

Mosquito Sampling and Techniques



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Classification Based on Larval Habitat

- Flood Water Mosquitoes
- Permanent Water Mosquitoes
 - Permanent Pool Group
 - Transient Water Group
- Container Mosquitoes

Larval Habitat

- Important to know which mosquitoes cause problems and when.
- Identify larval habitats based on adults present.
- Most effective to find and map larval habitats and eliminate or treat in this stage.

Sampling Equipment

- Vehicle to get around.
- Good topographical map or at least a plat or city map.
- Data sheets.
- Boots.
- Dipper, collecting jars, small straining type net or large bulb syringe.
- Water proof marking pens, tape etc.
- Carrying box or container, ice chest etc.

Sampling Equipment



- Dipper
- Pipet
- Aspirator
- Flashlight Aspirator
- Larval Container
- Bag for extra vials, pens, labeling tape, etc.

How do you Survey for Larval Mosquito Habitats?

Floodwater Species

- Look for areas of standing water immediately after heavy rains or flooding.
- Most municipalities should have an idea of location of such problem areas.
- Roadside ditches, low lying pools in woodlands or field area.
- Must exist long enough for mosquito larvae to develop. In spring 10-14 days. In summer 6-10 days.

Floodwater Mosquitoes – *Aedes vexans*



Floodwater Mosquitoes – *Aedes vexans*



Permanent Water Mosquitoes

Permanent Pool Group

- Usually fresh water, shallow grassy edges of ponds, even lakes edges of slow moving rivers or streams.
- Generally these species are not serious pests in Oklahoma and certainly probably do not contribute much to the transmission of West Nile virus.
- Although these area may seem like the logical areas to look often are least likely to have pest mosquitoes species.

Permanent Water Mosquitoes Transient Pool Group.

- Most of the important species of *Culex* that feed primarily on birds and likely are the chief vector of WNV between birds and mosquitoes.
- Any area of standing water that lasts for days to weeks can range from fairly fresh water around dripping faucets, plumbing, or irrigation systems to very polluted water in sewage lagoons.

Sources of Transient Permanent Water

- Floodwater pools that are in low lying area that may persist for three or four weeks, especially if refilled by rain or overflow water. Usually somewhat stagnant.
- Low lying areas of storm sewers systems, catch basins.
- Many cities and towns of Oklahoma do not have storm sewer system. Overflow rainwater runs down roadside ditches to catch basins, creeks, etc. Often after water has quit flowing and water stands in low areas. One key area often missed are drive way culverts of homes.

Sources of Transient Permanent Water cont.

- Water accumulations around leaking plumbing, irrigation systems, etc.
- Marshy low lying swampy areas.
- Water that has accumulated in area such as abandoned cellars, sink holes, etc.
- Water that has accumulated in tires or other large containers.
- Very stagnant foul water associated with animal wastes, sewage treatment overflow.

Transient Water Mosquito Habitat



Container Breeding Mosquitoes

- *Aedes albopictus* and some *Culex*.
 - Old tires or tire dumps, containers of any type in dumps, industrial areas, backyards.
 - Birdbaths, flower pot containers, abandoned swimming pools or kiddy pools, pet water dishes, water gardens without good water flow.

Aedes albopictus Eggs in Container



- Efficient container breeder utilizing available sources.
- Eggs laid on surface of water, on sides of container, and on stick.
- Immediate egg hatch of some eggs, delayed hatch for others.

Aedes albopictus Eggs



How Do You Survey For Adult Mosquitoes?

CDC Miniature Light Trap



- Developed by CDC for portable collection of mosquitoes and sand flies.
- Standard survey tool for mosquito collections.
- Operates on 6 volts.

Attractants



- CO₂ is the standard attractant for mosquitoes.
- Increases trap collections.
- 200ml/min is average release rate.
- **CO₂ plus Octenol increases trap catch for some species.**



CDC Gravid Trap



- Designed to catch gravid *Culex* females.
- Females are attracted to the hay infusion as an oviposition site.
- May be used for virus detection.
- Operates on 6 volts.

New Standard Miniature Light Trap



- **Incandescent Trap.**
- New design reflects light down like a street light.
- Emits 75% more light than other incandescent traps with maximal air flow.
- Operates on 6 volts.

New Standard Miniature Light Trap



- **Blacklight Trap.**
- Internal super efficient transistor ballast drives 4 watt blue blacklight tube.
- Operates on 6 volts.
- UV light may increase trap catches of some species.

New Standard Miniature Light Trap

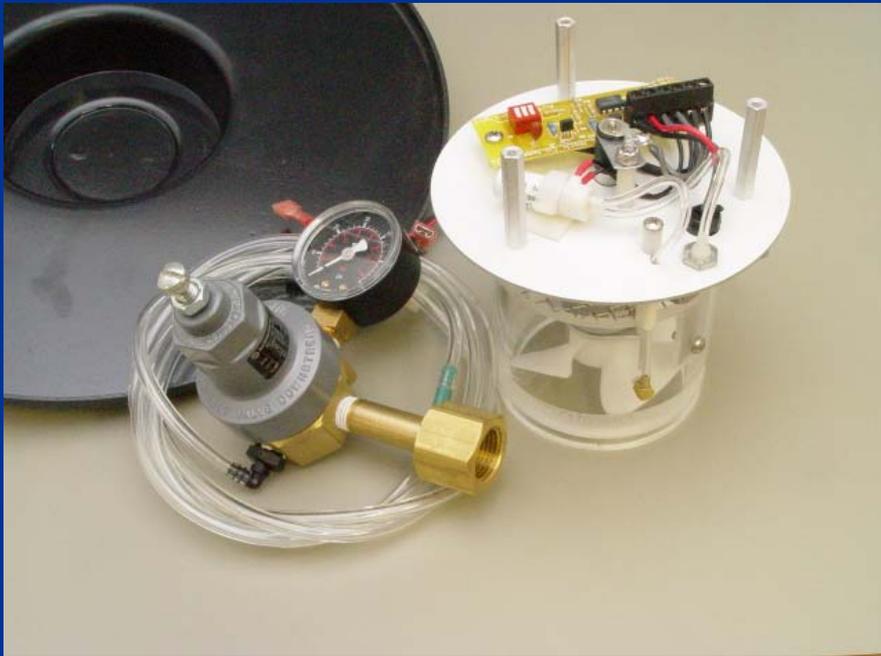
Incandescent Light



Blacklight



New Standard Mini Light Trap, Options:



- Photo-cell released CO2 option.
- Allows release of CO2 when photo switch turns on light.

Omni-Directional Fay-Prince Trap



- Daytime trap, no light source.
- Collect *Aedes albopictus*, *Aedes aegypti*.
- Utilizes contrasting black/white colors with CO₂ to attract mosquitoes.

Updraft Blacklight Trap



- Proven effective for collection of *Anopheles* mosquitoes in central America.
- Requires 12 Volts DC operation.

New Jersey Light Trap



- Typically mounted in a permanent position for mosquito collection.
- 25 watt bulb.
- Requires 110 V AC operation.

For Further Information

- Presentations may be accessed online at entopl.okstate.edu
- Click on Mosquitoes/WNV
- E-mail for Dr. Wright at rew0675@okstate.edu