



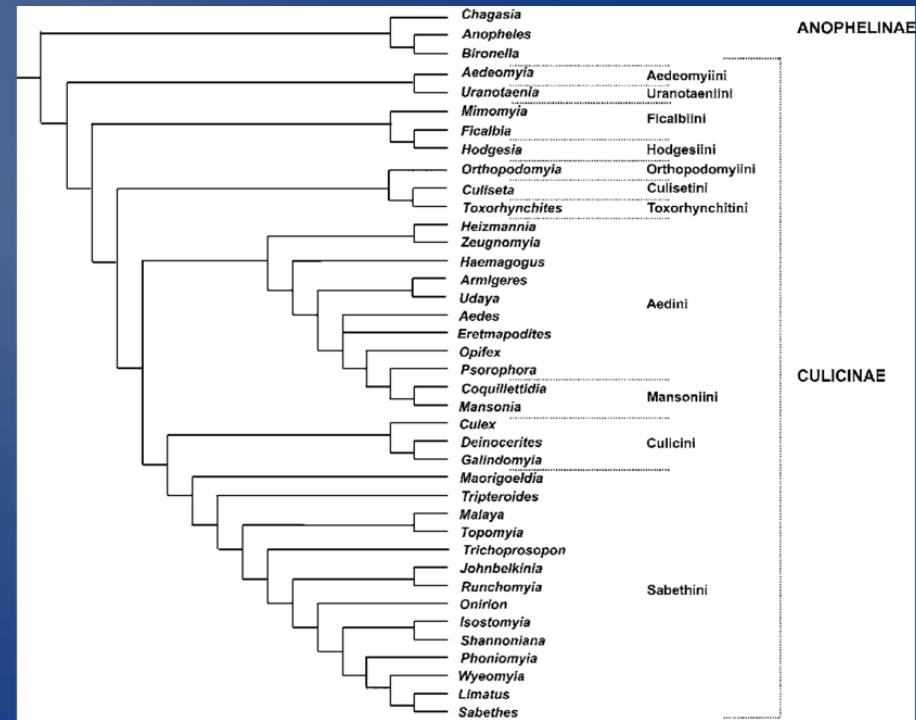
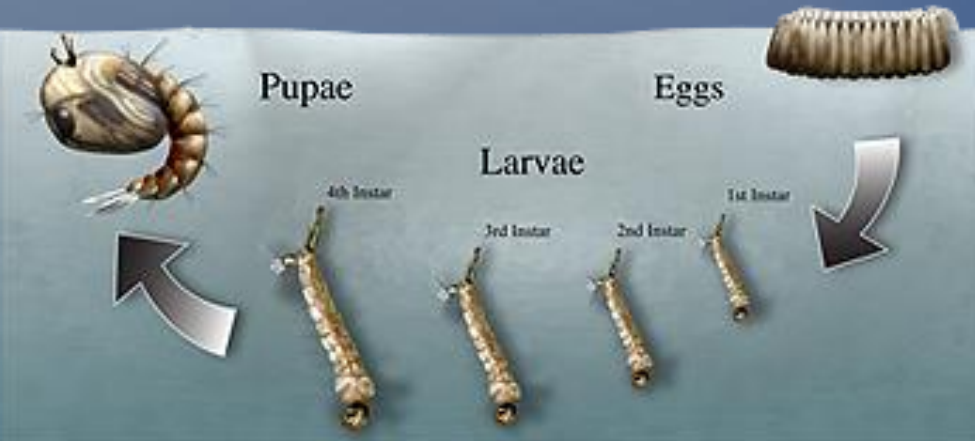
Acoustic Larvicide an Integration of Technology and Applications for an Urban Solution

Acoustic Larvicide™ Mosquito Control

- Pesticide Free
- Resistant Tolerant
- Target Specific
- Cost Effective



Killing All Species & All Larval Stages Including Pupae



Acoustic Larvicide™ For Urban Interventions

Urban Migration - Especially Tropical Economic Growth Zones

- Epidemic potential grows
- Water Supplies Stressed – easily contaminated
- Physics of Sound in Water are Optimal for Urban Environment Applications Especially Container Breeders



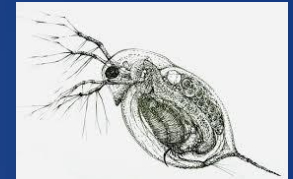
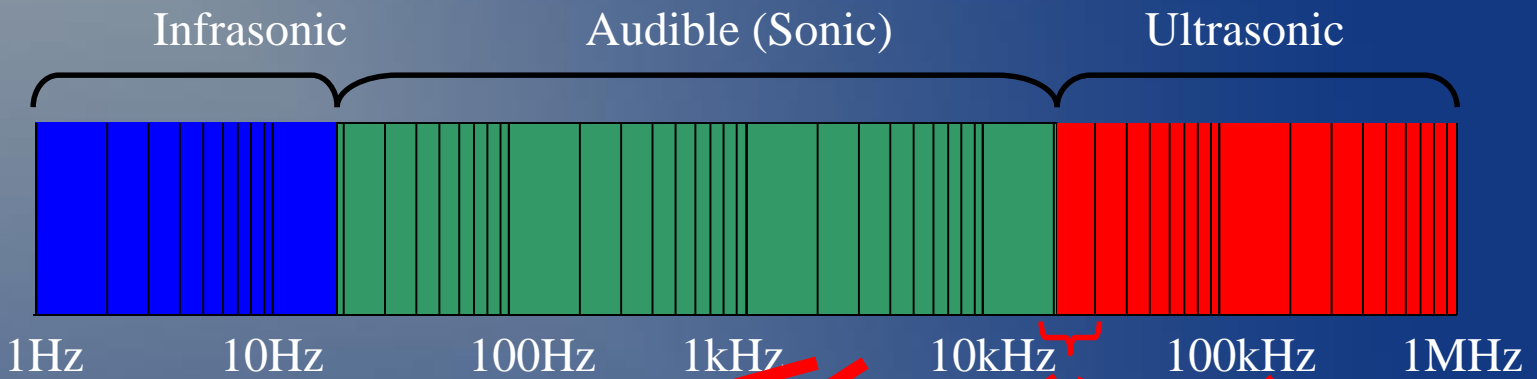
Susceptible Organ and Non-Targets



