



CRUSTACEA: TANAIDACEA

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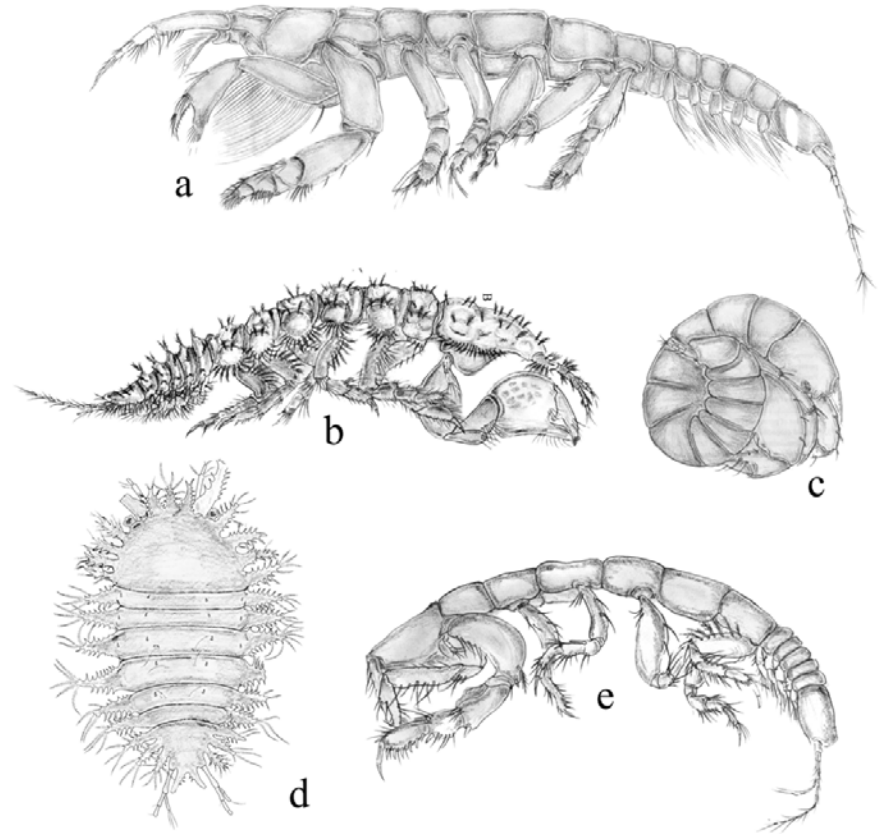
Roger N. BAMBER (Arto, UK), Piotr JOZWIAK (UL),
Rob N. JENNINGS (University of Massachussets) & Krzysztof PABIS (UL)



Tanaidacea – what they are?

- small
- marine
- benthic
- cosmopolitan

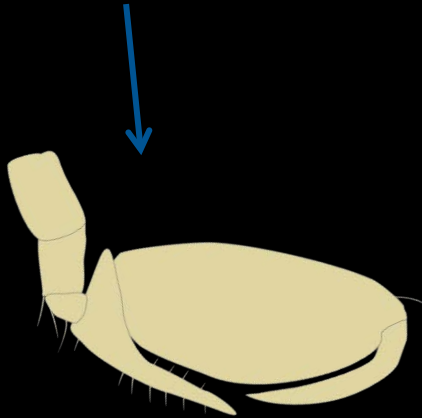
coral reefs, estuaries, algal turfs, hydrothermal vents, mud volcano, polymetallic nodules...



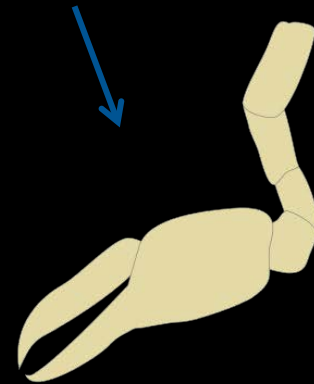
ISOPODA *contra* TANAIIDACEA



- *seven* free pereonites
- subchela



- *six* free pereonites
- chela



ISOPODA *contra* TANAIIDACEA



- more than one pleonite fused with thorax
- oxygen exchange by pleopods
- valves



- one pereonite fused with thorax
- oxygen exchange in branchial chamber
- no valves

ISOPODA *contra* TANAIIDACEA

Browse BioCode Photos by: [Phylum](#) [Class](#) [Order](#) [Family](#)



[Amphipoda](#) [see all 591 photos]
[Amphipoda](#) [browse by family]



[Cumacea](#) [see all 7 photos]
[Cumacea](#) [browse by family]



[Decapoda](#) [see all 6863 photos]
[Decapoda](#) [browse by family]



[Euphausiacea](#) [see 1 photo]



[Isopoda](#) [see all 306 photos]
[Isopoda](#) [browse by family]



[Mysida](#) [see all 49 photos]
[Mysida](#) [browse by family]

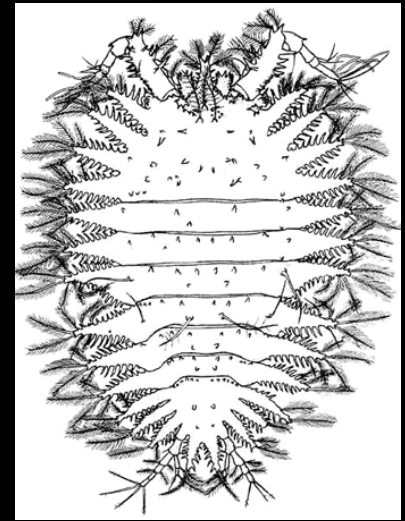
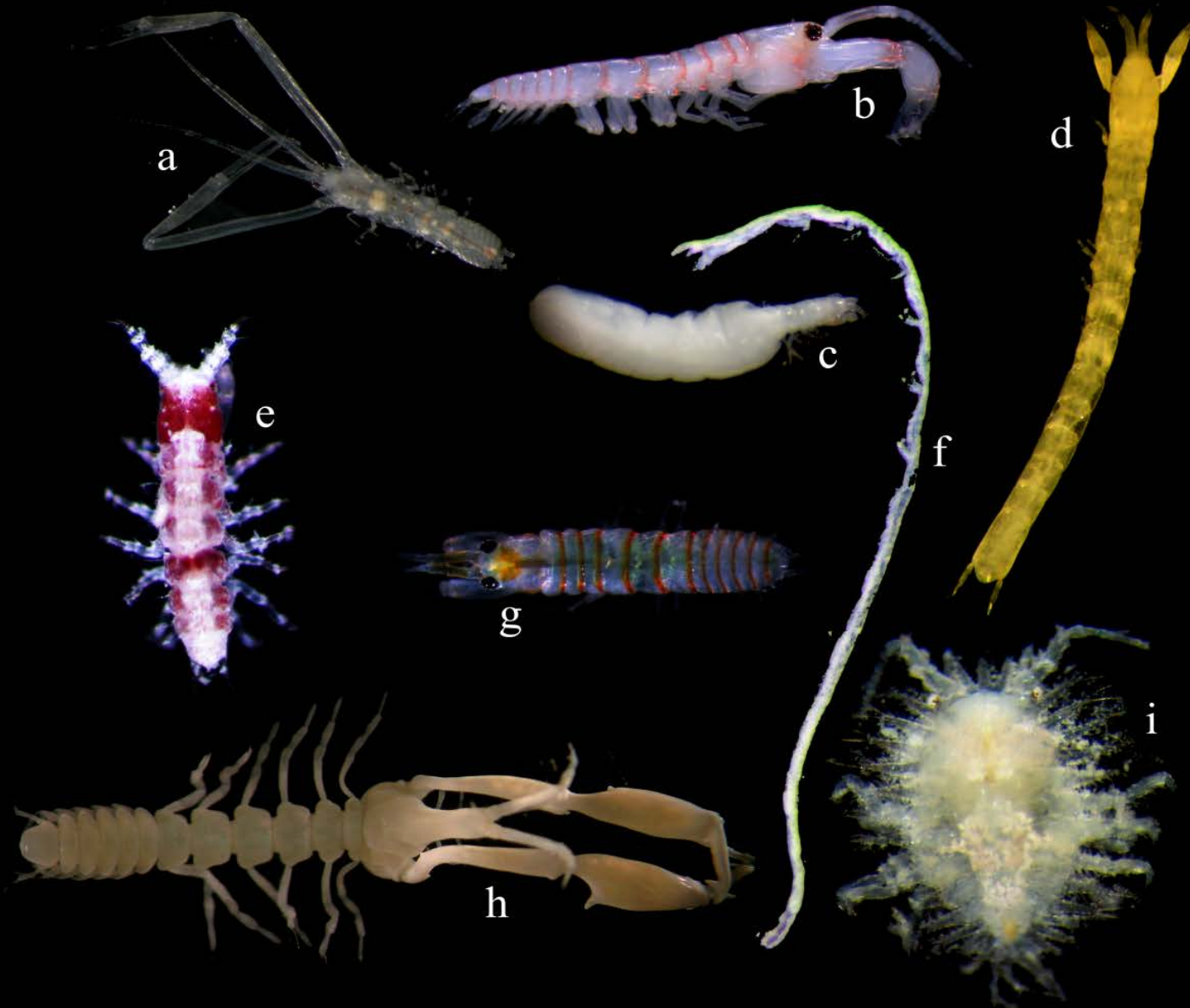


