Using Mosquito Surveillance to Target Your Vector Control Strategy

Nathan D. Burkett-Cadena
Auburn University
Department of Entomology and Plant Pathology

Why use targeted vector control?

- Reduce chemicals in environment
- Chemicals are expensive!
- Spraying is expensive!

Why conduct mosquito surveillance?

Determine which mosquitoes are present

Determine which mosquitoes are biting

Detect viruses in mosquito pools

Collecting mosquitoes for surveillance

Trapping adults

Dipping for larvae

Trapping adults

Landing count

Carbon dioxide-baited light trap

Gravid trap

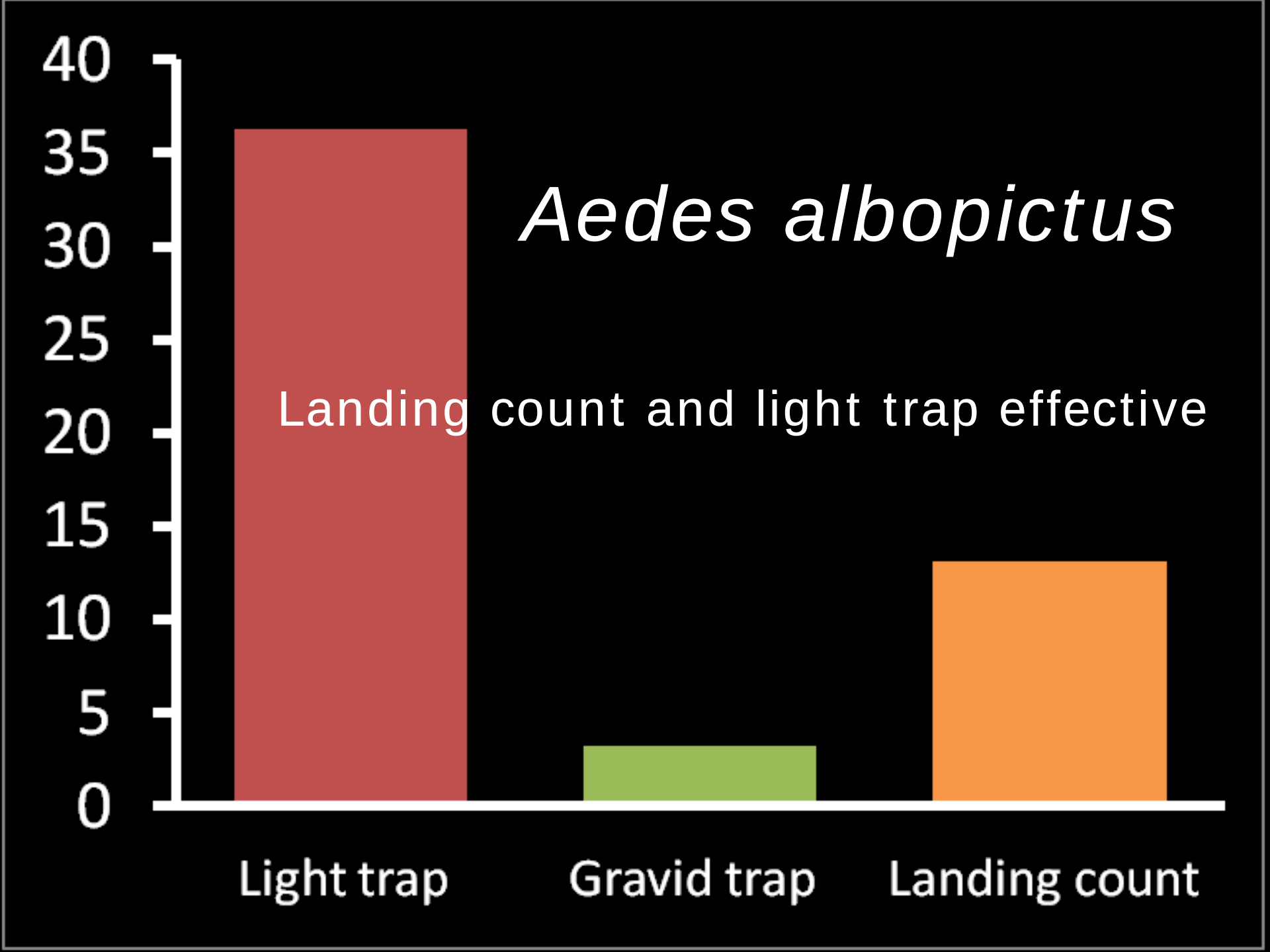
Part II: Comparison of trapping methods

Salvage yard

		Light trap	Gravid trap	Landing count
1	*Aedes albopictus*	36.3	3.1	13.2
2	*Aedes atlanticus*	0.7	0	0
3	*Aedes triseriatus*	1	0.1	0.1
4	*Aedes vexans*	20.3	0	0
5	*Anopheles crucians*	3	0	0
6	*Culex erraticus*	6.7	0	0
7	*Culex nigripalpus*	14.3	1.1	0
8	*Culex quinquefasciatus*	0	17.7	0
9	*Culex restuans*	3.3	0.6	0
10	*Culex salinarius*	0.3	0	0
11	*Psorophora ferox*	1. 7	0	0.1

Part III

Use mosquito biology with vector surveillance to target your control strategy


40
35
30
25
20
15
10
5
0
Aedes albopictus
Landing count and light trap effective
Light trap
Gravid trap
Landing count

Aedes albopictus biology

Does *Aedes albopictus* bite people?

