



Identification of the Asian Clam *Corbicula*



Dave MacNeill
Fisheries and Ecosystem Specialist
NY Sea Grant
SUNY Oswego
dbm4@cornell.edu



Cornell University
Cooperative Extension



Some Quick *Corbicula* Biology:

- Size \leq 50 mm, usual 25 mm.
- Life span: 1.5 - 3 years, 7 yr. max.
- Temp. range 0-2C (32-36 F) to 39C (86F); reproduce \sim 16 C (61 F)
- **Capable of self-fertilizing!** brooded larvae
- Crawling juveniles (pediveliger) w/ byssus; No byssus in adult.
- **70K offspring/clam.**
- **Dispersal/spread: ballast, bait buckets, as bait, water currents, water plant transfer.**
- Prefers good water quality, moderate currents.
- **But, may tolerate low oxygen for up to 3 months!**
- Lakes, canals, large rivers: mud, sandy, clay, gravel and hard bottomed areas
- Capable of rapid burrowing.
- Filter feeds: microscopic plants/animals (plankton)
- **High filtration rate! Up to 1.3 liters/hr/clam.**
- Competes with native clams/mussels.
- **Highly adaptable: unstable, unpredictable habitats!**



Center for
Biodiversity
and
Conservation



© Noel M. Burkhead



Cornell University
Cooperative Extension



Corbicula Life Cycle

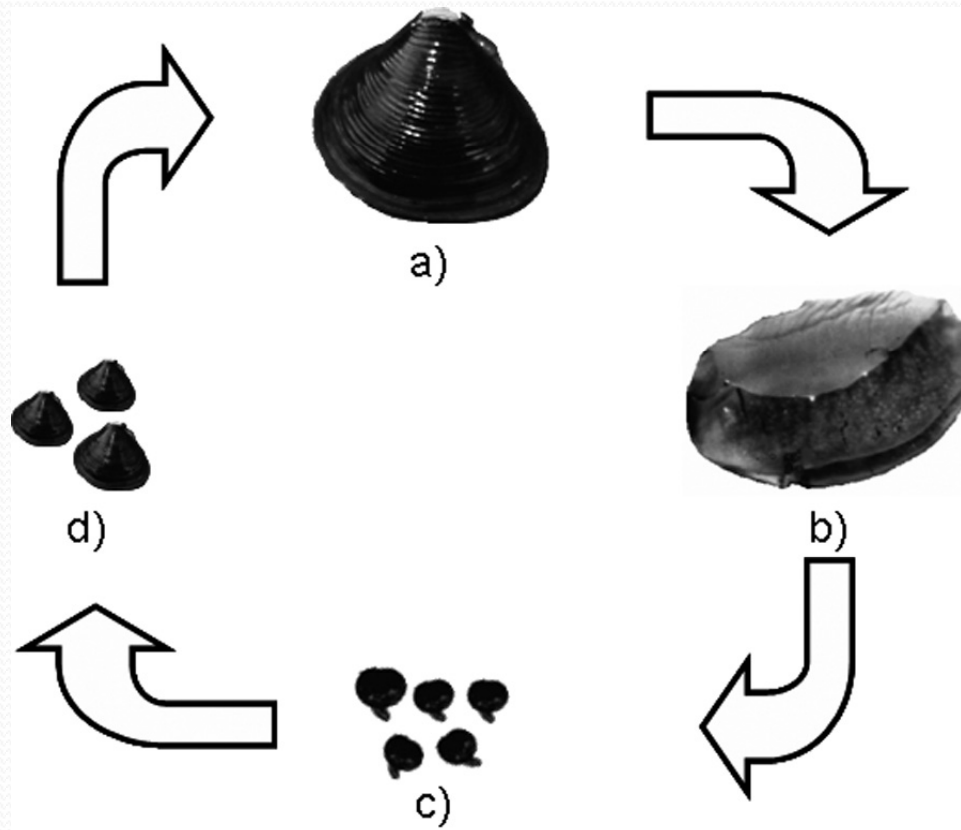


Fig. Illustrative representation of the life cycle of *C. fluminea*: a) adult specimen; b) inner demibranch with larvae; c) small juveniles recently released (with a completely developed foot and with the common D-shaped configuration) and d) small adults.



Identification of Asian Clams



Shawn Liston
Audubon of Florida

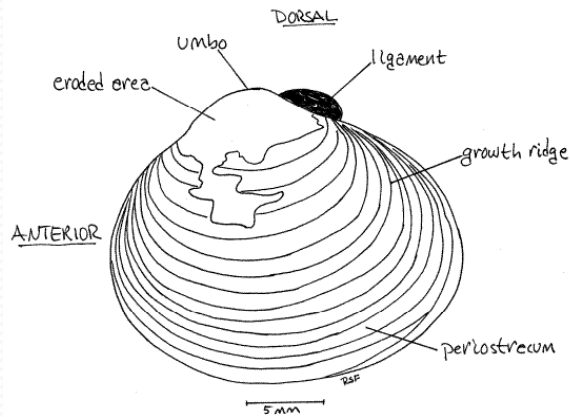


Cornell University
Cooperative Extension

5370

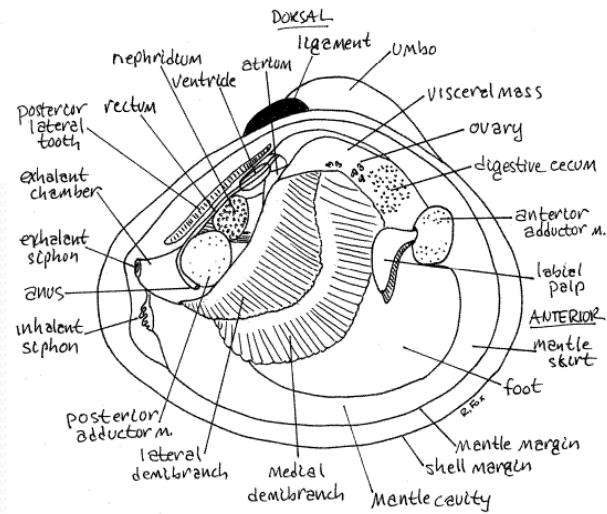


What features do we look for to ID *Corbicula*??

