Caminalcule activity

**Goal:** To introduce students to the concepts of holotype and paratype and morphological taxonomic classification, both historically and with current methods.

**Materials**: Sheet illustrating 29 Caminalcules (‘extant’) from Sokal, R. R. (June 1983). "A phylogenetic analysis of the Caminalcules. I. The data base". *Systematic Zoology* **32** (2): 159–184

Show the class the picture of a single caminalcule (Number 10). Some questions to discuss:

How would you approach classification of a brand new organism?

What would you keep, and how would you mark it?

What would you do with that specimen?

How would others compare it?

Discuss holotypes and paratypes and how natural history museums use them

Split the class into groups of four. Hand out the sheet with all 29 caminalcules and ask the groups to categorize them into ‘species’ (marking down the specimen numbers in each species). Also ask them to identify the defining features of each species – how do we tell them apart from one another?

What would differentiate one group from another?

 Broadly, we need characters that don’t vary between groups

 We care about shared derived traits, or synapomorphies

 Will talk about reconstructing phylogenies later

On the chalkboard, expand the following table with as many groups and species as needed.

|  |  |  |
| --- | --- | --- |
| Group | Species 1 (#’s) | Species 1 (features) |
|  |  |  |

Questions for discussion:

Are there differences between groups for which specimens to include? Differences in features chosen?

 What were the challenges students faced when doing the classification?