Variation in use of East Asian Late Paleolithic weapons: A study of tip cross-sectional area of stemmed points from Korea

Gayoung Park1,✉, Marlize Lombard2, and Ben Marwick1

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Text of abstract

1 Department of Anthropology, University of Washington, Seattle. USA  
2 Palaeo-Research Institute, University of Johannesburg, South Africa

✉ Correspondence: [Gayoung Park <[gayoungp@uw.edu](mailto:gayoungp@uw.edu)>](mailto:gayoungp@uw.edu)

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Highlights: These are the highlights.

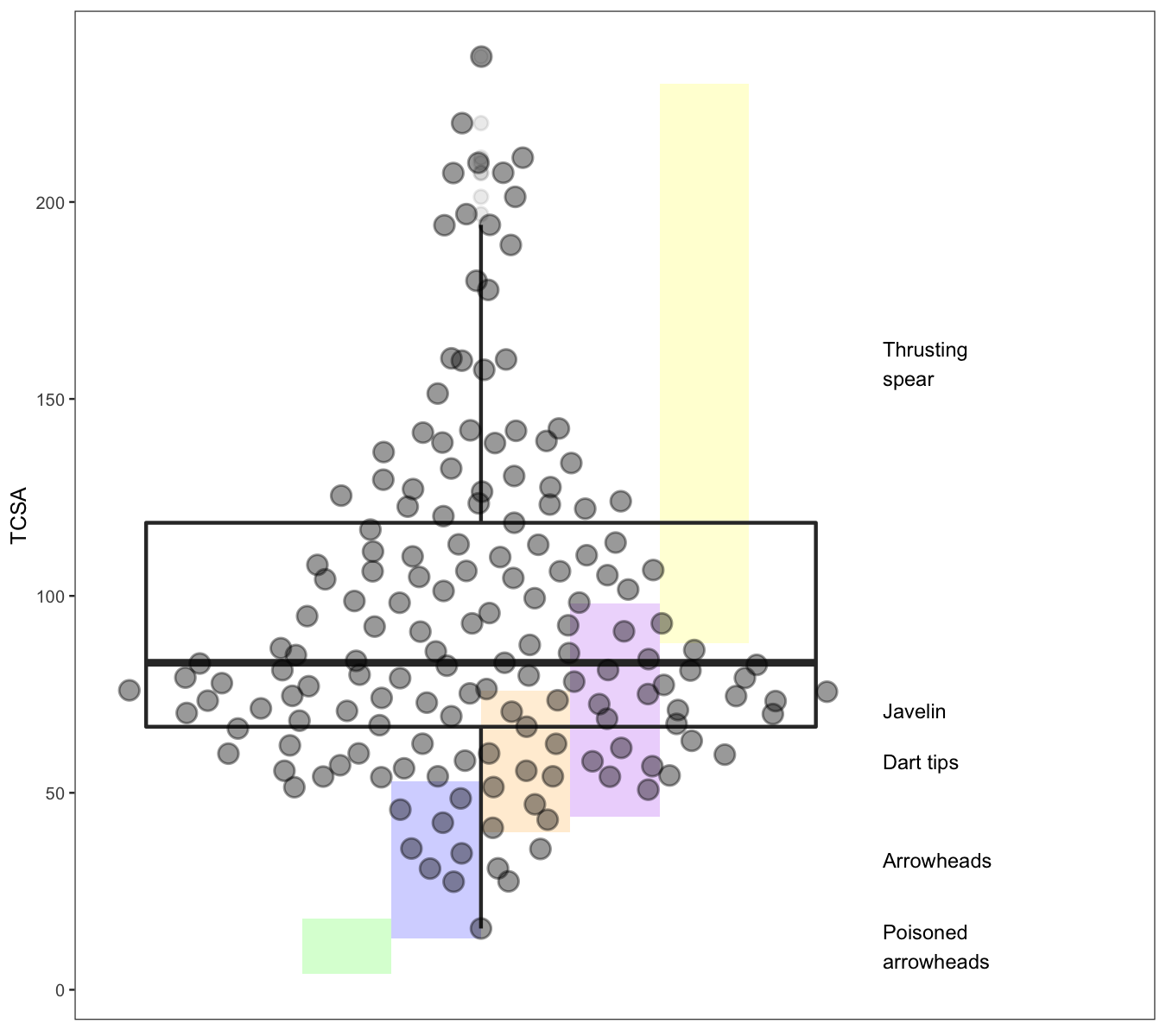


Figure 1: Distribution of TCSA values for all Korean stemmed points in the current dataset. Shaded boxes show TSCA ranges for various weapon types from Lombard (2021).

