



## Hui Ko‘e ‘Āina: Worming Our Way to Sustainable Food Systems

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### The Problem

The US Department of Agriculture estimates that approximately one-third of all food produced in the US is wasted; two-thirds of that happens at the consumer level, meaning food that we buy but do not consume (Buzby et al., 2014). Most of that food ends up in the waste stream and accounts for 21% of landfilled waste, more than plastics, metal, paper, or any other major category. Buried in landfills, that rich organic matter breaks down anaerobically, releasing methane, a potent greenhouse gas. The US



Environmental Protection Agency estimates that food waste is responsible for more than half of total methane emissions from landfills (Krause et al. 2023).

On O‘ahu, municipal solid waste is sent to the H-Power incinerator, generating electricity. The high water content of food waste reduces the efficiency of the burners and sends all the nutrients and organic matter in the food up into the atmosphere, not where we need it in our soils to produce more food.

### The Solution: Composting

Reducing food waste, of course, starts by purchasing only what we need and taking care of the food we buy until we eat it. We can also donate unused or unwanted food to



reduce the food insecurity of others. For everything else, we can transform food waste into a resource. Food waste can become substrate for decomposer organisms like bacteria and fungi, earthworms, and all kinds of soil organisms. The nutrient elements like nitrogen and phosphorus can be converted back to mineral forms that are then available for plants. The soil organic matter formed by decomposition stores the carbon in more stable forms and helps to hold nutrients and water in the soil.

Composting is a great way to control the decomposition of food waste and turn this waste into a resource for improving soil fertility and overall soil health, closing the loop in our food system. There are proven ways to efficiently compost food and other sources of organic waste like tree trimmings, grass clippings, and even parts of crop plants harvested but not used for food. Vermicomposting with worms can produce the highest quality organic fertilizer (Pant et al., 2012). Thermal composting is a mixture of food and other green waste that can heat up to > 150° F, effectively killing any pathogens or parasites. Even green waste without food, if composted correctly, can be transformed into a rich soil amendment.

## CTAHR Initiative

Multiple faculty have conducted research on the benefits of vermicompost for decades. In spring 2024, Mindy Jaffe, founder and owner of Waikiki Worm, a successful vermicomposting enterprise on O'ahu, expressed her desire to donate her worms and supplies to the college.

Understanding the great potential this offer held and with a desire to bring greater sustainability to the Manoa campus, and expand to a broader community-based composting initiative, Drs. Idol, Radovich and Sipes received funding from the UH Mānoa Provost Strategic Investment Initiative with support from the Dean of CTAHR, Dr. Parwinder Grewal. Thus Hui Ko'e 'Āina, the Earthworm Partnership, was born. The Magoon Research and Instruction station just off the



Mānoa campus became the home of the first campus wormery.

## **Turning Vision into Action**

In July 2024, Hui Ko'e 'Āina officially launched. A UH Foundation account was created to accept donations (see QR code below). Preparation work at Magoon began. Mindy Jaffe donated major equipment, worm bins, and worms valued at over \$100,000. A site was selected, shelters for the worm bins were constructed, bins were set in place, and the worms were placed in their new home, awaiting fresh inputs.

## **Strengthening Our Foundations**

The next month was pivotal for growth and collaboration. Our first major partnership was formed with Noelani Elementary School, which agreed to provide uneaten food from student breakfasts and lunches for our composting and vermicomposting programs, starting with the new school year in August. Schools are typically the biggest “producer” of food waste in the community. A typical lunch meal at Noelani, with approximately 400 kindergarten through fifth grade students, generates 100-200 pounds of food waste! Since the start of the school year, the Magoon Wormery has diverted over 6 tons of food from the waste stream and is converting it into high-quality vermicast and compost.

Outreach to the CTAHR Master Gardener program began, aiming to re-establish their wormery at the O'ahu Urban Garden Center. Téa Loren, a first-year UHM undergraduate student and member of the UHM Environmental Justice Club, reached out for guidance on setting up a vermicomposting bin at Gateway House dormitory, further illustrating our growing impact on student sustainability efforts. Meanwhile, Waikiki Worm's supporters began visiting the Magoon Wormery, contributing both donations and their enthusiasm to our program.

## **Growing Together**

October saw preparations for an open house take shape, with UHM Provost Michael Bruno providing opening remarks. We began a collaboration with the IMUA Center, a UHM Registered Independent Organization, focusing on developing comprehensive educational programs and faculty-mentored research opportunities for CTAHR and UHM students. Generosity from the community continued to flow in, as Lee Putnam, former chair of the UH Board of Regents and a passionate advocate for sustainable practices, pledged \$40,000 to Hui Ko'e 'Āina's vermicomposting operations.

## **November and December: Celebrating Achievements, Growing Forward**

In November, we celebrated the success of Hui Ko'e 'Āina (HKA) with a tour of the Magoon Wormery led by Lee Putnam and CTAHR Dean Parwinder Grewal. This visit

highlighted Ms. Putnam's generous contribution to our efforts and our commitment to worm our way into communities around the island! We were also excited to welcome Mary Pearson, a former Resource Recovery Specialist with Windward Zero Waste School Hui, as a new team member assisting in vermicomposting operations and project administration. The UHM Student Organic Food Training (SOFT) club joined our efforts by setting up a worm bin at Magoon near their student garden, providing a hands-on example of vermicomposting for households and small groups. Additionally, the UHM Sustainability Council toured the Magoon Wormery as part of their "tour de trash," which explored waste recovery and recycling initiatives across O'ahu.

On December 03, the Magoon Wormery hosted an open house, with remarks by Provost Bruno, Dean Grewal, and HKA team members Dr. Travis Idol and Téa Loren. Mindy led a tour of the wormery and composting operations, and great connections (and re-connections with other vermicomposters) were made among participants about how composting and food waste recovery could be expanded. This included interest from the CTAHR Fashion Design and Merchandising (FDM) program. Recognizing that clothing and other textiles make up over 10 percent of municipal solid waste (Buzby et al. 2014), the FDM program is excited by the potential for composting to transform worn out and unwanted natural fiber clothing into a resource for soils and plants. Healthy soils can benefit the production of plants used for clothing and other textiles, the same as food plants. This includes plants like cotton, linen, jute, hemp, and plants grown for traditional Hawaiian textiles and cordage like mamaki, wauke, olonā, hau, and others. Old undies can even be used as an indicator of soil health, as the faster it breaks down, the more active the microbial life in your soil (NRCS, 2024). On that note, HKA is in talks with the Hawai'i Climate-Smart Partnership ([climatesmarthawaii.org](http://climatesmarthawaii.org)) to subject our top-quality compost to the latest analytical tests and to evaluate the health of soils amended with it.

The first HKA "Learn to Worm" workshop was held on December 07 at the O'ahu Urban Garden Center. This will be a monthly, second-Saturday workshop, but space is limited, so be on the lookout for sign-ups at [wormohana.org](http://wormohana.org). If you represent a special group like a school, Scout troop, garden club, or community housing complex, contact us directly through [wormohana.org](http://wormohana.org) to arrange a special presentation or to schedule a workday and tour at the Magoon Wormery.

Finally, if you are interested in compost for your household or farm, you can also contact us. We are generating a regular supply of vermicast, but it will be about a year before our thermal compost and green waste are mature and ready for use. In the meantime, start your own composting operation and join the movement to worm our way to food security, local self-reliance and long-term sustainability!

## QR Code to Donate to Hui Ko'e 'Āina



Thank you for your support of community composting in Hawai'i!

### **Photos to include as desired**

[Wormery Photos Album](#)