

County of San Diego
Vector Control Program
Mosquitoes, Rats, Ticks and More!

What is a Vector?

- Any organism capable of carrying and transferring a disease
- Common vectors:
- Mosquitoes
- Ticks
- Rats
- Flies

Mosquito Facts

- San Diego County has 24 different types of mosquitoes
- Only female mosquitoes bite humans
- Females require the nutrients and protein from blood for their eggs
- Each blood meal allows the female to lay hundreds of eggs
- Mosquitoes need only half an inch of water to lay eggs

Mosquitoes Have 4 Life Stages

Stage 1: Female Laying Egg Raft

Stage 2: Mosquito Larvae

Stage 3: Mosquito Pupa

Stage 4: Hatching Adult

Adult Female About To Feed

Female Full Of Blood

Mosquito-related Diseases

- West Nile Virus
- WEE
- SLE
- Chikungunya
- Dengue
- Yellow Fever
- Malaria
- Zika virus

What Is West Nile Virus?

- Mosquito transmitted virus
- Usually infects birds, but sometimes humans, horses and other mammals

Where Did WNV Come From?

- Originally from Africa, West Asia and the Middle East
- First discovered in Uganda in 1937
- Closely related to St. Louis encephalitis virus which is found in the USA

How Did it Get Here?

- We don't know?
- First discovered in NY in 1999 at the Bronx Zoo in flamingos

- By 2003, it was found coast to coast

How is it Transmitted?

- Female mosquitoes are the only vectors of WNV to humans
- Can not be infected by touching dead birds
- Can not be infected by person-to-person contact
- Mosquitoes contract the disease from infected birds

WNV Transmission Cycle

Symptoms

- Incubation Period: 3-14 days
- Three Effects:
- Asymptomatic (80% of cases)
- Mild Infection (~20% of cases)
- Severe Infection (<1% of cases)
- Most commonly diagnosed by
a blood sample sent to a health laboratory

How Long Does It Last?

- Symptoms develop 3-14 days after infection
- Symptoms of mild infections usually pass within a few days
- Symptoms of more severe infections
may persist for several weeks and have lasting neurological effects

Treatment

- No specific treatment for WNV
- Hospitalization is recommended for serious infections
- Supportive care can be provided
- IV Fluids
- Respiratory Support
- Airway Management
- Preventing Secondary Infections

Who is Most at Risk?

- Those most at risk are:
- People over the age of 50
- People with weak immune systems

- No human vaccine is available
- Best form of protection is to avoid mosquito bites

What About Other Animals?

- Predominantly infects birds
- Crows
- Ravens
- Blue jays
- Tree squirrels
- Horses can be infected, but there is a vaccine available (see your vet)

- Other mammals can be infected but rarely get sick

2015 WNV Activity

2015 Season Totals

- 44 human cases
- 367 positive birds
- 49 positive mosquito pools
- 12 positive sentinel chickens
- 1 positive horse

What is the County doing?

- Surveillance
- Dead Bird Testing
- Sentinel Chickens
- Mosquito Control
- Mosquito Fish
- Public Outreach

Active Surveillance Programs

- Population monitoring
- Pooling (testing)

Aerial Surveillance

Dead Bird Testing

- Crows are highly susceptible to West Nile virus
- Must be dead for less than 24 hours, with eyes intact
- Call (858) 694-2888 to report dead birds!

Sentinel Chicken Screening

Here are the mosquito larvae!

Ground Application

Aerial Larvicide Applications

Public Outreach

- Public education
- Press releases and media events
- Web page
- Ads & articles in various publications
- Routine service calls
- www.SDfightthebite.com

Control Mosquito Populations

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Stagnant Green Swimming Pool

Control Mosquito Populations

- Place mosquito fish in ornamental fountains, ponds, and unused pools
- Mosquito Fish eat mosquito larva
- FREE Mosquito Fish are available at locations around the county

Prevent Mosquito Bites

- Repair/install window screens

Prevent Mosquito Bites

- Avoid outdoor activity during dusk & dawn
- Wear long sleeved shirts and long pants
- Use insect repellent when outdoors
- Treat clothing with repellents if necessary

Prevent Mosquito Bites

- DEET
- Picaridin
- Oil of Lemon Eucalyptus
- IR 3535

Special Note!!

- Bug zappers and electronic repelling devices do not control or repel mosquitoes!

How Can The Public Help?

- Eliminate standing water – bird baths, gutters, old tires, pots and buckets etc.
- Use mosquito eating fish in ponds
- Report dead birds
- Report mosquito breeding

Invasive Aedes Mosquitoes

Aedes facts

- Vectors for Dengue, Chikungunya, Yellow Fever, and Zika virus
- Daytime biters
- Prefer humans
- Lay eggs in small containers
- Eggs are resistant to drying out

Aedes breeding sources

- Indoor sources

Aedes breeding sources

- Outdoor sources

The End.....for the moment

Rat Facts

- Rats can:
- Spread disease
- Contaminate food
- Cause damage by chewing
- Rats are usually most active at night

- Seeing rats during the day means there are more rats lurking nearby or they have eaten bait
- Rats are omnivores

Types of Rats

Roof Rat Norway Rat Wood Rat

Signs of Rat Activity

- Rat droppings
- Rub or grease marks
- Piles of eaten snail shells
- Signs of gnawing and chewing
- Stripped plant and tree bark
- Damaged food and containers

Signs of Rat Activity

Signs of Rat Activity

Signs of Rat Activity

Common Rat Habitats

Common Rat Habitats

5 Simple Steps to Get Rid of Rats

1. Rodent Proof Your Home and Storage Buildings

- Check outside for holes and gaps
- Repair holes and gaps with rodent-proof material
- Put metal weather stripping under doors to seal large gaps

Rodent Proofing Continued

Tools to Rodent Proof Your Property

Available at Hardware Stores

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2. Remove Food & Water

Sources from Your Property

3. Trap Inside the House

- Use rat TRAPS not POISON inside your home
- Put traps where you have seen rat droppings
- Tie down traps, and check twice a week
- Keep children and pets away from traps

Safe Trapping

- Use peanut butter or dog food for bait
- Use several traps to increase your chances of catching rats
- Use CAUTION when setting and placing traps

4. Bait Outside the Home

- Only use bait AFTER rat proofing has been completed

- Use poison bait OUTSIDE the home
- READ and FOLLOW poison label and directions carefully
- Put poison bait in a secured bait station
- Place bait stations in protected areas
(under woodpiles, thick vegetation)
- Check stations twice a week

5. Eliminate Rat Habitat

- Remove trash and debris
- Trim trees, bushes, and vines 4 feet away from home and roof
- Remove heavy vegetation away from buildings and fences
- Stack wood and household items at least 18 inches above the ground and 12 inches from walls or fences

Diseases Carried by Rats

- Bubonic Plague
- Food Poisoning
- Tapeworm/ Trichinosis
- Rat-bite Fever

Vector Control Can Help

- On site property assessment
- Rat prevention tips and education
- Rodent Control Starter Kit

Vector Control Can Help

- Visit our website: www.SDVector.com to fill out a rat complaint form
- Contact us by phone: (858) 694-2888
- Contact us by email: vector@sdcounty.ca.gov

Questions?