

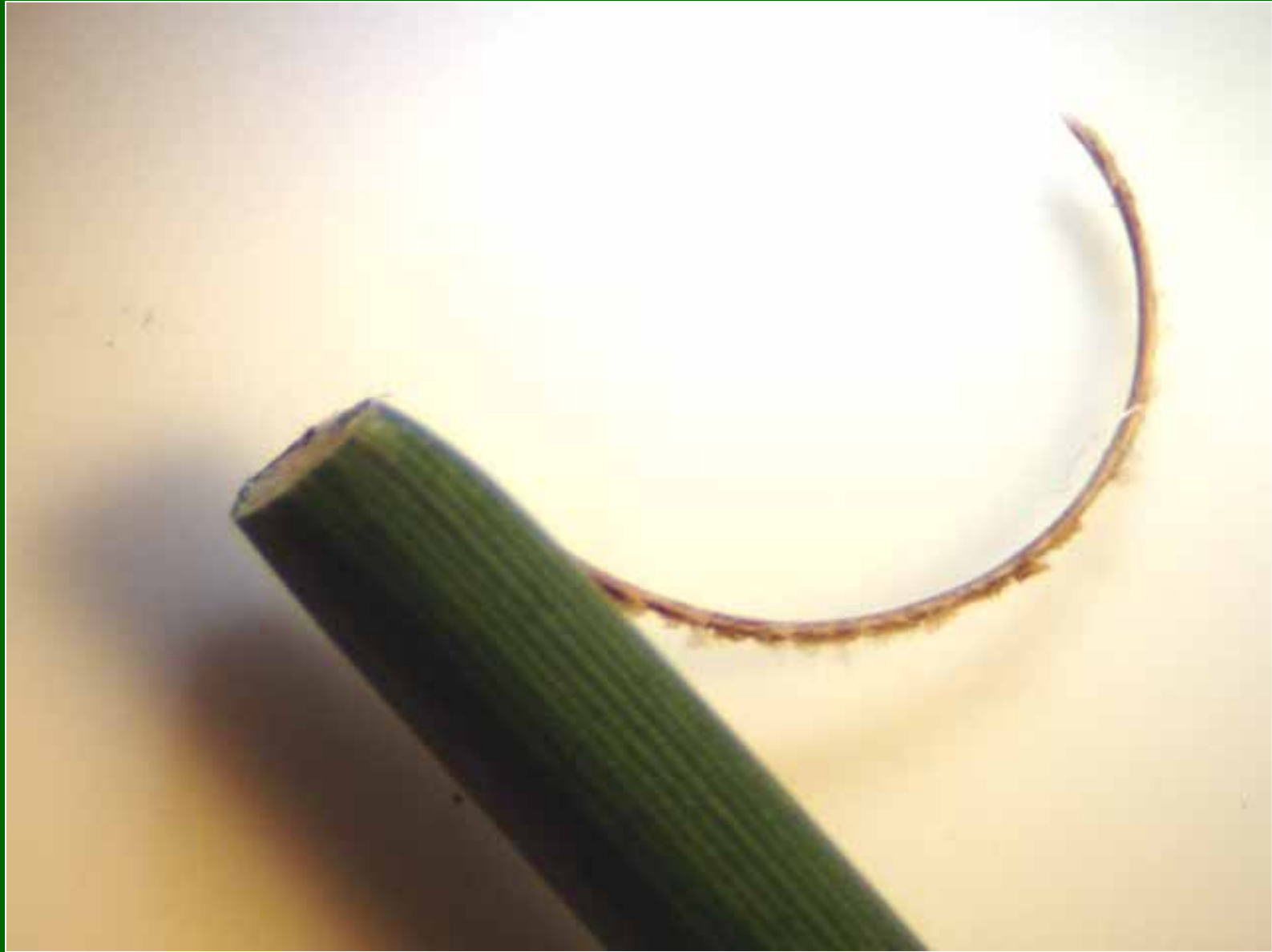
RAISING AESHNA

Linda Gilbert, Naturalist, Geauga Park District
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Evidence of a female mosaic darter's oviposition on a rush stem.

Stem with eggs collected August 22, 2006



August, 22, 2006

Picture of embedded egg before soaking, 1.7mm long

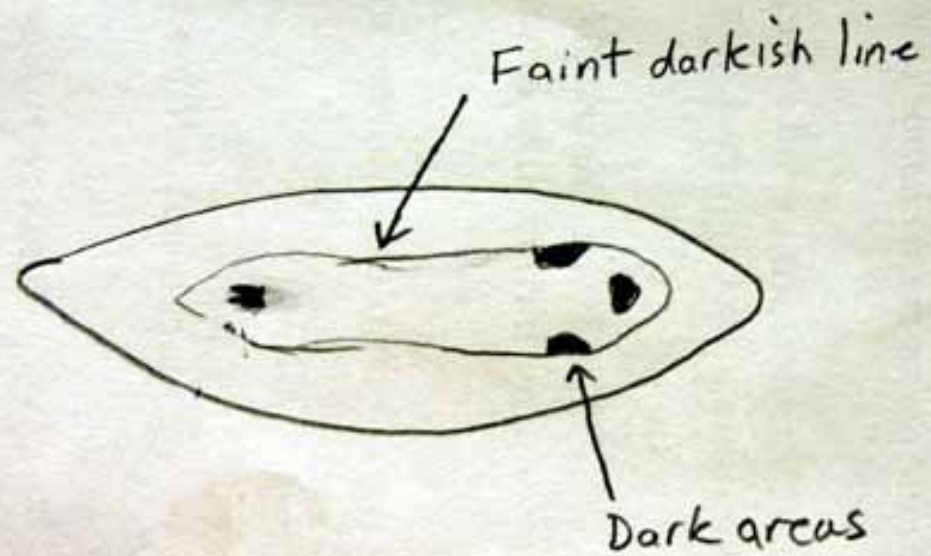


Oct. 13, 2006 Egg showing signs of development after 8wks of soaking



Sketch of another egg a month later.