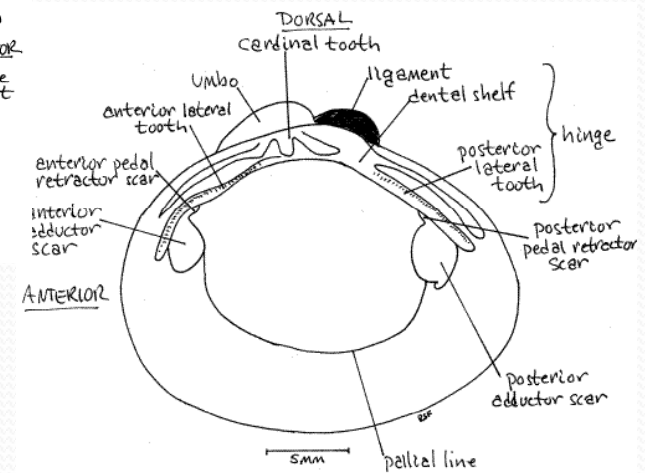


Outside left valve

Inside left valve



Inside right valve



Copyright 2001 by
Richard Fox
Lander University



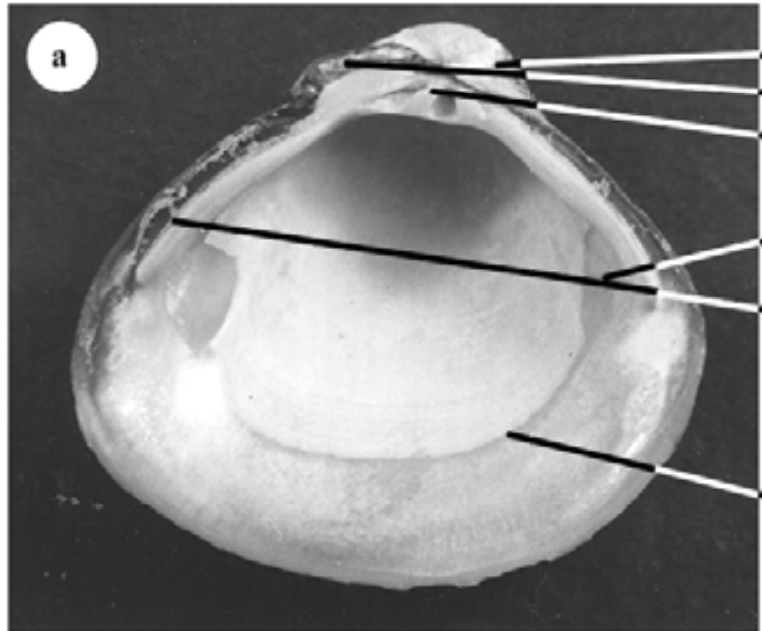
Cornell University
Cooperative Extension



More Details of the Internal Shell Features of *Corbicula*:

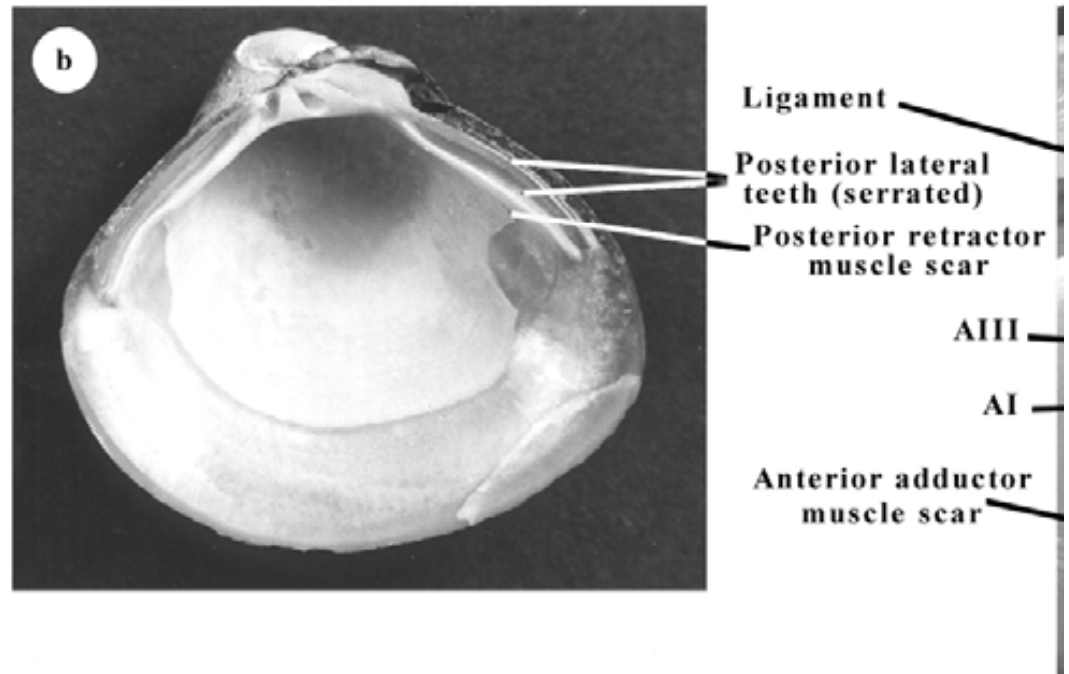
Inside view comparisons of right versus left valves