[Stomatopoda](#) [see all 128 photos]
[Stomatopoda](#) [browse by family]

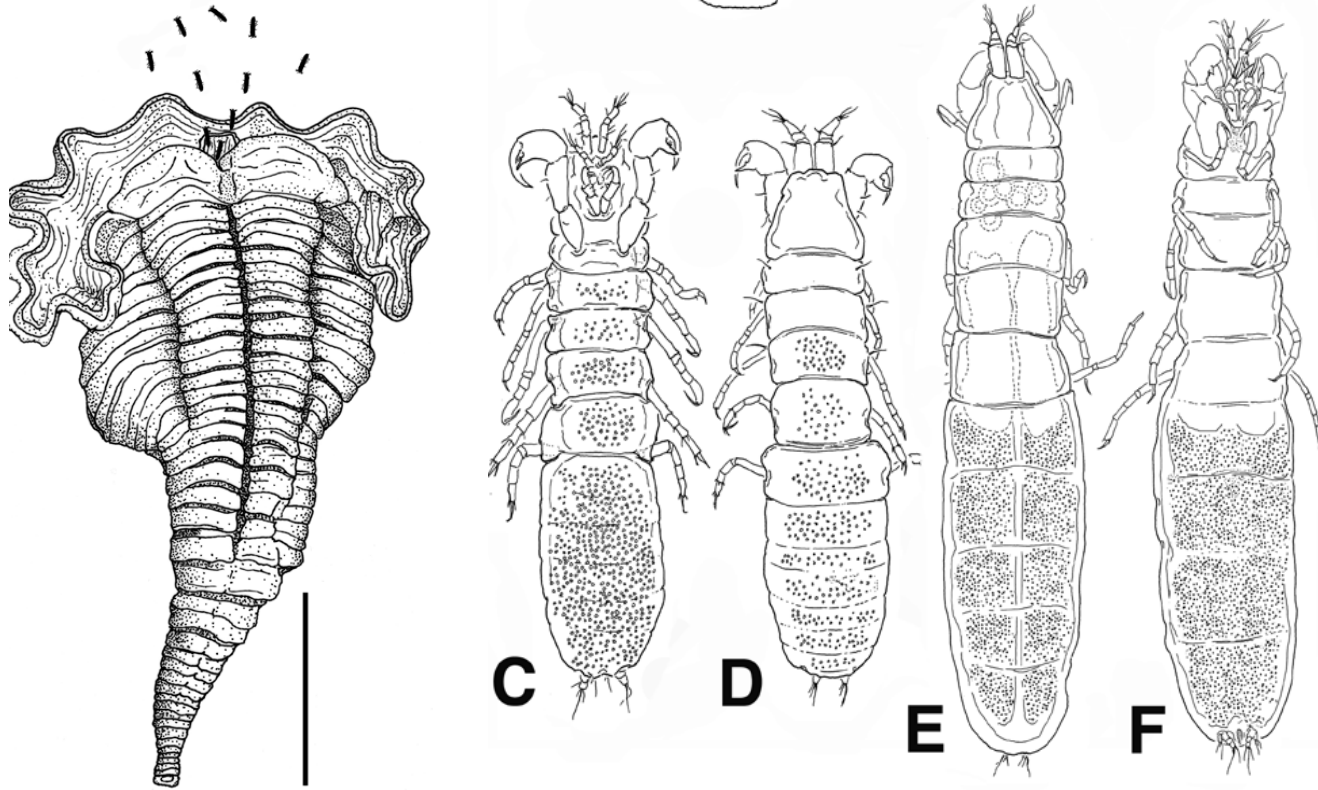


[Tanaiidacea](#) [see all 146 photos]
[Tanaiidacea](#) [browse by family]

