7/12/70

Thoughts on Bearpen-Vly-Halcott

407-4

Bearpen, Vly, and Halcott are hardwood ridges, with supposedly no living balsam or no evidence of recent balsam since the last century. These summits, then, have been free of balsam for probably a minimum of several centuries. Why should 3500 to 3600-foot peaks in the western Catskills be free of balsam while those in the east are dominated by it? Water stress from mean annual precipitation ↓ partly so

Factors that can be measured

	Western Catskills	Eastern Catskills
	1. Hardwoods dominate.	1. Balsam dominates.
?? →	2. Wind-ice-snow damage less	2. Wind-ice-snow damage more (?)
OK →	3. Soil thicker; humus on mineral soil on bedrock	3. Soil thinner: organic mat on bedrock
OK →	4. Soil more nutritive, more neutral, rapid decay	4. Soil less nutritive, slow decay, more acid
OK →	5. Soil well-drained, warmer	5. Soil poorly-drained, colder,
OK →	6. Growth rate greater	6. Growth rate poorer

Other non-testable factors in (mostly) distant past

7. Disease eliminated balsam	7. Disease not sufficient to eliminate
8. Deer or other browse eliminated balsam	8. Browse not sufficient to eliminate
9. Balsams removed for Xmas trees [no evidence for #9]	9. No such removal
10. Fire by lightning	10. No fire

Discussion over ↓

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2. A- Winds may be severer on western peaks since it hits them first.
Winds may be severer on eastern peaks because unevenness of topography to the west creates funnels and concentrated currents.
Most likely → There might be no appreciable difference in wind effects.
B. Precipitation may be greater on the western peaks by orographic lifting, and less on the east by loss of water over the western & central portions.
Just the reverse!!! Precipitation may be same at a given elevation on both eastern & western summits because the gradual rise of the foothills west of the western peaks limit any orographic effects.
Greater precipitation would hinder hardwoods by () water-logging of soil for greater periods during the year, and hinder conifers by increased snow-pack on foliage.
→ not on well drained sites
Hardwood invasion of conifers comes quicker where conifers suffer more water stress.

3. Soil may be thicker on western summits because of greater drift deposits and/or earlier ice retreat and thus more time for soils to develop. Perhaps, perhaps not. Rich suggests local glaciers here at similar time to those near Hunter. Dr. Richards says NW Catskill soils are just as acid as Eastern soils.

Question: Why must balsam be eliminated by encroaching hardwoods? Can't balsam be eliminated by disease, browse, or lightning fire and then be replaced by hardwoods because of lack of balsam seed trees remaining? Partial answer: BY WATER STRESS Examine summits where balsam is currently being eliminated and seek to determine