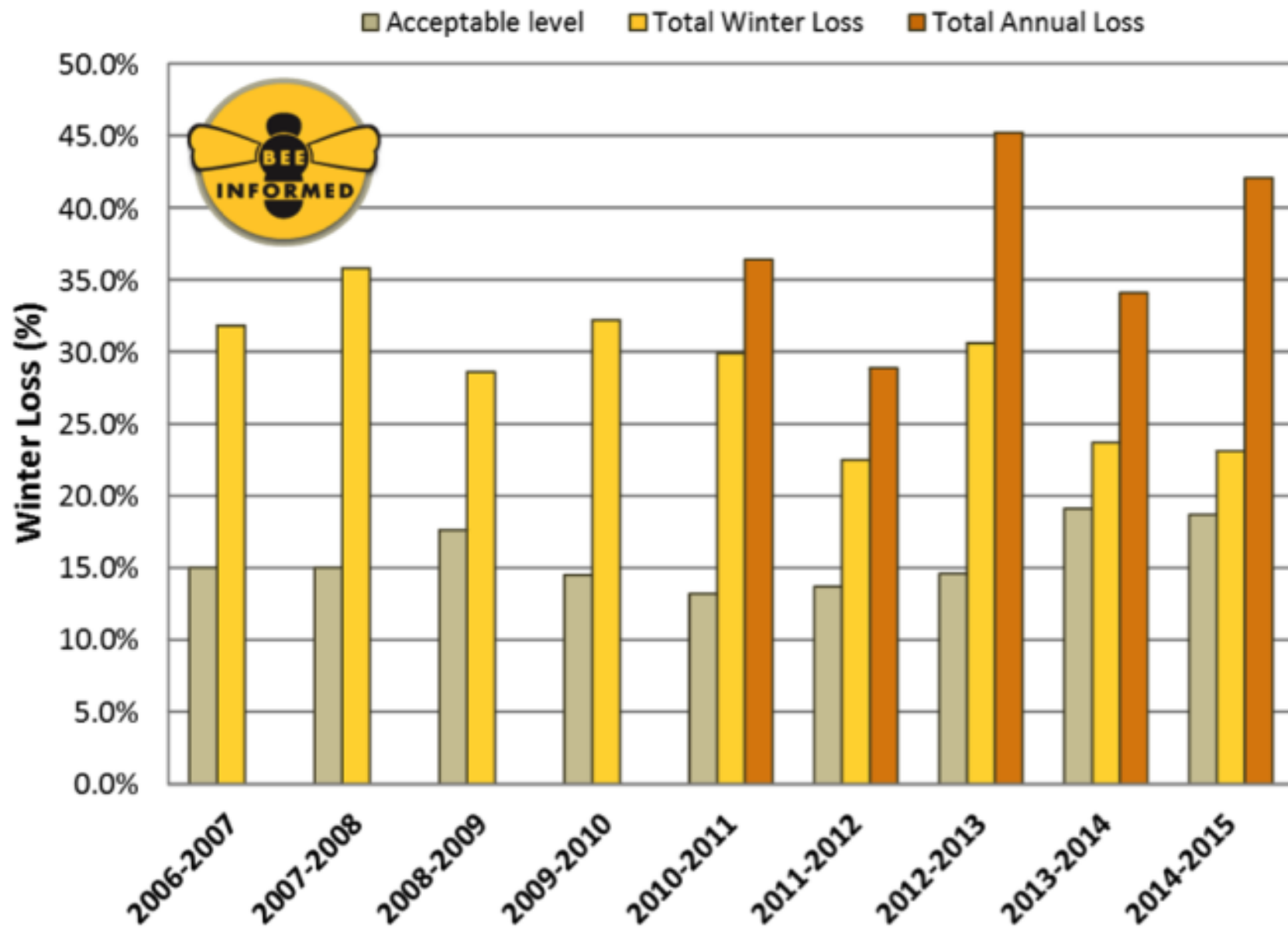


# The state of play: Drivers of Honey Bee Losses in Commercial Beekeeping