DRAGON EGG 11/16/06

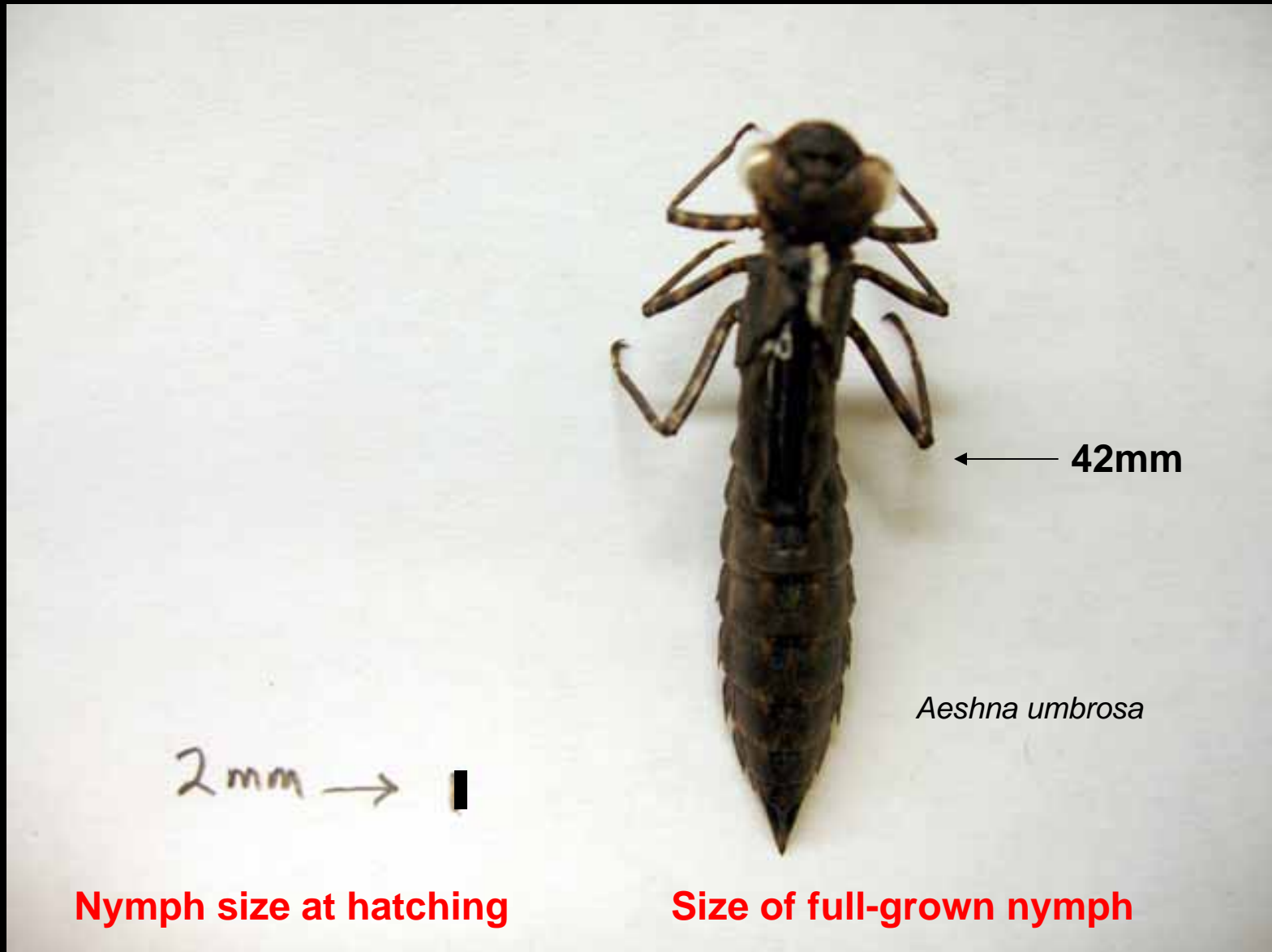


January 6, 2007

Newly hatched nymph, 2mm long

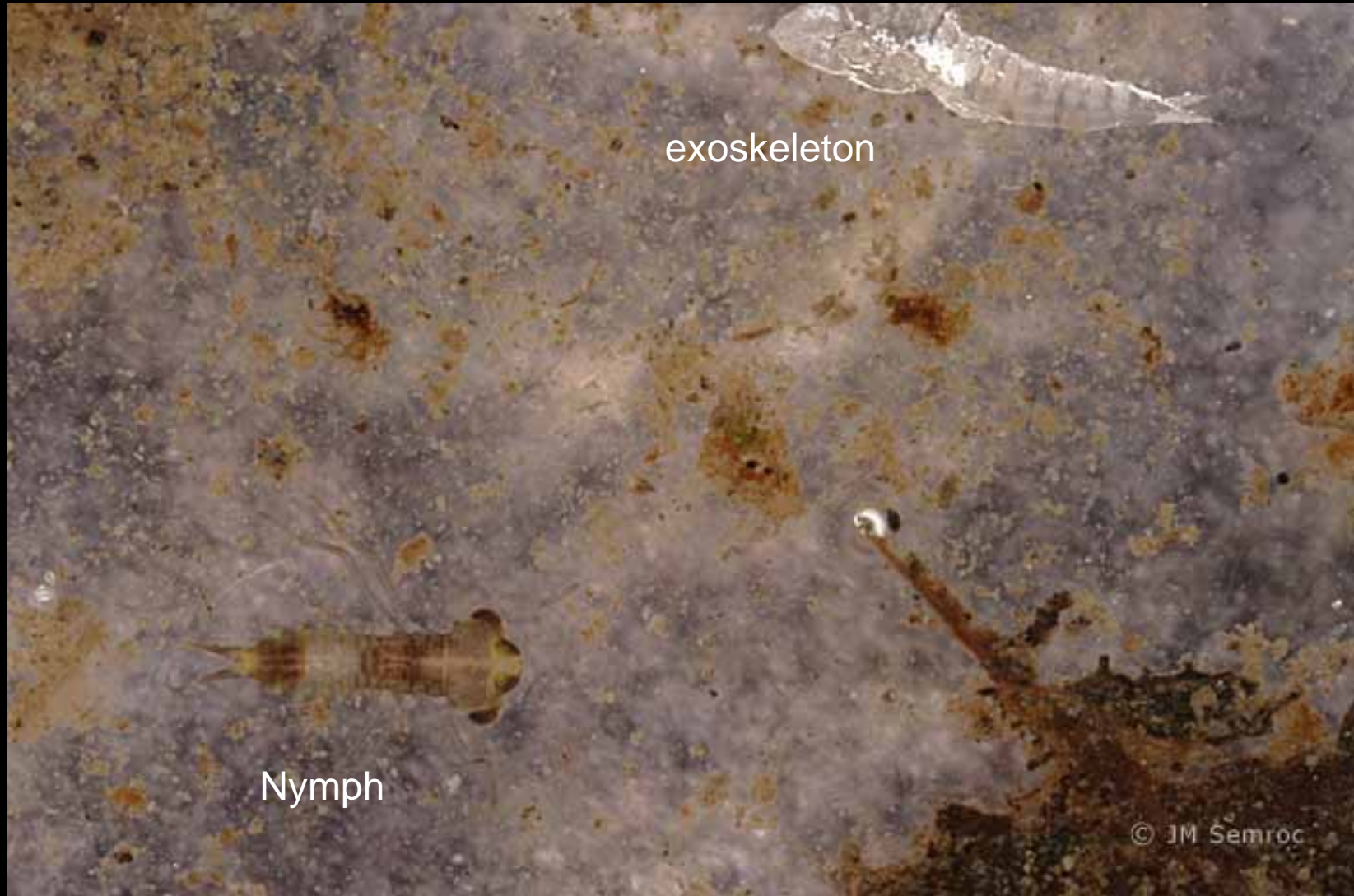


Aeshna nymph size comparison





Jan. 7, 2007 Nymph and 1st molted skin



Empty egg casing.