Diversity of TANAIIDACEA



Diversity of TANAIIDACEA



Terebellatanaeus floridanus Suárez-Morales, 2011

Diversity of TANAIIDACEA

parasite



1 cm



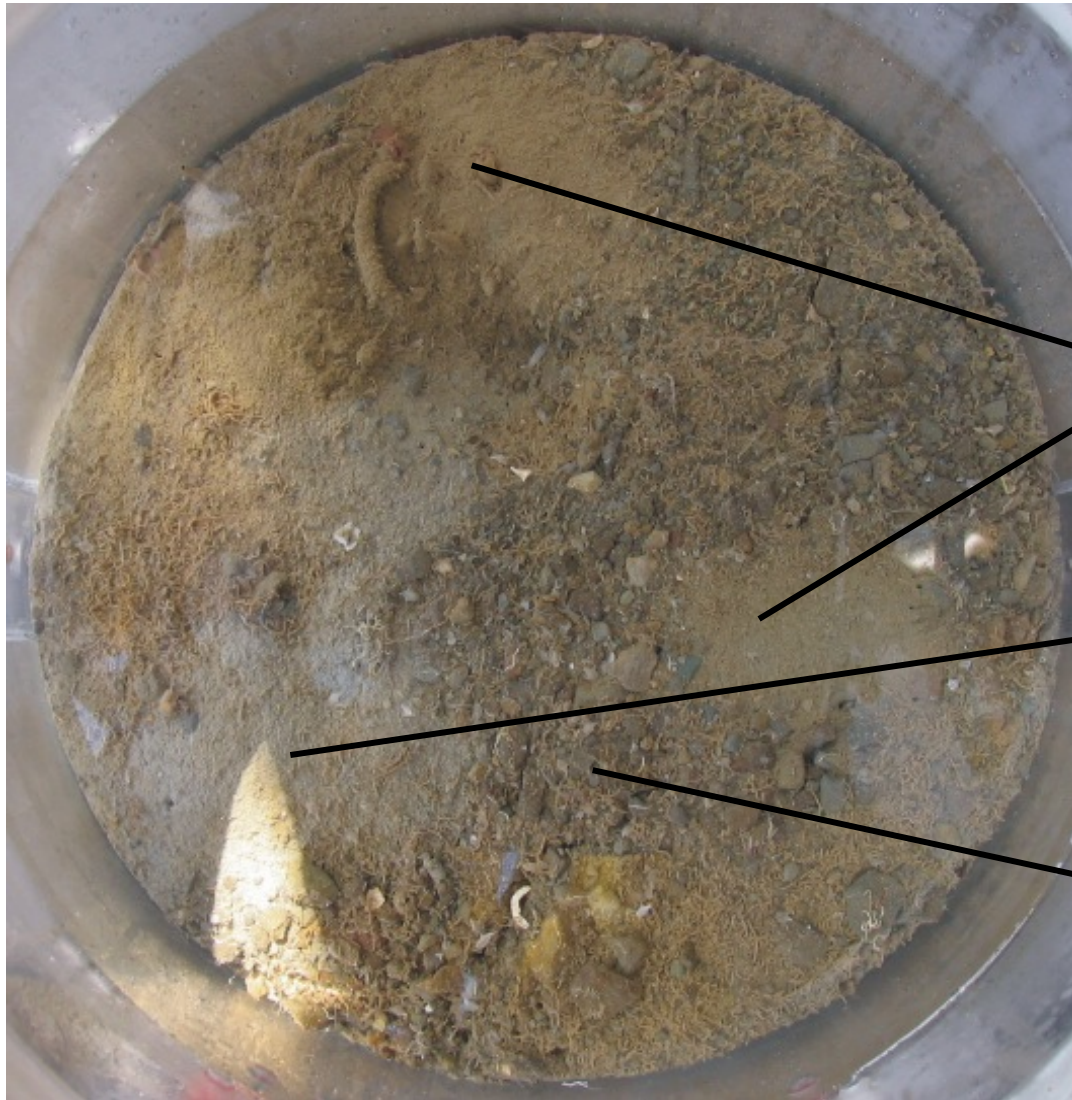
1 mm



Exspina typica Lang, 1968

Alvaro *et al.* 2011

Tanaidacea in soft sediments habitats



Gulf of Cadiz
~ 500 m

aggregation of tanaiid
tubes

low abundance

aggregation of polychaete
tubes

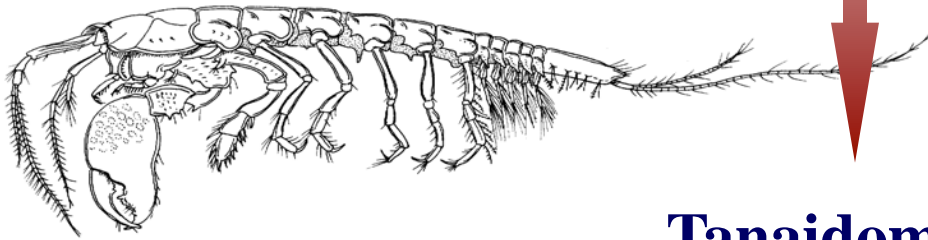
photo: Marina DaCunha

TANAIDACEA - systematic (suborders)

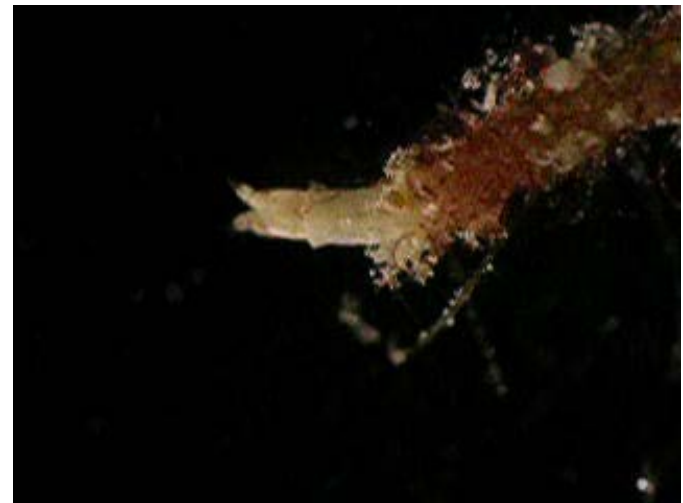
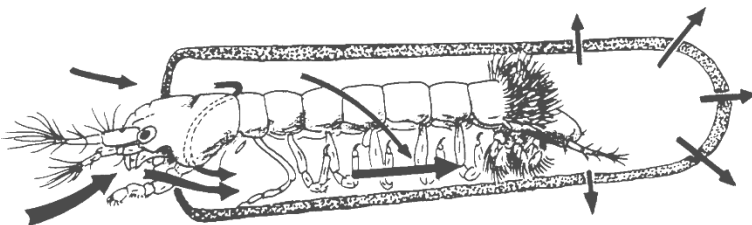
Previous

Apseudomorpha

Neotanaidomorpha



Tanaidomorpha



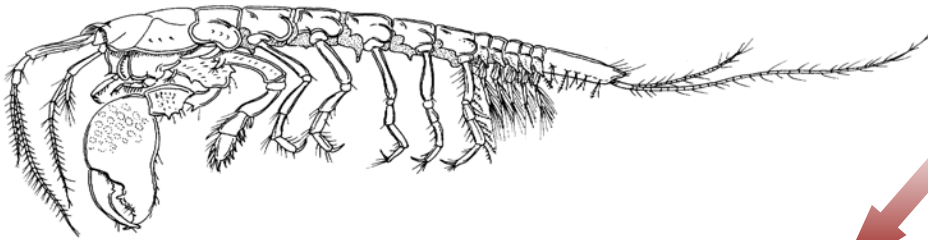
TANAIDACEA - systematic (suborders)

