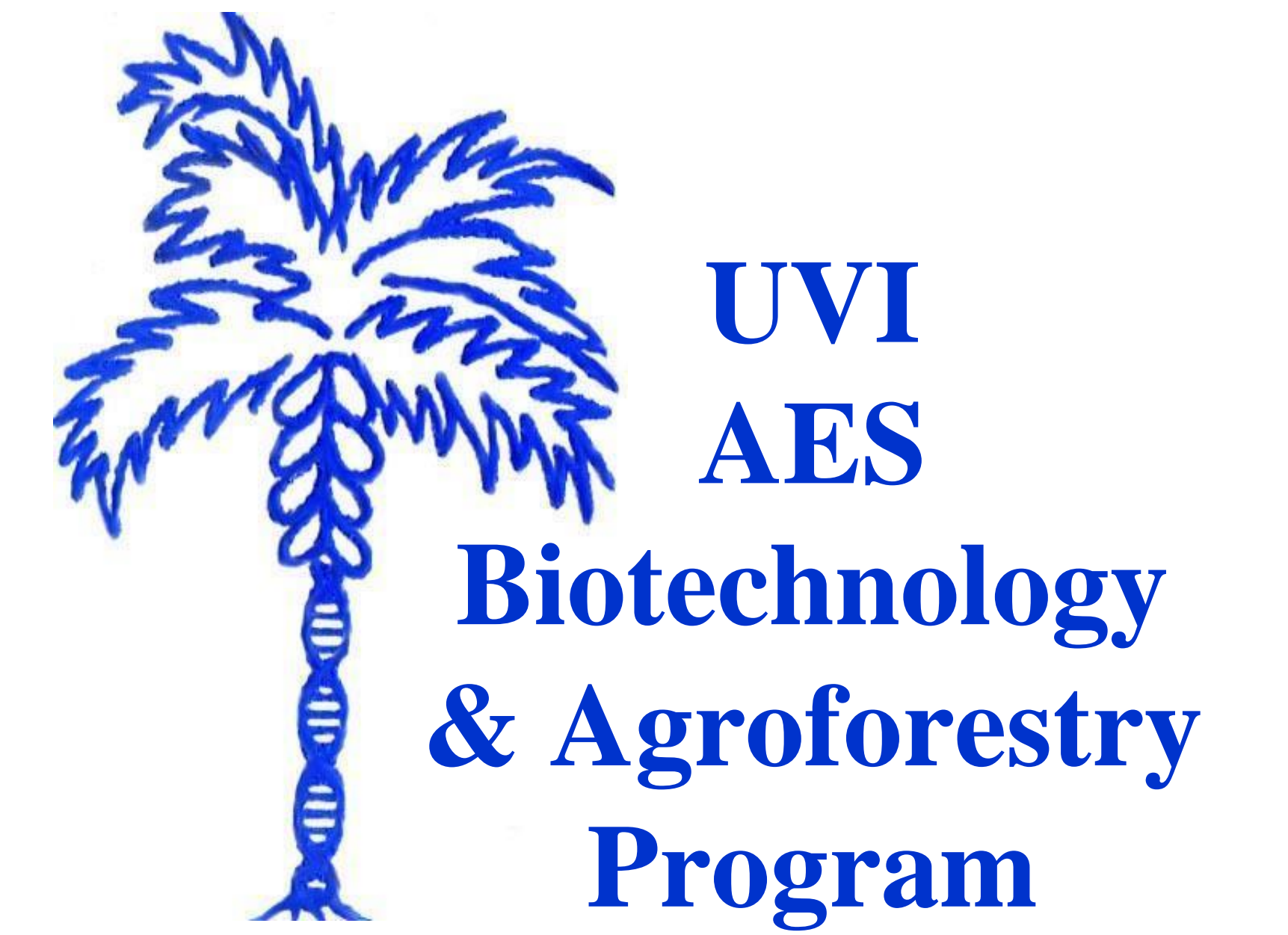




# Population Distribution and Structure of *Catesbaea melanocarpa* on St Croix, US Virgin Islands

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**Introduction:** Tropical Thorn Lily or *Catesbaea melanocarpa* Krug & Urb is a thorny shrub in the Rubiaceae or Coffee family (Figure 1). The plant has fragrant white flowers (Figure 2) and the fruit is a small black berry dispersed by birds (Figure 3). It is listed as a federally endangered plant species. It occurs on one site on the island of St Croix, US Virgin Islands, and two sites in Puerto Rico. It also occurs on the Caribbean islands of Antigua where it was first described, Barbuda, and one island in the French Overseas department of Guadeloupe. The purpose of this research is to map and describe the St Croix population of *C. melanocarpa*.