Face

**Jan. 9, 2007
Four days old**



Underside

Jan. 27, 2007 14 days old, 3rd instar



Cast-off exoskeleton



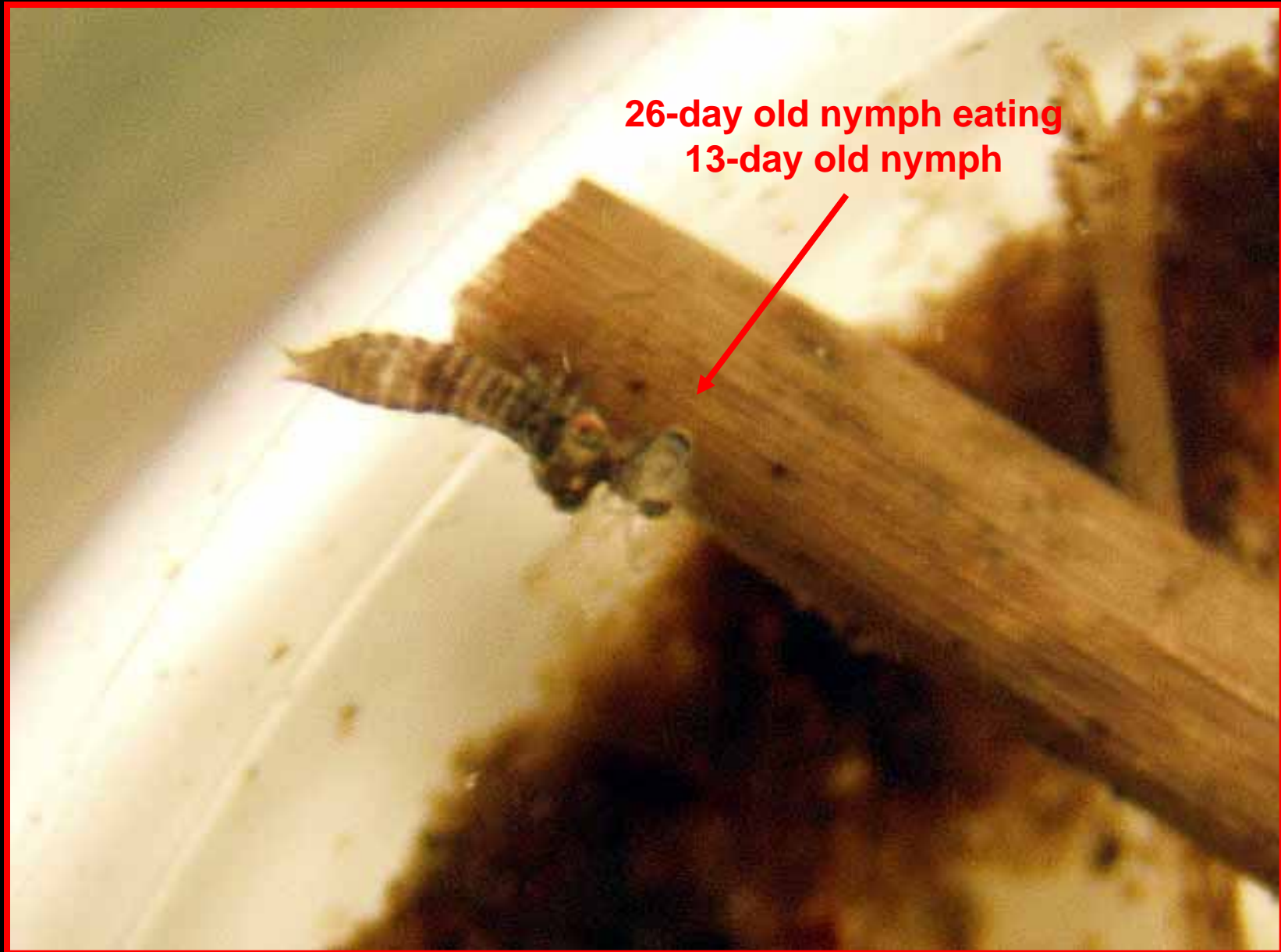
Feb. 1, 2007

Freshly molted nymph in 4th instar, 19 days old., 3.5mm



Feb. 8, 2007

CANNIBALISM



**26-day old nymph eating
13-day old nymph**

Feb. 15, 2007 5th Instar nymph, 33-days old, approx. 4.5mm long



Still no sign of wing buds or gender.



Feb. 28, 7th instar nymph freshly molted.

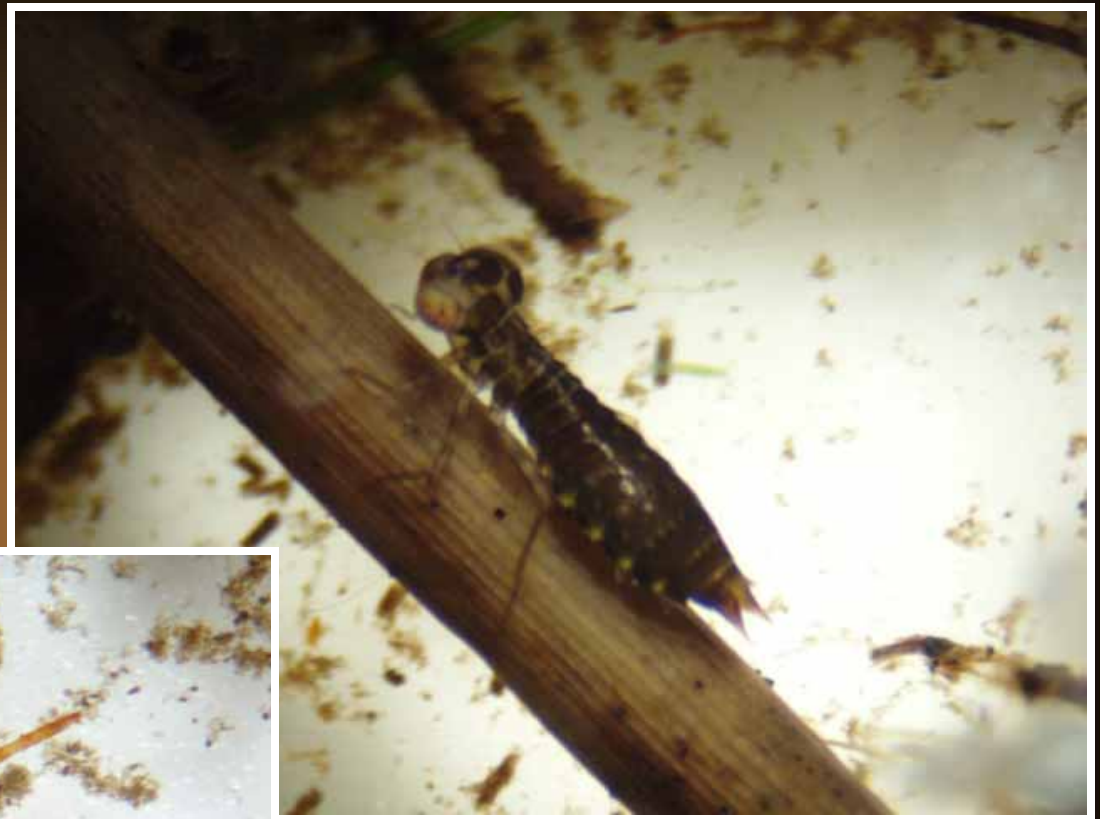
**Bottom pictures from
March 1st and 2nd.
48 days old
Approx. 6mm long**



**Faint zigzag line
on dorsal surface
are the tracheal tubes.**



**Mar. 6th , Nymph on right
turned much darker after
its 6th molt.**





Mar. 6th, Potential confrontation?

Not.



