

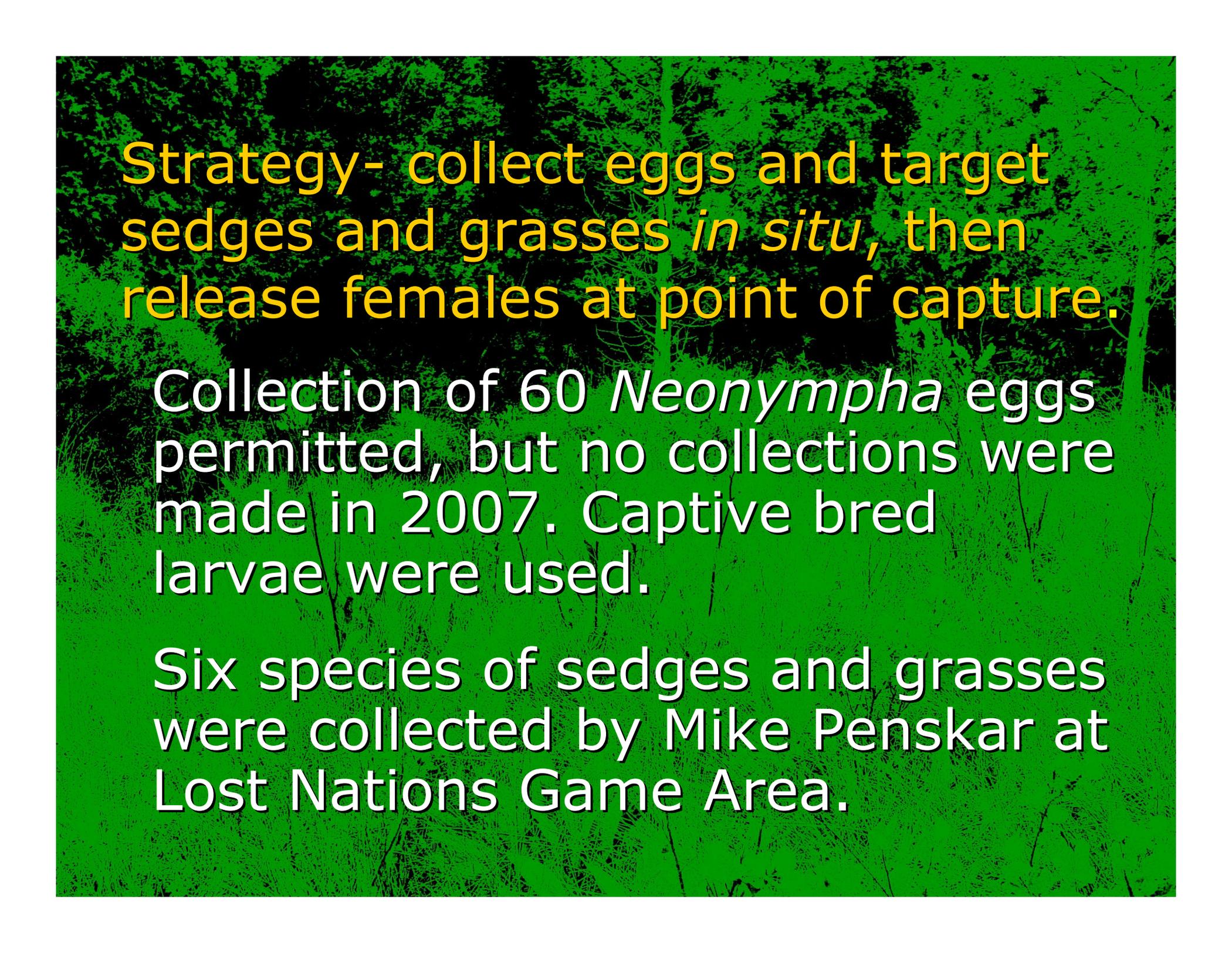
# Host Plant Selection Experiments for the Mitchell's satyr, *Neonympha mitchelli*

at The Toledo Zoo



Background- although *C. stricta* presumed to be host plant, older, gray literature, & anecdotal info documents use of other species.