Notes on Figure 1:

1. The mean TCSA of the Korean stemmed point is 95.5, and standard deviation of TCSA is 44.1. Overall we see wide variation of TCSA values in this boxplot.
2. According to Lombard’s (2021) TCSA ranges, Korean stemmed points are mostly in the categories of javelins and thrusting spear tips, with smaller numbers as dart tips and arrowheads.
3. Poison arrowheads seem to be absent from these Korean assemblages

## Variation by raw material

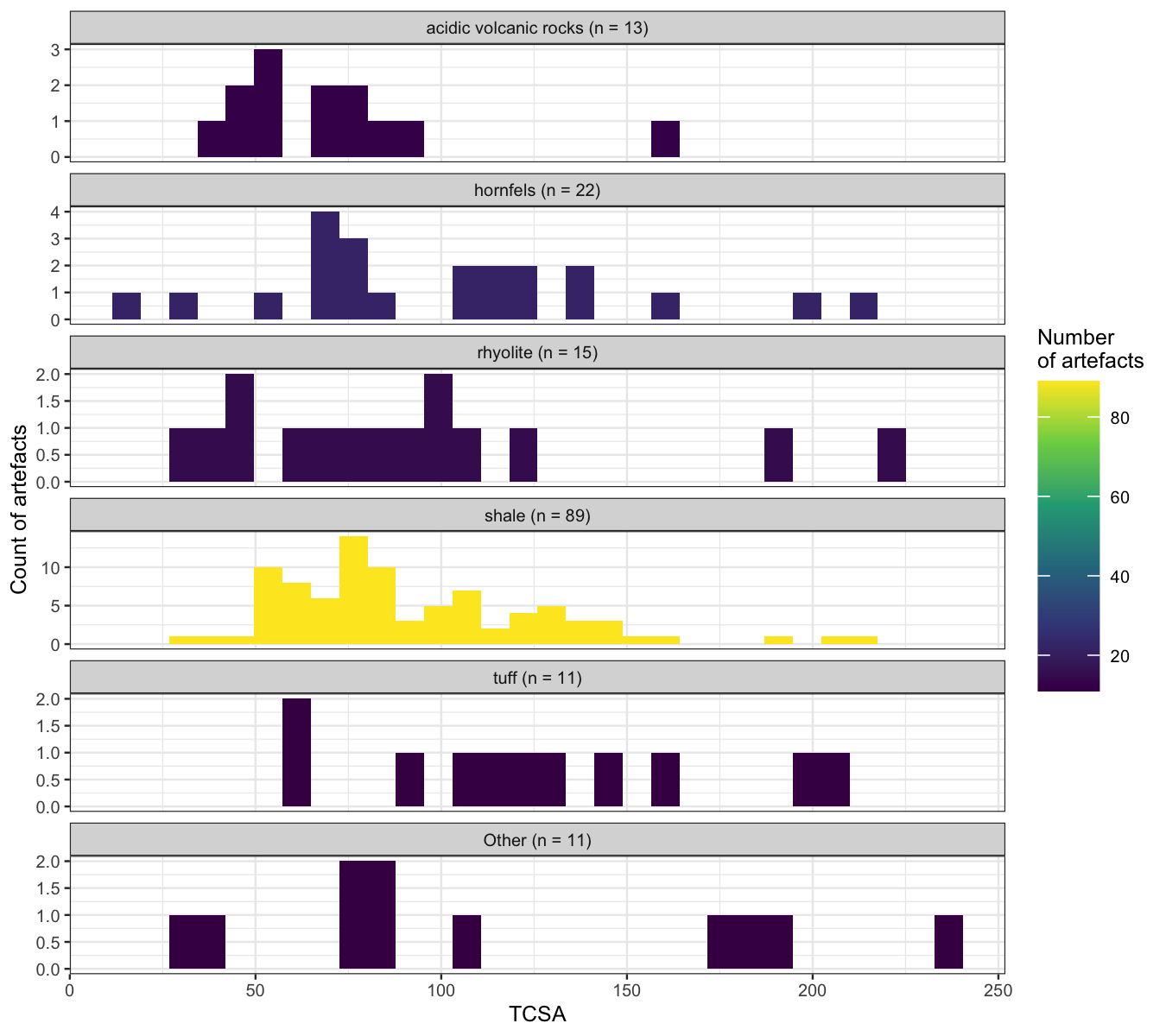


Figure 2: Histograms of TCSA values by lithic raw material.

Notes on Figure 2:

1. About half of all the stemmed points made out of shale.
2. Acidic volcanic rocks tend to have skewed lower TCSA values.
3. But overall, there is no clear pattern of different TCSA values by raw material.

