Moose foraging can influence inland lake communities because of its potential to release phosphorus, a limiting nutrient, from lake sediments. The release of this phosphorus has the potential to increase phytoplankton and aquatic macrophyte growth, consequently affecting higher trophic levels in a lake food web.

### Background and Significance

**U. vulgaris** is a rootless, floating aquatic plant that is able to survive in a variety of nutrient conditions by absorbing nutrients from the prey it traps using its bladders. The number of bladders per leaf indicates the amount of energy allocated to carnivory, and likely poorer nutrient conditions in a lake. **U. vulgaris** was selected to affect higher trophic levels in a lake food web.

### Methods

**Field component:** Two enclosures will be used as controls, two will be used for intermediate disturbance levels, and two will be frequently disturbed to provide a stronger data set. Each enclosure will be stocked with ten **U. vulgaris** plants and disturbed for five minutes using a simulated moose leg. Immediately after the disturbance period, I will collect both a water sample (preserved for later phosphorus measurement) and a sample of **U. vulgaris** for a bladder count (done in the field). The water sample will be analyzed for total phosphorus using a spectrophotometer. Total bladder number will be counted to determine a bladder density for each sample.

**Lab component:** **U. vulgaris** samples taken from the study lake will be reared in the laboratory. One tank of **U. vulgaris** will be maintained in lake water (control) and one tank of **U. vulgaris** under elevated phosphorus conditions.

### Hypotheses

1. After simulated moose disturbance, amount of total phosphorus will be significantly higher in the water column within disturbed enclosures relative to the control.
2. **U. vulgaris** bladders will show a significant decrease in density (number per leaf) over time in both disturbed enclosures relative to the control.
3. The slope of the relationship between **U. vulgaris** bladder density and time will be significantly steeper in the frequent disturbance enclosure compared to the intermediate disturbance enclosure.
4. **U. vulgaris** grown in elevated phosphorus conditions over time in the lab will result in a significant decrease in bladder number over time relative to the control.

### Works Cited