AESHNA NYMPH
EXUVIAE
2ND MOLT
2-25-2007



AESHNA NYMPH
EXUVIAE
3RD MOLT
2-1-2007



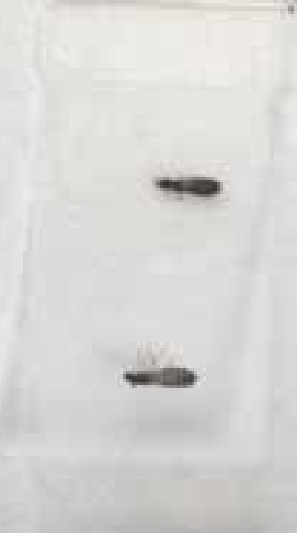
AESHNA NYMPH
EXUVIAE
4TH MOLT
2-10-2007



Aeshna Nymph
Exuviae
5th Molt
2-19-07



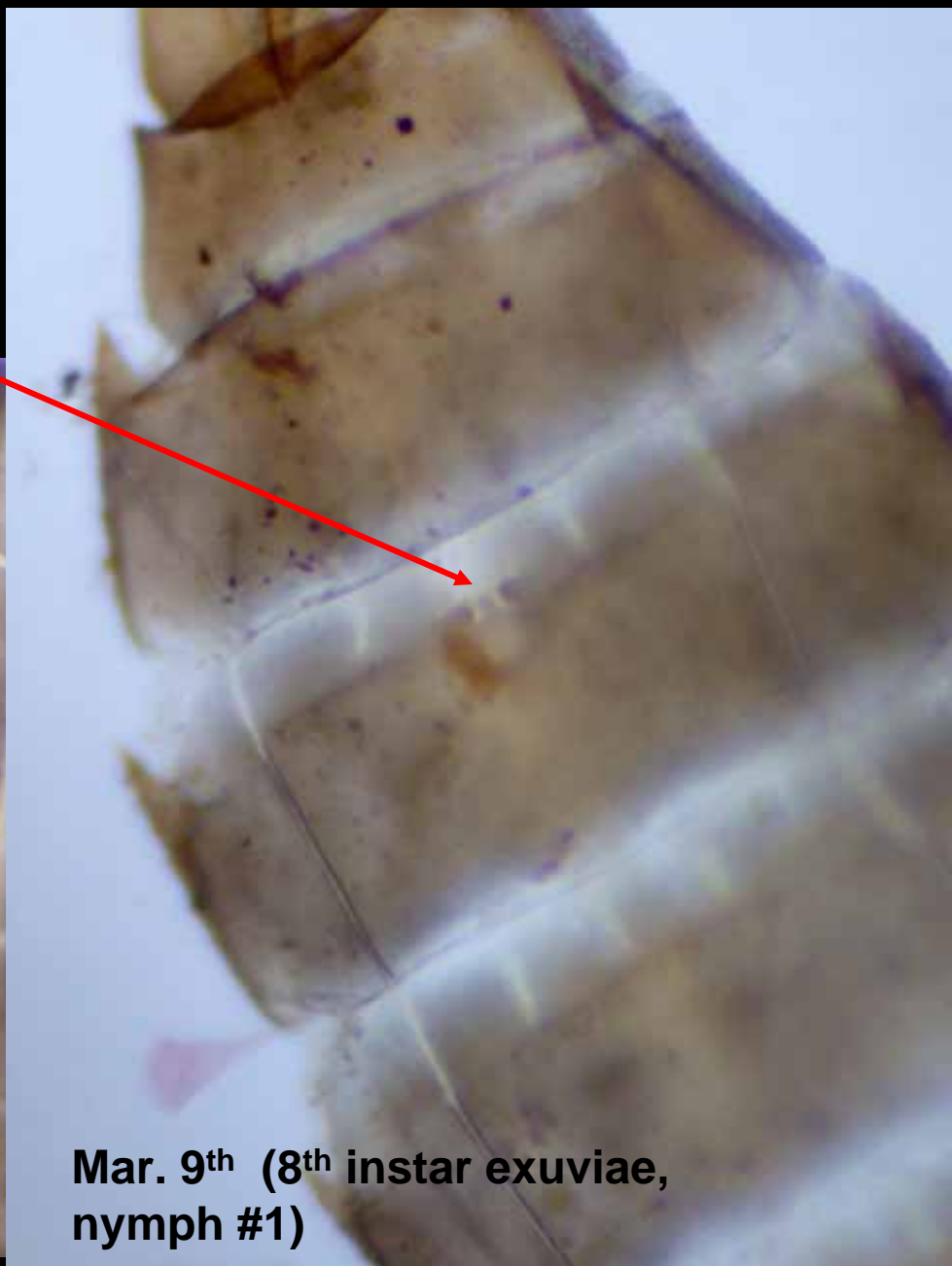
Aeshna Nymph
Exuviae
6TH MOLT
2-29-07, 3-5-07



