

# Bird foraging behavior in vineyards in New Zealand

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# Problem species New Zealand



European blackbirds  
(*Turdus merula*)

Thrushes (*Turdus philomel*)

Territorial

Permanent

Australasian silvereye  
(*Zosterops lateralis*)

European starling (*Sturnus vulgaris*)

Flocking

Attracted by vineyards







# What can we do?

Options?

Netting

Shooting

Scaring

Poisoning

Expensive (nets, ammunition, fuel, labour).

Public resistance (noise)

Legal restraints (protected)

Little change in advice  
over years

*We know very little about what birds do in the vineyard*

# What do we know about birds?

Previous research showed preference for purple grapes

BUT

Birds preferred green grapes when sugar concentration was higher

It was difficult to control sugar concentration in real grapes

SO.....

**We developed an artificial grape**

# How did we run a controlled experiment?

*Experimental method to control variables*

*Artificial grape*

*Bird feeder table*

*Timelapse video*

*Controlled concentrations of hexose sugars*

*Two separate locations for two species*

# Experimental design with artificial grapes



Bird feeder table with 20 grape positions  
Slopes backwards



Experiment in a vineyard

# Field studies show differences in behavior

## *Silvereyes*

Small flocks

Pecked grapes

Clusters of visits

Long visits

Several birds together

Always foraging

## *Blackbirds*

Solitary

Took whole grapes

