

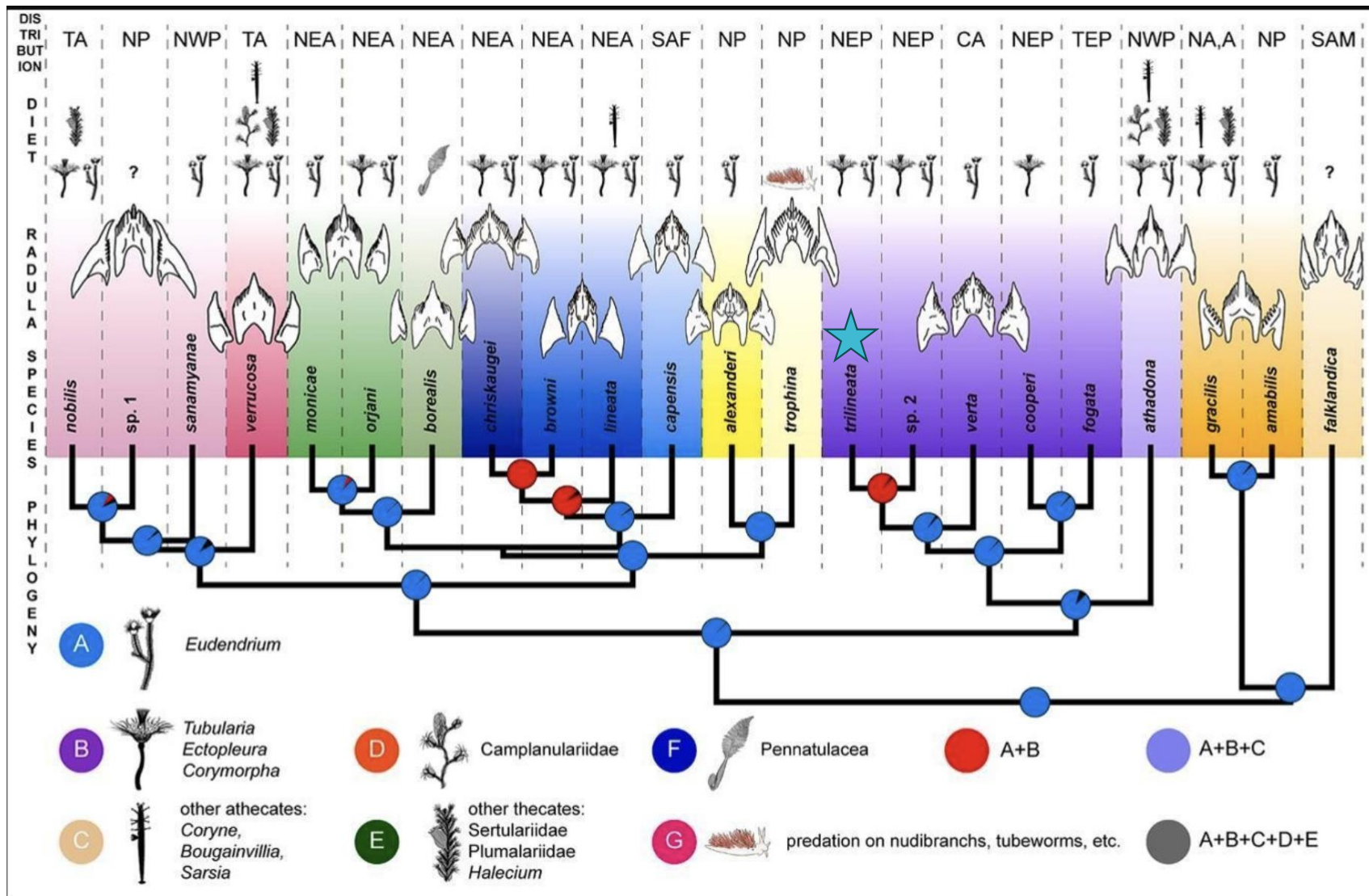
Potential  
*Coryphella Trilineata* Cryptic  
Species at FHL

