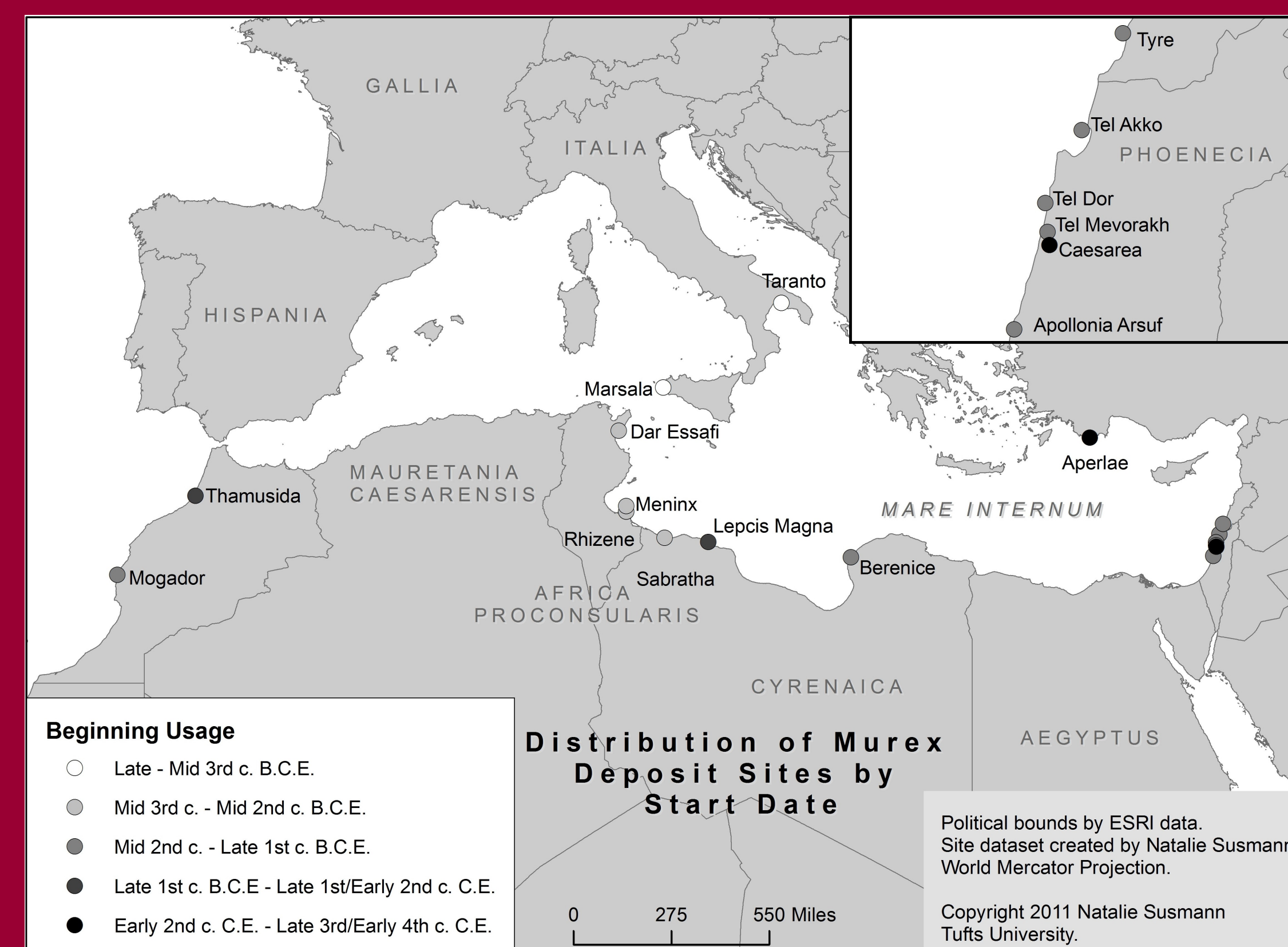
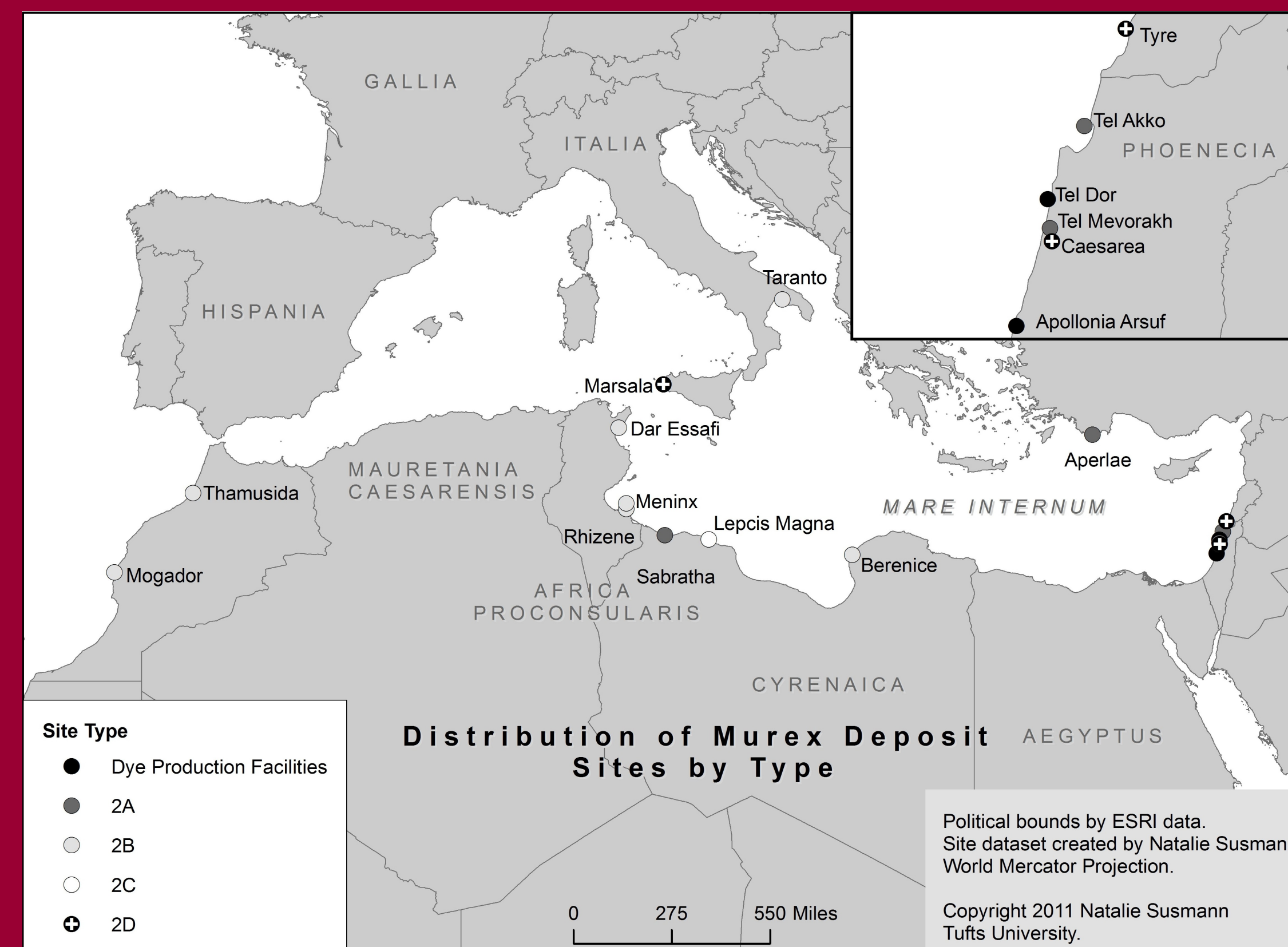
An example of a *murex* shell dump in Meninx, Tunisia. This is only a small portion; the people in the background indicate its large size. The holes in the dump are a result of the leftover shells being harvested for lime in antiquity.