Recent

Apseudomorpha

Tanaidomorpha

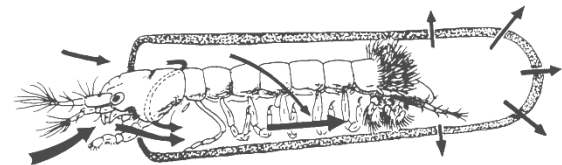
Neotanaidomorpha



Neotanaoidea

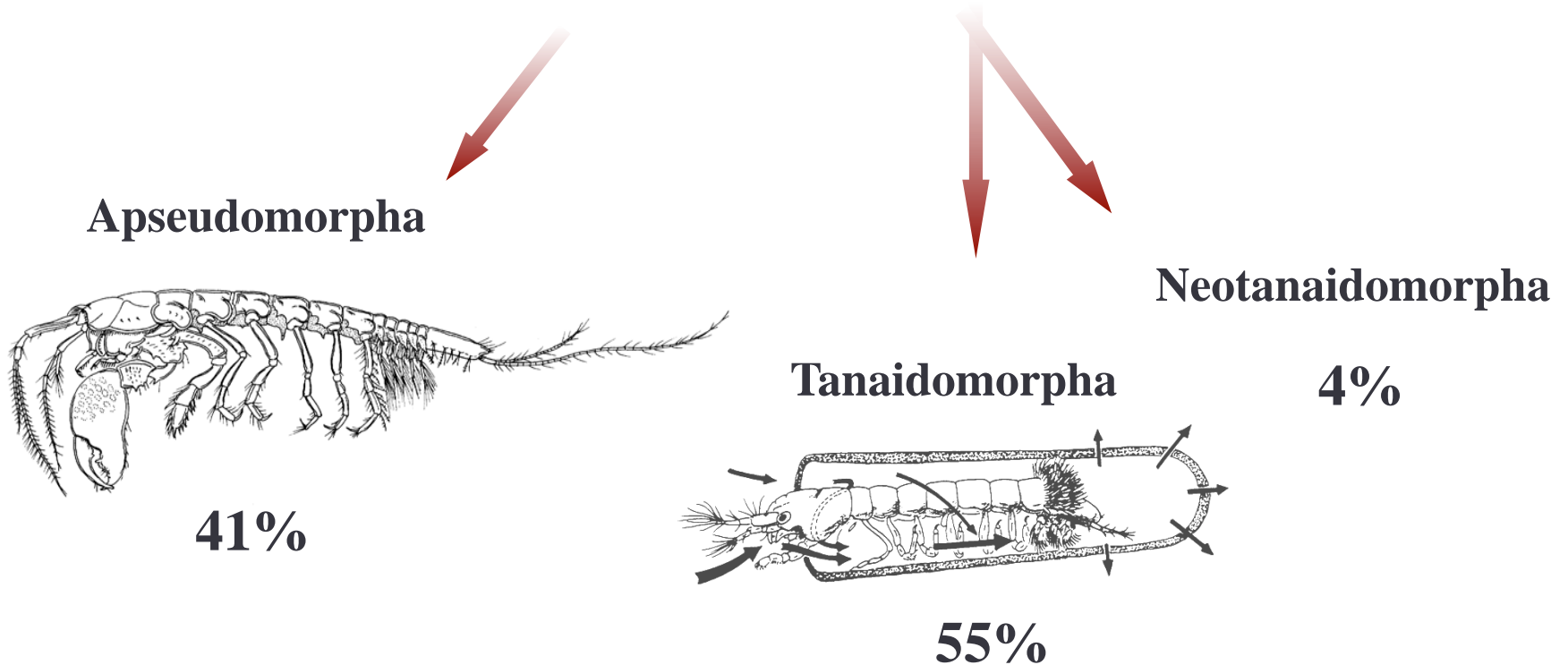
Tanaoidea

Paratanaoidea



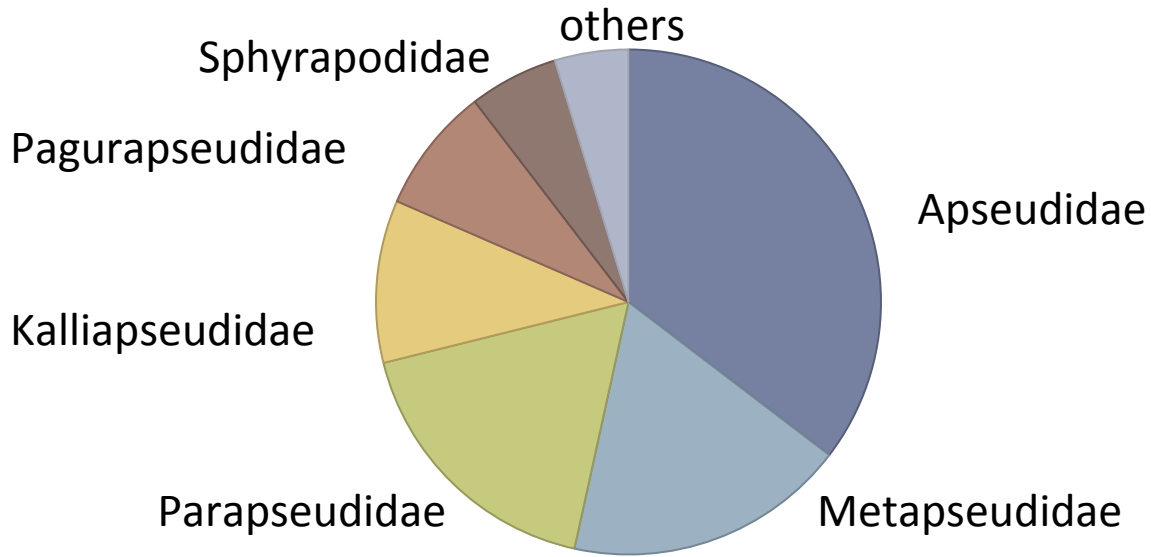
Tanaidacea in World Ocean

1302 species described + a thousand undescribed
± 40 000 species may occur in the World Ocean*

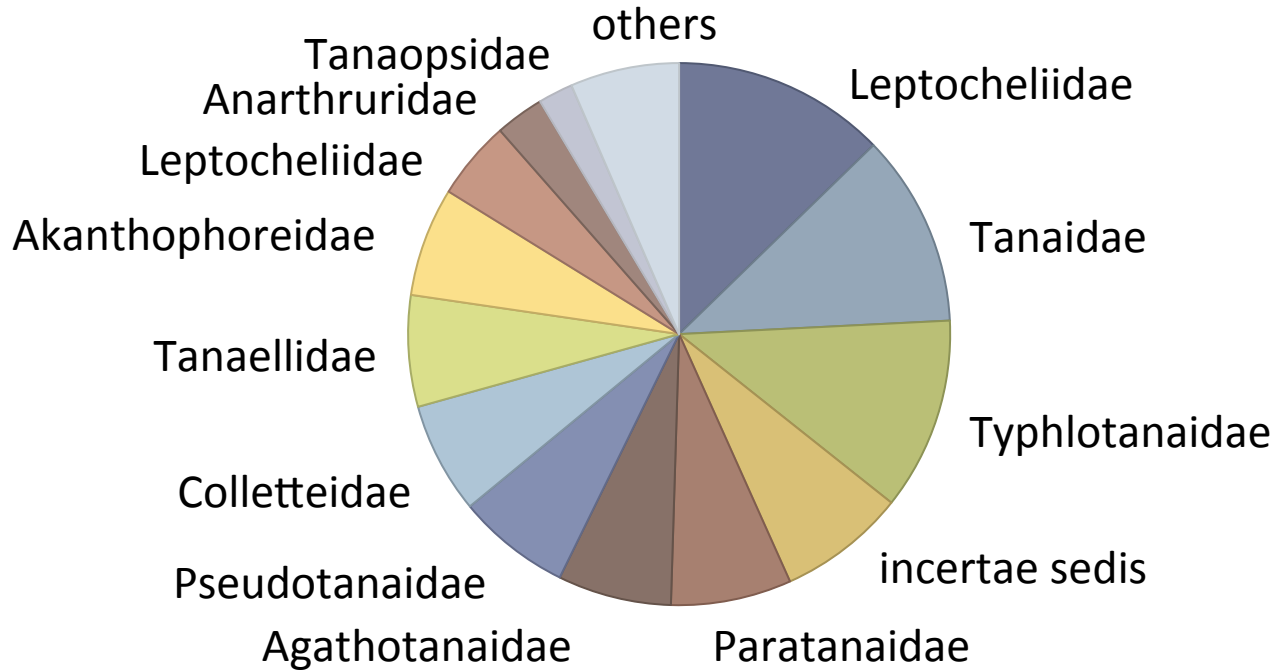


* (Appeltans et al. 2012)