an observational study using external  
morphology and SEM

Marine Invertebrate Zoology  
(FHL 423), Summer 2025

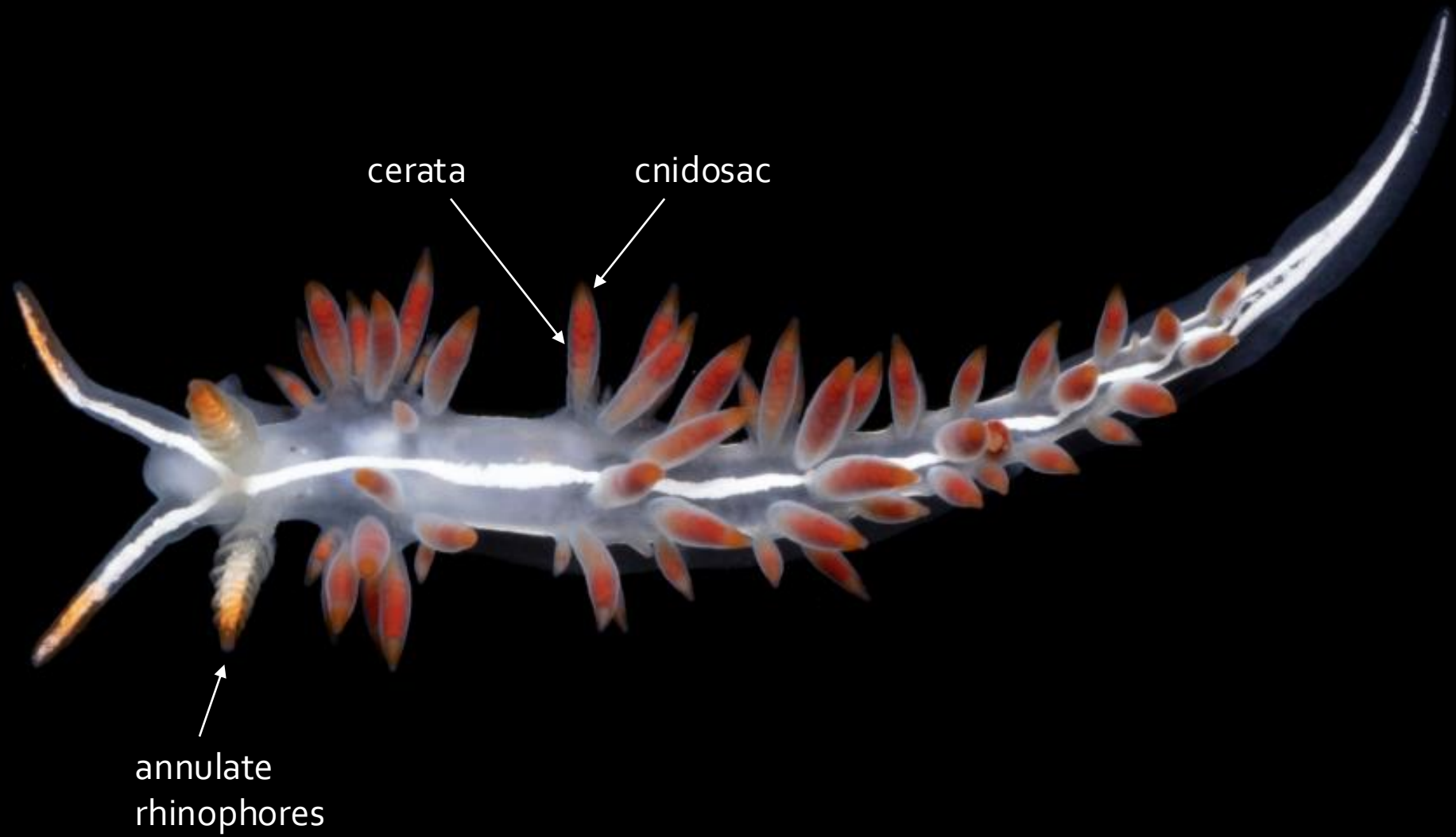
Zoey Harvey

July 17, 2025



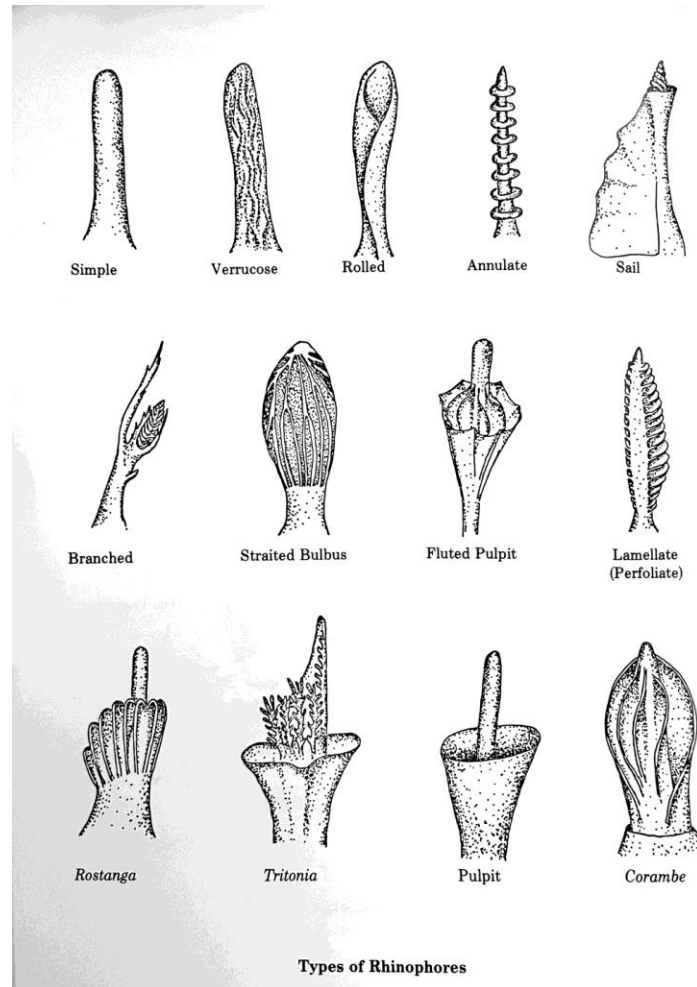
# Methods

- 11 *C. trilineata* specimens were collected off the docks at FHL
- The external morphology of each was examined under dissection scope
- Attempted to remove radula of each by dissecting with a needle
  - Proved very difficult to move such tiny structures between surfaces
- Compare and contrast external morphology with radular morphology
- Ideally use this information to determine if any cryptic species are present
- A few samples have also been sent in for barcoding



“Distinct”  
Features

## Annulate rhinophores



Gary Cobb



California Academy  
of Sciences (2012)