Figures 1, 2 and 3, above. Thorns, flowers and fruit, respectively.

**Study Site and Ecology:** The population of *C. melanocarpa* occurs on the south shore of St Croix. It is bisected by an unpaved road that leads to Ha'Penney Beach (Figure 4). The subpopulation on the west side of the road occurs primarily in a gallery forest on both sides of a dry stream bed (Figure 5). The eastern subpopulation occurs on a dry grassy plain dotted with tree islands (Figure 6). It is very unusual to find a *Catesbaea* plant growing out in the open in full sun. The plant produces abundant flowers but very few fruit (<10 per plant) are ripe at any one time. Frugivorous birds like bannaquits (*Coereba flaveola* Linnaeus 1758) are suspected to eat the fruit and disperse the seeds. (Morgan, personal observation). St Croix has a limited suite of bird species because it is an isolated island.

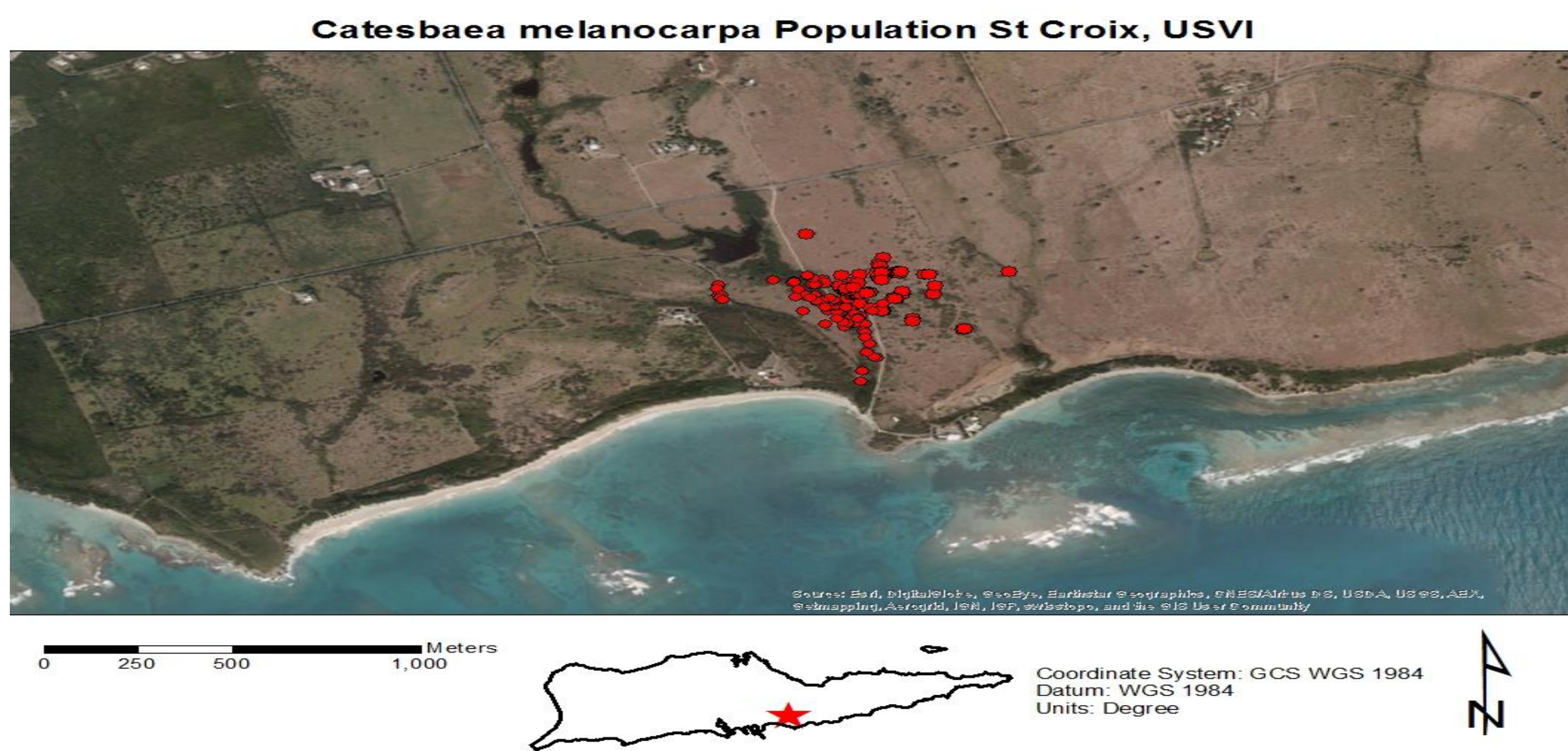


Figure 4. Aerial photo of study site, plus map of St Croix. Red dots indicate individuals or groups of *Catesbaea* plants.