APSEUDOMORPHA

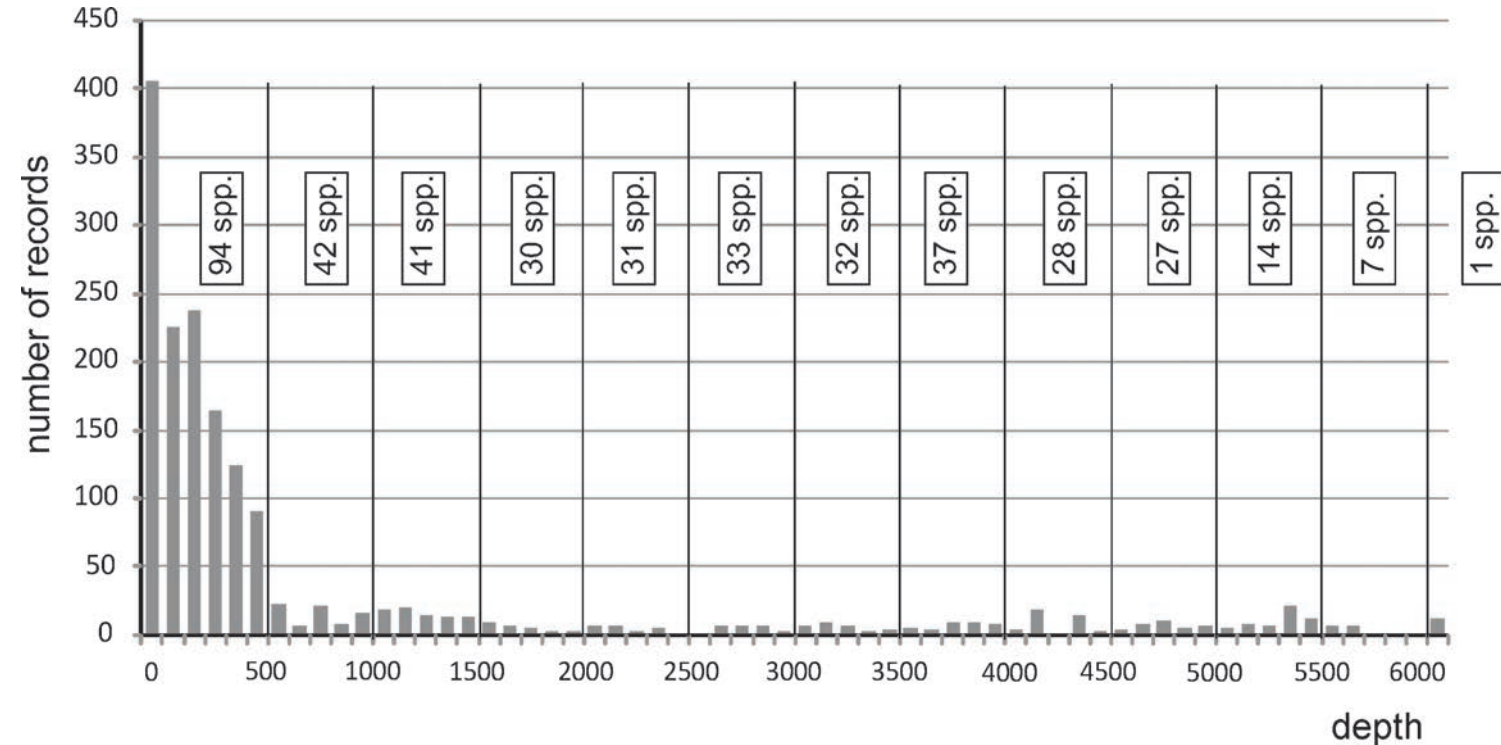


TANAIDOMORPHA



Tanaidacea in SOUTHERN OCEAN

number of tanaid records *per depth**

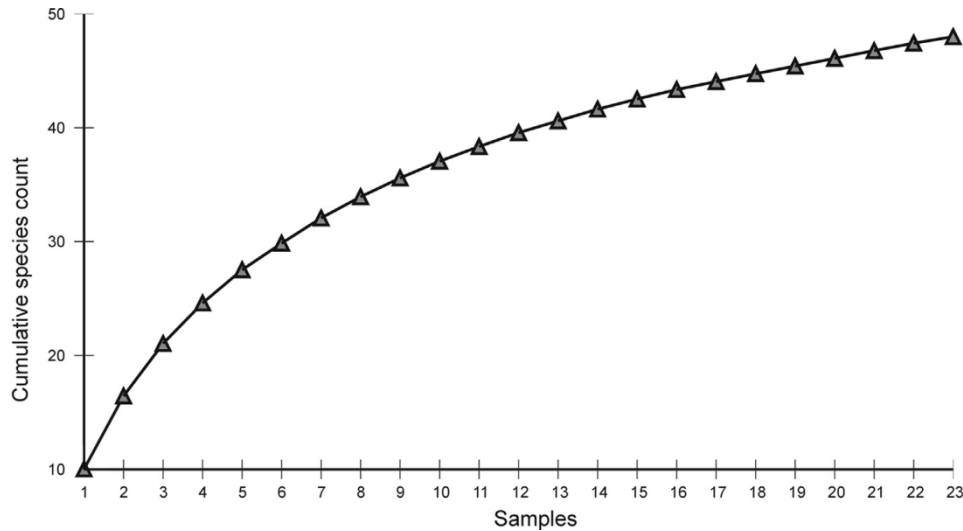


* Based on accesible literature and unpublished data (http://peracarida.usm.edu/iwp_home.html)

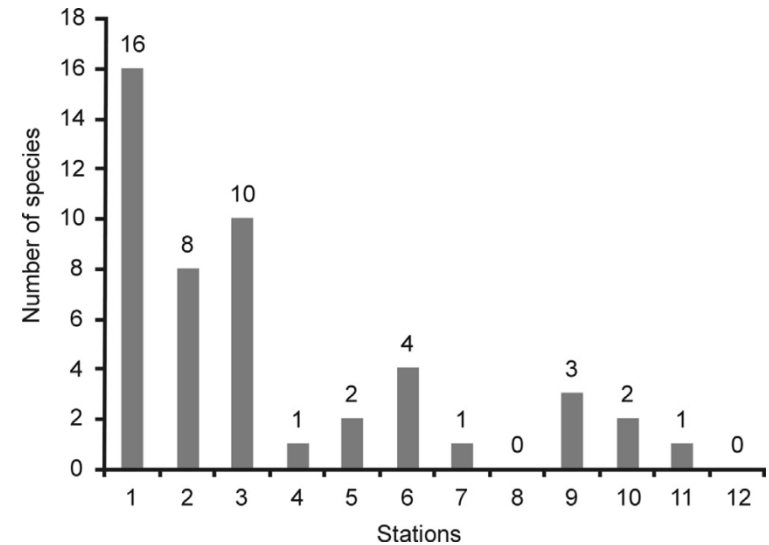
Błażewicz-Paszkowycz (2014)

Tanaidacea Kuril-Kamchatka Trench

Species cumulation curve
(gear :GKG; depth 5600-6100 m)

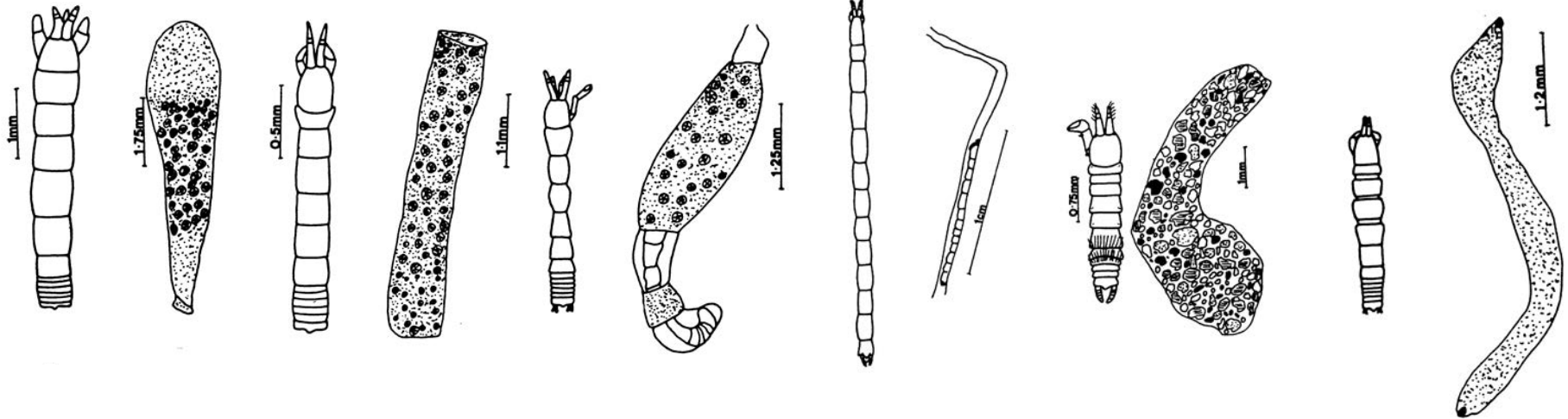
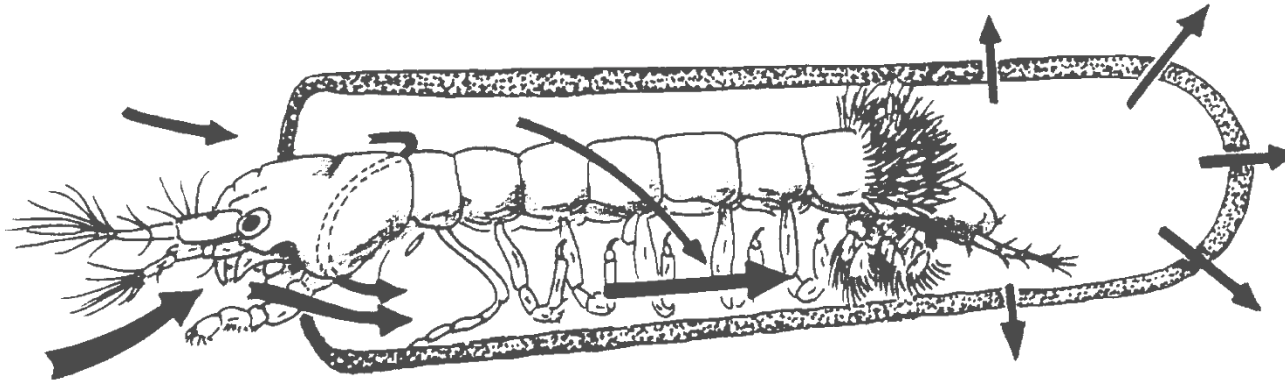