- McAlpine et al. (1960)  
*C. alopecoidea*, *C. cephalophora*,  
*Scirpus atrovirens*
- Legge and Rabe (1996)  
“fine sedge leaves” (*C. lasiocarpa*?)
- Bergman (1997)  
sedges “from various wet locations”
- Szymanski and Shuey (2002)  
*C. lacustris*, *C. prairea*, and *C. stricta*



Strategy- collect eggs and target sedges and grasses *in situ*, then release females at point of capture.

Collection of 60 *Neonympha* eggs permitted, but no collections were made in 2007. Captive bred larvae were used.

Six species of sedges and grasses were collected by Mike Penskar at Lost Nations Game Area.

# Species collected

*Carex buxbaumi*

*Carex flava*

*Carex lasiocarpa*

*Carex prairea*

*Carex sterilis*

*Carex tetanica*

*Rhynchospora capillacea*

# Species tested

*Carex sterilis*

*Carex stricta*

*Carex tetanica*

*Panicum* sp.

*Poa palustris*

*Rhynchospora capillacea*

Not all species collected had recovered sufficiently for use.

# Meanwhile, back in the polyhouse...



309 eggs were oviposited

*Pilea pumila*- 200

*Oxalis corniculata*- 26

*Viola nephrophylla*- 25

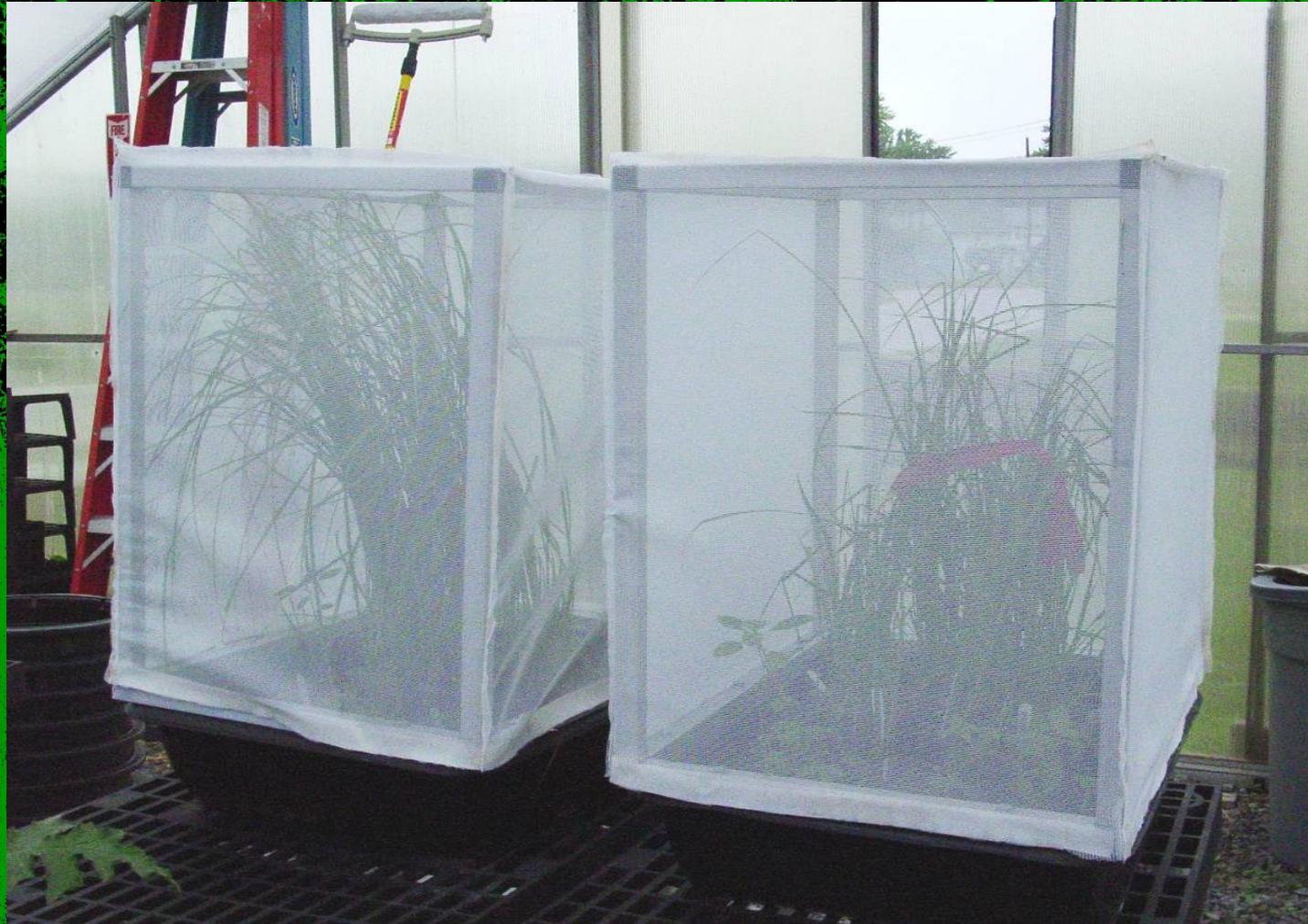
*Carex stricta*- 21

*Populus* sp.- 16

Tub/frame- 11

