Impact of Strawberry Guava on Water Supply in Hawai‘i

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22 July 2008

Our current research in Hawai‘i Volcanoes National Park, funded by the US National Science Foundation and the US Geological Survey, is the first to directly examine the hydrological impacts of the invasive tree species *Psidium cattleianum* (strawberry guava). Since the beginning of 2006, we have operated state-of-the-art sensing equipment to measure energy, carbon, and water exchanges at a native forest site and at a site where strawberry guava has invaded. Our data show that the invaded site has much higher evapotranspiration (ET), i.e. much more water is lost to the atmosphere, as compared with the native forest site. The ET of the invaded forest is 27% higher than that of the native forest on average. This translates into a huge loss of water from our soils, streams, and groundwater systems in areas where strawberry guava has invaded native forests. Increased ET can be directly equated with reduced water available for municipal water supply systems and irrigation. The reduction in surface and groundwater resources will have serious economic as well as environmental impacts. Measurements of the higher rates of water loss associated with this invasive species underscore the need to immediately employ the most effective methods to reduce strawberry guava infestation and to prevent further invasion by this species in Hawaiian forests.