

California All Taxa Biodiversity Inventory Sampling Protocol: Insects

The following instructions are for the sampling of insects. This protocol does not include the collection of bumble bees or federally listed branchiopods, moths, butterflies, or other insects on the California Terrestrial and Vernal Pool Invertebrates of Conservation Priority [list](#). See “Sampling Protocols: Materials, Site Selection, and Best Practices” for permit information.

Precautions and Guidance on Sampling

- Do NOT collect moths, butterflies, or bumblebees or other insects on the California Terrestrial and Vernal Pool Invertebrates of Conservation Priority [list](#).
- Do collect non-insects (e.g., spiders, centipedes, millipedes, isopods).
- Wasps and other stinging insects are of interest to the project but should likely be avoided for safety reasons. This is left to the discretion of the sampler.
- Do not sweep vegetation that could damage the net. For example, bushes with thorns may rip the net. Grasses with excessive burrs or seeds may also make sweep netting unreasonable.
- Aim to sweep as many different microhabitats as possible within the sampling site. Walking/sweeping along a trail near your sampling plot is encouraged.
- Collect samples that have a diversity of species, not too many of any single species, contains numerous individuals, and includes small insects.
- Insect vials with only a few specimens are not worth the time spent collecting and analyzing. If you are unable to collect at least 50 insects, please cancel the sample. Do not ship or submit undersized samples for analysis. Figure 5-1 shows examples of good and bad insect samples.

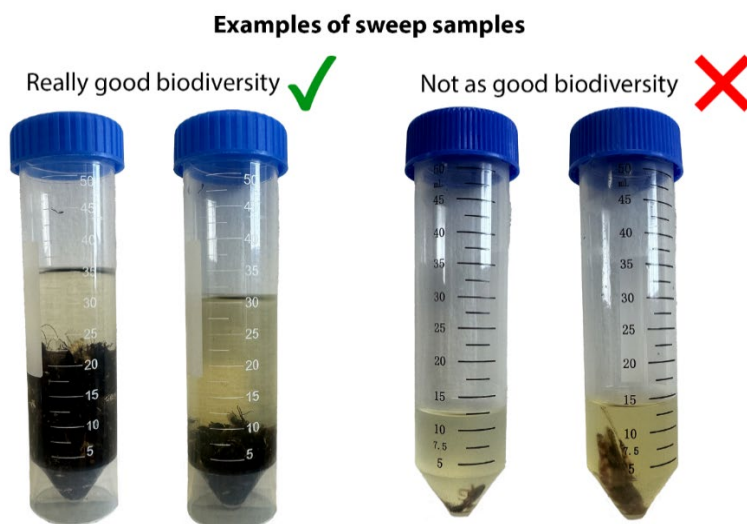


Figure 5-1. Example of Good and Bad Insect Samples.

Equipment:

- Gloves
- Barcode sticker labels or prelabeled insect vial (1 per site)
- Insect vial filled halfway 95% ethanol
- Aspirator
- Sweep net
- Paper
- Pencil

Steps:

1. Make sure your vial is filled halfway with 95% ethanol before starting.
2. Sweep the net through vegetation for 2-5 minutes (you don't have to see insects on the plants for them to be there). Try and sweep as many different types of plants as possible, from ground level to as high as you can reach. Keep the net in motion to prevent the insects from flying out.
3. Aspirate the insect sample:
 - a. Before looking inside the net to aspirate, swing the net quickly to make sure all insects are at the back of the net then grab the net in the middle to enclose everything inside (Figure 5-2).
 - b. Invert the net (Figure 5-3).
 - c. Open the net with one hand and with the other hand, use the aspirator to suck up (using your mouth) all the insects (Figure 5-4). You can use your hand to remove any large debris in the net. Small insects hide in the very fine debris that collects at the bottom of the net.
 - d. Aspirate to collect the micro-debris that may contain very small insects.
4. Blow the insects out into the vial with ethanol.
5. Repeat steps 2. through 4. until you have sweep netted the site for at least 20 minutes.
6. You do not need to collect more than 3 or 4 insects of each morphotype. For instance, if there are ~300 of the same small black fly in your net, you only need to aspirate a few of them. Aim to collect as many different species as possible.
7. Once you've finished sweeping and aspirating, cut a small strip of paper and write the sample ID (found on the barcode label) using a **pencil (DO NOT USE SHARPIE OR PEN)**.
8. Put the label strip **into** the tube with the insects. Then, close the tube tightly.
9. Store the samples in a cool, dark, and dry location.



Use of aspirator during sweep net insect collection.

Figure 5-2. Before looking inside the net to aspirate, swing the net quickly to make sure all insects are at the back of the net then grab the net in the middle to enclose everything inside.



Figure 5-3. Invert the net.

Figure 5-4. Open with one hand. With the other hand, use the aspirator to suck up (using your mouth) all the insects.



Alternative Insect Sampling Methods:

The following alternative methods are permitted under the ATBI Scientific Collection Permit.

- Pitfall traps
- Pan traps
- Light traps
- Flight intercept traps
- Baited traps
- Blue vane traps
- Malaise traps
- Beat-sheet sampling

Individuals or organizations are welcome to collect insects using an alternative method. Please contact ckamoroff@stillwatersci.com for more information.