“Distinct”  
Features

3 iridescent white lines

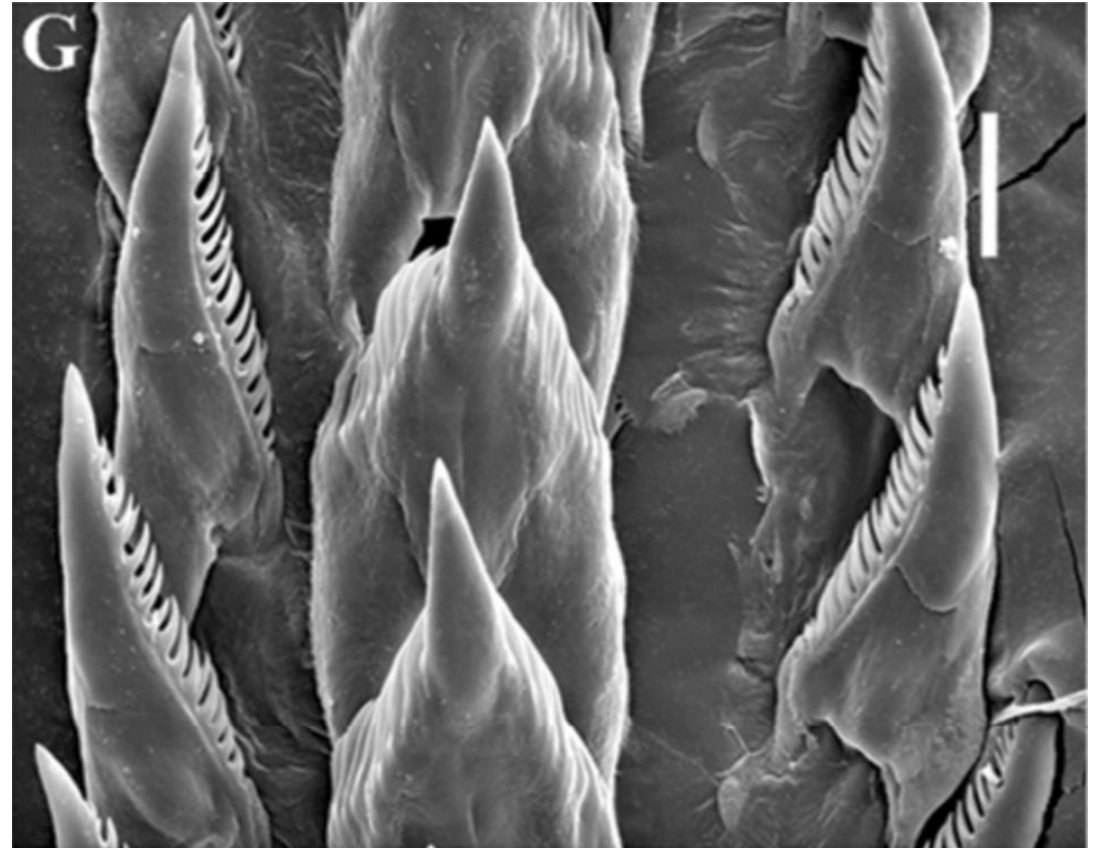


Randall Spangler (2020)

©2020 Randall Spangler  
<http://scuba.spanglers.com>

“Distinct”  
Features

## Radula



# Expected Morphological Data

## Body Plan

- Length 5-20 mm, 35 mm max
- 3 iridescent white lines (specific pathway)
- Pale white/grey

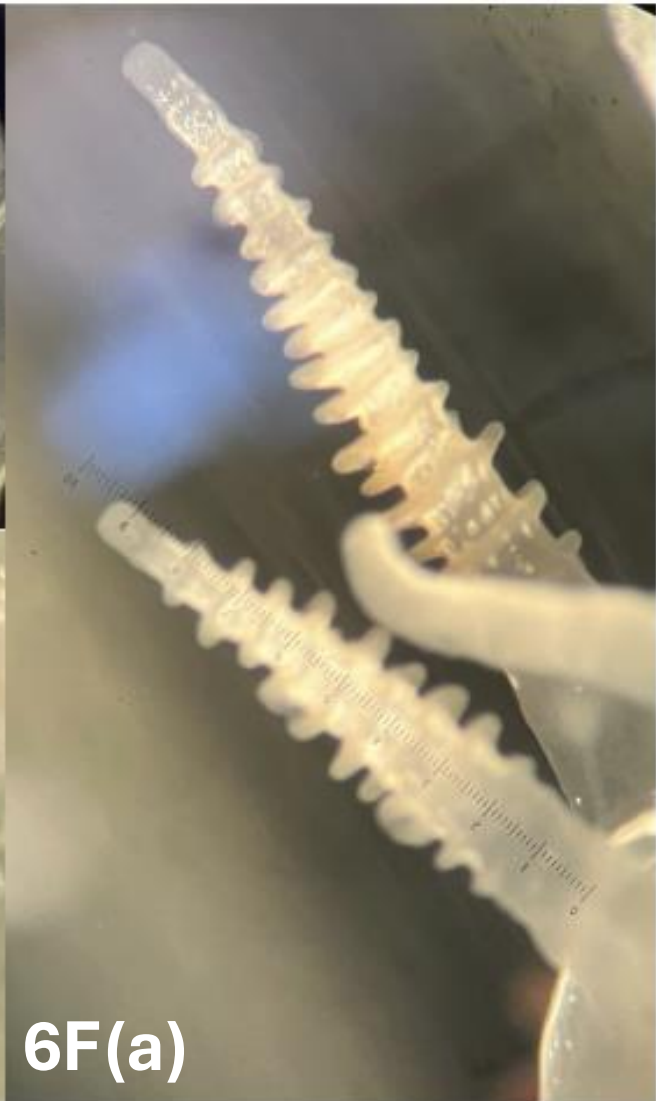
## Cerata

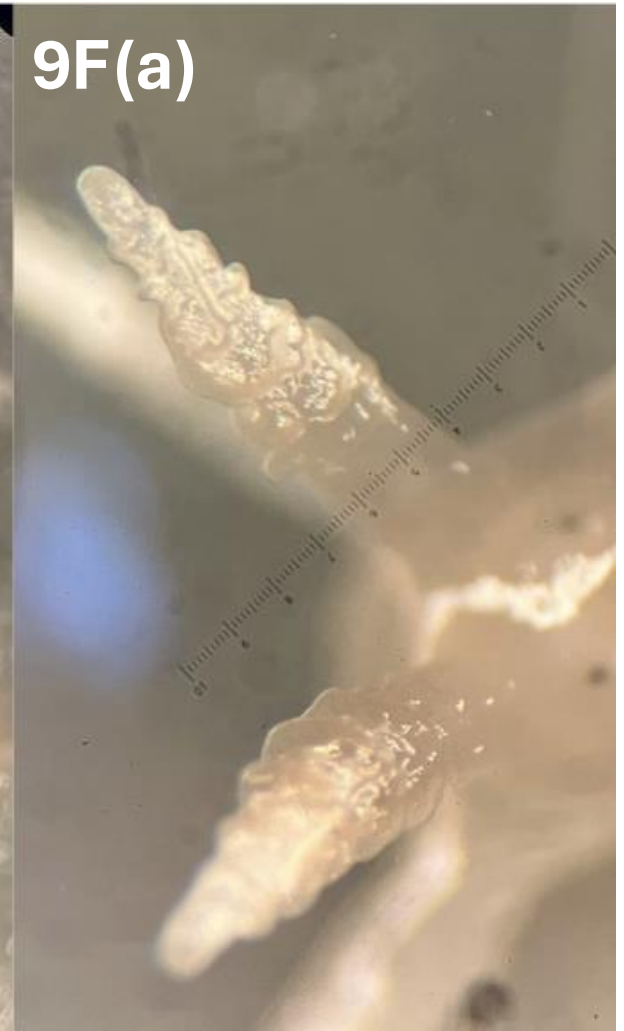
- 32-34 per side
- 1<sup>st</sup> group ~7-9 → remaining are in 3-4 ill-defined groups
- Conical with blunt ends and wider at distal extremity (conical)
- Transparent with brick red interior and orange/dark red cnidosac