## Variation by site

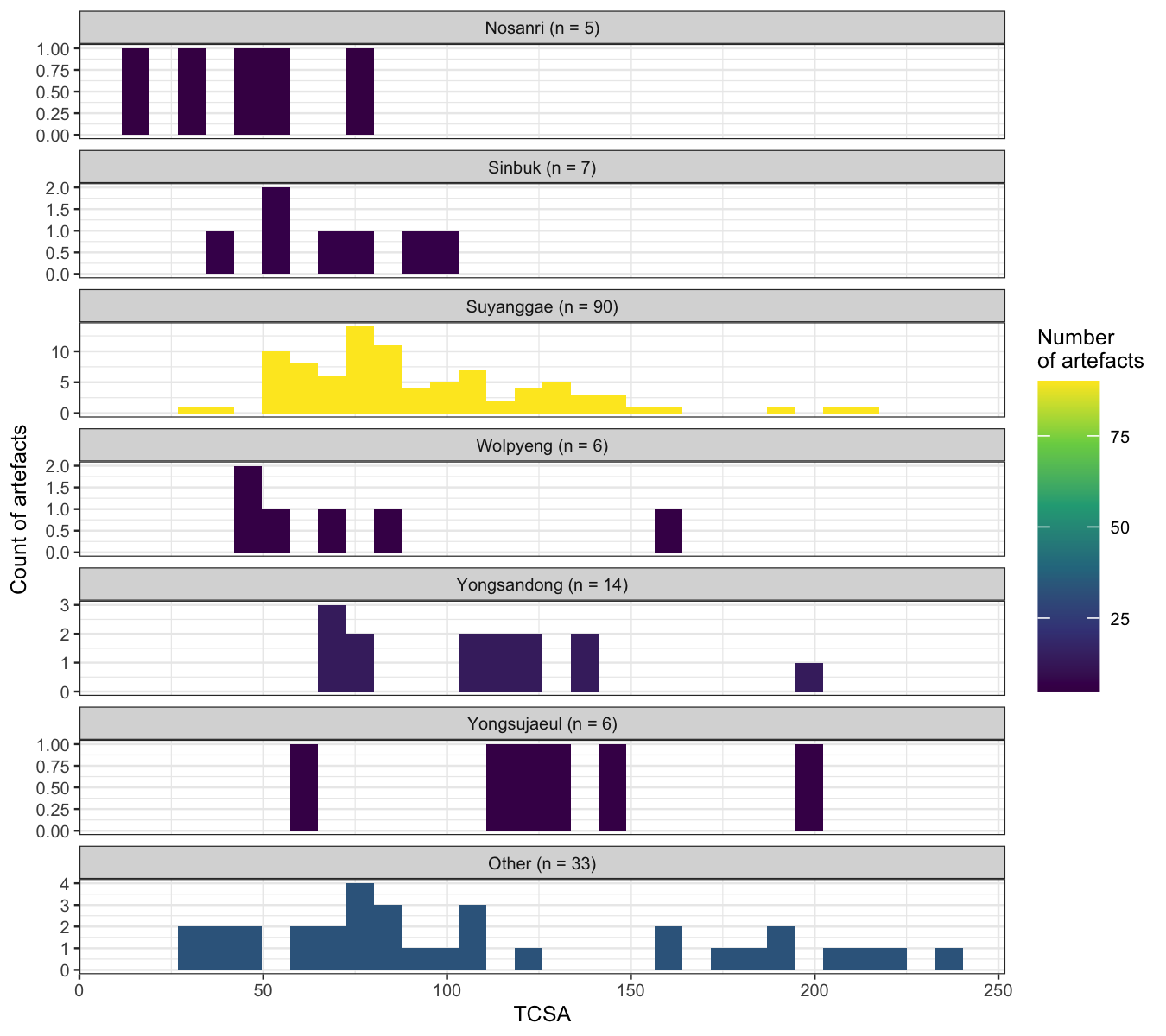


Figure 3: Histograms of TCSA values by archaeological site.

Notes on Figure 3:

1. We computed TCSA for sites that include >= 5 stemmed points.
2. Suyanggage has the most stemmed points and the range of TCSA is wide. We can assume that people used stemmed points for a variety of different purposes.
3. Nosanri and Sibuk have similarly small TCSA values, perhaps these sites had similar functions? Wolpyeng and Yongsujaeul have similar amounts of stemmed points to Nosanri and Sibuk, but different distribution of TCSA values, so perhaps Wolpyeng and Yongsujaeul had a different role in the foragers’ land use system compared to Nosanri and Sibuk.