operations in the US



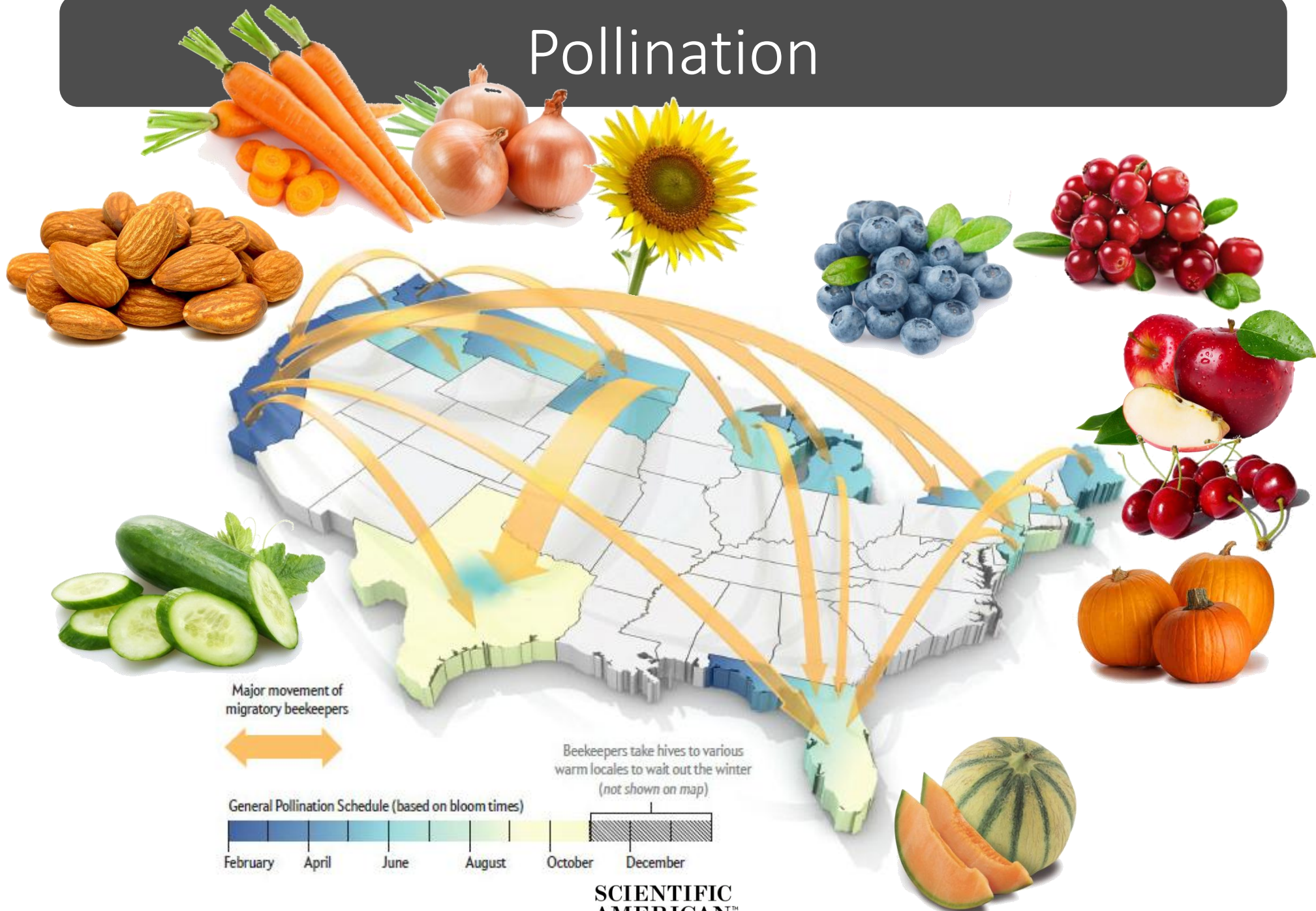
Dennis vanEngelsdorp  
University of Maryland