left



1 cm

right



Arthur E. Bogan
North Carolina State Museum of Natural Sciences
John M. Alderman
Alderman Environmental Services, Inc.
Pittsboro, NC
Workbook



Cornell University
Cooperative Extension



Common Freshwater Mussel Shapes:



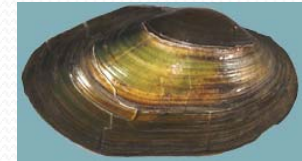
Subelliptical



Anodonta implicata alewife floater



Margaritifera margaritifera eastern pearlshell



Pyganodon cataracta eastern floater



Rhomboid/subtriangular



Alasmidonta heterodon dwarf wedgemussel



Subtrapezoidal

Elliptio complanata eastern elliptio



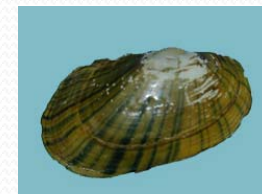
Utterbackia imbecillis paper pondshell



Subovate



Lampsilis cariosa yellow lampmussel



Lampsilis radiata eastern lampmussel



Triangular/Rounded triangular*



Corbicula fluminea asiatic clam

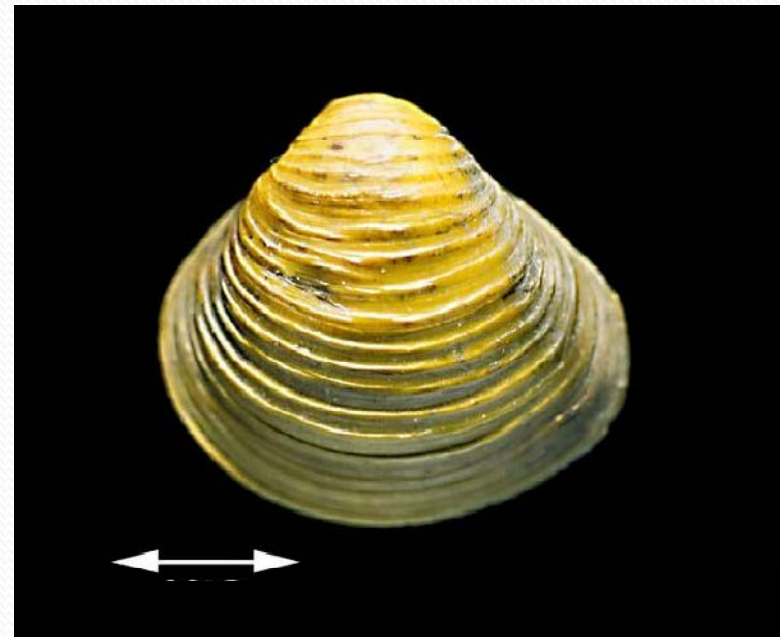
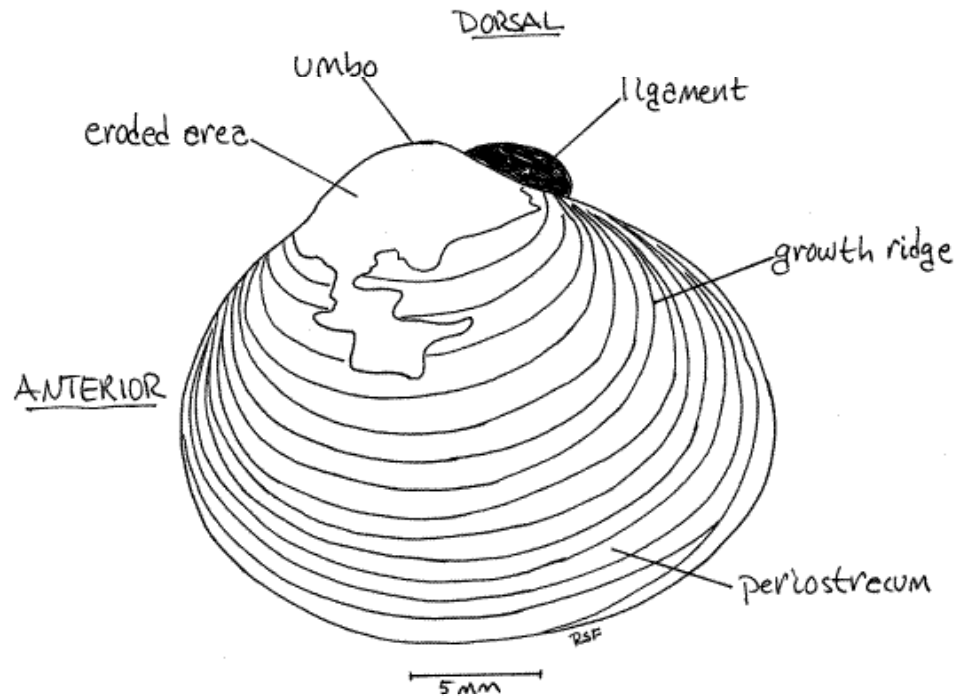


