

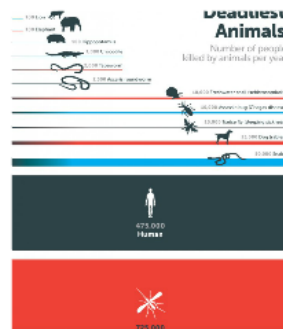
# Importance of Insects

Vol FRST, No. 352

Thursday, January 5, 2017

\$1.25

## Mosquito: Kills Millions Every Year



### Insect-Borne Diseases

- Mosquitoes**
- malaria (1-3 MM / 500 MM per year)
  - dengue
  - yellow fever
  - encephalitis
  - west Nile virus



- Fleas**
- plague
  - typhus

**Tsetse Fly** - sleeping sickness  
**Assassin Bugs** - chagas



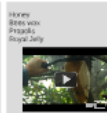
### Forest Devastation

MIPB: 18 MM Hectares ... 60% of PI dead



### Insect Products

Clothing, Jewelry, Cosmetics, Lotions



We hope that, when the insects take over the world, they will remember with gratitude how we took them along on all our journeys.

### Food High in protein & vitamins

**Waffle**

- 10g protein
- 10g vitamins
- 10g minerals
- 10g fiber
- 10g fat
- 10g sugar
- 10g carbs

**Waffle 2**

- 10g protein
- 10g vitamins
- 10g minerals
- 10g fiber
- 10g fat
- 10g sugar
- 10g carbs

### Pollination

Critical for our food supply

- 1 in 2 bites of food requires bees!
- fruits & many vegetables
  - milk, seeds
  - honeydew for meat!

- Wax & pollinators**
- bees, ladybugs & solitary
  - flies
  - butterflies
  - beetles



### Miscellaneous

**Pest Control**

- pesticides & parasitoids

**Biological**

- entomology

**Basic Research**

- entomology
- genetics

**Wax**

- carpenter
- "bees" (bees) in Middle Ages
- WWII - drug in infected food
- cold war - pink liver infected neoplasts

**Nutrient Cycling**

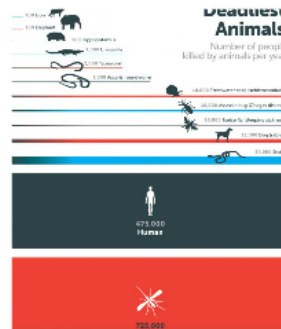
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## Mosquito: Kills Millions Every Year



### Insect-Borne Diseases

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- dengue
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- encephalitis
- west Nile virus

#### Fleas

- plague
- typhus

#### Tsetse Fly - sleeping sickness

#### Assassin Bugs - chagas



## Food

High in protein & vitamins

**Widely available**

- bees
- crickets
- mealworms
- silkworms
- grasshoppers

**Beneficial**

- high protein
- high vitamins
- easy to digest
- easy to raise

**Lentils & other legumes**

**Insects & Aquaria**

**Insects for Food**

## Pollination

Critical for our food supply

**1 in 2 bites of food requires bees!**

- Many & many vegetables
- Fruit, seeds
- Ingredients for meat!

**Honey production**

- bees (colony & solitary)
- Bee
- Bumblebee
- beehive

**THE DEATH OF BEES**

## Forest Devastation

MIPB: 18 MM Hectares ... 60% of PI dead



## Insect Products

Clothing, Jewelry, Cosmetics, Lotions

**Silk**  
Shellic  
Dye (Carmine, Cochineal, Nettle, Pearl)

**Honey**  
Bee wax  
Propolis  
Royal Jelly



We hope that, when the insects take over the world, they will remember with gratitude how we took them along on all our journeys.

## Miscellaneous

**Pest Control**

- predators & parasitoids

**Biological Monitoring**

**Nutrient Cycling**

**Basic Research**

- manufacturing
- bioinspiration
- genetics

**Wax**

- candle
- beeswax
- "Tread Lightly" in Middle Ages
- WWII - drug in infected foot
- cold war - pink liver infected neoplasm



# Importance of Insects

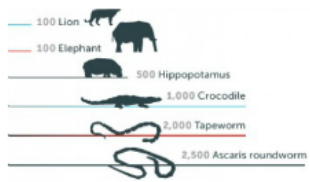


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## Mosquito: Kills Millions Every Year