Number of species present
in 1, 2, 3... 12 stations



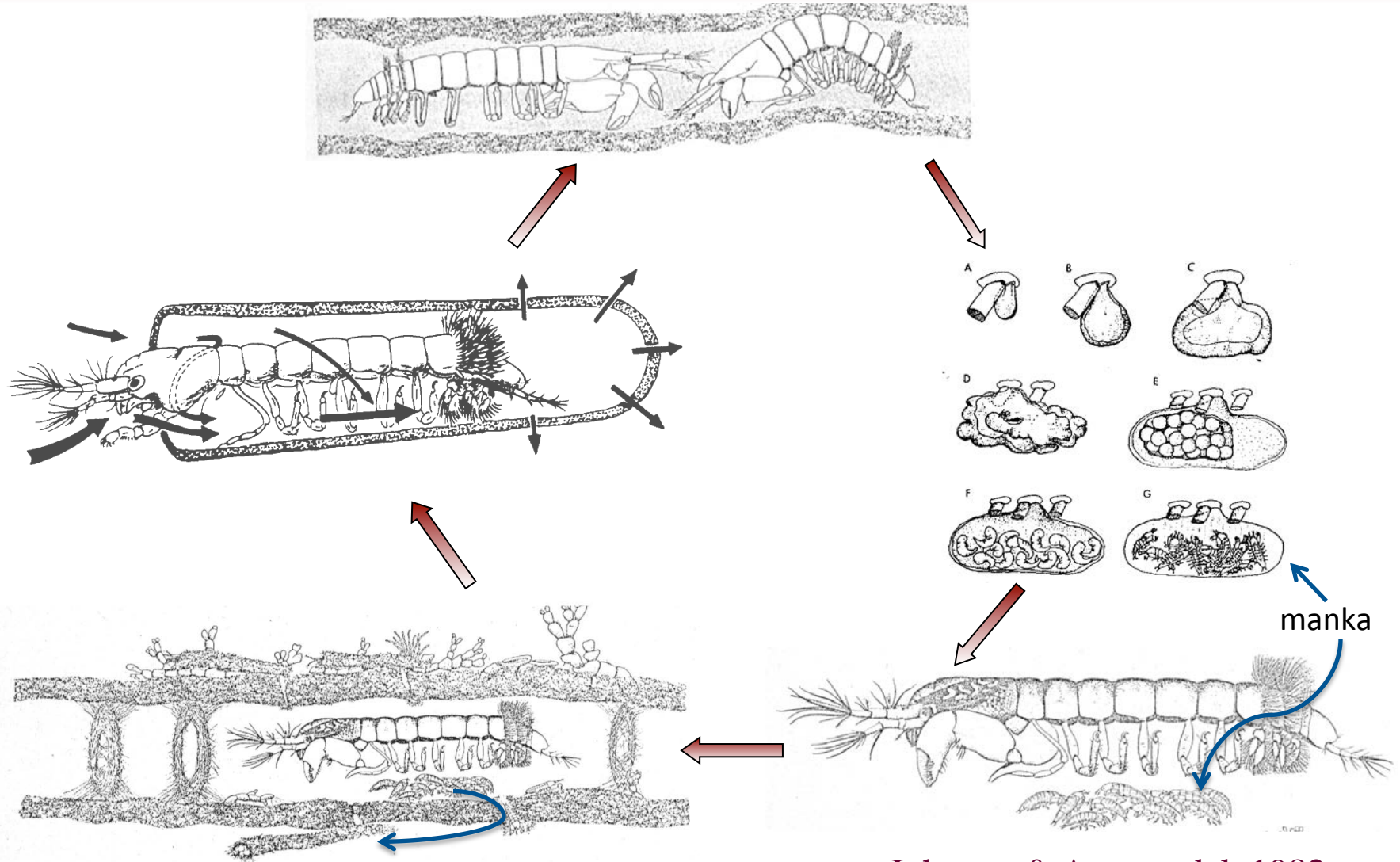
(Błażewicz-Paszkowycz et al. 2014)

TANAIDACEA (suborders)

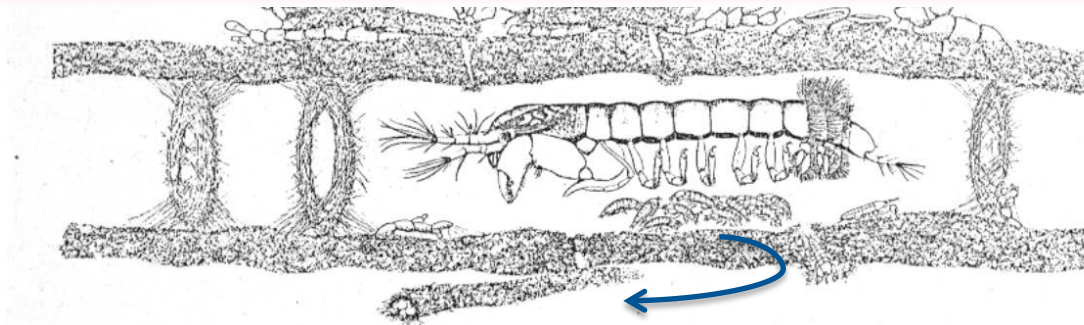


Tanaidomorph tubes

Tanais cavolinii - brooding behaviour



Johnson & Attramadal, 1982



- tube building life style
- no planktonic stage
- immobile juvenile (manca)



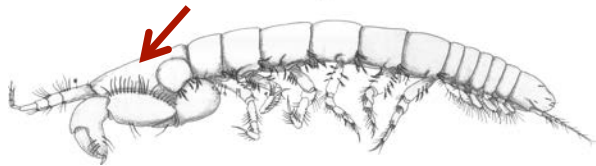
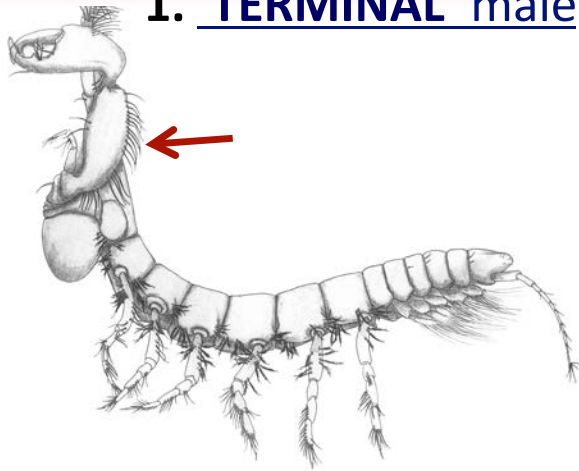
Tanaidacea have limited dispersal potential



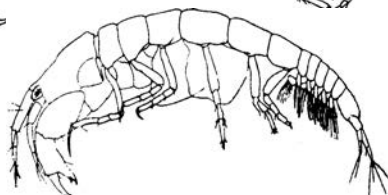
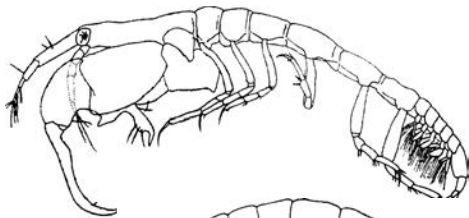
Potentially ideal indicators of the
environmental conditions

TANAIDACEA – problem with males

1. 'TERMINAL' male

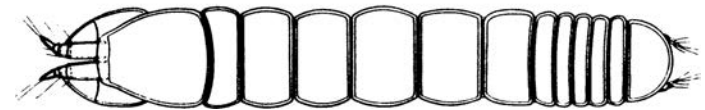
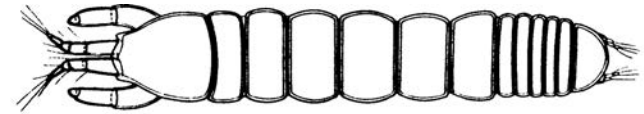