Cornell University
Cooperative Extension

Center for
Biodiversity
and
Conservation



External features (left valve)

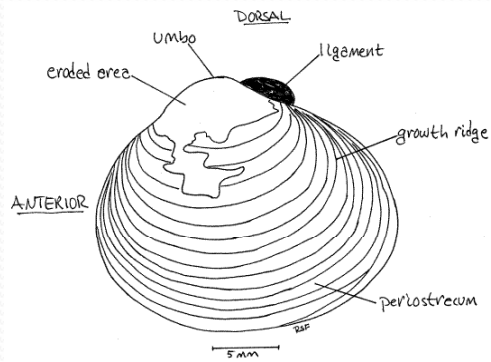


Copyright 2001 by
Richard Fox
Lander University

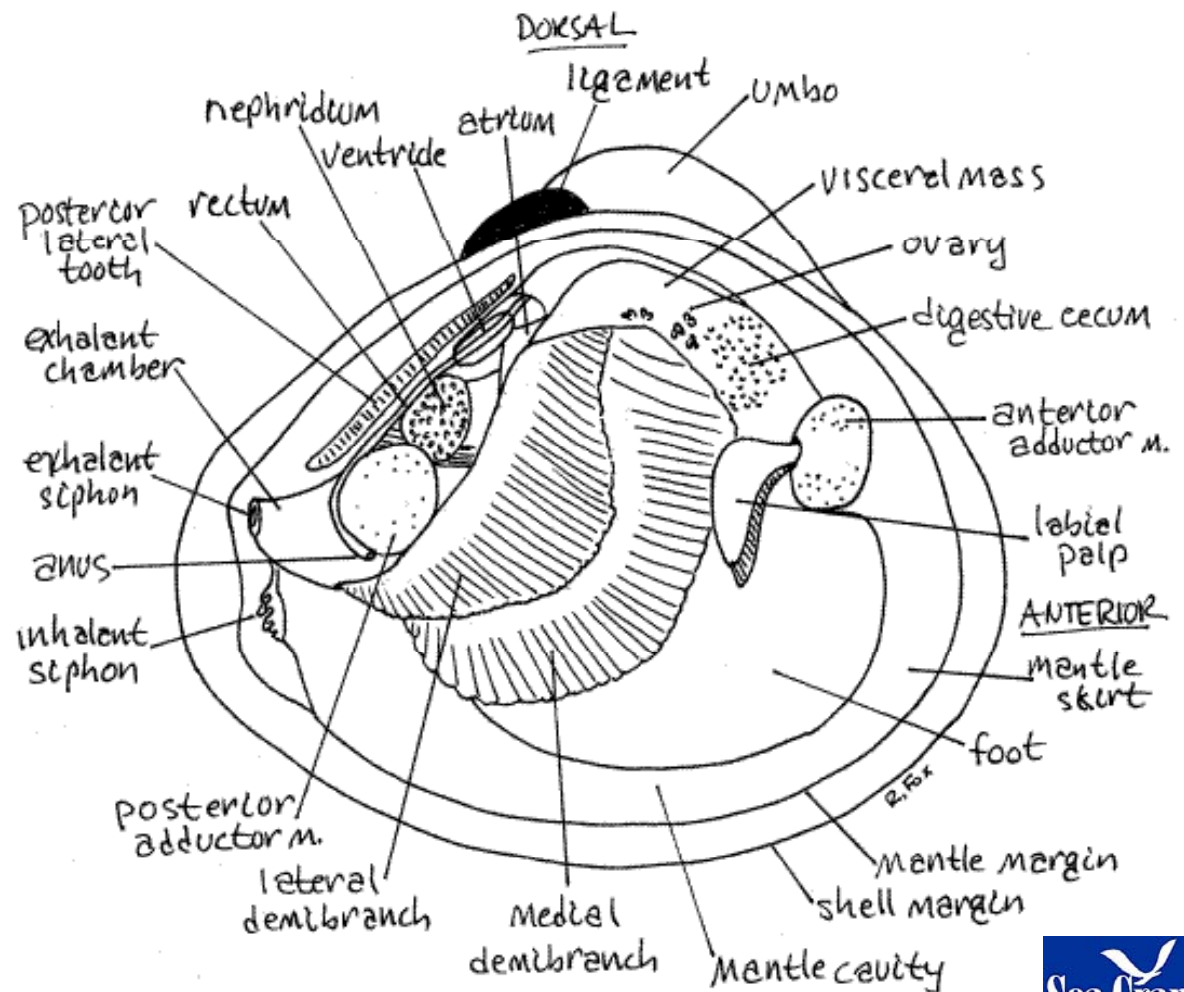


Cornell University
Cooperative Extension





Internal Features: (right valve)



