

# How Mosquitoes Impact Life in the United States

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# Mosquito Impacts

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- **Human Health**
- **Animal Health**
- **Tourism**
- **Outdoor Recreation**
- **Lower Quality Of Life.**



# Human Health Impacts

- **Zika virus**
  - > 42,000 cases in U.S. and territories.
  - 224 cases locally-transmitted in U.S.
  - No locally-acquired cases since 2017
- **Yellow fever – Outbreaks along Gulf Coast and Atlantic seaboard north to Boston, into upper Mississippi River valley in the 19th century.**
- **Dengue fever**
  - 2019 – 1,183      20 locally acquired
  - Puerto Rico (3,000 – 9,000 cases yearly).



# Human Health Impacts

- **Malaria**
  - In 1914 – 600,000 cases of malaria in U.S.
  - In 1934 there were 125,566 cases in the U.S.
- **West Nile virus**
  - 51,747 cases 1999-2020
  - 25,264 cases of neuroinvasive disease
  - >2,400 fatalities.
- **Chikungunya virus**
  - 9,035 cases
  - 5084 locally transmitted in U.S. and its territories.



# Human Health Impacts

## WNV-associated Health Care Costs in Louisiana

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- In 2002 - 329 hospitalizations in Louisiana.
- June 2002 to February 2003
  - Estimated cost - \$20.1 million
  - \$10.9 million cost of illness
    - \$4.4 million medical and
    - \$6.5 million nonmedical costs
  - \$9.2 million - public health response.



# Human Health Impacts

## Associated Health Care Costs - National

- **25,264 neuroinvasive cases reported in the US**
- **\$60 million annual cost**
- **\$60 million could have covered annual health care costs for 51,700 children in U.S. for one year.**
- **Each neuroinvasive case prevented saves \$700,000**



**“These survivors struggle with memory loss, where a fiancé is heartbroken when her intended really does not remember her, or the promise that they shared.”**

**Wendy Station**

*Encephalitis Global*



# Animal Health Impacts

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- **Caribou migrations in Alaska being driven by mosquitoes.**
- **Horses 2000-2007**
  - **>25,000 horses dead**
    - **Eastern Equine Encephalitis (EEE)**
    - **Western Equine Encephalitis**
    - **West Nile virus (WNV)**
- **Dogs: canine heartworm transmitted by Culex mosquitoes**





# Animal Health Impacts

- **Large birds (ostriches, emus, etc.) and zoo species potentially killed by EEE and WNV**
- **Endangered species**
  - **EEE killed 7 of 39 whooping cranes in Maryland in 1984.**
- **WNV impacts on endangered species and ecosystems**
  - **Florida Scrub-Jay**
  - **California Condor**
  - **Whooping Cranes**
  - **Bald Eagles and various other raptor species**



# Animal Health Impacts

## Associated Costs - States

- **WNV – 30% fatal to horses, full recovery unlikely**
- **WNV costs in Texas estimated at \$2,300/ horse**
- **Costs of WNV to horse industry in Colorado and Nebraska was over \$1.2M**
- **Horse industry contributes approximately \$39 billion in direct economic impacts to the U.S.**



# Animal Health Impacts

## Associated Costs - National

- Horses vaccinated against EEE, WE, or VEE are NOT protected against WNV.
- 468 equine West Nile virus cases in 2007
- Treatment of encephalitis in horses
  - Ranges from \$8,000 to \$20,000
  - National average is \$15,000/horse
- National cost - > \$7,000,000



# Tourism Impacts

- Tourist destinations are in some of the nation's worst mosquito habitat along coastlines and in state/national parks.
- Traps set in the outskirts of the Everglades and barrier islands have recorded nightly catches in excess of 1,100,000 mosquitoes.
- Landing rates of over 100/min are common in salt marshes and areas bordering rice fields prior to control operations and 500/minute in the Everglades.





# Tourism Impacts

## Associated Costs - States

- **Tourism saves every household in Wyoming \$510 in additional taxes.**
- **Tourism supports 29,950 full time and part time jobs in Wyoming.**
- **Tourism accounts for 8.3% of Wyoming's total state sales tax revenue.**
- **Tourism accounts for nearly 20% of North Dakota's economic base.**



# Tourism Impacts

## Associated Costs - National

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- **In total, out-of-area park visitors spent \$9.4 billion in the local regions surrounding surveyed parks in FY 2005.**
- **Visitor spending supports about 235,000 jobs in gateway regions.**



# Outdoor Living Impacts

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- **Outdoor recreation (hiking, camping, etc.) usually occurs in prime mosquito habitat.**
- **The diaries of Lewis and Clarke**
- **Reduced attendance at outdoor events such ball games, car races, picnics, fireworks displays, reunions, concerts, parades, graduation or wedding ceremonies, drive-in movies, etc.**





# Outdoor Living Impacts

## Associated Costs - National

- **Outdoor recreation pours \$646 billion into American economy yearly**
- **Supports nearly 6.1 million jobs across U.S.**
- **Generates \$39.9 billion in annual federal tax revenues.**
- **Generates \$39.7 billion in state tax revenues.**



# **Outdoor Living Impacts Mountain Bikers**

**50 million mountain bikers pump \$26 billion into American economy – > 1 1/2 times total discretionary budget authority for NASA.**

**1 1/2 times more mountain bikers than golfers.**

**Contributes \$133 billion annually to the U.S. economy**

**Supports nearly 1.1 million jobs across the U.S.**



**Generates \$17.7 billion in federal and state taxes**

# Outdoor Living Impacts

- **88% adults bitten by mosquitoes at least once/week.**
- **66% use insect repellent all/most of the time.**
- **Areas with mosquito control**
  - **113 more minutes spent outdoors daily**
  - **228 minutes average daily playtime outdoors**
- **Areas without mosquito control**
  - **99 minutes average daily playtime outdoors**
  - **74% adults spent less time outdoors**



# Quality of Life Impacts

- A 6-year-old's inability to fall asleep when he has 30 mosquito bites from playing in the backyard earlier in the evening.
- People staying indoors on warm evenings
  - Required to constantly apply repellents
  - Required to wear tight-knit long-sleeves and long pants during hot weather.
- \$86 spent on average by households annually for mosquito control supplies and devices.



# Quality of Life Impacts

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- **Native Americans historically migrating from lowlands**
- **Higher beef and dairy prices.**
- **Development of prime real estate in many areas inhibited.**
- **Equity and land values plummet in mosquito-infested areas**



# The Good News Is...

- **There are over 950 MCDs in the United States**
- **We have tools to manage mosquitoes – and we know how to use them!**
- **Today, communities are developing locally-tailored mosquito control programs that may be scaled to adapt to changing conditions.**
  - **MCDs**
  - **Mosquito-specific franchises**
  - **PMPs**



Jim's Cell  
519-8291

- Monday: Kill mosquitoes
- Tuesday: Kill mosquitoes
- Wednesday: Kill mosquitoes
- Thursday: Kill mosquitoes
- Friday: Kill mosquitoes
- Saturday: Kill mosquitoes....  
then rest if at all possible
- Sunday: Say sorry for killing all week

Take out Trass

Weekly Goal!  
Kill as many as possible!!