What type of breeding site?

Where do adults rest?

What time of day are adults active?

How do you control *Aedes albopictus*?

Adulticide?

Larvicide?

Remove breeding sites?


25
20
15
10
5
0
Aedes vexans
Only light trap effective
Light trap
Gravid trap
Landing count

Aedes vexans biology

Does *Aedes vexans* bite people?

What type of breeding site?

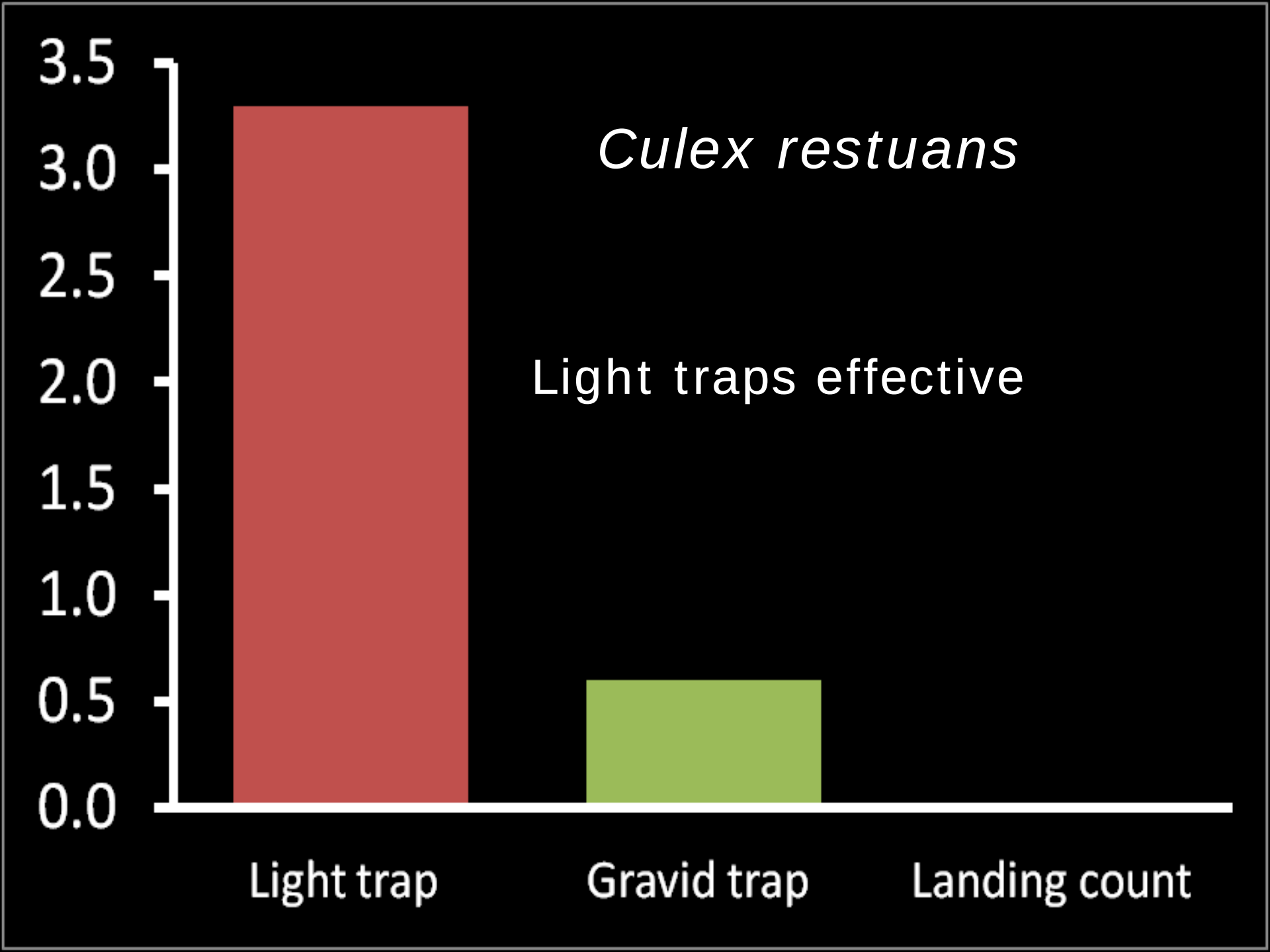
Where do adults rest?