Copyright 2001 by
Richard Fox
Lander University

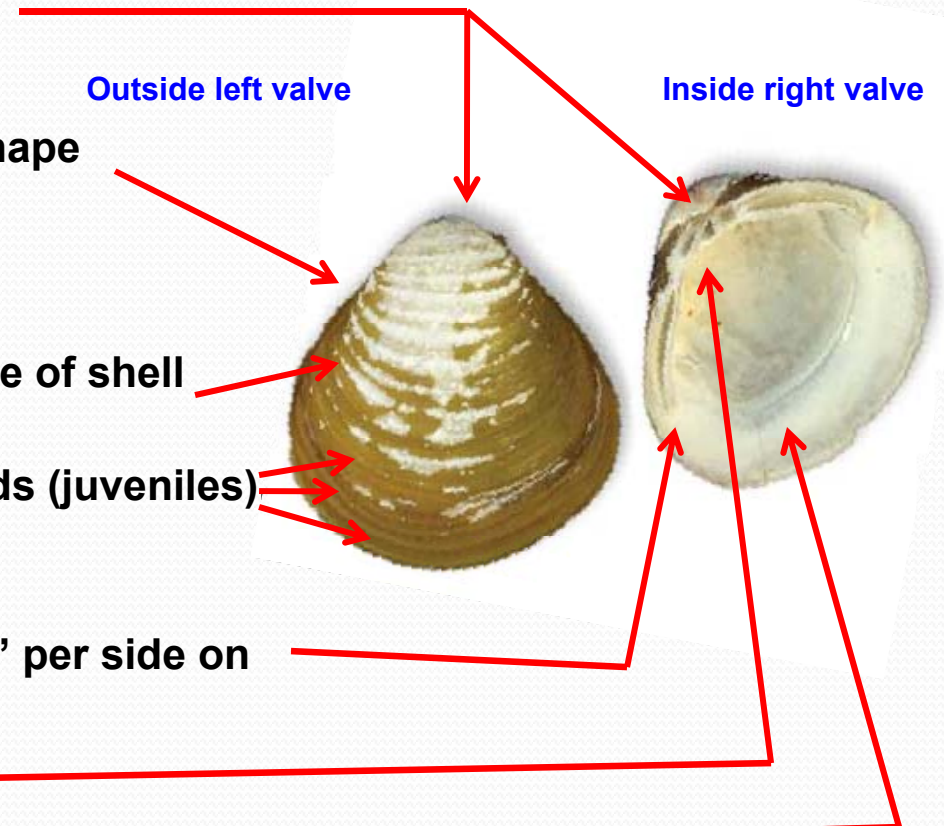


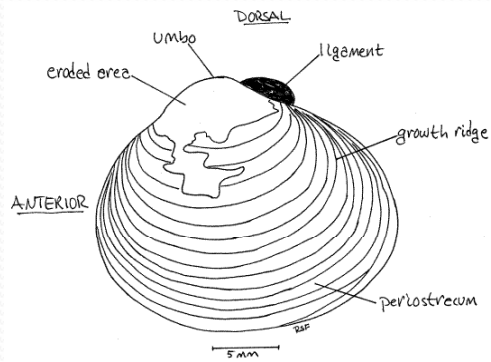
Cornell University
Cooperative Extension



Corbicula Identification Features

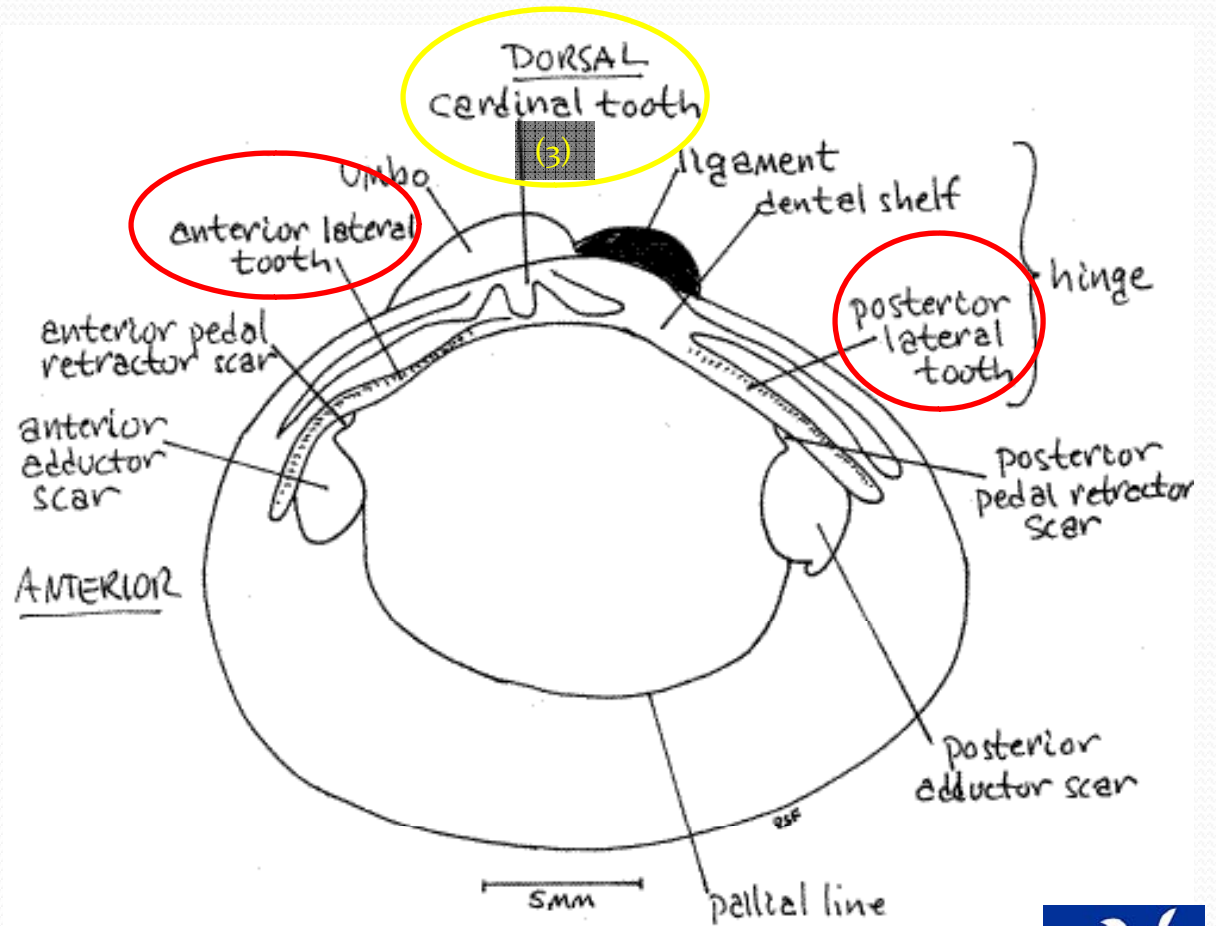
- Centrally located beak or umbo on shell
- Triangular or rounded triangular shell shape
- Many, coarse concentric rings on outside of shell
- 3 brown/purple colored radial colorbands (juveniles)
- 2 pair long, finely serrated lateral “teeth” per side on right valve: 1 pair per side on left valve
- 3 pseudocardinal “teeth” per valve.
- Interior of shell bluish white.
- Most similar to native fingernail clams.