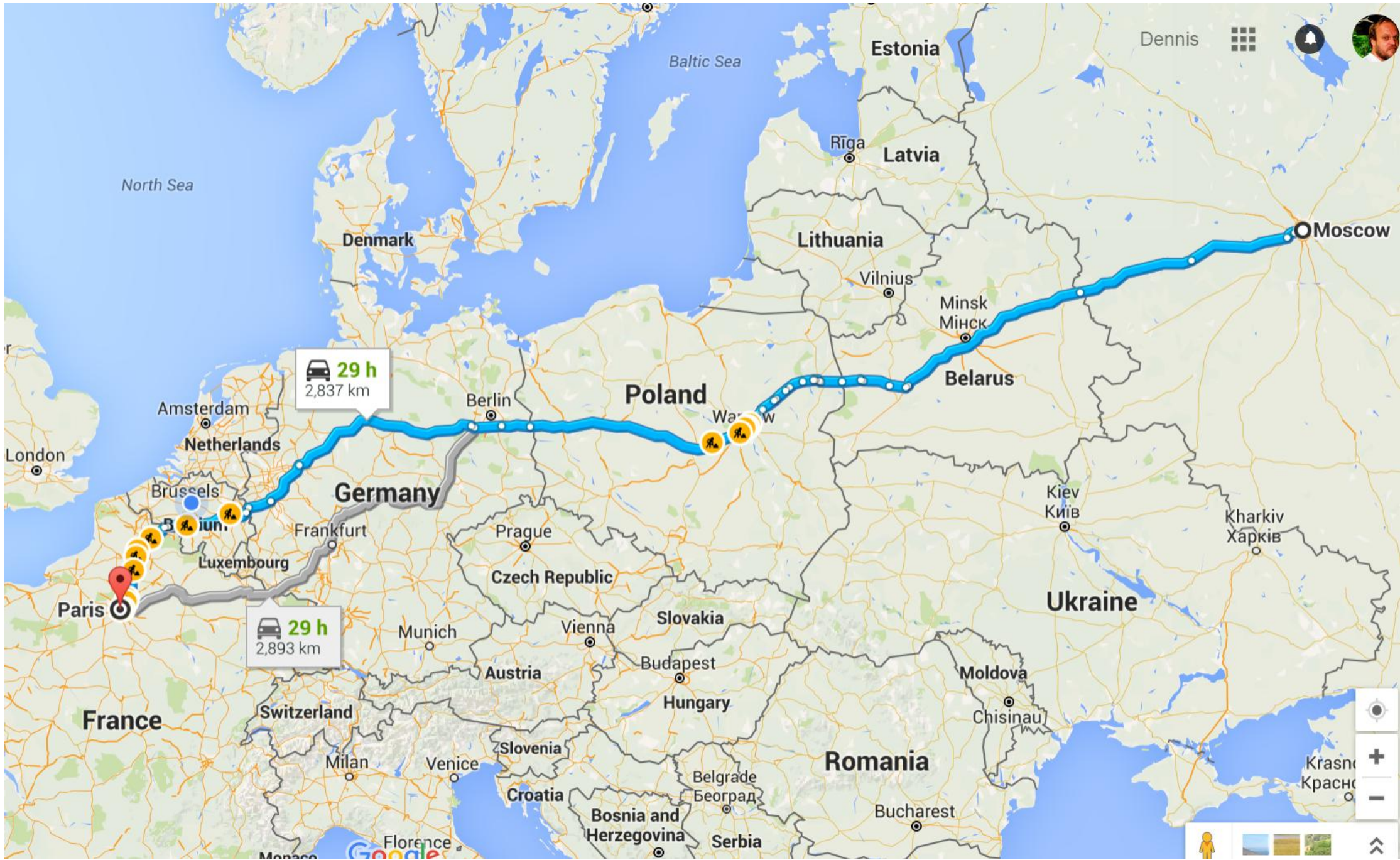
# Total US managed honey bee colonies Loss Estimates