## Variation by artefact size

We wanted to check the relationship between TCSA and size. We use weight to represent overall tool size.

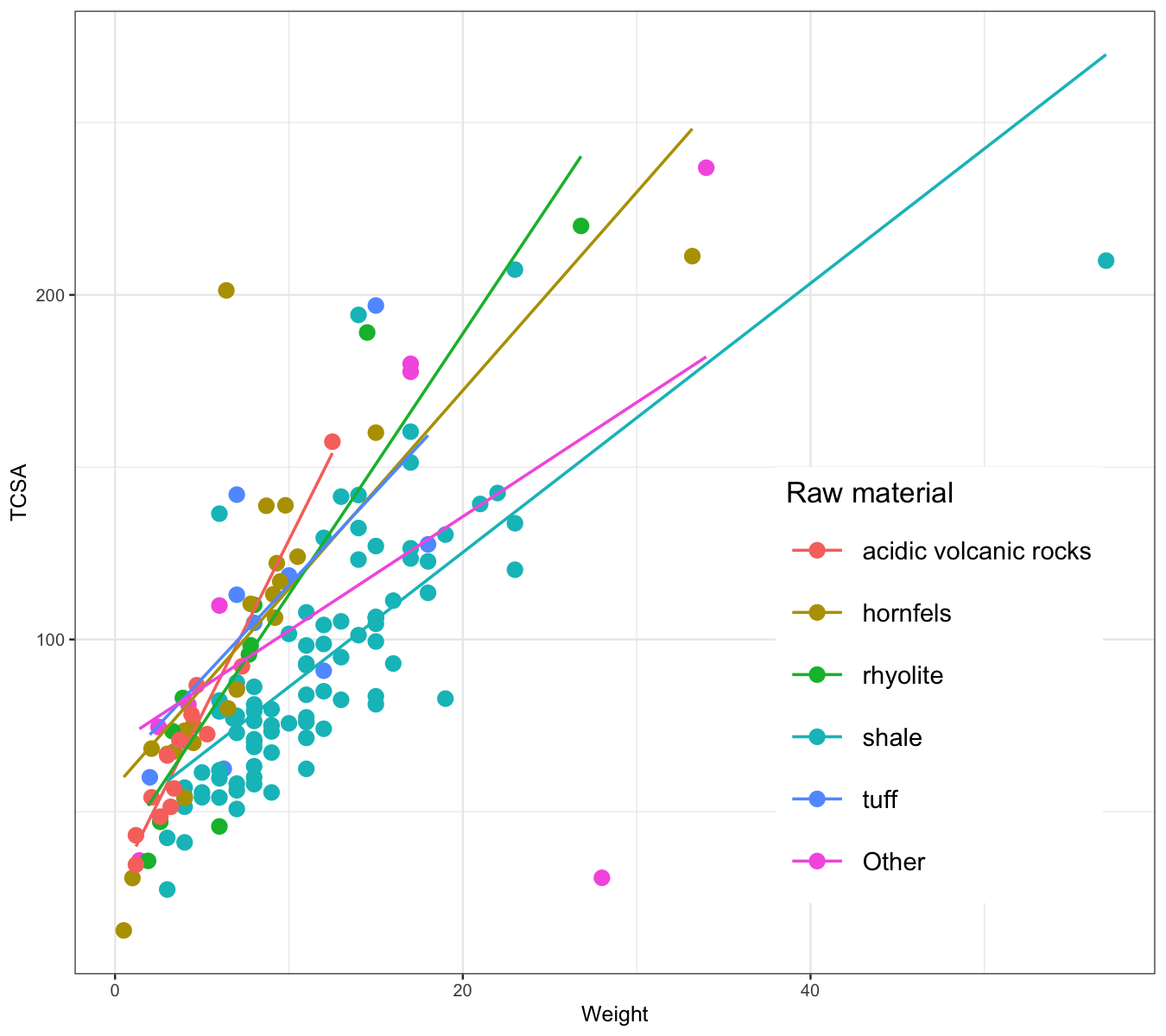


Figure 4: Artefact size and TSCA values by lithic raw material

Notes on Figure 4:

1. TCSA and artefact weight have a positive relationship.
2. The relationship between TCSA and artefact weight varies by raw material, perhaps due to variation in the density of different lithic raw materials
3. Shale stemmed points tend to have TCSA values that are strongly correlated with artefact size, while acidic volcanic points have TCSA values that vary over a very limited size range, suggesting size is less influential.