They have three cardinal teeth in each valve with two lateral serrated teeth in each side of the right valve and only one in each side of the left valve. Inside right valve shown below

Internal Features (right valve)



Copyright 2001 by
Richard Fox
Lander University



Cornell University
Cooperative Extension

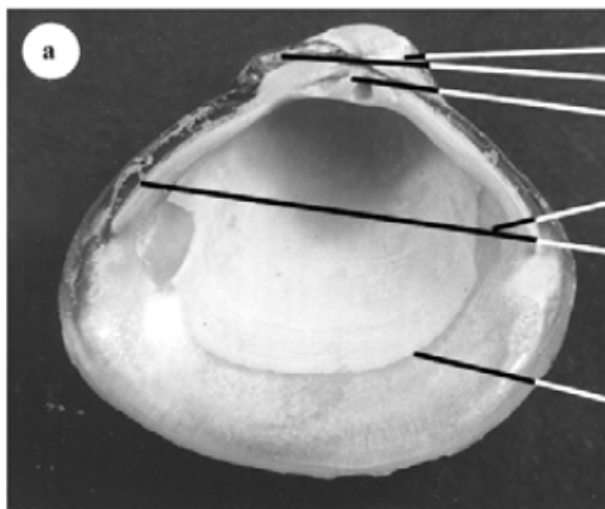


More Details of the Internal Shell

Features of *Corbicula*:

Inside view comparisons of right versus left valves

Inside left valve

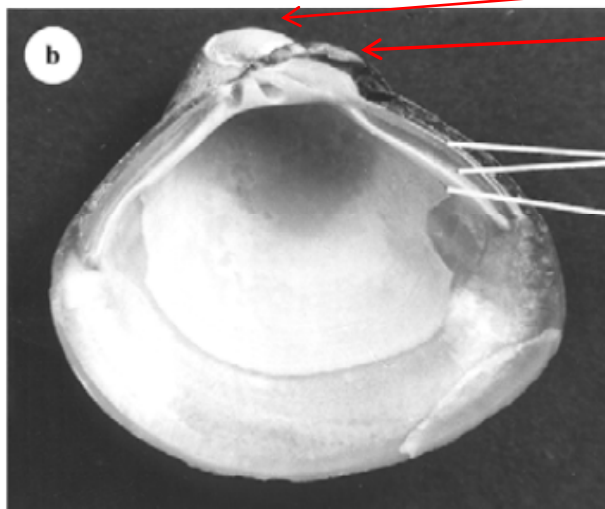


- Umbone
- Ligament
- Cardinal teeth
- Hinge plate
- Anterior adductor muscle scar
- Serrated lateral tooth

1 pair

Arthur E. Bogan
 North Carolina State Museum of Natural Sciences
 John M. Alderman
 Alderman Environmental Services, Inc.
 Pittsboro, NC
 Workbook

Inside right valve



- Umbone
- Ligament
- Posterior lateral teeth (serrated)