- Very large, highly pressurized tracheal trunk is unique among aquatic insects
- Highly tuned structure susceptible to narrow frequency spectrum 18kHz to 30kHz
 - ½ Octave – equivalent to 4 keys on a piano
- Humans exposed to these frequencies on daily basis
 - Majority of sound energy remains in water
 - Transducer inefficient in air



Spectrum of Resonances



Effect on Physiology



Proprietary

Modes of Mortality

- Violent rupturing of the Dorsal Tracheal Trunk is the primary mechanism
- Secondary Effects
 - Air breaches trachea becomes trapped in thorax and abdomen
 - Secondary resonances traumatizes additional organs and tissues
 - Major breach of exoskeleton
 - Tissue damage conveys through metamorphosis



500 Frames Per Second

**1/1000 Second Shutter
Speed**

**(400 Cycles of Energy per
Frame)**



Proprietary

Failed Emergence



Proprietary

- Legacy Products for Public Health



New Developments Acoustic Lethal Ovitrap™



Cistern Fixed Mini



Spectrum of Urban Sources

Site	%	Treatments
Flower Planters	27%	Inspections, Acoustic Lethal Ovitrap, SD -Mini
Caixas Dagua	17.1%	Fixed Mini (solar or domestic)
Un -serviceable	11.1%	Acoustic Lethal Ovitrap, SD -Mini
Barrels & Drum	10.5%	SD -Mini
Rainwater Drainage	10.2%	Field Arm, SD -Mini
Sewer S ystem	6.0%	Fixed Mini, Field Arm, ROV
Animal Troughs	5.1%	SD -Mini
Domestic Containers	4.8%	Inspections, SD - Mini, Acoustic Lethal Ovitrap
Tanks	3.5%	Fixed Mini, SD -Mini
Naturals	2.5%	Acoustic Lethal Ovitrap



Field Arm

ACOUSTIC LARVICIDE®

- Natural
 - Small Ponds
 - Roadside Ditches
- Sewerage systems
- Large Tanks



Larvasonic™ ROV

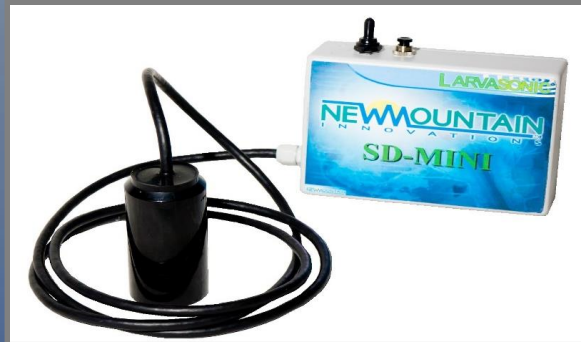
ACOUSTIC LARVICIDE®

- Sewer Systems
- Natural



SD-Mini

- Barrels Drums
- Domestic Containers
- Rainwater Drainage
- Tanks
- Large Flower Pots



Set and Forget Low Cost Cistern Solution

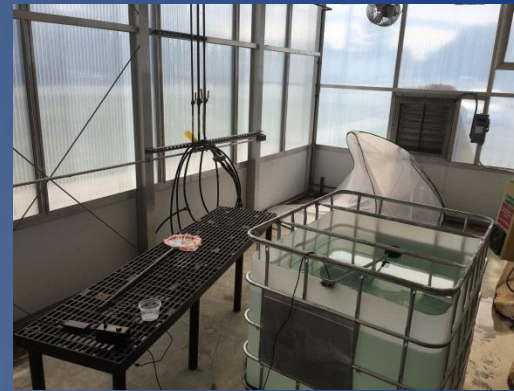
Cisterns, wells are increasingly important for survival providing excellent breeding habitats



Four 3 milli-second pulses in 24 hour period resulted greater than LD90

ACOUSTIC LARVICIDE®

Laboratory (USDA) and Field Trials Conducted



Low-cost, low-power (solar) fixed set and forget system proved effective



Acoustic Lethal Ovitrap Set and Forget Daylight & Twilight Fliers

- Low Cost – Recycled Tires!
- Will not become breeding site
- Solar Power
- No Toxic Pesticide Handling
- Multi-Mode Attractant
 - Water, Blue LED with Motion, Dark Interior
- Internal Radius Shade (tire)
- Black-White Variegated Exterior
- No Consumables (Sticky Paper/Pesticides)
- No Moving Parts to Fail
- Bottom Slope Prevents Breeding
- Optional Attractants
 - Octanol Strips, Organic Brew, Sugar Bait Applique

Large water view

Recycled Tires

Solar Powered



Shade Space

Draining Port

Aedes Oviposition Sites

“Studies have shown that population densities can be reduced with sufficiently large numbers of frequently-serviced traps.”
(<http://www.who.int/denguecontrol/research/en/>)

Thank You