# Pollination





Dennis



North Sea

Baltic Sea

Estonia

Rīga

Latvia

Lithuania

Vilnius

Minsk

Мінск

Belarus

Moscow

Denmark

Poland

Berlin

Warsaw

Amsterdam

Netherlands

Brussels

Luxembourg

Germany

Frankfurt

Prague

Czech Republic

Munich

Vienna

Slovakia

Budapest

Hungary

Ukraine

Kiev

Київ

Kharkiv

Харків

Paris

France

Switzerland

Milan

Venice

Slovenia

Croatia

Bosnia and Herzegovina

Serbia

Belgrade

Београд

Romania

Bucharest

Moldova

Chisinau

Krasnodar

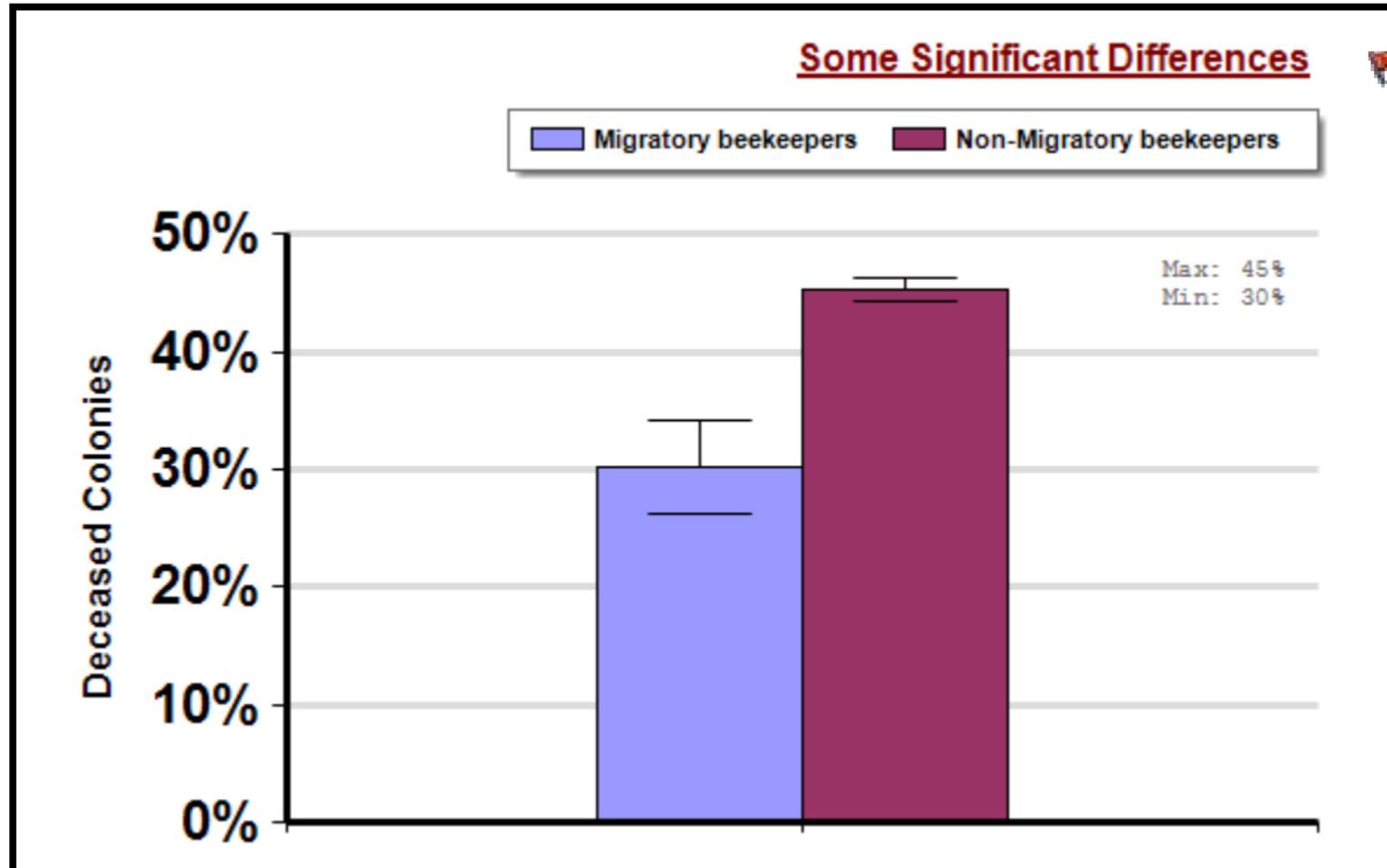
Краснодар

29 h  
2,837 km

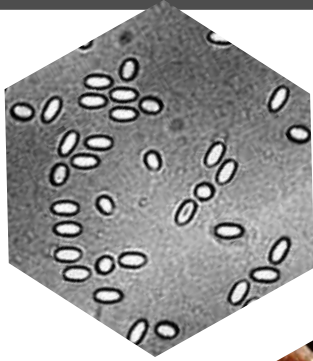
29 h  
2,893 km



# Migratory vrs Stationary Operations



# What is killing the bees?



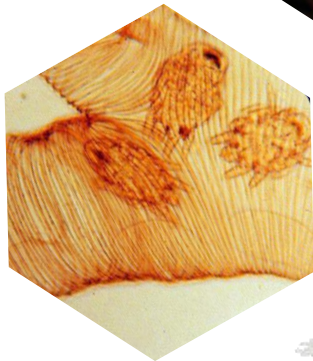