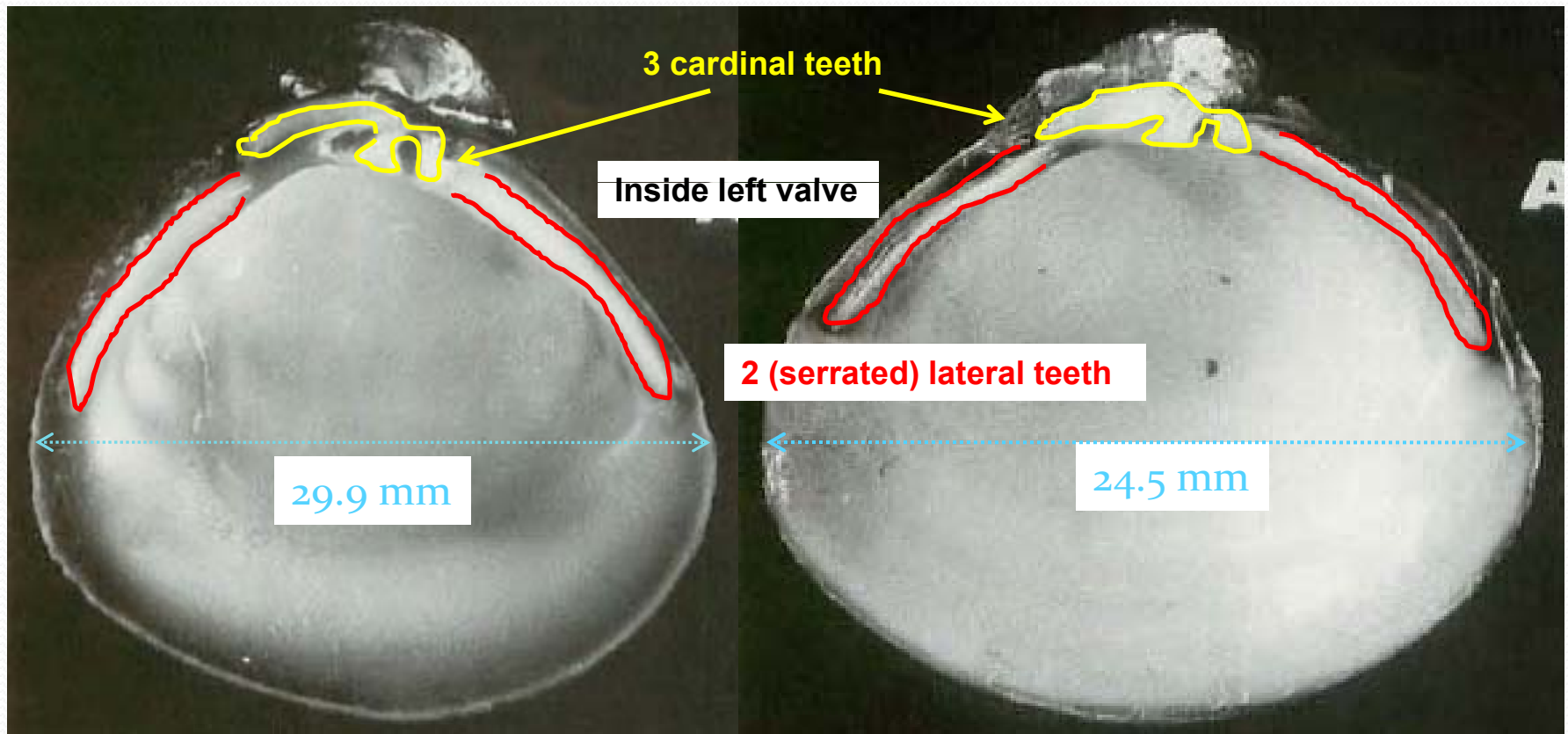
2 pair



Cornell University
 Cooperative Extension



Details of the Internal Shell Features of *Corbicula*



American Malacological Bulletin, Vol. 10(1) (1993):39-49

The Asiatic clam *Corbicula fluminea* (Müller, 1774)
(Bivalvia: Corbiculidae) in Europe