*Poa palustris*- 5

**Netted poly tubs were used for the larval feeding experiments**





Overall, 88 larvae were detected and subsequently used for host plant selection experiments.

## Plant species selected for testing:

*Carex sterilis*, *C. tetanica*, *Panicum* sp., *Poa palustris*, *Rhynchospora capillacea*.

- Three experimental plant species placed with *C. stricta* in tubs.
- Each species placed at vertex of a square in center of tub with eggs placed in center of square.
- Larvae observed each day to record location and feeding.



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An additional replicate of the host plant experiment from 2006 using two grasses was replicated in 2007. Species tested were *C. stricta*, *Panicum* sp. and *Poa palustris*.

<b>Tub #</b>	<b><i>C. stricta</i></b>	<b><i>Panicum</i> sp.</b>	<b><i>Poa palustris</i></b>	<b>Substrate</b>
5	9	3	7	2

Three additional tubs using the new species collected were assembled. Species tested were *C. stricta*, *C. tetanica*, *Panicum* sp. and *Rhyncospora capillacea*.

Tub#	<i>C. stricta</i>	<i>C. tetanica</i>	<i>Panicum</i> sp.	<i>Rhyncospora</i>	Substrate
6	7	2	5	4	3
7	4	4	4	4	3
8	7	2	8	6	3