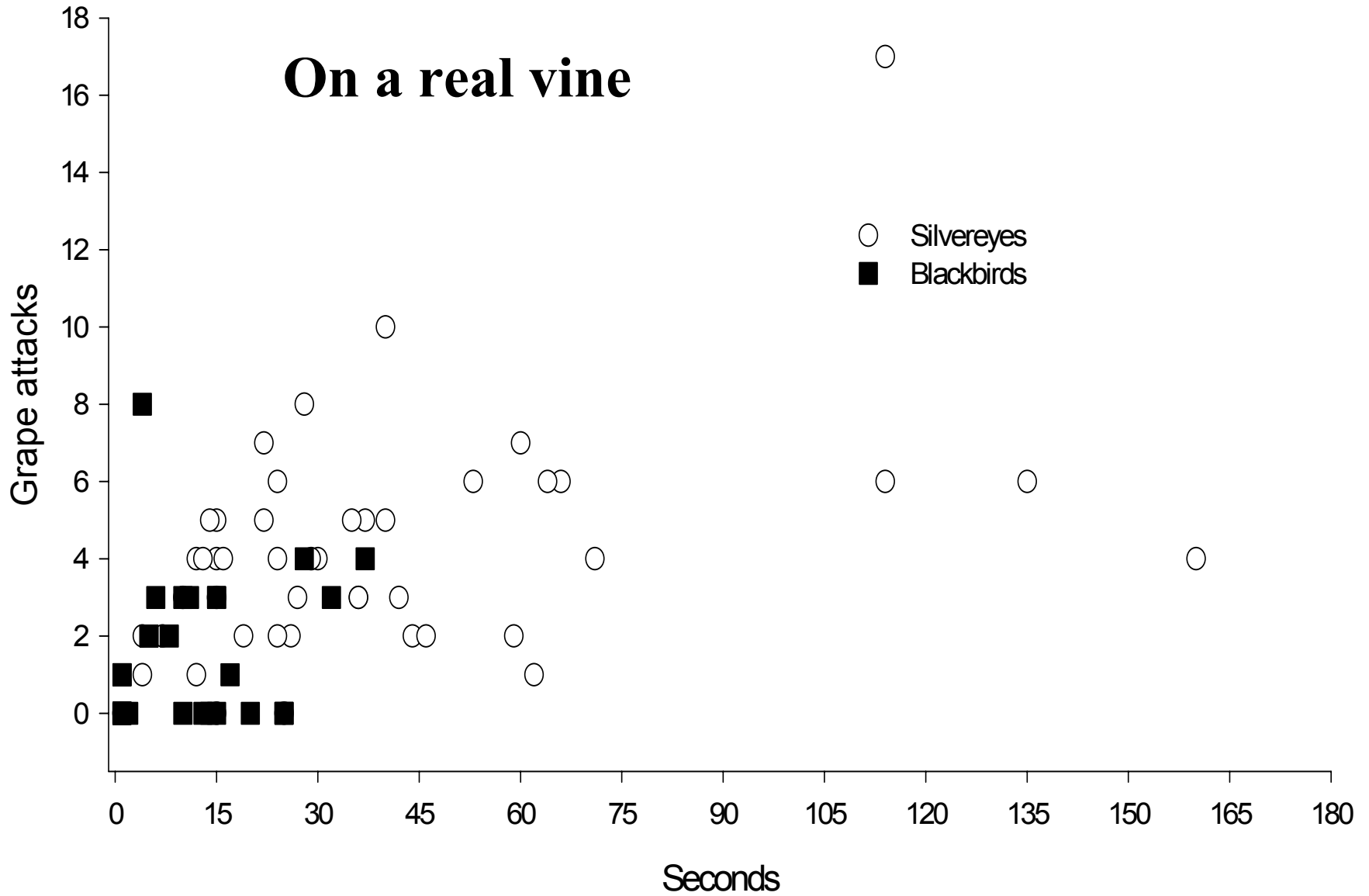
Periodic visits

Shorter visits

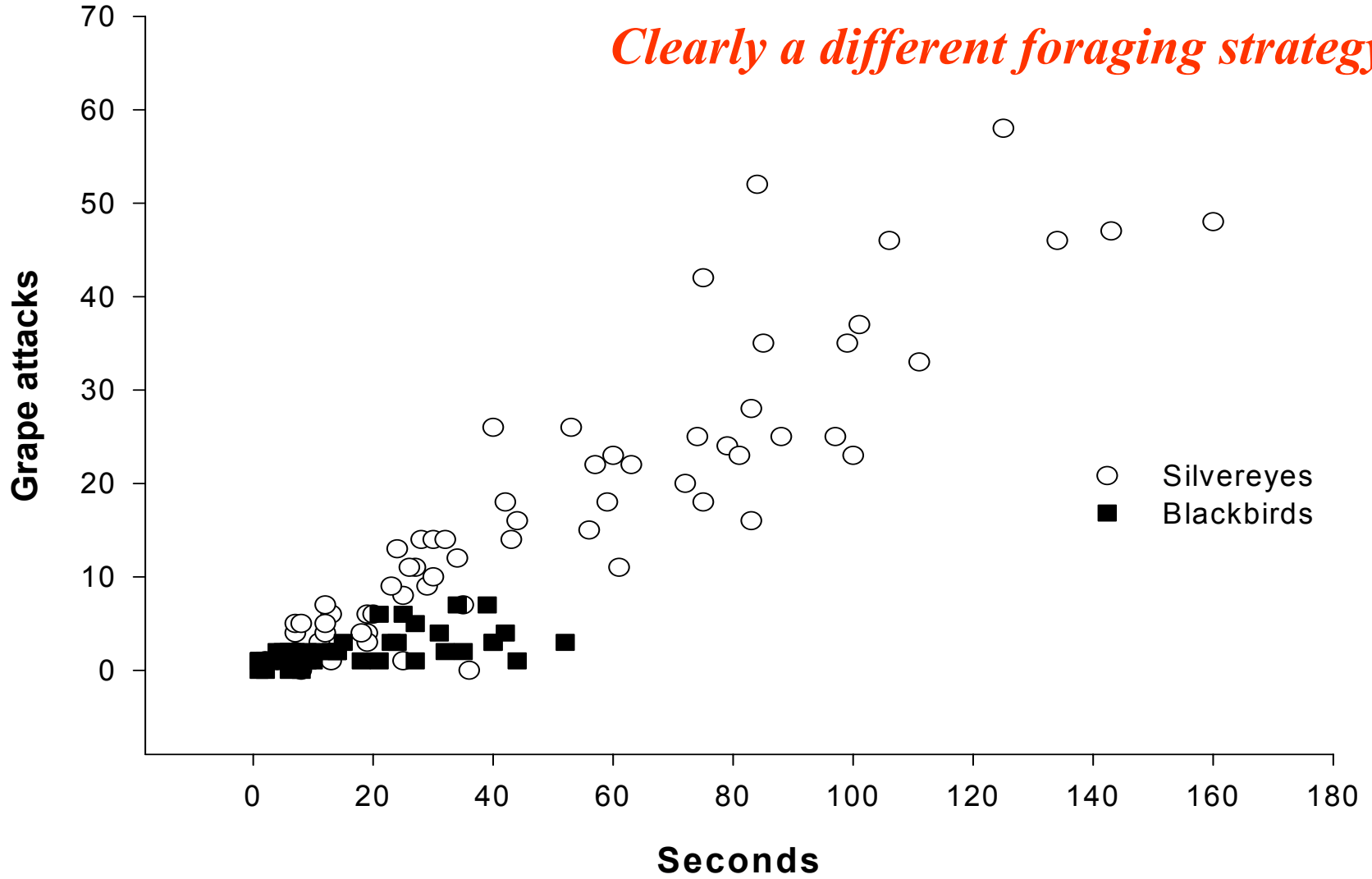
Limited # birds

Not always foraging

# On a real vine

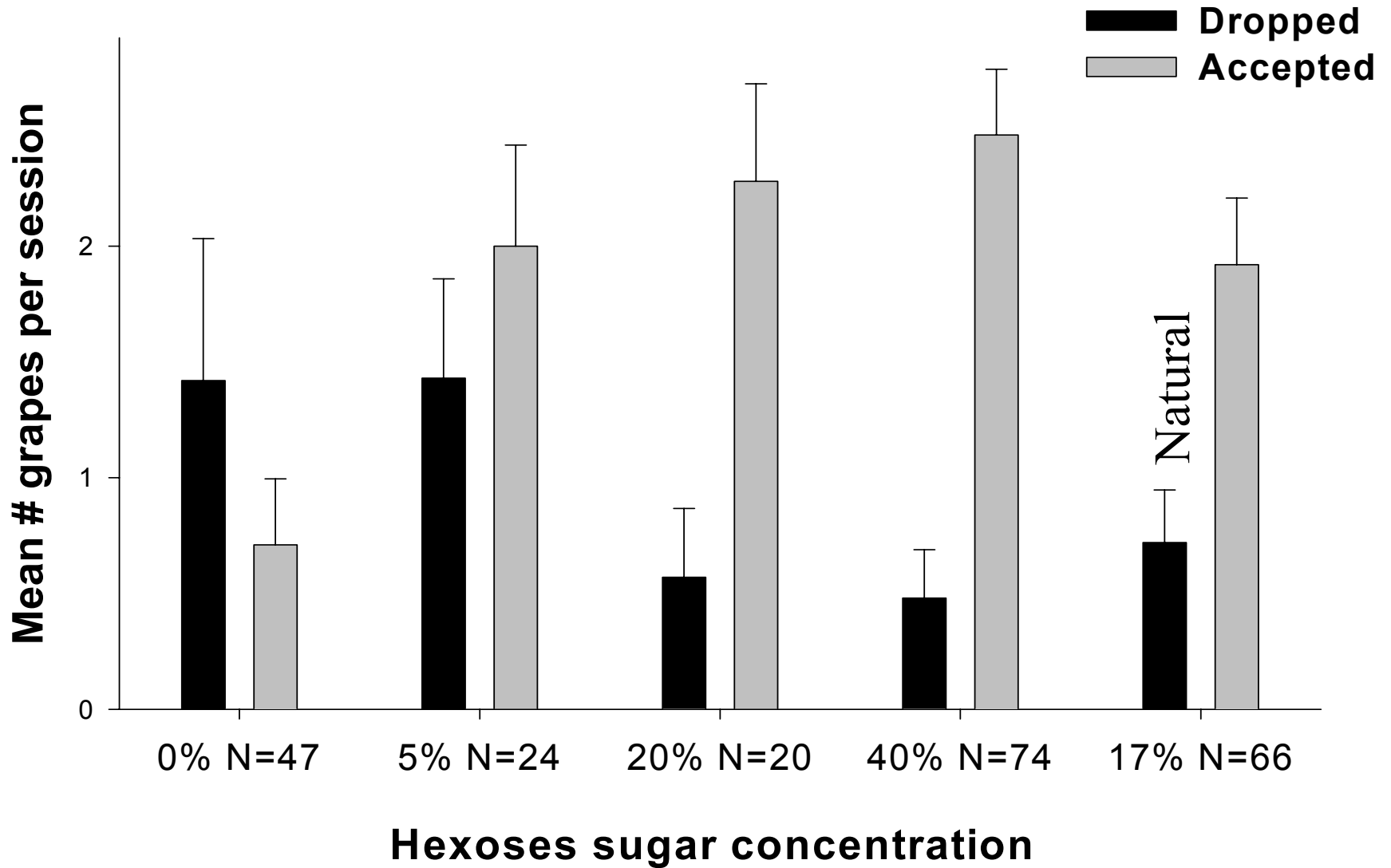


# Bird feeder table

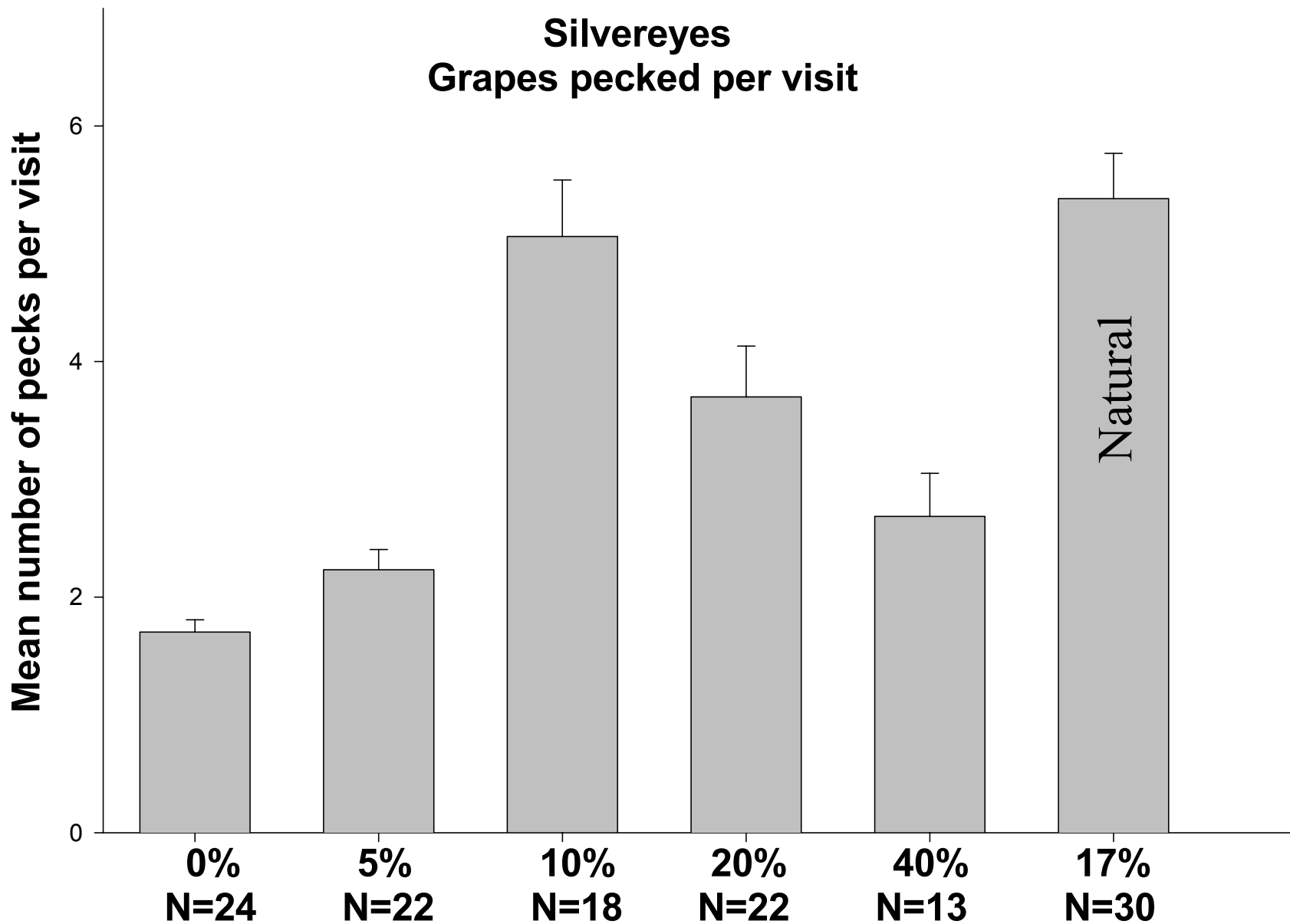


# Blackbirds

## Grapes handled per 3-hour session



**Silvereyes**  
**Grapes pecked per visit**



**What we have observed may be explained by**

**Two different digestive systems**

## *(W.H. Karasov)*

### *For generalist frugivores:*

- Carrier mediated system
- Less efficient absorption
- Fast Gut Passage Rate (GPR)
- E.g. American robins

### *For nectarivorous birds:*

- Passive absorption system
- Almost fully efficient
- Limited by assimilation rate
- Feeds at length, 'grazes'
- E.g. Cedar waxwings

# And this may dictate

Differences in foraging behaviour that we are seeing....

Does digestive capacity dictate:

- Feeding rate
- Sugar level preference
- Foraging strategy
  
- Type of damage?



# What does this imply for management...?

- Are birds behaving differently with
  - Different cultivars?
  - Tannin levels?
  - Aromas?
  - Colour?
  - What are the drivers?



*The first step is knowing more about EACH species*

# Two different species

Just as we target different fungal invasions with different control methods...

We need to understand our birds to effectively target control methods

*Thankyou to ASEV, NZ Winegrowers, Lincoln University, Royal Society of New Zealand.*