**Signs of developing ovipositor
on segment 8**

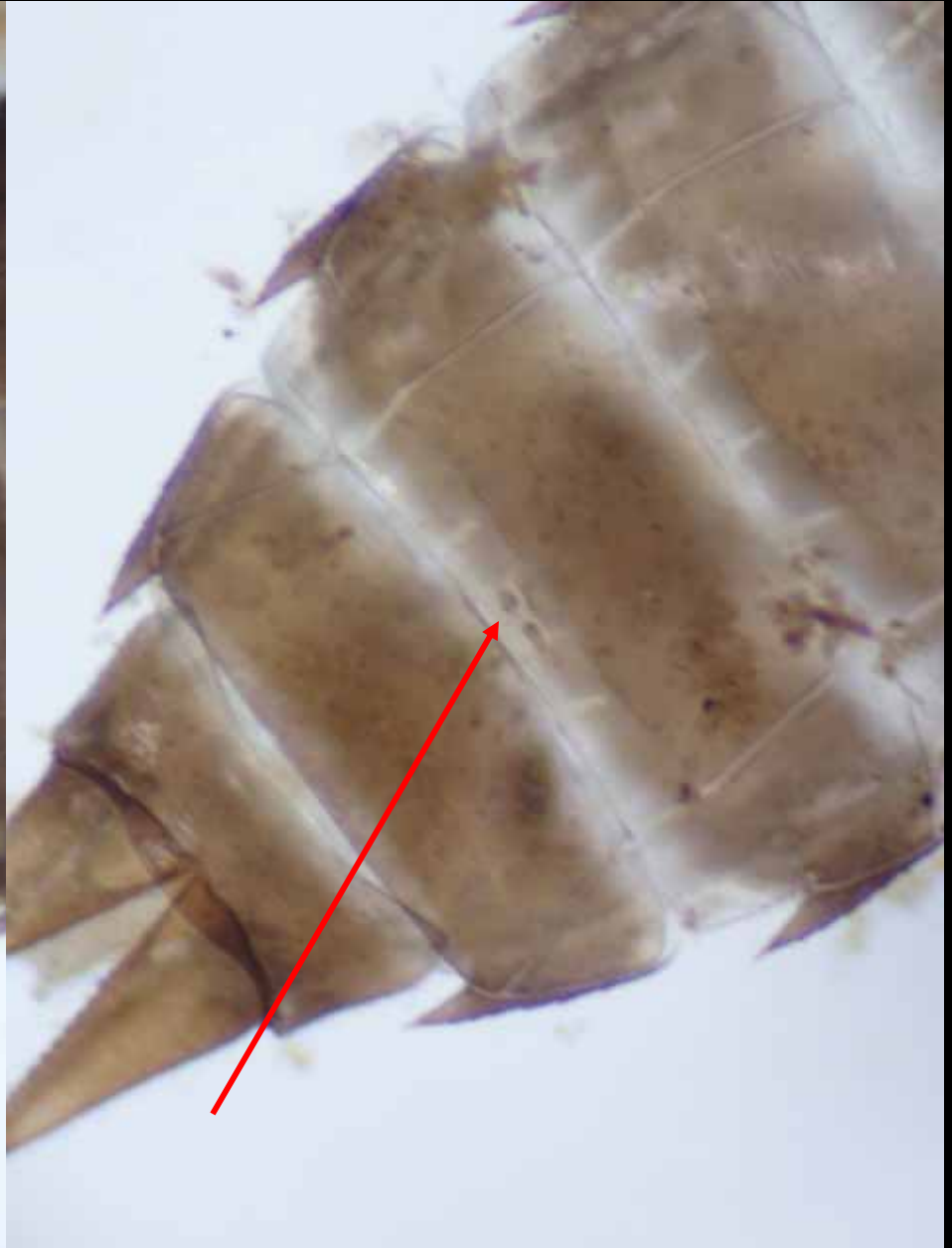


**Mar. 12th (8th instar exuviae,
nymph #2)**

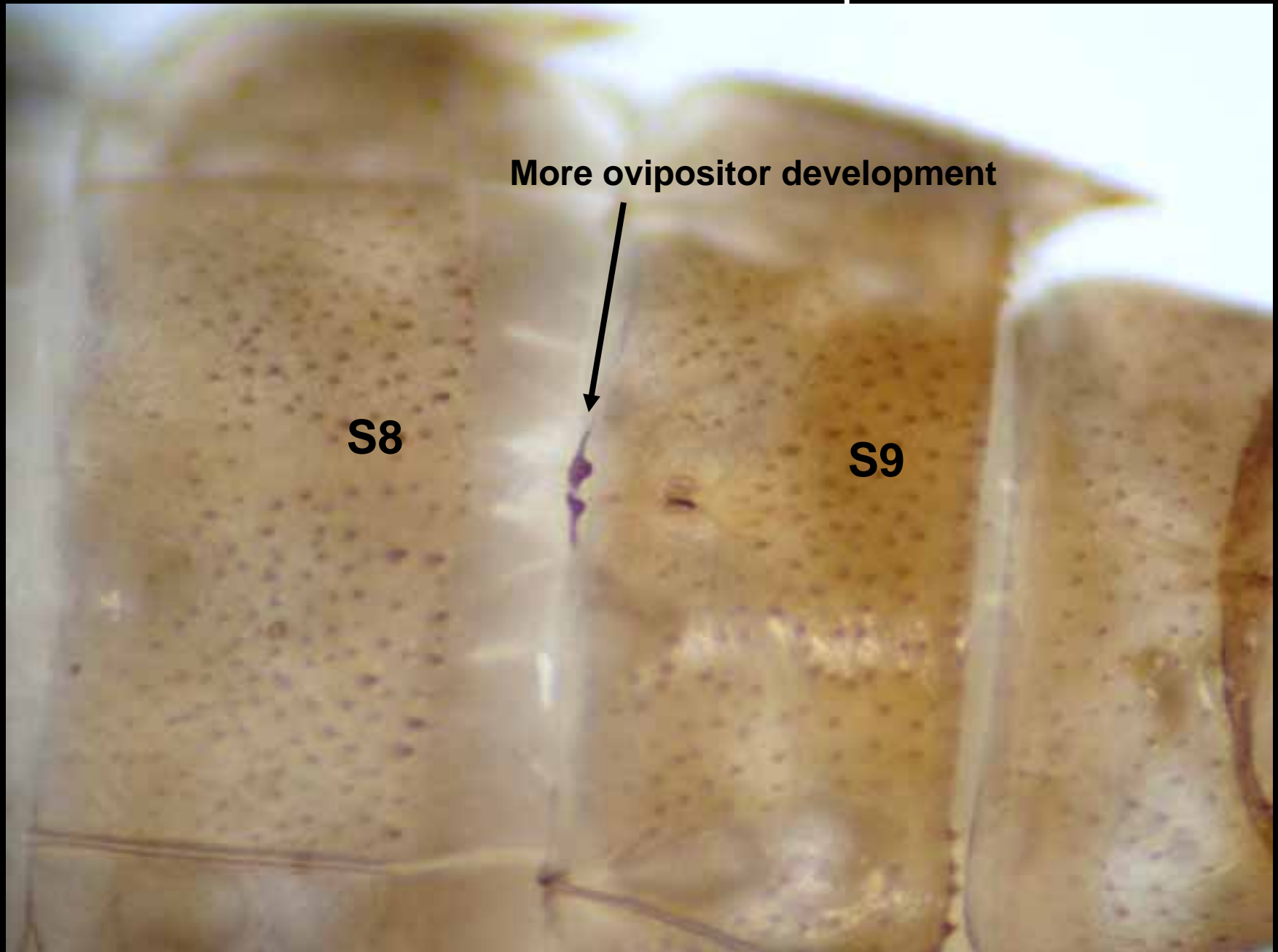