Pathogens



Parasites



Pesticides



Mono-cultures



Multiple, Interacting Causes of Death

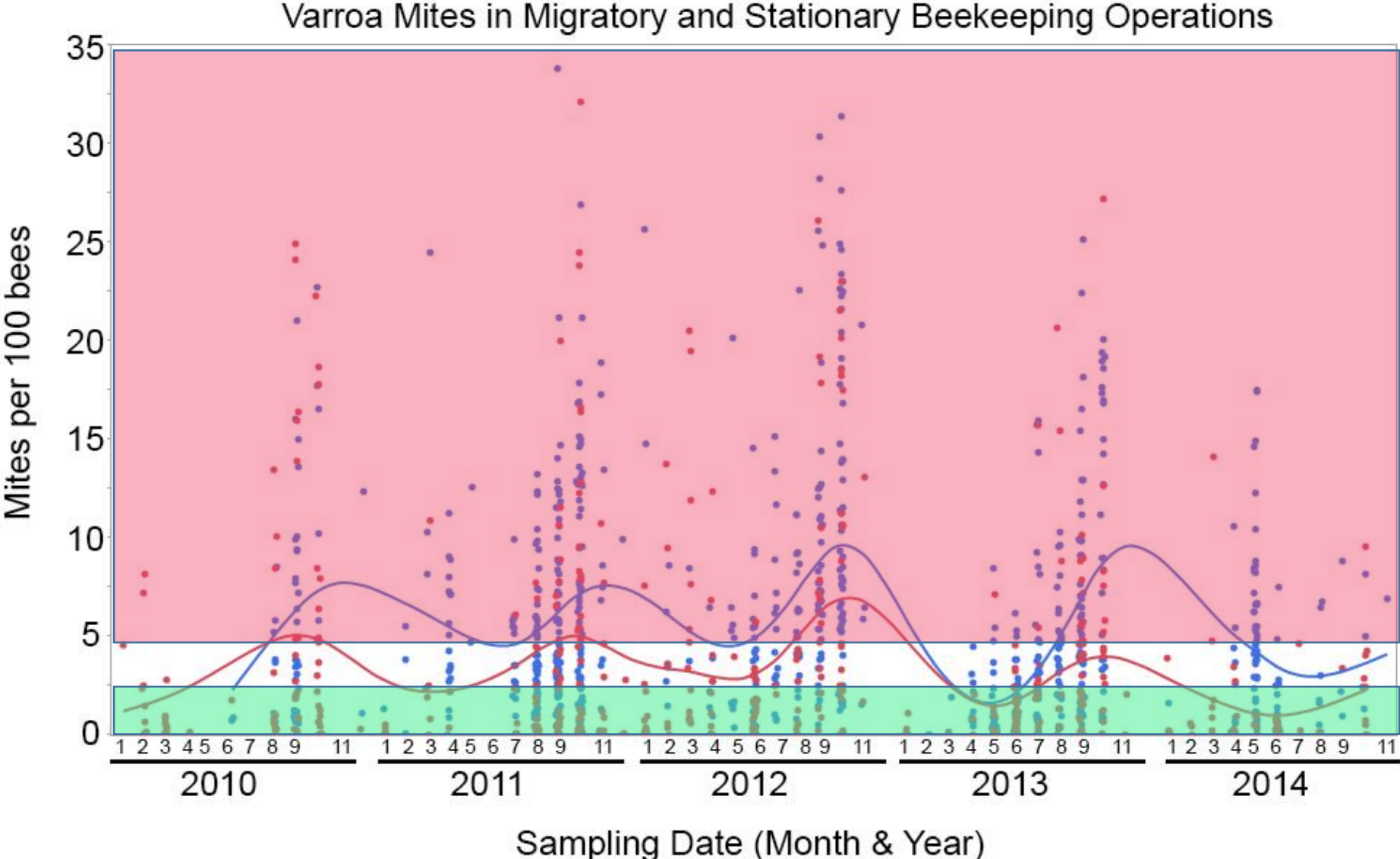
Habitat destruction

Poor Nutrition





# Mean *Varroa* over time for migratory (red) & stationary (blue) beekeepers



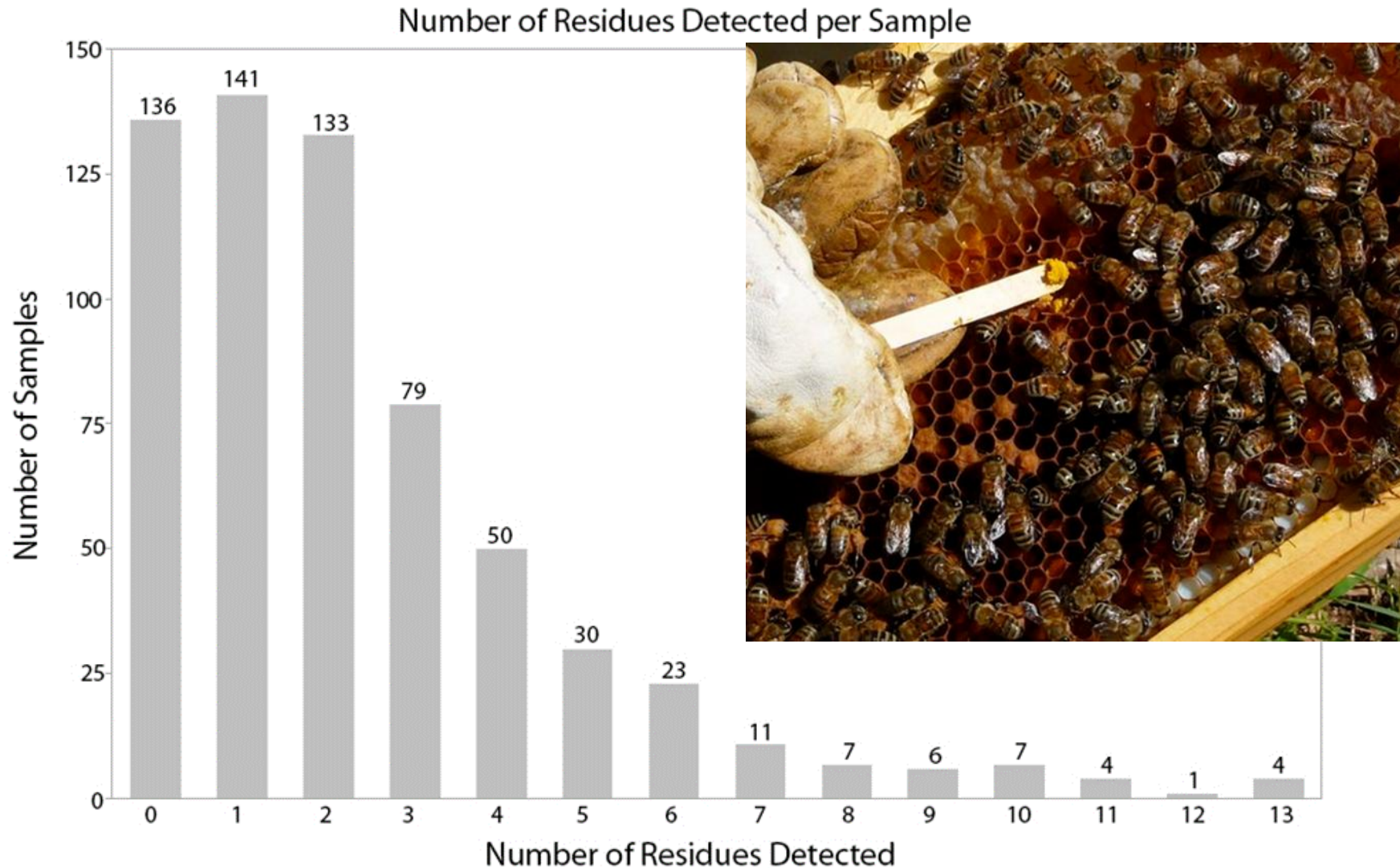
N=633

21 % had no detectable contamination

Mean 2.36 products