Neotanais krappschickelae



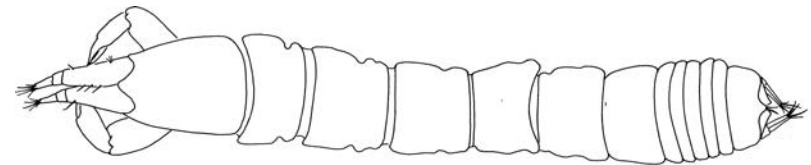
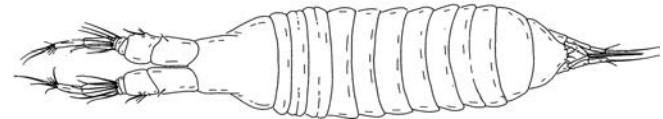
Nototanais dimorphus

2. 'JUVENILE' male



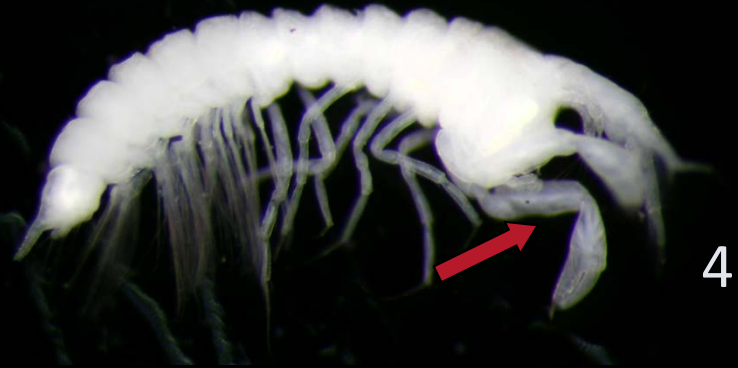
e.g. *Agathotanaida*

3. 'SWIMMING' male



Peraeospinosus n.sp.

Problem of being (tanaid) male



1

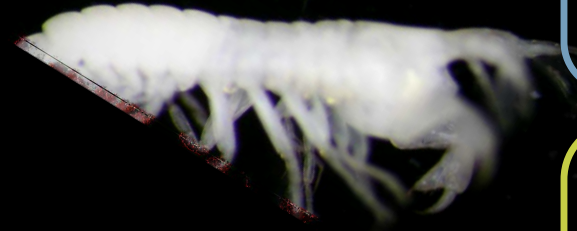


Typhlotanaidae

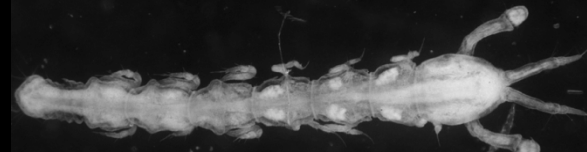


Problem of being
(tanaid) male

2



Akanthophoreidae



Agathotanaidae



4



Cryptocopodidae



5

3



?