What time of day are adults active?

How do you control *Aedes vexans*?

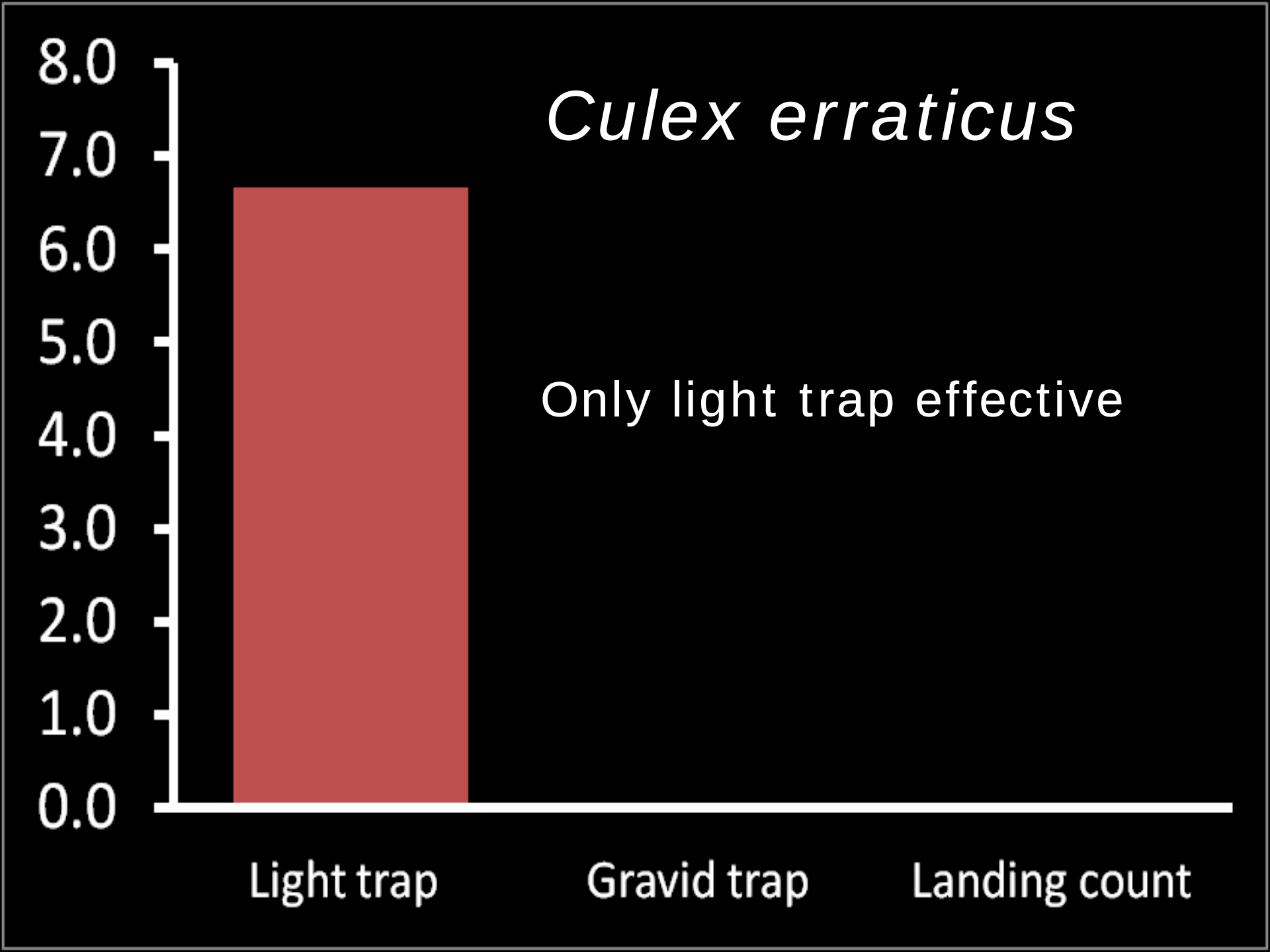
Adulticide?

Larvicide?


3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Culex restuans
Light traps effective
Light trap
Gravid trap
Landing count

Culex restuans biology

Does *Culex restuans* bite people? NO


8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Culex erraticus
Only light trap effective
Light trap
Gravid trap
Landing count

Culex erraticus biology

Does *Culex erraticus* bite people?

What type of breeding site?

Where do adults rest?

What time of day are adults active?

How do you control *Culex erraticus*?

Adulticide?

Larvicide?

Mosquito diversity varies from one location to another.

Relying on any one trap type may cause you to underestimate the abundance of a mosquito species in a given location.

Light traps are effective for collecting host-seeking mosquitoes of many species and are great tools for mosquito surveillance.

however...

Whenever possible, it is best to use as many different trapping methods as possible to collect a representative sample of the mosquitoes in your area.

Combining mosquito surveillance With mosquito biology can enable you to target your control strategy.

This is good for the environment and your budget.