

What species of tree will make the best raft?

Alleyne's Academy

Taylor Tree Works and Forestry and Land Scotland

Overview and Aims

Involving 44 students from two schools, this investigation initially studied the absorbency of several different species of timber. Additional work followed - examining the workability of each species and the types of trees (or environment) most likely to produce long, straight logs – and hence to discover which tree which would make the best raft.



STEM Partner Neil Taylor worked with the team on a field trip.

Methodology

Samples were floated in fresh or salt water for ten days. A group from a second school studied which species of tree was the easiest to cut (dry sycamore) and we undertook a field trip to study which species might produce straight logs.



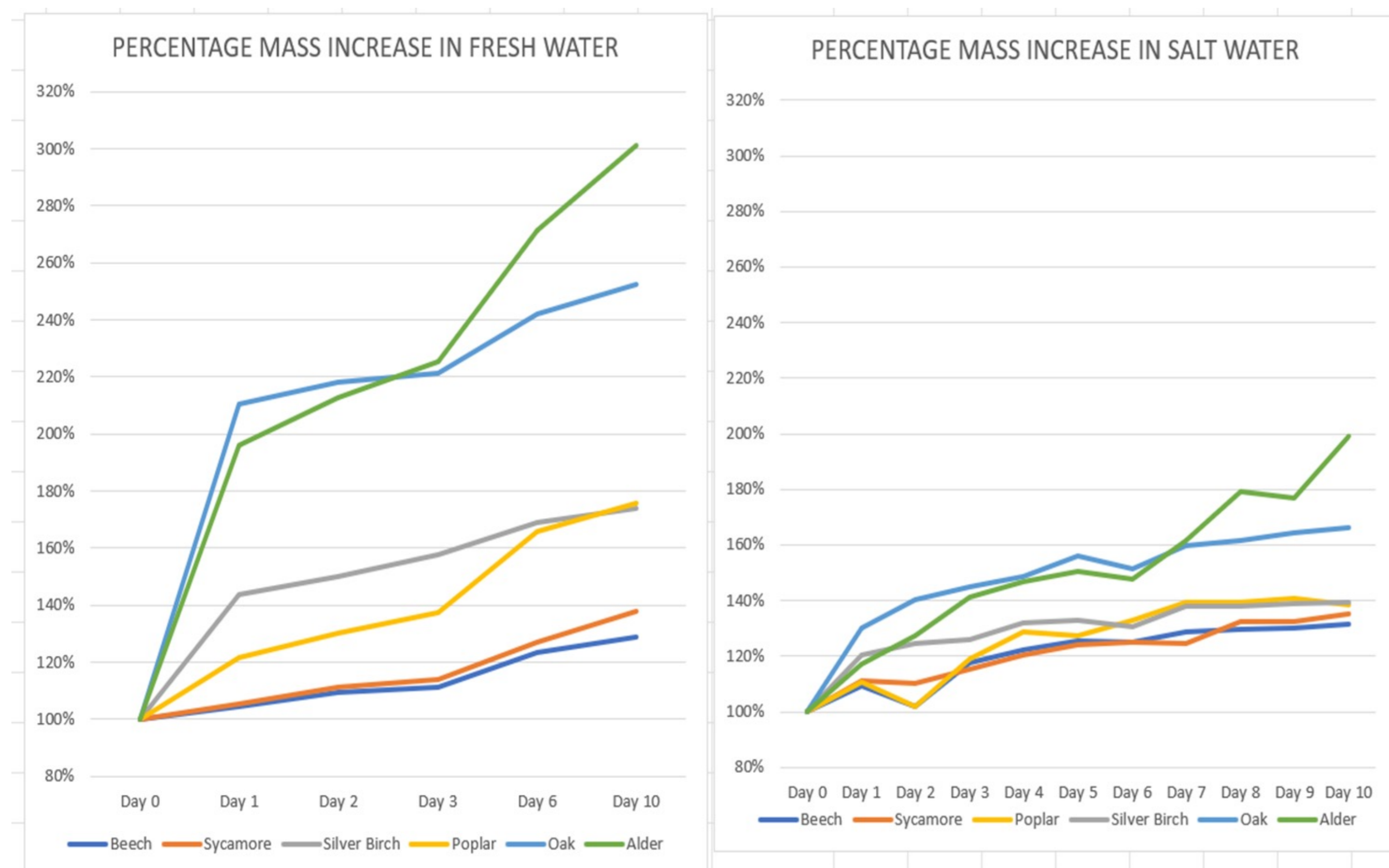
A cutting test was used to work out which species were easier or harder to work.



All the samples absorbed water. We measured the mass daily to work out the least absorbent.

Background information. Our main STEM Partner was Neil Taylor - local tree surgeon and an ex-Alleyne's pupil. He provided all the samples of different species, supported the work throughout the project and led the field trip too. An online meeting with a forestry professional, Stuart MacKenzie, helped the team to understand variations in moisture content and why sunlight, wind and snow might cause trees to grow to be different shapes in different environments.

Results. After a series of 70 experiments, the students confirmed that alder would be the worst species to use for a raft. Alder is a species that thrives on riverbanks. Alder absorbed so much water that the samples actually sank. An alder sample in fresh water weighed three times as much as its starting mass after ten days compared to the same sample in salt water which weighed just twice as much. The graphs show that beech and sycamore absorbed the least water, but our experiments showed that beech was very hard to cut.



Our results show that a raft at sea, in salt water, will stay afloat much longer than a raft in fresh water.

Conclusion. Reflecting on our discussions with two STEM Partners and the results from the absorbency experiments, the cutting tests and the field study, our conclusion is that young sycamore trees (growing tall and thin in a woodland setting) would be the best local tree with which to make a raft.

Next steps, The number of species involved in the study was small. The group would like to test a broader range, especially conifers.