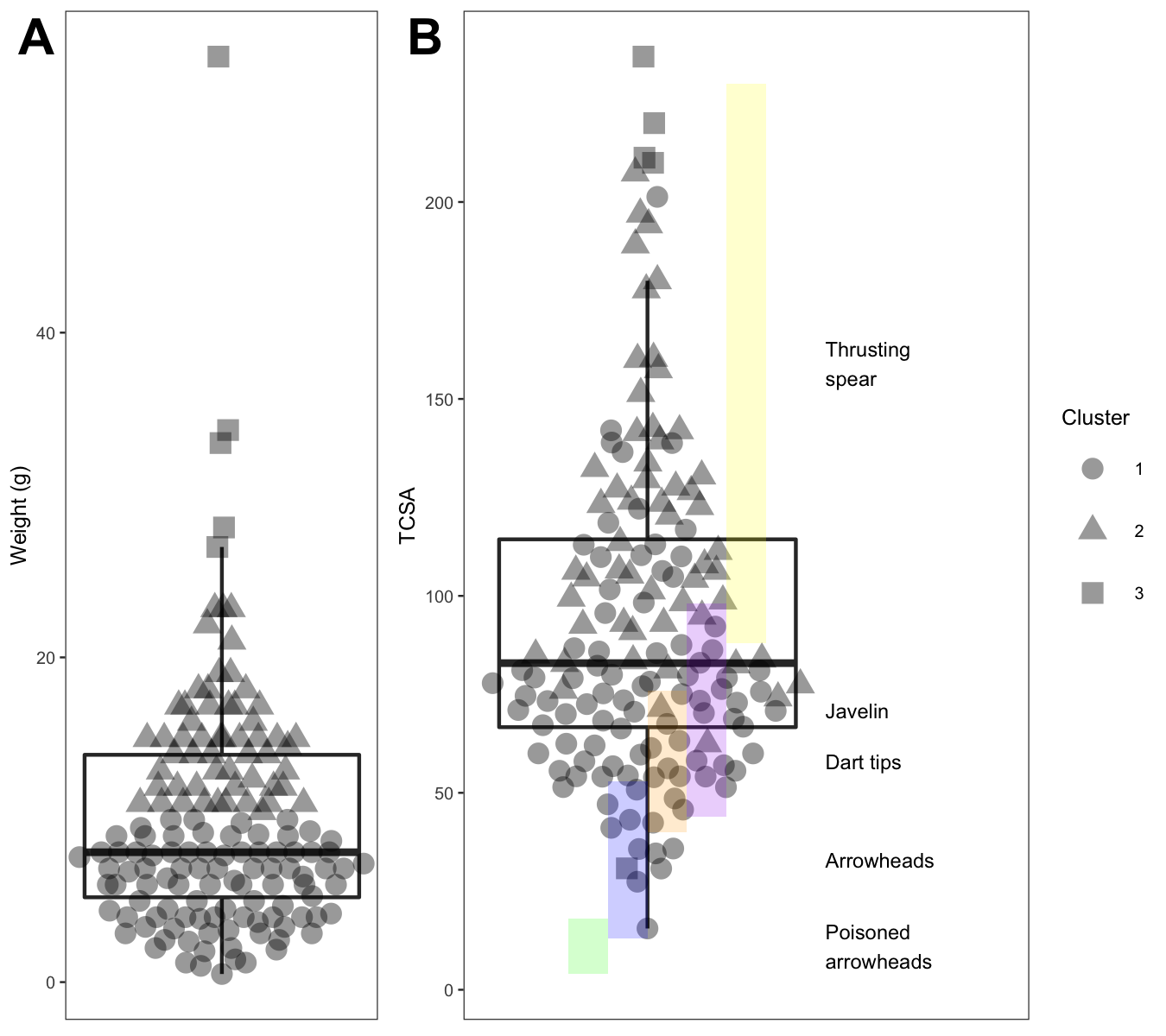


Figure 5: A. Distribution of artefact weight showing three clusters. B. TCSA values for all artefacts with size classes indicated by data point shape.

Notes on Figure 5:

1. Univariate cluster analysis of artefacts by weight reveals three groups or clusters
2. Cluster 1, the smallest (lightest) artifacts, is the lower TCSA, compared Cluster 2. TCSA of Cluster 3 is the highest, except for one artifact, which is lower than 50.
3. We can assumed that artifacts in different clusters might be made for different purposes.

# CRediT authorship contribution statement

Gayoung Park: Software, Validation, Formal analysis, Resources, Data curation, Writing - original draft, Writing - Review & Editing, Visualization, Project administration.

Marlize Lombard: Conceptualization, Methodology, Formal analysis, Writing - Review & Editing, Supervision

Ben Marwick: Software, Validation, Formal analysis, Investigation, Writing - Review & Editing, Visualization, Supervision

# References

### Colophon

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