

Containers:

size, cost, evaporative loss, archival

- Clear flint glass jars (tread 400; typically straight-sided), from 2, 4, 8, 16, 32 oz. (1 L), 1 gal., rarely more nowadays.
- Lids: White ribbed Polypropylene cap (tread 400) with F217 SureSeal liner.
- Sealing Tape: SpecTape ST-408C Polypropylene Tape with acrylic adhesive.
- Stainless steel container with neoprene gasket (from few gallons to 10's of thousands) or heavy duty polypropylene (not as sturdy but more chemical and organic resistant) or polyethylene containers (with or without rollers).
- For dry collections: see CMN PET boxes...



Fluids:

ethanol-type, %, formalin, buffering

- Typically 70-80% Ethanol for general collection preservation.
- Some in 90-95% to extend usability live for DNA, but renders specimen more brittle (better to extract tissue for cryo-storage).
- Formaldehyde still used for good, long-term fixation of tissue but quickly renders useless for DNA analysis (so far...).
- Some planktonic organisms better preserved in formaldehyde than ethanol.
- Because of high acidity, if calcium-based biogenic material such as mollusc shells, then should be transferred to ETOH or have buffer checked/added regularly .
- No alternative for formaldehyde yet...

See Simmons, John E. 2014. *Fluid Preservation – A Comprehensive Reference*. Rowman & Littlefield. 347 pp.



Labels:

generation, archivability, imaging labels, retain all labels?

- **For dry collections:**

- acid-free or buffered bond (with 100% cotton rag content) paper.
- Black-only high-res inkjet printer (allow time to dry), but now difficult to find such printers.



- **For fluid-preserved collections:**

- We still use Resistall paper (100% cotton fiber), which is not acid-free.
- Today, we use Thermal Transfer Printers with spun bound polyester and SDR 5+ resin ribbon
 - expensive and can be quite finicky.



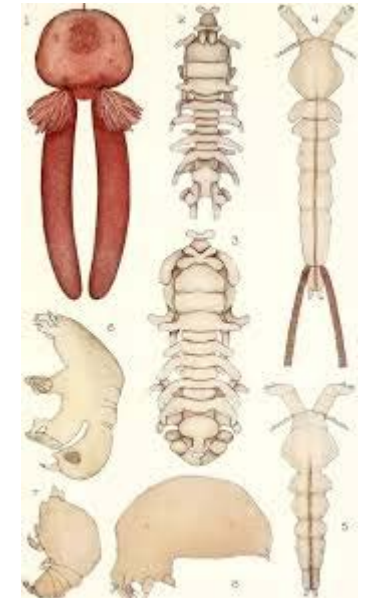
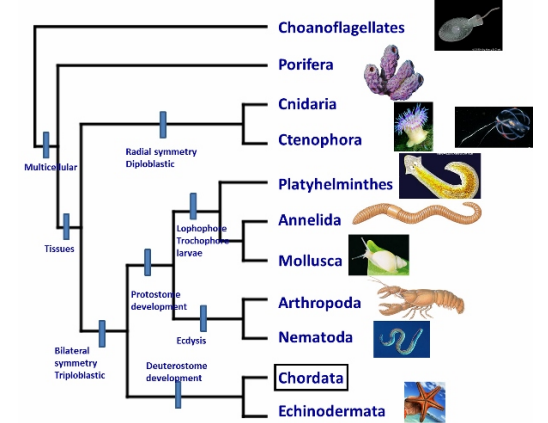
- **Always keep old labels with samples:**

- Never assume that the captured data on new label or in database is perfect.
- Physical preservation of old labels
- Paper linkages to old labels/acquisition information
- Imaging old labels may provide an easy access to resolve data discrepancies.

See https://spnhc.biowikifarm.net/wiki/Labeling_Natural_History_Collections

shelf organization

- Most invertebrate collection are organized following some systematics classification.
- May not be up-to-date, but as long as a good and shelve labelling system is available, it works.
- Taxonomic groups that have unresolved or frequently-changing classifications may benefit for a numerical organization, provided it is fully databased with location reference system.
- Issues with some numerical organization approaches e.g. taxon codes.



Trays on shelves:

organization, fire codes

- Greatly dependent on fire code and how it is interpreted/applied.
- Some will not allow bins if perceived as blocking movement of water down the shelves during a fire-triggered sprinkler discharge. In such cases, perforated shelves would be recommended.
- When possible, we favor having specific taxonomic groups (e.g., species or genus) organized within bins for ease of labelling, access and transport.
- Bins can be made of metal (expensive), wood (average cost but highly flammable and will absorb fluid chemical) or plastic (flammable too but will not absorb, are light and fairly inexpensive).
 - At CMN, we use polyethylene coroplast bins that come flat, pre-cut &, ready to fold into shape with reinforcing liner.



- Also: historical collections, dried collection storage, unusual collections (e.g., Japanese tsunami collection, where artifacts are substrates for encrusters).