**Deepest Animals**  
Number of people killed by animals per year

### Insect-Borne Diseases

- Mosquitoes
  - malaria (1-3 MM / 500 MM per year)
  - dengue

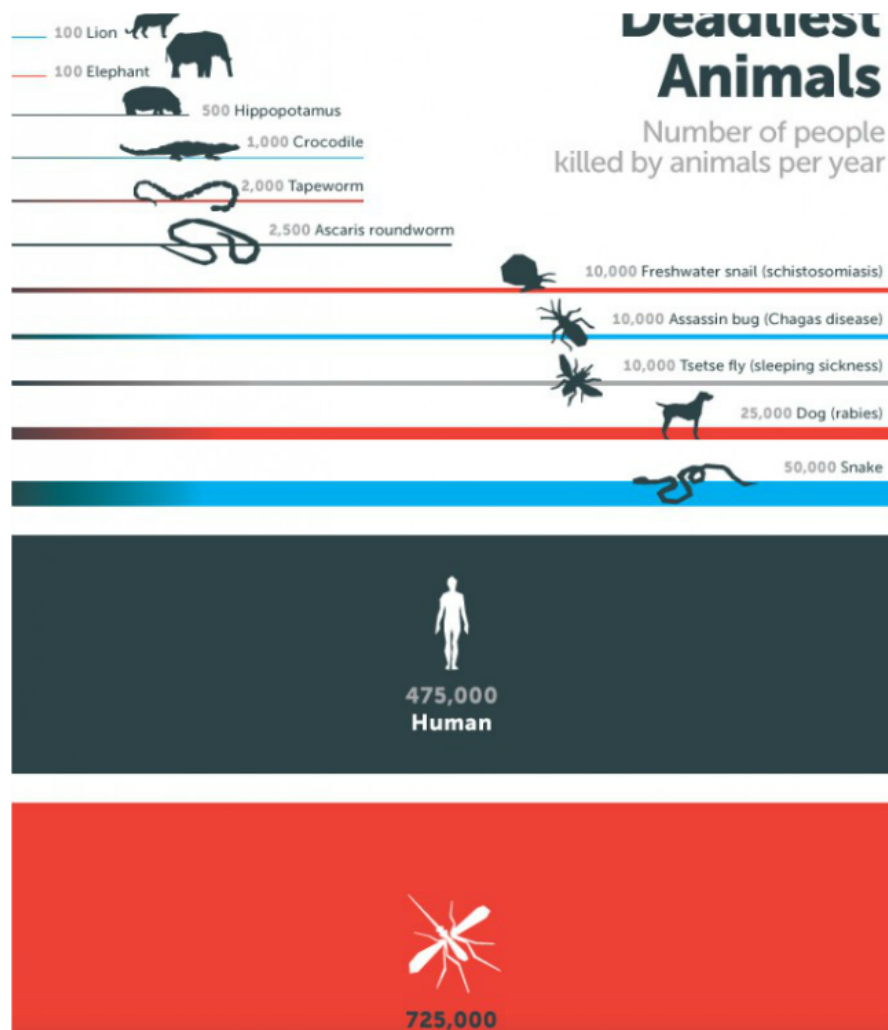
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### Insect Products

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## Insect-Borne Diseases

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Tsetse Fly - sleeping sickness

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# Forest Devastation

**MPB: 18 MM Hectares ... 60% of Pl dead**

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# Insect Products

## Clothing, Jewelry, Cosmetics, Lotions

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Silk  
Shellac

Dye (Carmine, Cochineal, Natural Red 4)



Honey  
Bees wax  
Propolis  
Royal Jelly





UNIT D To Bize- Picnic in sector 76, I repeat.  
Picnic in sector 76... Send reinforcements...

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We hope that, when the insects take over the world, they will remember with gratitude how we took them along on all our picnics.

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# Miscellaneous

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# Food

## High in protein & vitamins

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### Wildlife

- birds
- amphibians
- reptiles
- small mammals
- bears

allowable limits of insects in food!!

- choc. 60 parts/100g
- peanut butter 30 parts/100g
- flour 150 parts/100g
- juice 5 eggs & 2 larvae per 250ml

### Livestock

- cattle & poultry





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# Pollination

## Critical for our food supply

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1 in 3 bites of food requires bees!

- fruits & many vegetables
- nuts, seeds
- hay/alfalfa for meat!

insect pollinators

- bees (colony & solitary)
- flies
- butterflies
- beetles



# Miscellaneous

## Pest Control

- predators & parasitoids

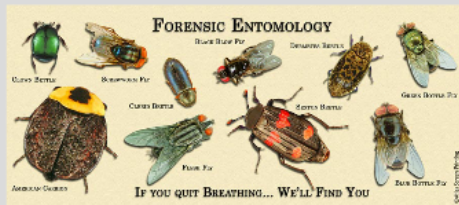
## Basic Research

- miniaturization
- populations
- genetics

## Ecological Monitoring

## War!!

- crop pests
- "nest bombs" in Middle Ages
- WWII - plague infected fleas
- cold war - yellow fever infected mosquitoes



## Nutrient Cycling