**Mar. 9th (8th instar exuviae,
nymph #1)**

9th instar exuviae, nymph 2 on left, nymph 1 on right



10th instar exuviae from Apr.6th molt



More ovipositor development

S8

S9

11th instar live nymph ovipositor development



April 6, 2007 Freshly molted. 11th instar. 83 days old



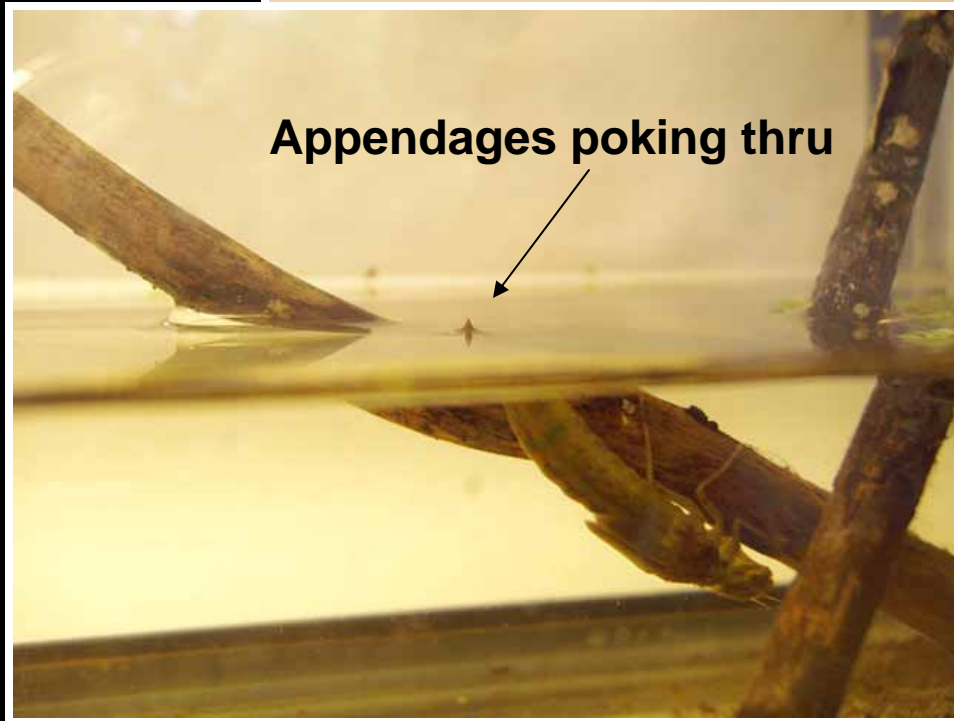
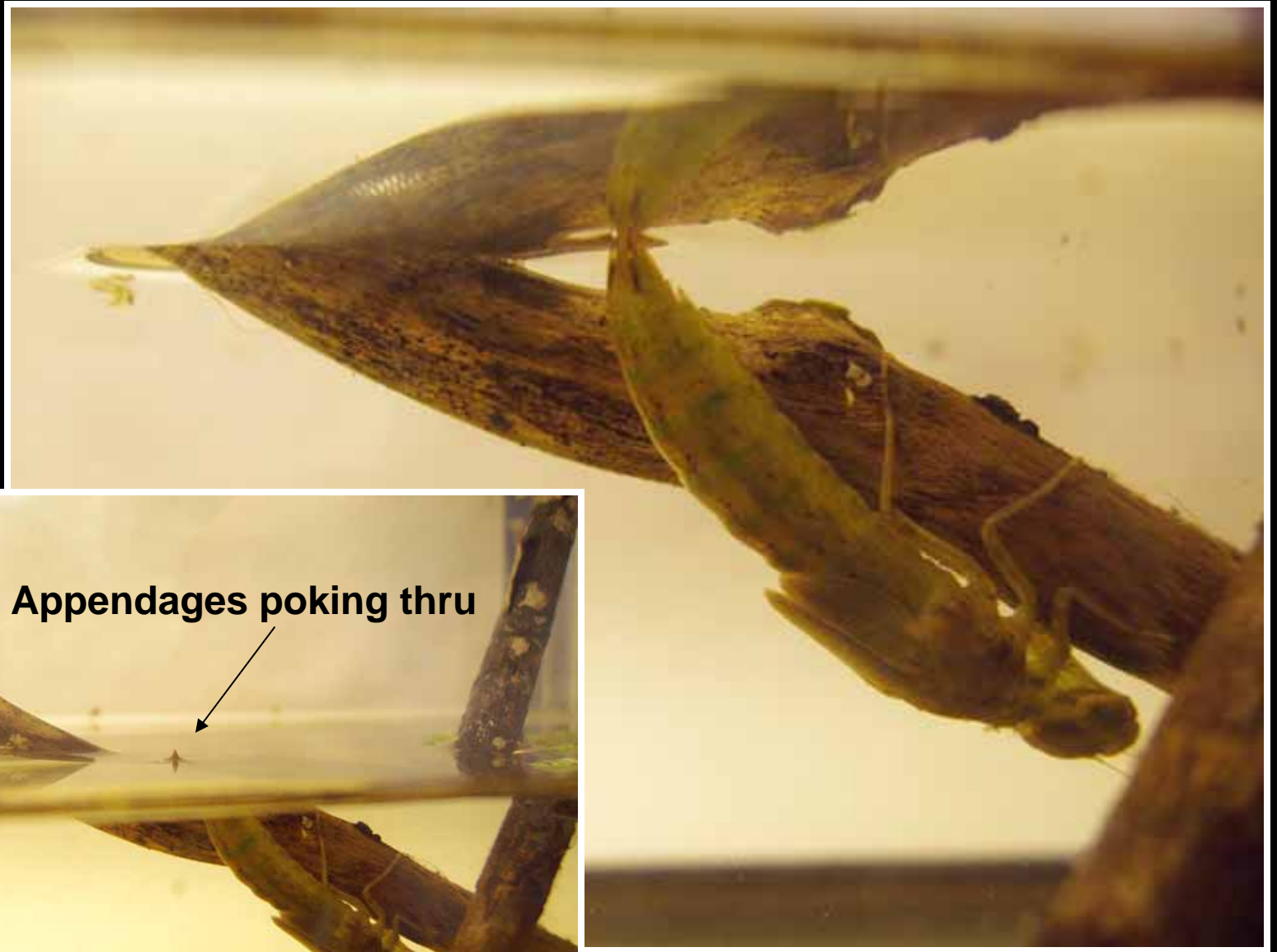
Mar. 20, 9th instar, 66 days old



