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Dirty water

When the natural watershed gets an urban-industrial makeover, the potential for disease increases

During a presentation at the Hawai'i Association of Watershed Partnerships 7th annual Watershed Symposium on Oct. 19, Bruce Wilcox showed a rendering of what a healthy watershed looks like—a healthy ahupua'a with streams that run down the mountains through forests and pastures and empty into the ocean. Then he showed a rendering of what valleys in Honolulu look like—an ahupua'a whose streams have their passage to the sea blocked by giant buildings and hotels and a highway running perpendicular to the waterways.

"This is an insane direction to go, and we're doing it on this island," said Wilcox, the chairman of the University of Hawai'i-Mānoa Department of Tropical Medicine, Medical Microbiology and Pharmacology's Division of Ecology and Health.

Wilcox's research suggests that when the natural watershed is transformed into an urban-industrial watershed, the potential for diseases to thrive and be transported in the streams is increased. According to

Wilcox, feral swine are potential reservoirs for at least 30 human and domestic animal pathogens transmitted by water and direct contact.

Contaminated freshwater is not only unhealthy for humans but poses a threat to nearshore marine species and species that live in brackish water.

The group of mostly scientists—ecologists, hydrologists, botanists—gathered at the symposium to compare notes on water quality-

and water-quality research conducted at some of the major watersheds on the Hawaiian Islands. Their findings and the questions they raised serve to assist resource managers, many of whom were also in attendance, in determining the best course of action to preserve Hawai'i's precious watershed.

Besides presenting their research, the panelists raised questions that they hope further research will answer, such as: Does native plant

restoration lead to improved watersheds?

Travis Idol of the UH Department of Natural Resources and Environmental Management said that invasive species such as miconia, which shades out undergrowth and reduces soil cover, may increase runoff and erosion.

Meanwhile, while conventional wisdom holds that invasive species suck up more water than native plants, Lawren Sack of the UH-

Mānoa Botany Department pointed out that transpiration, or how much water a plant uses, differs dramatically between different types of plants. He emphasized the need for more data to help determine what species should be used for reforestation.



The discussion eventually turned to the ultimate reason for protecting the watershed: Water is the source of life. As Kamehameha Schools Water Resources Manager Ka'eo Duarte put it, "This discussion of water and management is because we've created lots of needs. We don't need science to [tell us] to protect our biodiversity. The impetus to perpetuate and restore our species is personal." —Catharine Lo