

## **GEAR SANITATION PROTOCOLS**

Hawaii's natural resources management crews work in a variety of habitats in the course of their conservation work. These different habitats likely have weed strata that reflect the climate, elevation, or relatively pristine nature of the sites.

As a result, managers should be keenly aware of the composition of those various weed strata, especially in terms of priority invasive plants.

While other people besides conservation workers may frequent these assorted places, and possibly transport weeds seeds in their gear, it is imperative that conservation workers hold a much higher standard that reflects their value to protect natural areas. Any complacency in this regard only will undermine the huge effort made to preserve native ecosystems.

**FOOTWEAR:** When working in areas where seeds of highly invasive plants are likely to be in the soil, footwear should be inspected and cleaned (on site when possible) prior to entering vehicles.

This can be done with water and a shoebrush, disposing of the debris in 1) a known contaminated site, 2) a site that will have continued monitoring, or 3) trash receptacles, all depending on the severity of the species.

While the extremely tiny seeds of plants like melastomes are one of the greatest concerns, they may need mud or fruit pulp to adhere to footwear.

Grass seeds, on the other hand, are notorious for sticking to even dry boots.

An often overlooked aspect of cleaning footwear is the collection of seeds (especially grasses) inside the tongue and laces of boots. This requires a thorough inspection of laced footwear and is the main reason that rubber boots are often suggested.

In all cases, the insides of footwear should be inspected and brushed as well.

**RAINGEAR:** The seams of most raingear make them susceptible to hiding tiny seeds within the flap. Even raingear that is dedicated to certain sites known to harbor highly invasive plants should be periodically washed. This can be done in a tub containing 5% bleach in water, with disposal going into a place routinely monitored for any seedlings. For less severe species, a hose can be directed at the seams, or they can be dry brushed. Also make a point of cleaning any pockets. The guidelines for where any debris is disposed of can be similar to that of footwear.

**PANTS:** Cloth pants are more difficult to separate as gear than rainpants, and therefore should be viewed in the same context as other working gear. They could be easily overlooked when removing and cleaning other gear, and contaminated pants could even be inadvertently worn inside vehicles. At some sites, it is not always practical or modest to be removing pants upon return to the vehicle. Provisions should be made to anticipate removal of pants (also shirts, hats, and socks) contaminated with mud from an area with highly invasive plants, such as wearing shorts underneath.

Again, depending on the severity of the weed and potential for contamination, change of clothing should be waiting for workers upon return to the vehicle.

**PACKS:** One of the most overlooked aspects of sanitation procedures is the pack. Some workers make special effort to hang their packs above ground, while many other set them down in contaminated mud or weed debris. As in raingear, packs contain many seams or netting material that readily adhere seeds. All sections of the pack, including the inside, should be examined for hitchhiking seeds or mud. Disposal guidelines as listed above.

**GLOVES:** If gloves are worn in areas where tiny seeds of invasive plants could be in mud or debris, they should be separated and washed as recommended above. In some cases, gloves should be dedicated gear per specific weed.

**TOOLS:** Machetes, hip chains, flagging tape, radios, GPS, spray bottles, and other supplies and tools that accompany crews into invasive plant work sites are sometimes just as susceptible in carrying unwanted seeds as personal gear. An example is the machete scabbard, which has an interior that no one looks at (cleaning a used scabbard will reveal dirt that has been hidden for some time).

According to the site and severity of the weed, this gear should be designated for use on a specific plant, or at the least, routinely inspected and cleaned.

Extra precaution should be taken for any camping gear used at such sites.

Disposal areas for debris the same as listed above.

**GEAR CONTAINMENT:** Once work is completed at a site and personnel return to the vehicle, provisions should be made for storage of the potentially contaminated gear. Gear designated for use on a particular species should be stored as such, with clear writing indicating the use. Large poly tubs are practical storage for these items, and plastic trash bags may provide an additional layer to contain boots, packs, and muddy clothes. This procedure minimizes the potential to contaminate the work vehicle.

**VEHICLES:** Vehicle sanitation is a concern only if 1) it is driven into the infested site, or 2) if contaminated gear enters the vehicle.

Mud should be rinsed from the undersides of the vehicle by washing under the wheel wells and bumpers with high pressure. Once the vehicle cools, the differential, driveshaft, splash pan, and other components that may hold mud or debris, can be hosed. Vacuum or brush inside floors, pockets, door jams, and seats. Sweep and hose out the pickup bed.

The disposal area would be relative to the severity of the weed, but should be routinely monitored to see what seedlings sprout in the wash.

**INSECTS ETC.:** Also be aware when entering natural areas to avoid carrying roaches, ants, spiders, etc, in packs and supplies. Gear and food items should be inspected prior to going into natural areas.

**COMMON SENSE:** This task becomes much easier when personnel anticipate what challenges they will encounter when following sanitation procedures.

Each crew should have the same understanding of the priority weeds and their locations. Knowing aspects of the target plant, such as seed size and likelihood to be in the soil or air, can help crews address the necessary precautions. As crews become confident in following these procedures, they can also be confident they are part of the solution and not the problem of vectoring priority weeds.