MUREX DYE SITE FEATURES

A shell dump. 5000 snails were required to dye an entire cloak. The dump should be large enough to reflect long term production had occurred.

A heating source. Experimental archaeology and ancient text analysis prove that heat was necessary to complete the chemical reaction.

Holding tanks and dye vats. Their design varies from site to site and by period, making them the biggest challenge to identify.



METHODOLOGY

1. Researched over 200 site reports claiming to have evidence for *murex* production sites. Sites which did not have the necessary characteristics were eliminated.
2. The remaining 17 sites were analyzed and placed in a gazetteer, organized by a typology best representing the data. Sites were assigned geographic coordinates.
3. The gazetteer was transformed into a GIS dataset, and symbolized by a variety of factors, including start date, site type, and length of usage.
4. The GIS was analyzed in congruence with archaeological and textual data to understand how *murex* production altered during the Roman period.

GAZETTEER

Type 1 *Murex* Dye Production Sites: Large dump of shells, architectural features, and a heating source.

Type 2 Probable *Murex* Dye Production Sites:

Type 2A: Large dump of shells, architectural features, and no heating source.

Type 2B: Large dump of shells.

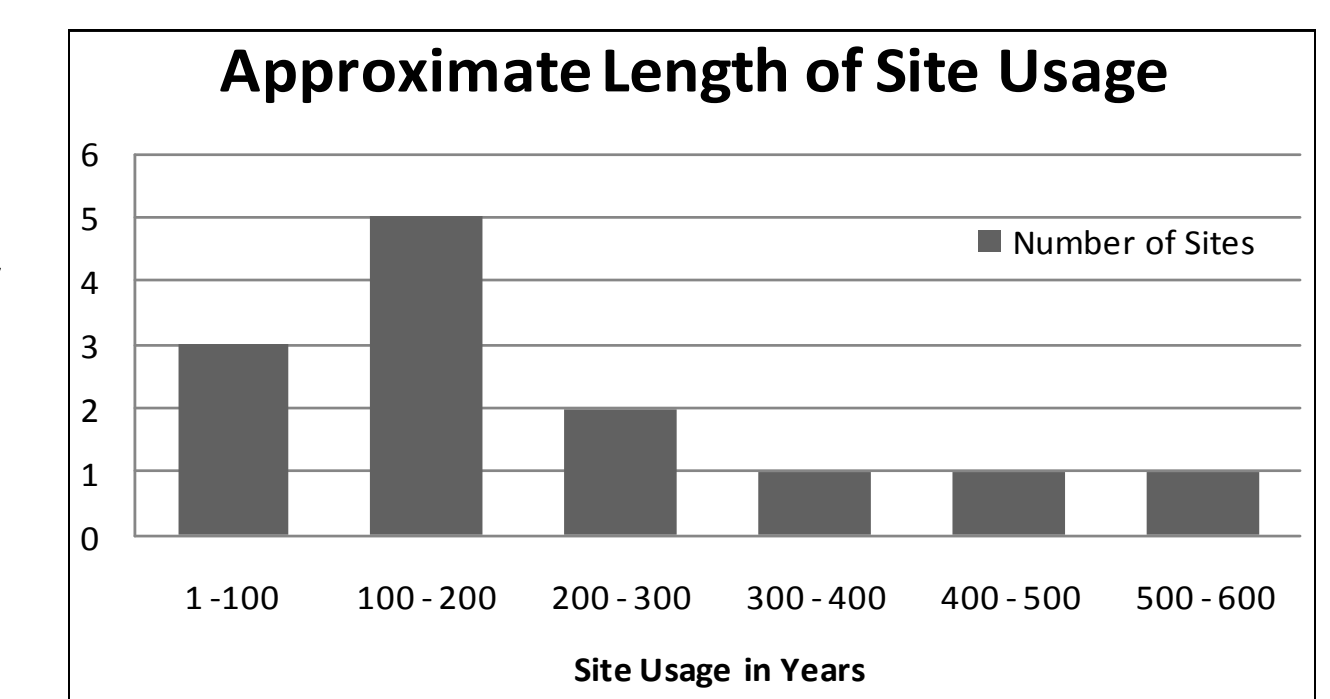
Type 2C: Large dumps of shells incorporated into mortar of other features.

Type 2D: Textual evidence stating that Roman *murex* dye manufacture occurred, but no archaeological data has been found yet.

CONCLUSIONS

There was an expansion in the number of dye sites in the Late Republican period, and a contraction in the later Empire. The expansion correlates with the influx of luxury goods that occurred with more provinces coming under Roman rule. The contraction resulted

from elites wanting to control dye usage. Restrictions were placed as cheaper imitation dyes gained popularity. The 3rd c. C.E. contraction also correlates with the crisis of the 3rd century, when there was political turmoil in the Empire, and many emperors were assassinated. The emperors likely favored the dye in this period because it represented military control, and thus wanted to prevent others from wearing it to further strengthen their position. The focus of dye sites in North Africa, and their obvious longevity points to an interesting relationship with Rome. All of these dye sites also had large scale production centers (garum, fish salting, textiles, metalworking. etc.) As elites began restricting dye usage and other dye sites were shut down, North Africa maintained their markets because of their control over trade.



The sites used for the longest periods of time were located in North Africa, likely because of the region's trade relationships with Rome.