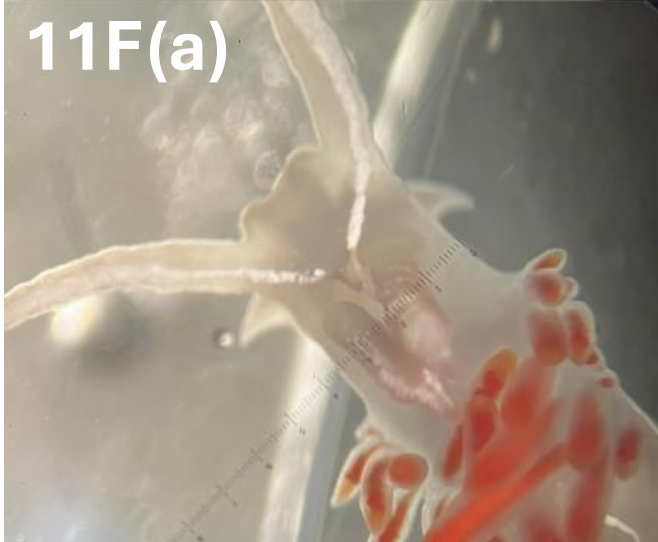
## Rhinophores

- Annulate with blunt, rounded ends
- 10-12 shallow leaves/annulations
- Yellow tips









# Observed Morphological Data

## Similarities

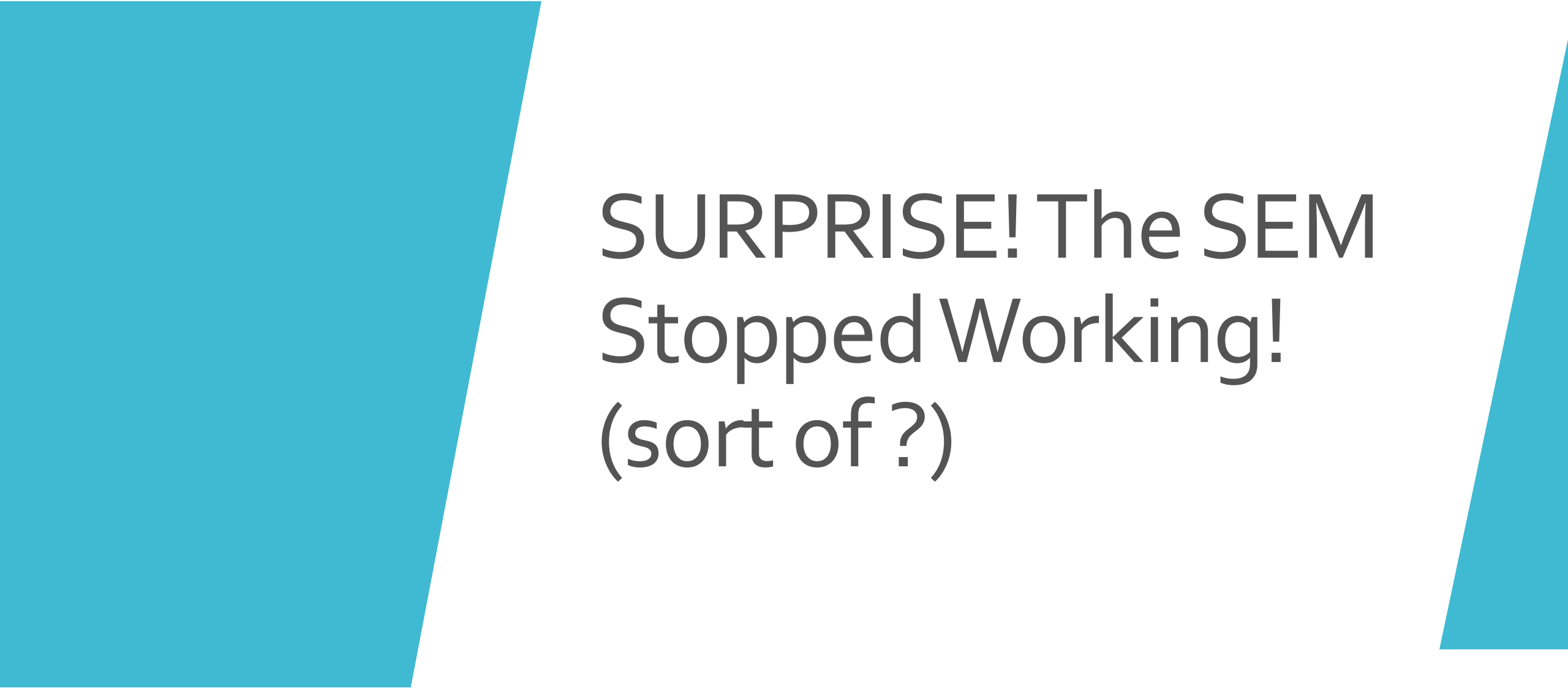
- 3 iridescent white lines and their “pathway”
- Conical cerata with orange cnidosacs
- General body plan
- Size
- 2 black dots (eyes)

