Subphylum Crustacea: Characteristics

1. Aquatic “equivalent” of insects - very diverse
2. Body form highly variable usually due to appendage modification.
   a. Limbs variable in number, *biramous*.
   b. Body with 16-20 somites (segments)
   c. Two pairs of antennae - very olfactorily oriented.
Crustacea: Characteristics

d. Respire with gills – often with a carapace.
   1. Cuticle with CaCO₃
3. Growth often indeterminate - continues throughout life.
   4. Molting is an important time.
      a. Extreme vulnerability.
      b. Frequently associated with mating.
      c. With compound eyes, ocelli.

Crustacea: Characteristics

5. Reproduction is gonochoristic or hermaphroditic; occasionally with parthenogenesis.
6. Most taxa with nauplius larva; direct or indirect development.

Crustacea: 5 Major Classes

1. Remipedia - look like centipedes
2. Cephalocarida - well developed head shield
   3. Branchiopoda - water fleas, etc.
4. Maxillopoda - copepods and barnacles
5. Malacostraca - higher Crustacea
1. head composed of 4 or 5 fused segments (plus acron) with 2 pairs of antennae and 2 or 3 pairs of mouth appendages;
2. biramous second antennae;
3. nauplius larva;
4. phyllopodous body limbs
5. with head shield or small carapace;
6. raptorial mouth appendages;
7. mouth appendages situated in posteriorly directed atrium;
8. anterior thoracopods (one or more pairs) modified as maxillipeds (a highly variable trait that occurs in remipedes, malacostracans, and maxillopodans); forms large "folded" structure enclosing most of body;
9. loss of phyllopodous condition on trunk appendages;
10. trunk appendages oriented laterally;
11. maxillules function as hypodermic fangs;
12, postcephalic trunk regionalized as thorax and abdomen;
13, loss of internal organ homonomy (e.g., segmental gut ceca);
14, reduction in number of body segments; and nonphyllopodous thoracic limbs.

15, reduction of abdomen (to 11 segments);
16, fully developed carapace (reduced in several subsequent lineages);
17, reduction of abdomen to fewer than 9 segments;
18, reduction (or loss) of abdominal appendages;
19, first and second maxillae reduced or lost;
8, anterior thoracopods (one or more pairs) modified as maxillipeds (a highly variable trait that occurs in remipedes, malacostracans, and maxillopodans);

20, thorax shortened to fewer than 11 segments;
21, abdomen shortened to fewer than 8 segments;

22, with maxillopodan naupliar eye;
23, thorax of 6 or fewer segments;
24, abdomen of 4 or fewer segments;
25, genital appendages on the first abdominal somite (associated with male gonopores);
Class Maxillopoda

1. Mostly small crustaceans, with some exceptions
2. Shortened bodies, reduced abdomen, with few or modified legs

3. A "naupliar" eye in many groups
   a. Or "maxillipodan eye"
   b. Retention of larval characteristics - *paedomorphosis*
   c. Possible role of this process in producing this group
4. Possibly polyphyletic too.
Class Maxillopoda
5. Systematics
   a. 6 major subclasses
      1. Ostracoda -
      2. Mystacocarida -
      3. Copepoda
      4. Branchiura
      5. Cirripedia
      6. Tantulocarida

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Subclass Copepoda
1. Large and diverse, again mostly quite small.
2. Usually teardrop shaped or elongate.
   a. Large antennae.
   b. Often with single maxillopodan eye.
   c. Females with dangling egg sacs.
Subclass Branchiura
1. Entirely parasitic.
2. Includes *Argulus*.
3. Now appears to include the Pentastomida.

Subclass Cirripedia
1. Bodies highly modified for attachment
   a. Extreme reduction of posterior body and appendages
   b. Body attached to substrate with "test"
   c. Body also may be attached by stalk.
2. Huge and diverse group - most of systematics by Charles Darwin.
   a. Much of his work remains intact today.
3. Larval stages are motile, then settle on substrates.
Phylum Arthropoda, Subphylum Crustacea, Class Maxillopoda, Subclass Cirripedia, Order Rhizocephala

Sacculina Life Cycle

26, 8-segmented thorax and 7-segmented abdomen (plus telson);
27, male gonopores fixed on thoracomere 8/females on thoracomere 6;