EXAMINATION OF ECHINODERMS AND NEMERTEANS

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Echinodermata

For fixation good quality, buffered formaldehyd (4-5%) or alcohol (70-75%) can be used. When alcohol is used, washing with tap water is recommended. As formalin may corrode calcareous structures, the echinoderms should be transferred to alcohol (70%) as soon as possible. Live specimens can be relaxed by adding magnesium sulfate or icy salt water (fresh water) prior to fixation. Outlines and details of plates and calcarous appendages are more easily recognized when the specimens surface is dried.

For identification use Mortensen, T., 1927, Handbook of the Echinoderms of the British Isles; for material from Danish seas the Danish edition, Mortensen, T., 1924, Pighude (Echinodermer), Danmarks Fauna, is recommended. Juveniles of Ophiura albida and Ophiura ophiura can be identified using Webb, C.M. & P.A. Tyler, 1985, Marine Biology 89. A quantitative survey of echinoderms in the Central North Sea is presented in Ursin, E., 1960, Meddr Danm. Fish- Havsunders. N.S. 2.

Nemerteans

In general, identification of nemerteans requires sectioning; though external and internal structurs may help to identify families, genera or even species. Significant external features are general body shape, outline of cephalic region, presence of cephalic slits or grooves, number and arrangement of ocelli, opening of mouth and proboscis pore, presence of ventral sucker and caudal cirrus. Appropriate internal structures (distinguishes in specimens lightly flattened or transferred into glucerine) are cerebral ganglia, rhyncocoel, proboscis armature, intestine. Colour patterns of nemerteans may vary considerably, and is thus usually not sufficient for species identification.

For identification of nemerteans use Gibson, R., 1982, British Nemerteans, Synopsis of the British Fauna (New Series) 24. Nemerteans from Danish waters are described in Brunberg, L., 1964, Ophelia 1.

SUGGESTED PROCEDURE FOR FIXATION AND PRESERVATION OF BENTHOS SAMPLES (METAZOANS)

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Except for larger macrofauna use:
2% formaldehyde (pure quality) in seawater or demineralized H_2O, buffer with Borax so pH is as least 7,5 (prepare the fluid before use !); make sure that bulk samples are fixed throughout; if necessary exchange fluid; fixation time 1-2 days; then exchange formaldehyde solution as soon as possible with 70% ethanol (final concentration) after short washing with tap water (to remove salt).
This would be a good general method for most taxa of Metazoa.

Special methods:

1. Early spat of shelled molluscs are best kept in 90% ethanol after short washing with tap water. Store samples in the dark.

2. Larval molluscs: Best kept in Carriker's solution: 1 liter of filtered seawater + 10 ml of 40 or 30% formaldehyde (analytical quality) + 100 g of cane sugar and buffered with Borax to get pH of 8 (or slightly higher). Check pH !! (This medium is, however, not good for e.g. planktonic Crustacea).
   Store in darkness.

3. Really good material of polychaetes requires narcotizing with isotonic $mgCl_2$ before fixation in 2% formaldehyde.

4. When changing preservation fluids of bulk samples, use sieves with meshsize well below that used earlier during sampling.

5. Use for nomenclature the checklist of marine Molluscs from Hoisaeter, T. (1986) Sarsia 71: 73-145.