## Differences

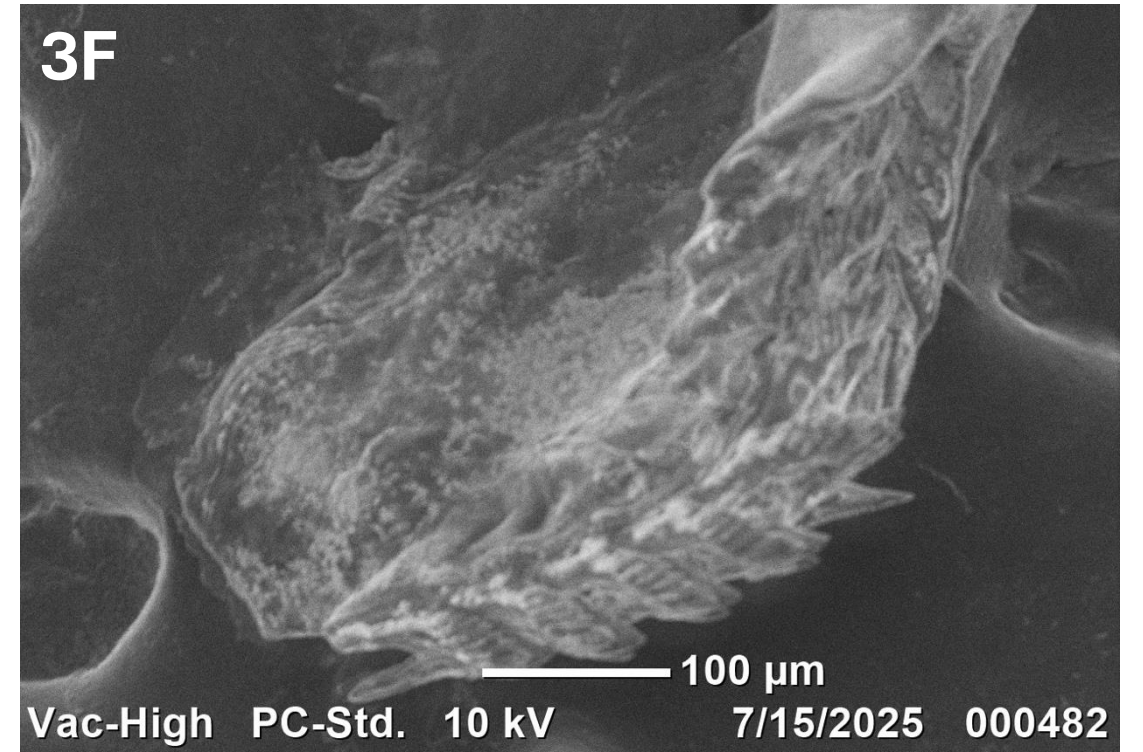
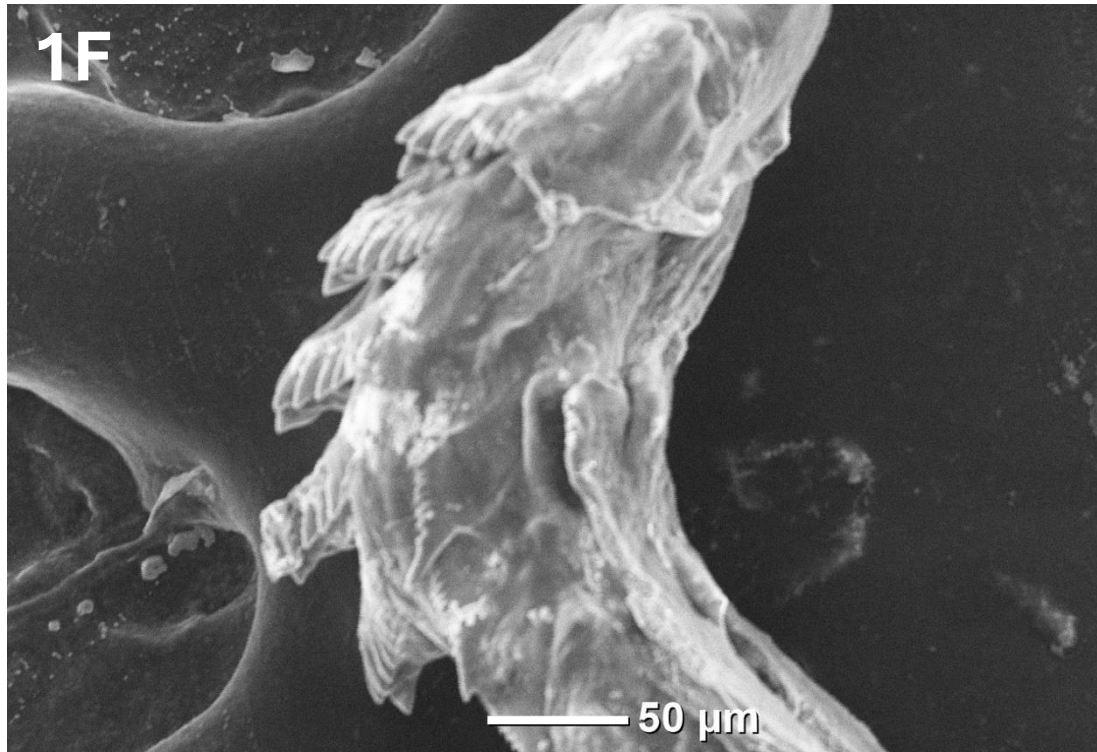
- Rhinophore annulation (intensity/shape, number, and symmetry )
- Rhinophore coloration
- Cerata coloration