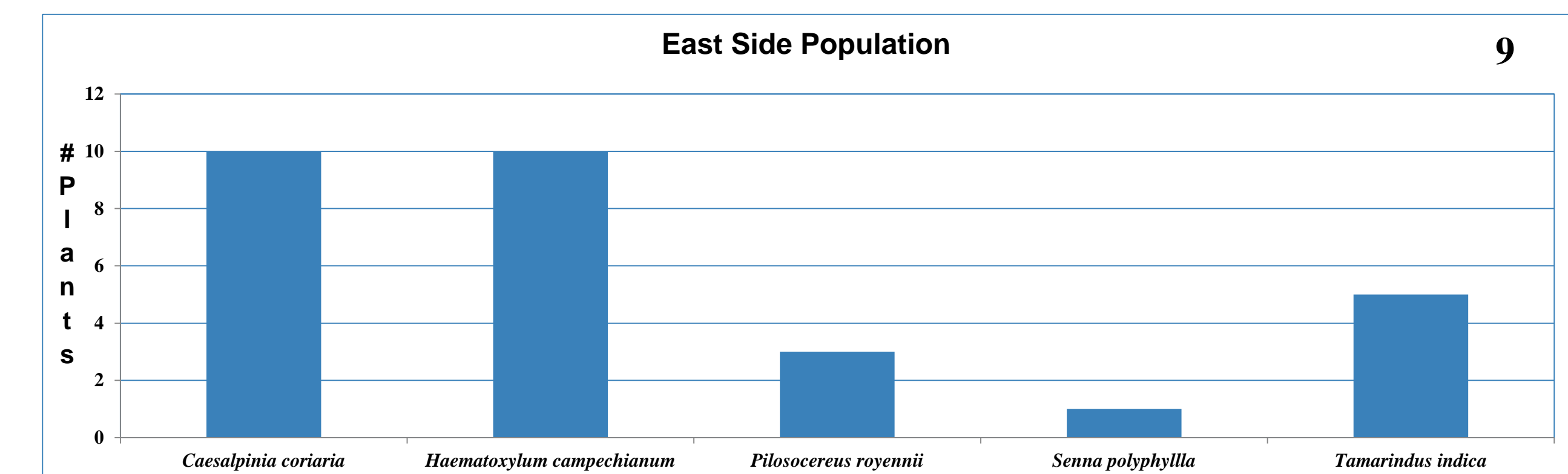
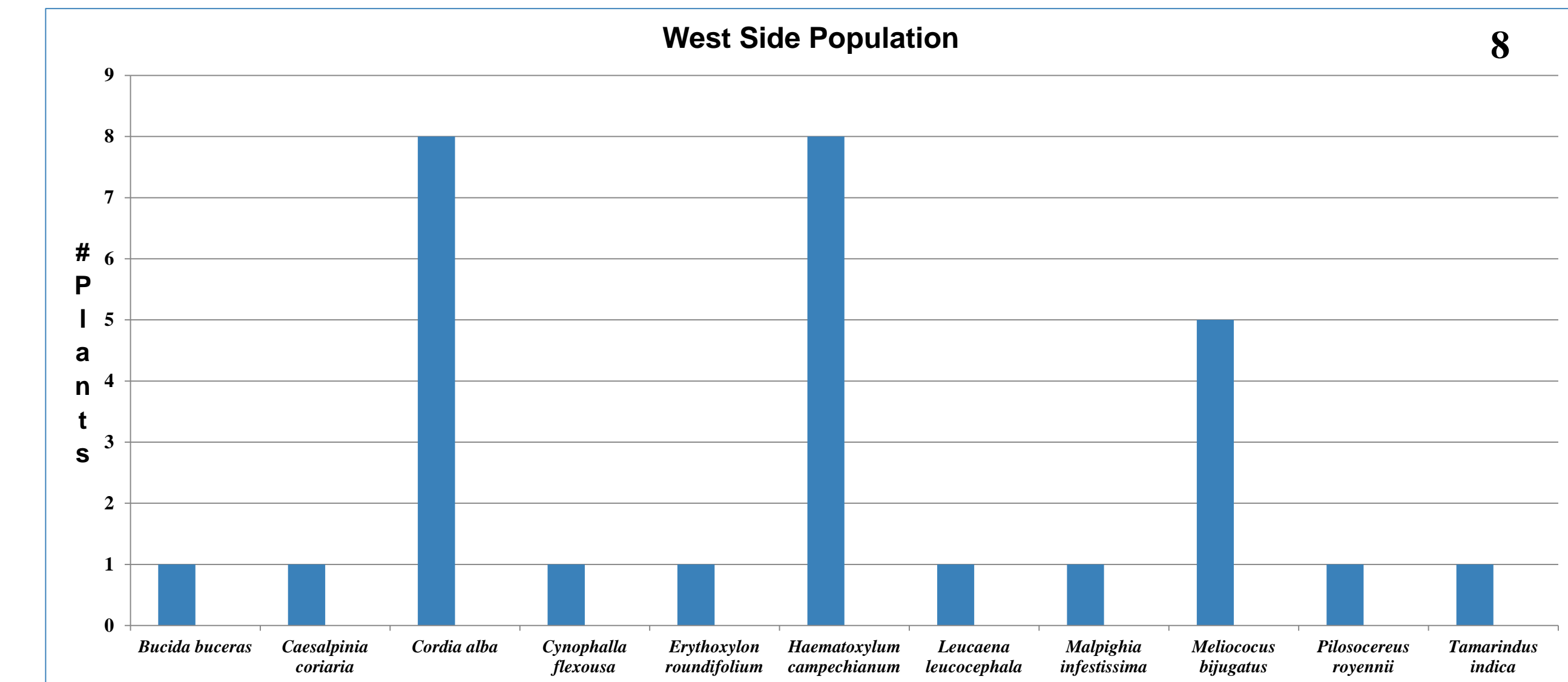
Figures 5 and 6. Two meter tall *Catesbaea* bush in gallery forest on west side. Tree island in dry plain on east side