Wing bud development



April 7, 11th instar, 84 days old



Appendages poking thru

**Final countdown for Nymph 1!
July 22**



**Homestretch for Nymph 2
August 15**

Aug. 19







Aug. 19



Aug. 26

Nymph #1, July 31



Nymph #2, Aug. 27





Teneral adults, August 1 & 28

Shadow Darner – NOT!



Surprise!! --Female Black-tipped Darner *Aeshna tuberculifera*

Hatch Date: January 14th, 2007

| <u>Instar</u> | <u>Molt Date</u> Nymph #1 | <u>Molt Date</u> Nymph #2 | <u>Age (days)</u> Nymph #1 | <u>Age (days)</u> Nymph #2 | <u>Length</u> |
|------------------|------------------------------|------------------------------|-------------------------------|-------------------------------|---------------|
| *2nd | 14-Jan | 14-Jan | 1 | 1 | 2mm |
| 3rd | 25-Jan | 25-Jan | 12 | 12 | 2.4mm |
| 4th | 1-Feb | 1-Feb | 19 | 19 | 3.5mm |
| 5th | 11-Feb | 11-Feb | 29 | 29 | 4.5mm |
| 6th | 19-Feb | 19-Feb | 37 | 37 | |
| **7th | 28-Feb | 5-Mar | 46 | 51 | 6mm |
| 8th | 9-Mar | 12-Mar | 56 | 59 | |
| ***9th | 20-Mar | 20-Mar | 66 | 66 | 8+ mm |
| 10th | 26-Mar | 27-Mar | 72 | 73 | 10mm |
| 11th | 6-Apr | 8-Apr | 83 | 85 | 14mm |
| 12th | 22-Apr | 29-Apr | 99 | 106 | |
| ****13th | 14-May | 19-May | 121 | 126 | 22mm |
| 14th | 29-May | 28-Jun | 136 | 166 | 26 & 27mm |
| 15th | 15-Jun | 13-Jul | 153 | 180 | 33 & 31mm |
| 16th (last) | 30-Jun | 31-Jul | 168 | 198 | 37 & 38mm |
| Emergence | 1-Aug | 28-Aug | 199 | 226 | 42-43mm |

* Hatching process not observed.

** Gender signs noted in 7th instar exuviae.

*** Beginnings of wingbuds observed.

**** Nymph 2 spent 40 days in the 13th instar and fell two molts behind its sibling.

Other notes:

Nymph #1 spent 33 days in the last instar and +/- ten days in pre-emergence mode from when the appendage behavior was noted.

Nymph #2 spent 29 days in the last instar and +/- fourteen days in pre-emergence mode.

Total time frame: Nymph #1, 199 days; Nymph #2, 226 days; approx. 4 ½ month as eggs; approx. 6-6 ½ months as nymphs.

QUESTIONS?

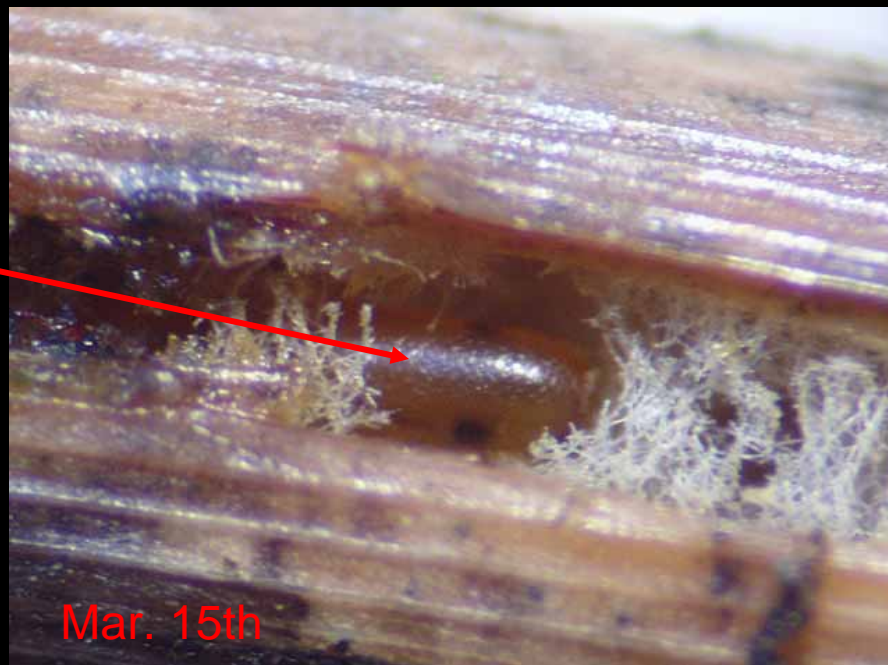
Rush clump, Mar. 2



Rush clump, Mar. 15



Developing egg embedded in rush stem that has not been submerged in water, but buried under snow since the heavy snows of January-March.



Mar. 15th

Maybe they will transform into this...???

SHADOW DARNER
Aeshna umbrosa