# Larvae making bad choices were deliberately not rescued.



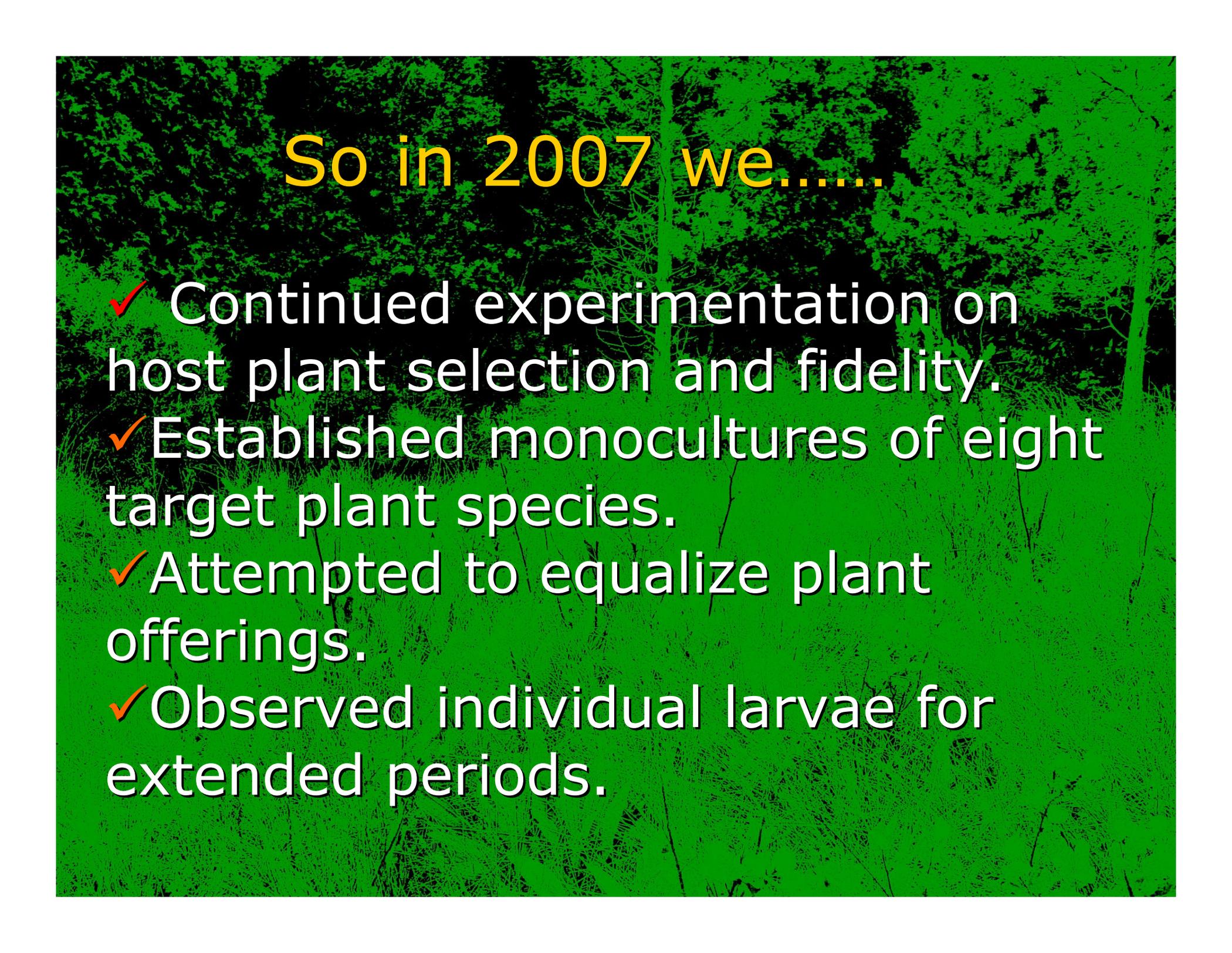
- Larval movement was very limited in 2007. Larvae staying on the substrate, on *Carex tetanica*, and *R. capillacea* died!
- Larvae choosing *C. stricta*, *Panicum* sp., and *Poa palustris* did well.

Whichever species of plants they fed on, larvae **always** returned to *C. stricta* to pupate (12.6 pupae emerged as adults in 2007).



Attachment distance along on the *Carex* ranged from 53 mm to 680 mm.

Mean attachment distance was 394 mm.



So in 2007 we.....

- ✓ Continued experimentation on host plant selection and fidelity.
- ✓ Established monocultures of eight target plant species.
- ✓ Attempted to equalize plant offerings.
- ✓ Observed individual larvae for extended periods.

# And coming up in 2008?

- Continued experimentation on host plant selection and fidelity.
- Collect more species of sedges and grasses?
- Identify our *Panicum* to species?
- Attempt to maximize survival for some individuals?