**Materials and Methods:** *C. melanocarpa* plants were located and mapped with a GPS, measured and tagged. We built upon previous surveys in 2015 and 2013. The *Catesbaea* population is bisected by a road that leads to the ocean. Because the accompanying vegetation on each side of the road is different from each other, we treated the *Catesbaeas* as two subpopulations. Using a random number generator, 30 plants on each side were selected. The overstory tree species recorded and the crown canopy density measured with a densiometer (Figure 7).



Figure 7 Convex glass densiometer for measuring tree canopy cover or shade.

**Results and Discussion:** The *C. melanocarpa* population on the west side of the road grows in the shade of a gallery forest that lines a seasonally dry stream. The east side population grows on a previously grazed plain dotted with tree islands, occasionally burnt over and currently harvested for hay. The overstory species differ significantly ( $P=0.05$ ) between sides (Figures 8 and 9). However there is no significant difference between % canopy cover measured with the densiometer (54% east side versus 61% west side,  $P=0.1458$ ). It must be noted that rarely is a *Catesbaea* plant found growing in full sun. Is this because of competition with grass, mowing, burning or grazing? The thorns should provide some protection against grazing. The population structure of the west side differs from the east side in that there are many more juveniles (<50cm than adult plants  $\geq 100$  cm capable of flowering and fruiting. The east side has many more adult plants than juveniles. In fact it appears that the west side population is colonizing a pasture west of the stream Figures 10 and 11. Total population as of 2016 is approximately 400 plants.



Figures 8 and 9. Tree species of overstory on the West side gallery forest and East Side Tree Islands, respectively.