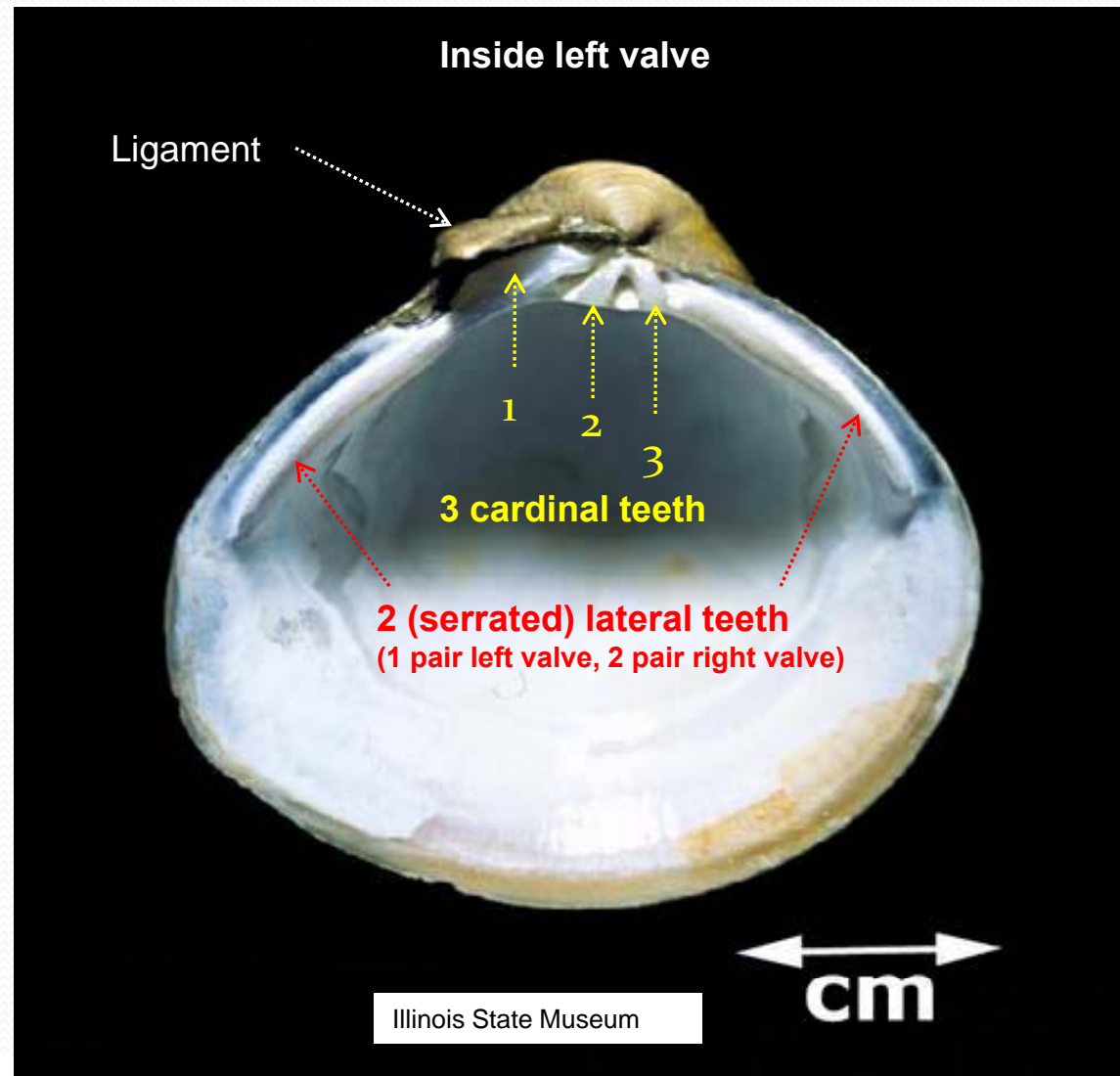
R. Araujo, D. Moreno and M. A. Ramos



Cornell University
Cooperative Extension



More Details of the Internal Shell Features of *Corbicula*



Identification of Native Fingernail Clams

- Triangular to oval shape (more variable).
- **Fine** concentric rings on shell
- **Umbo not well centered**, more posterior.
- Smaller size: 6-14 mm.
- **Thinner shell**, lighter (cream) colored.
- **Smooth, non-serrated, lateral teeth.**
- Sluggish water currents, tolerates lower water quality
- Creeks, rivers, ponds, springs, marshes, lakes.
- **Usually completely buried in soft sediments.**
- Filter feeds on sediment bacteria.



Center for
Biodiversity
and
Conservation



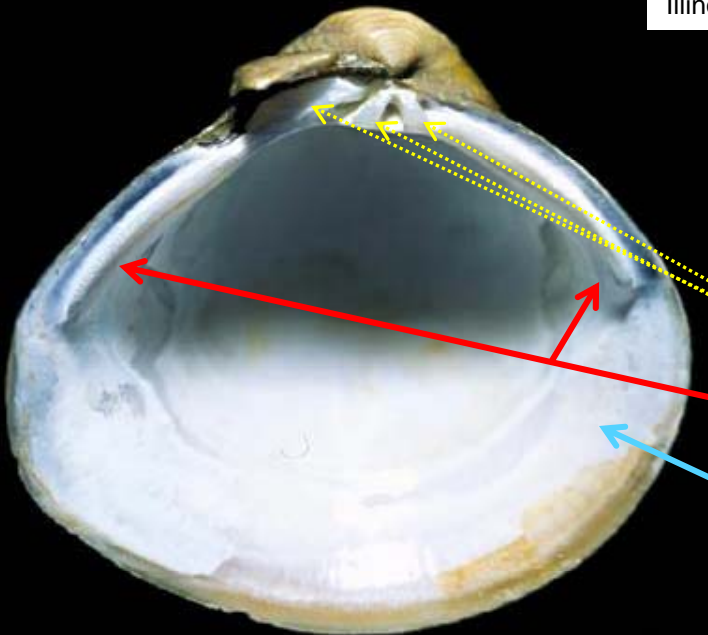
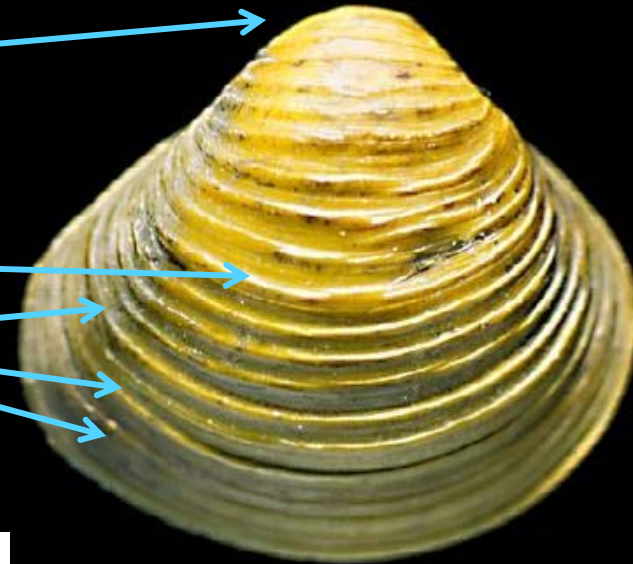
Cornell University
Cooperative Extension



Corbicula Identification Features: Summary

- Centrally located beak or umbo on shell
- Triangular or rounded triangular shell shape
- Many, coarse concentric rings on outside of shell
- 3 brown/purple colored radial color bands (juveniles).

Illinois State Museum



Left valve:

- 3 pseudocardinal “teeth” per valve.
- Long, finely serrated lateral “teeth” each side of valve. (2 inside left valve, 2 pair inside right valve)
- Interior of shell bluish white.