# Expected SEM Data

- Median tooth is U-shaped with a spine in the center
  - 6 spines on either side of the median tooth that get smaller as they go back
  - 1st spines are almost as big as median spines
- Lateral teeth form an almost right-angled triangle
  - Small piece removed at right-angle corner
  - Hypotenuse has 1 large spine and 8-10 smaller spines

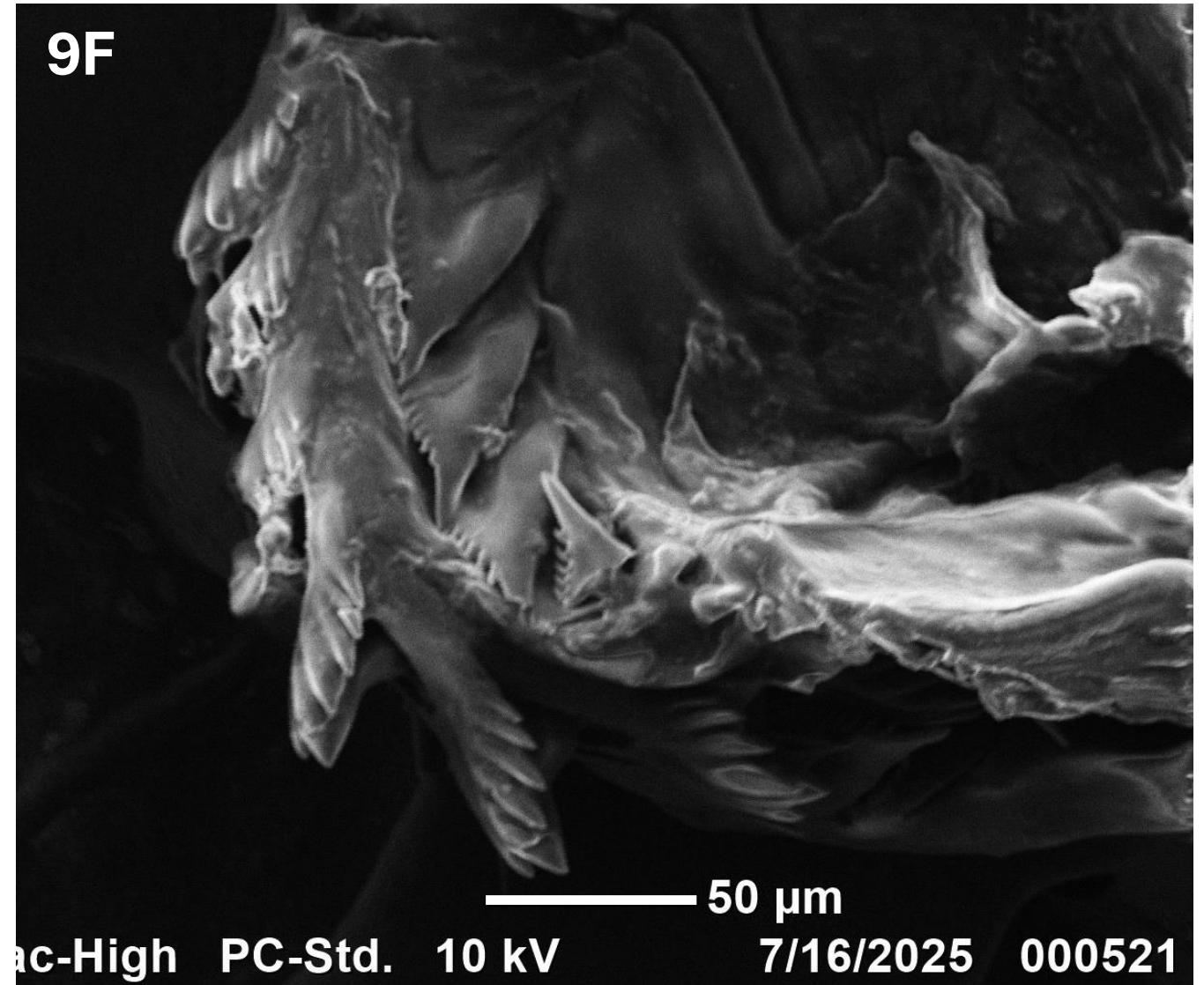


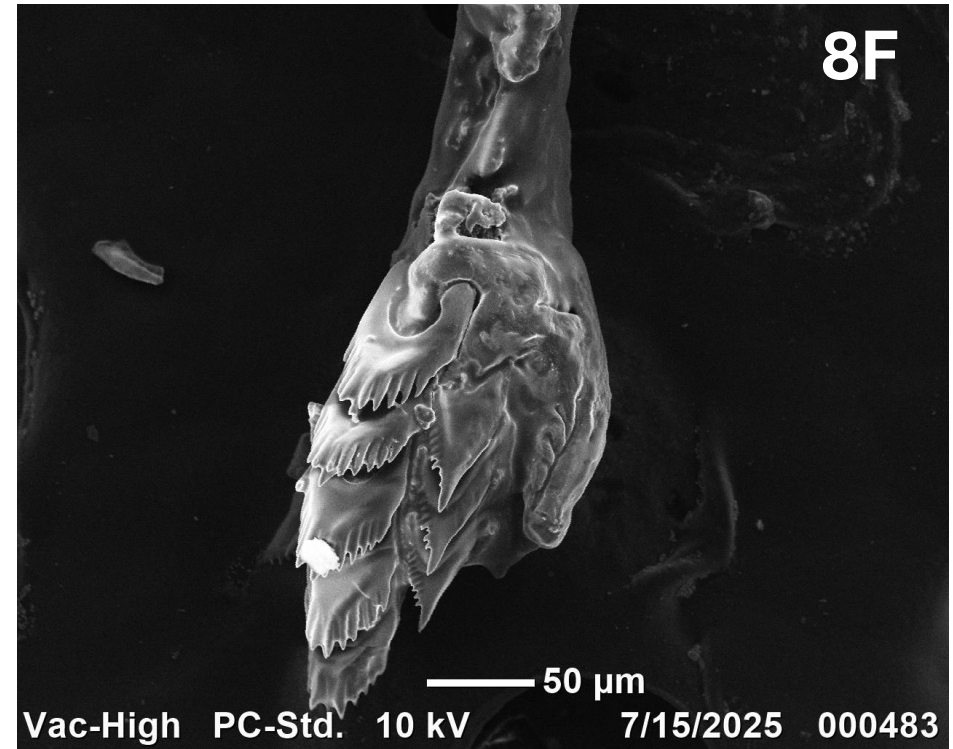
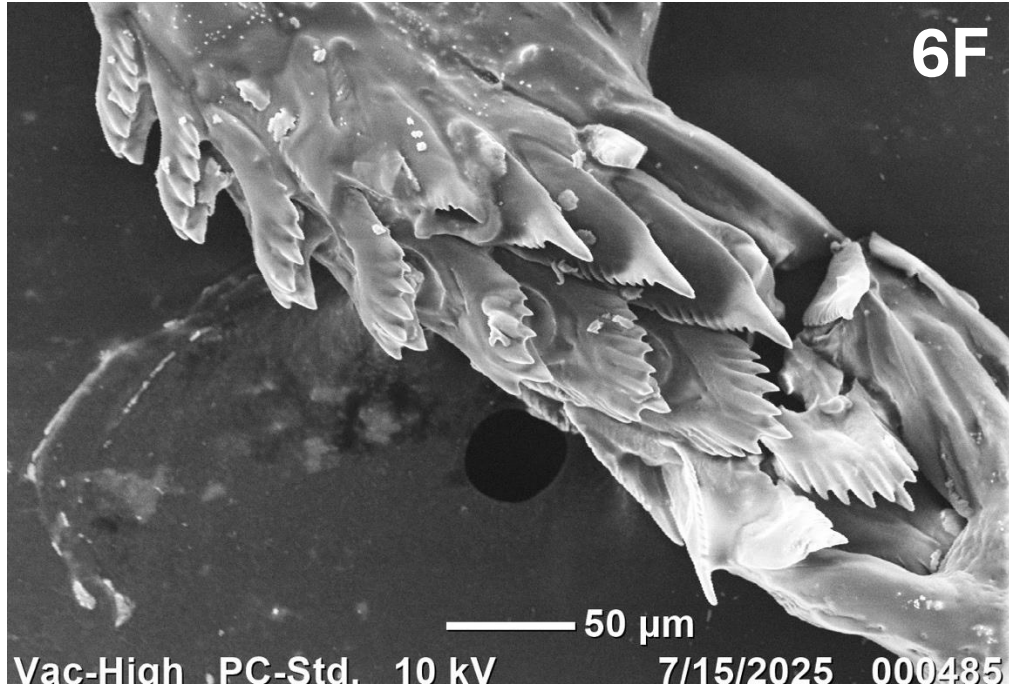
SURPRISE! The SEM  
Stopped Working!  
(sort of?)