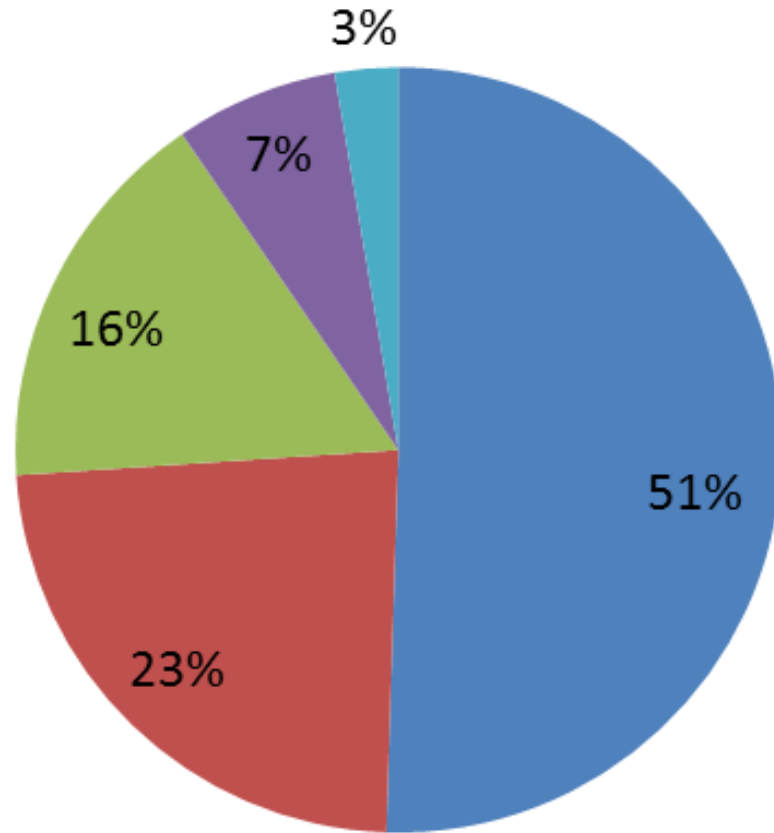
Mean excluding no detects: 3

# Pesticide Detections



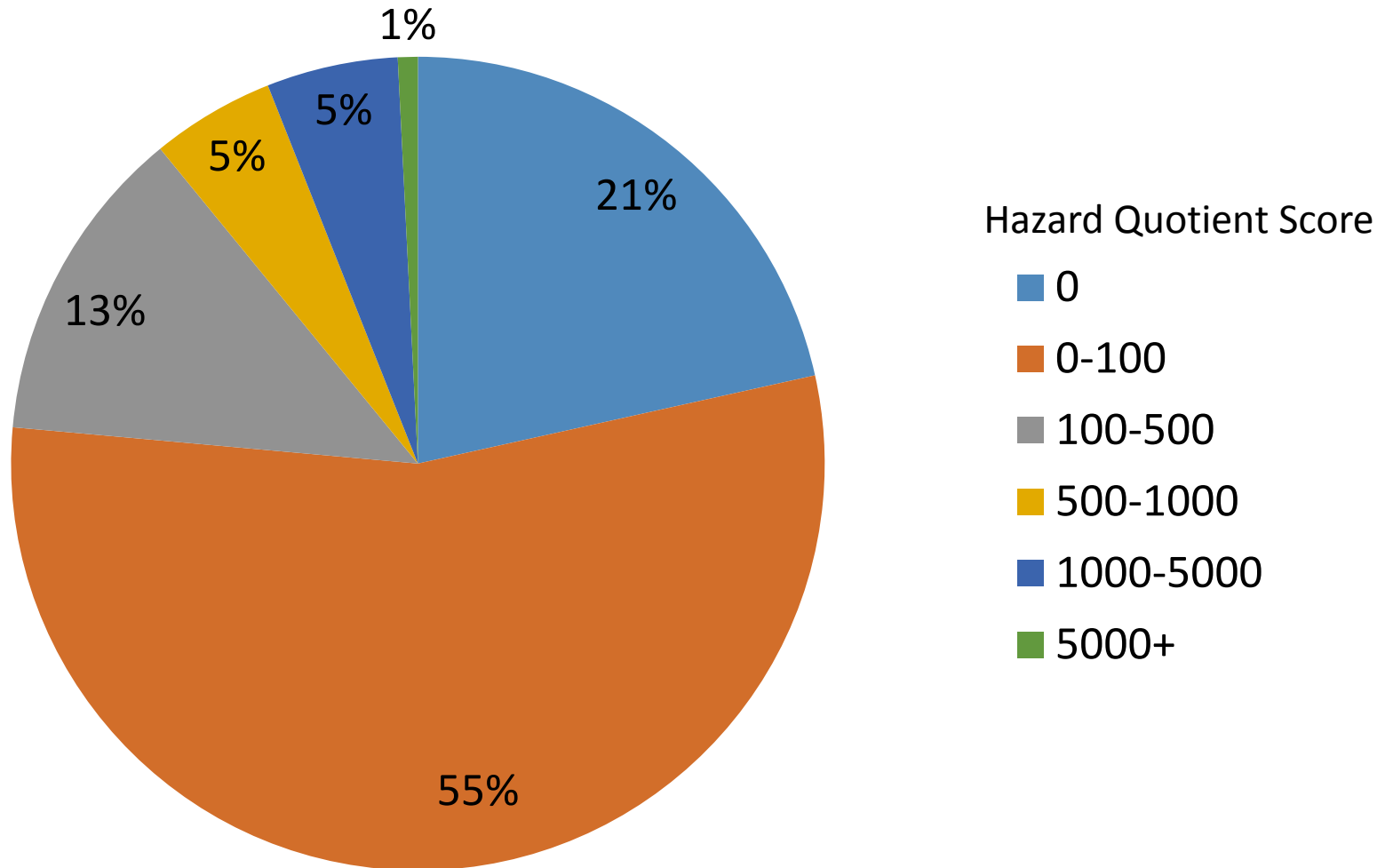
Pestic

## Pesticide Detections by Class

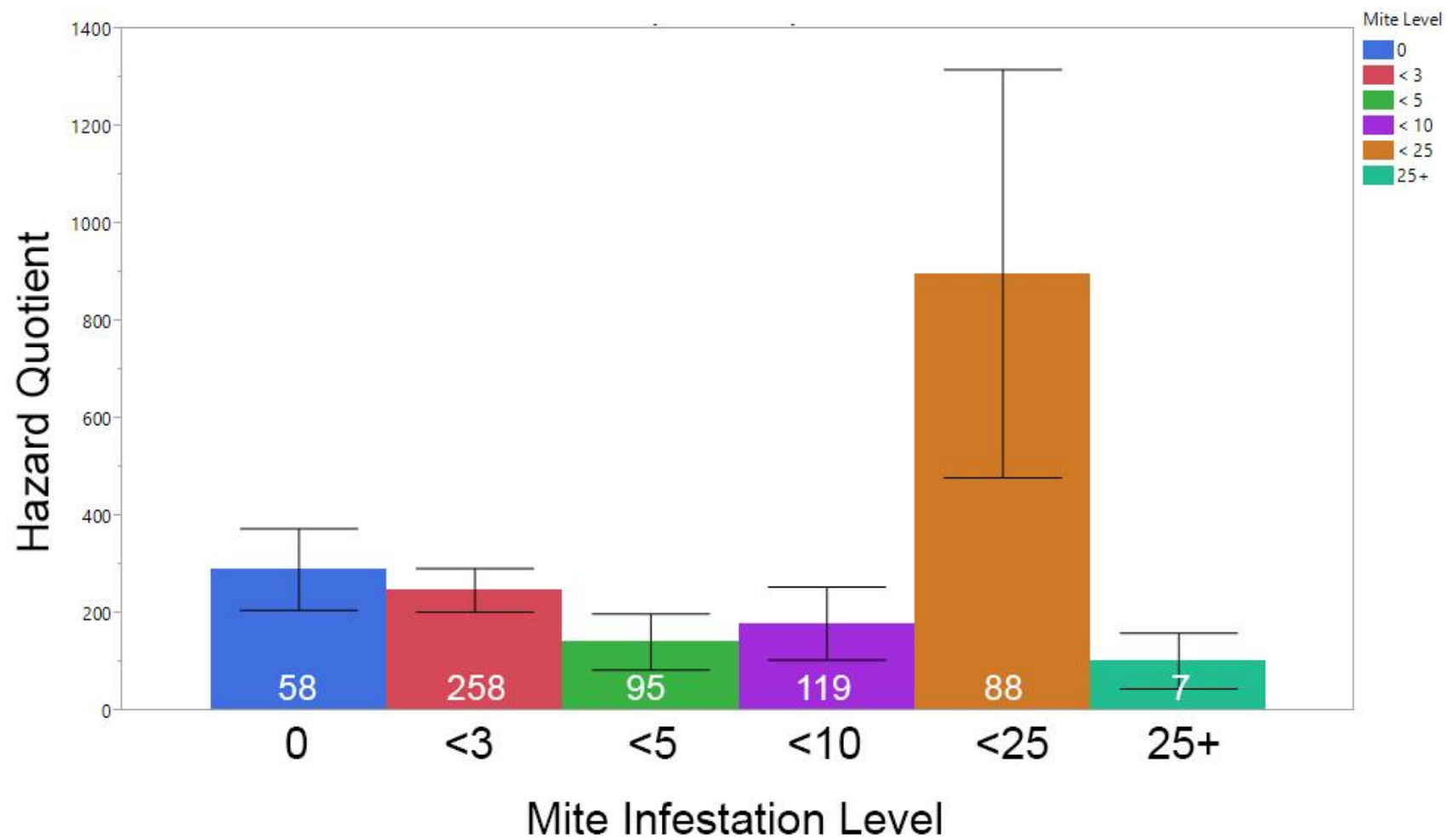


■ Varroa ■ Insect ■ Fung ■ Herb ■ Neonic

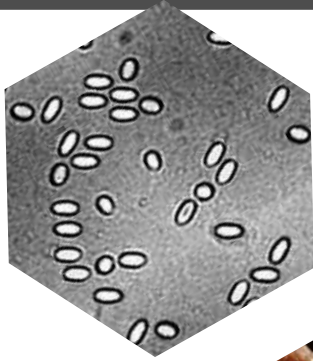
# Frequency of Samples with varying HQ



## Mite infestation levels influence on HQ



# What is killing the bees?



Pathogens



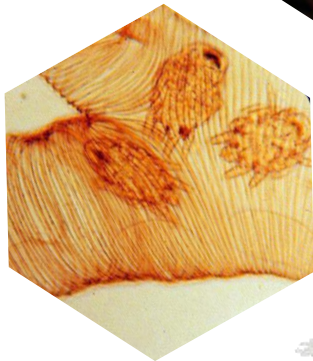
Pesticides



Parasites



Mono-cultures



Multiple, Interacting Causes of Death

Habitat destruction

Poor Nutrition





The Bee Informed Partnership:  
[www.beeinformed.org](http://www.beeinformed.org)

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