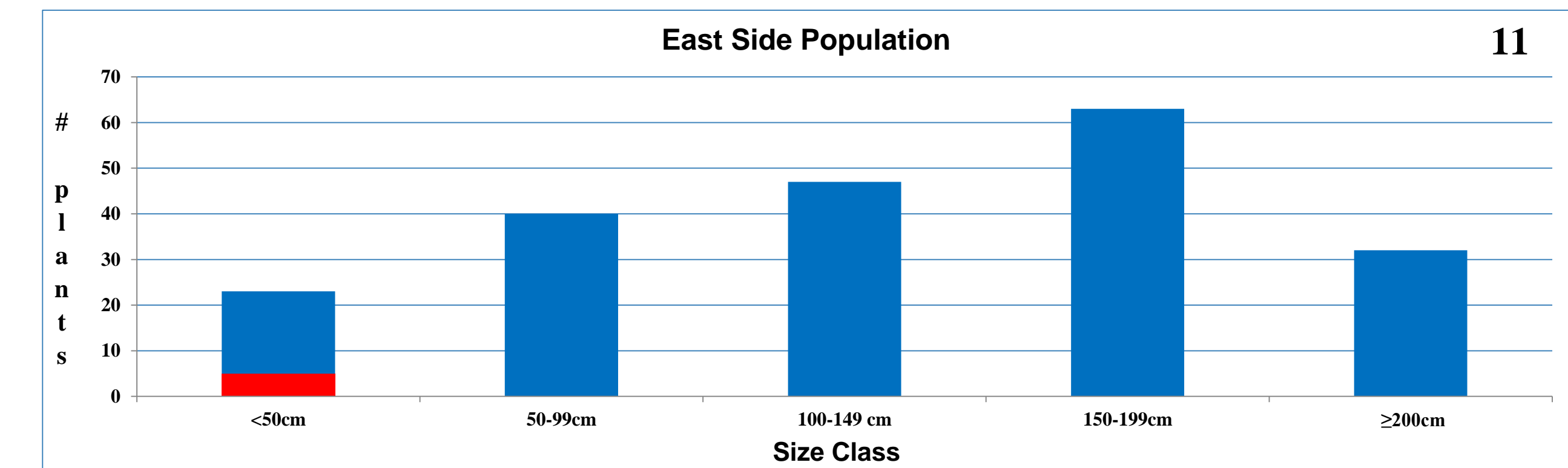
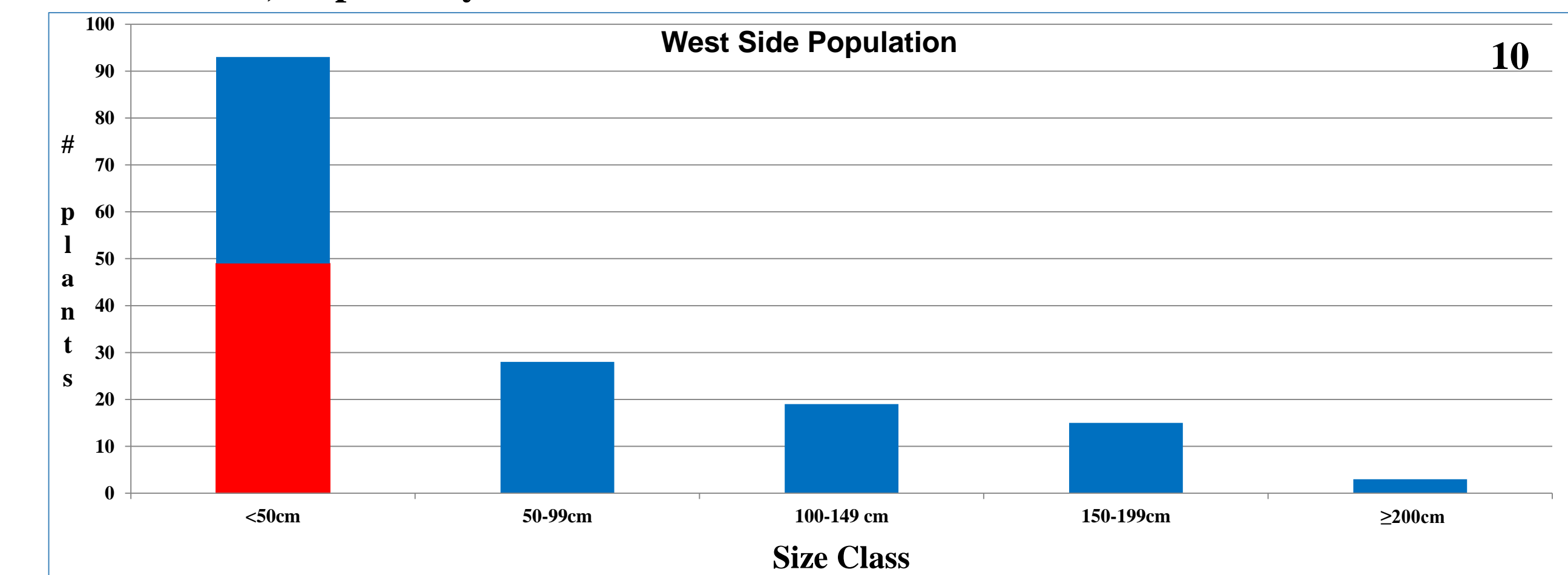


Figure 10 and 11. Population structures by size classes of west side and east side *Catesbaea* populations.

**References:**  
 Daley, B. and J. Valiulius. 2013. Rapid Assessment of Four Endangered Plant Populations on St Croix, US Virgin Islands. A report written for the US VI Department of Planning and Natural Resources. 41pp.  
 U.S. Fish and Wildlife Service. 2005. Recovery Plan for *Catesbaea melanocarpa*. Atlanta, Georgia. 32 pp.

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