# Observed SEM Data

# Observed SEM Data





# Observed SEM Data

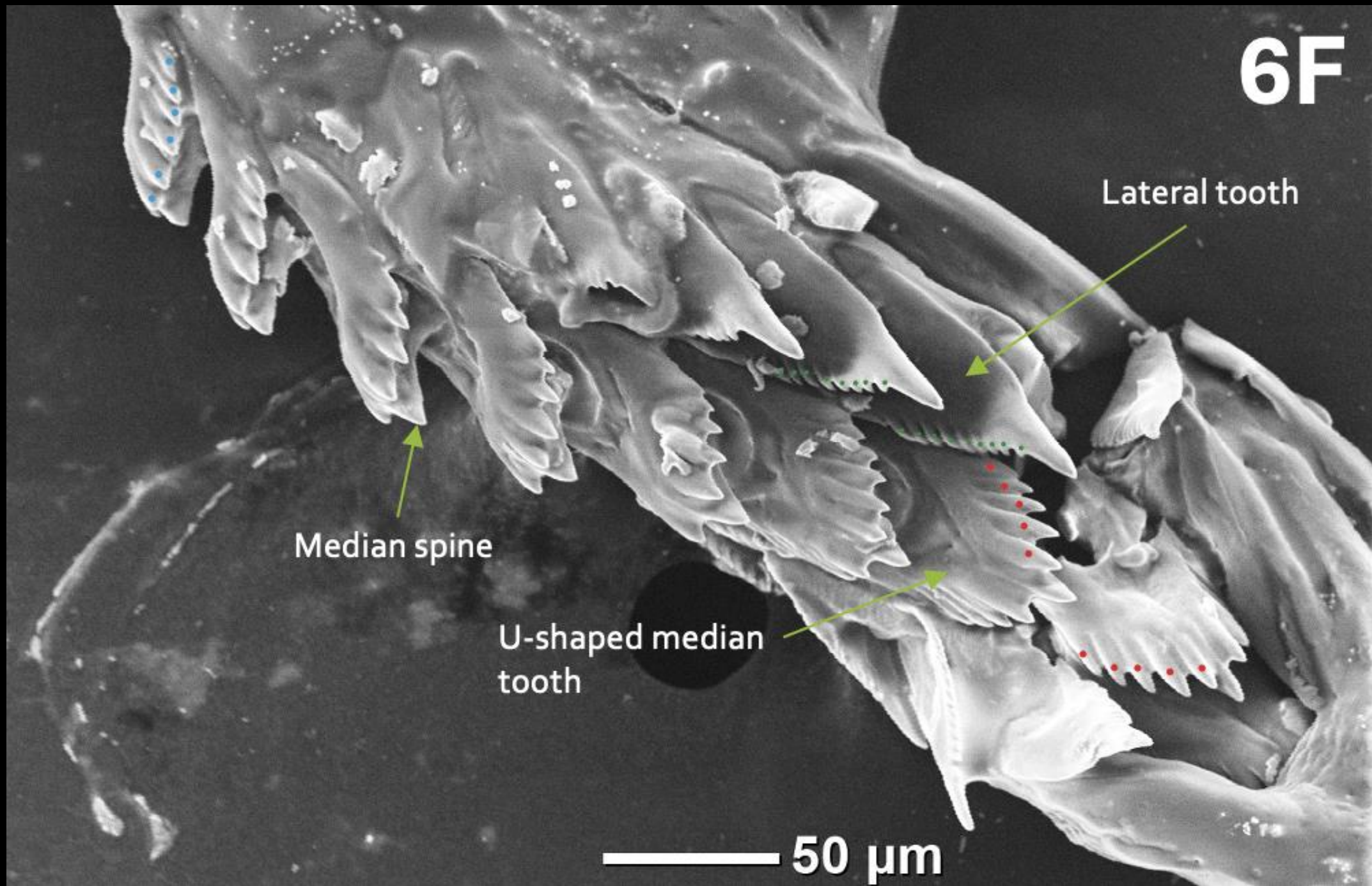
6F

Lateral tooth

Median spine

U-shaped median  
tooth

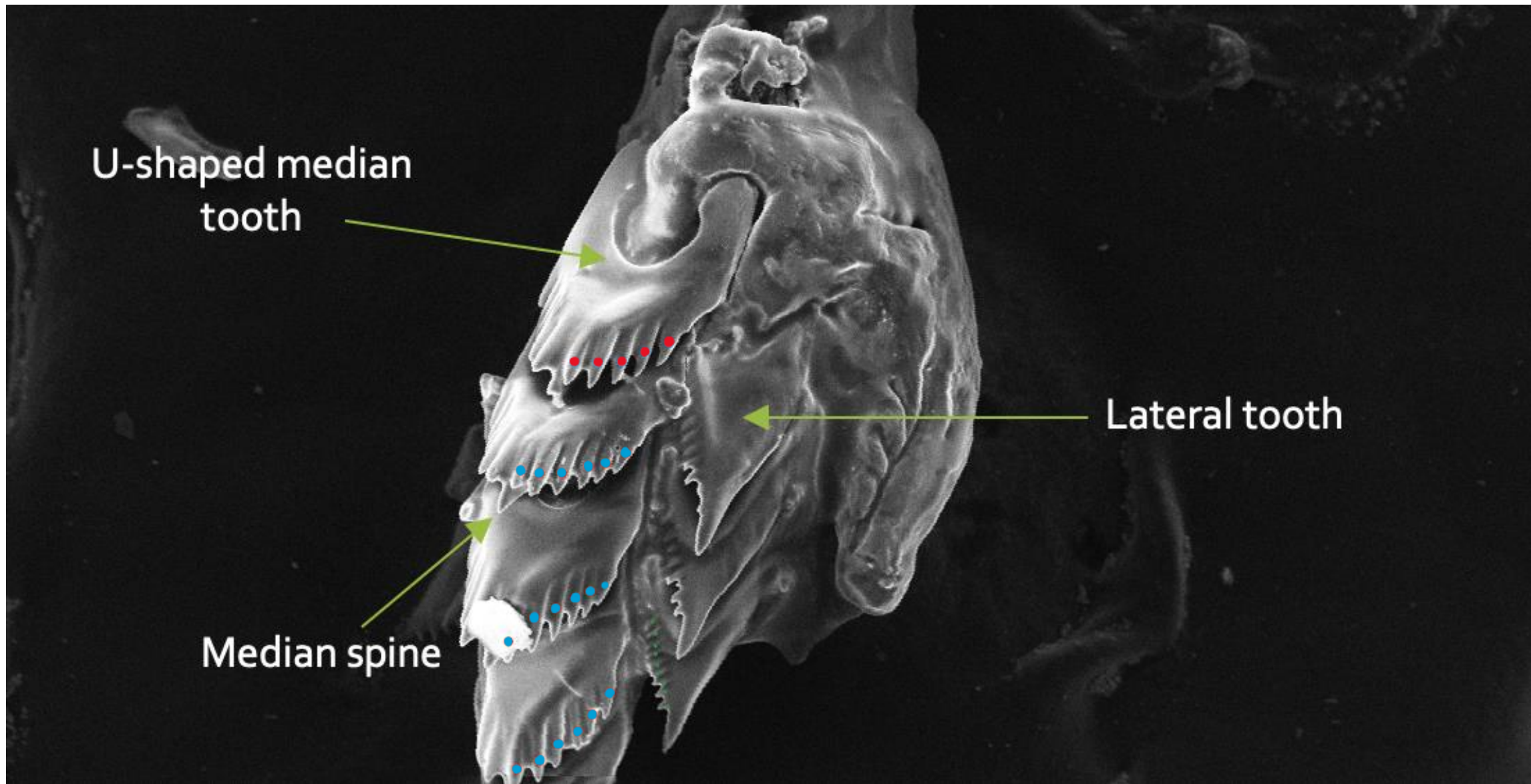
50  $\mu\text{m}$



U-shaped median  
tooth

Lateral tooth

Median spine



# Wrap-Up

- Hard to use SEM data due to quality and there is so little available
- Coloration is not super reliable
- Rhinophores varied greatly though! YAY!!
- No specimen had yellow color on rhinophores at the tip specifically
- Number of annulations varied from 4-16
- Annulation asymmetry (1F & 6F)
- Annulations varied from:
  - Shallow (1F, 2F, 7F, 8F)
  - Pronounced (3F, 5F, 6F, 10F)
  - Overlapping (9F)

# Conclusions

Moderate positive association between red cerata and pronounced rhinophore annulations exists

→ Could be due to natural variation, ontogeny, low sample number

There are differing levels of asymmetry in rhinophores and varied annulation patterns

→ Traits do not group together clearly enough to insinuate obvious presence of cryptic species

Possibility of cryptic species can't be rejected or confirmed

→ MORE DATA!!

# Special Shout Outs

Mattie, Jackson, Mallori, Teja, Isabella,  
Cassy, and anyone else who helped me  
find or catch my lil' dudes!





Thank You For  
Listening!

# Sources

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