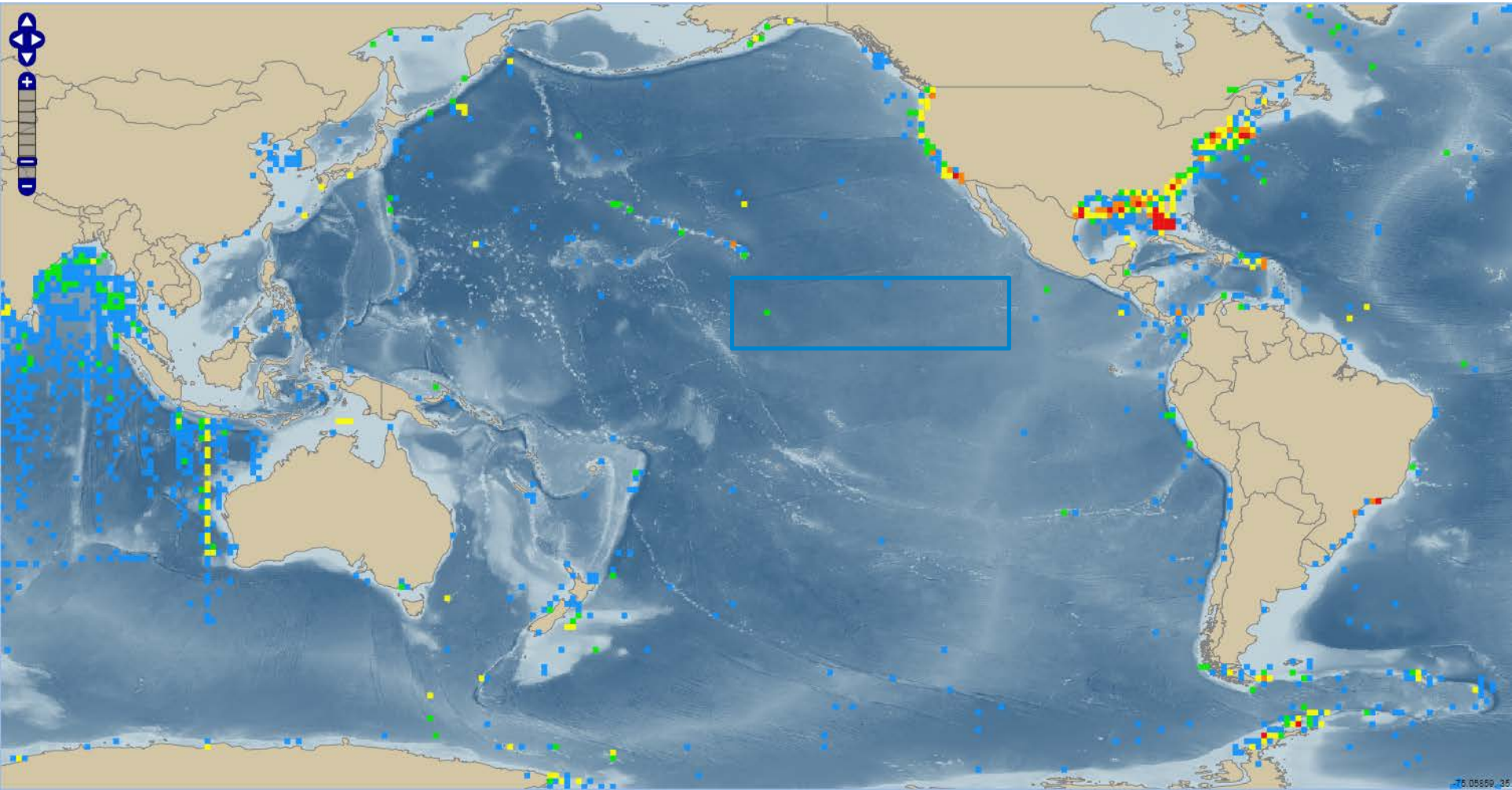
Typhlotanaidae

6

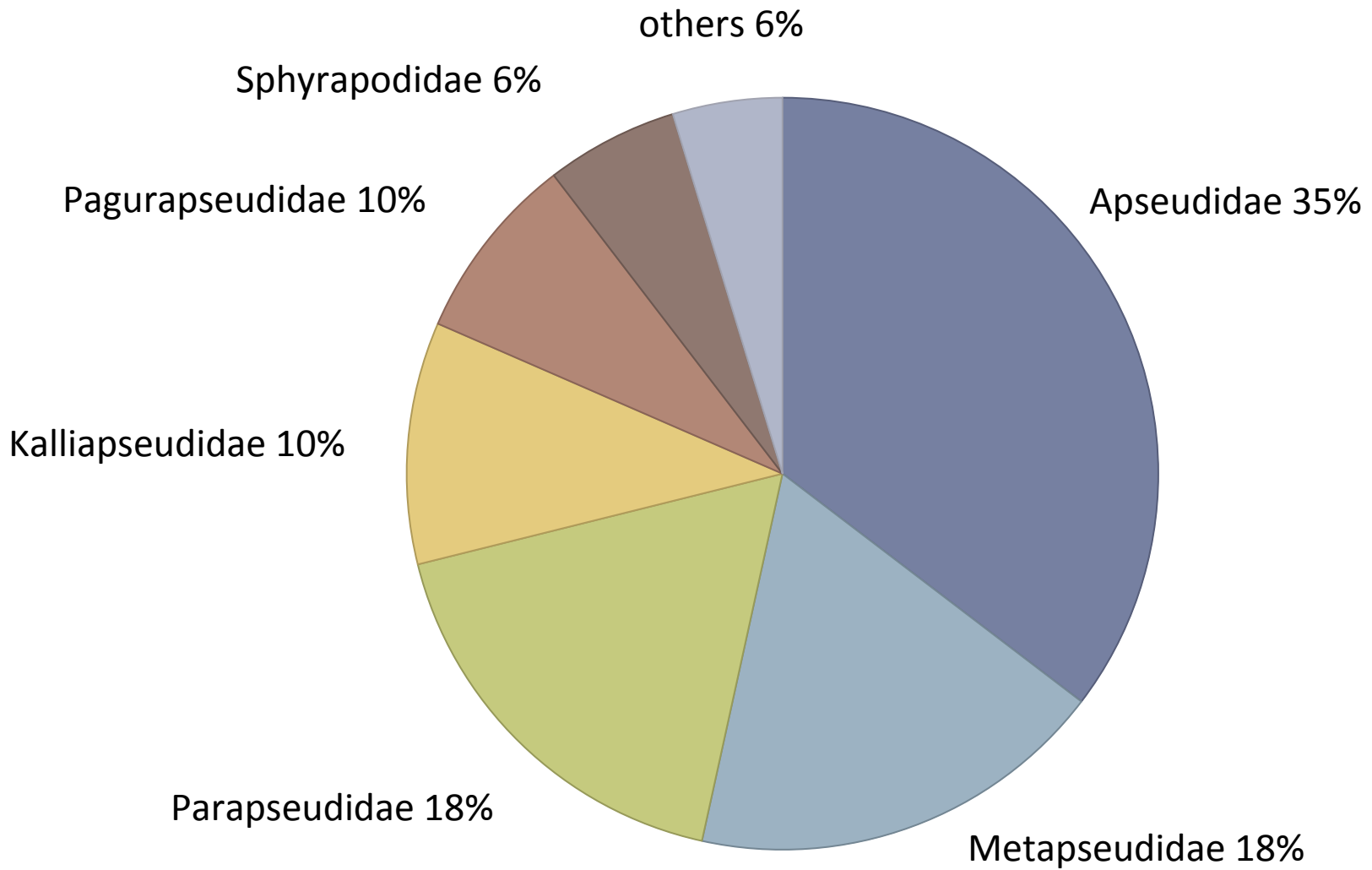
Mating tactic e.g. *female mimicry* hypothesis



Tanaidacea of Pacific & Clairon-Cliperton Fracture Zone



Apseudomorpha diversity



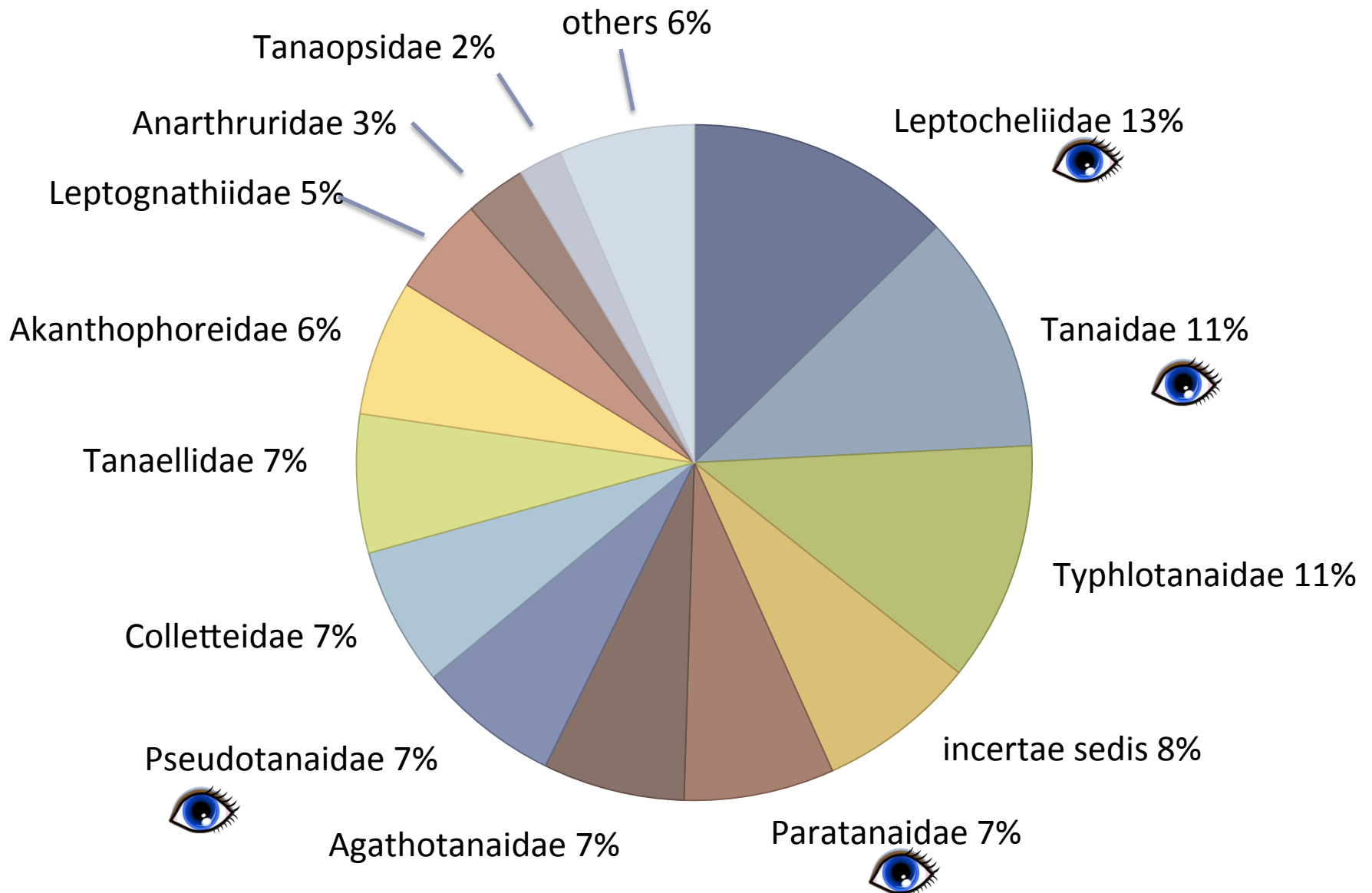


Apseudidae

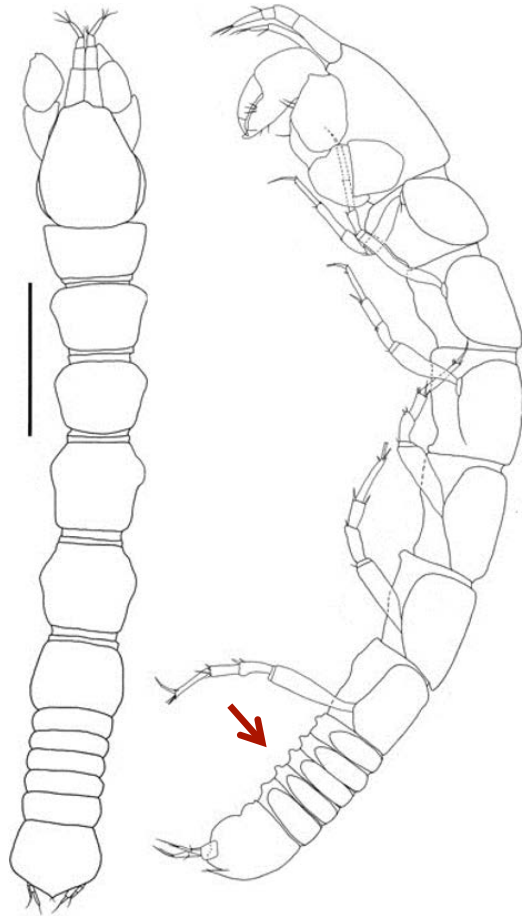


Sphyrapodidae

Tanaidomorpha family diversity



Tanaidacea of Clarion-Clipperton Fracture Zone

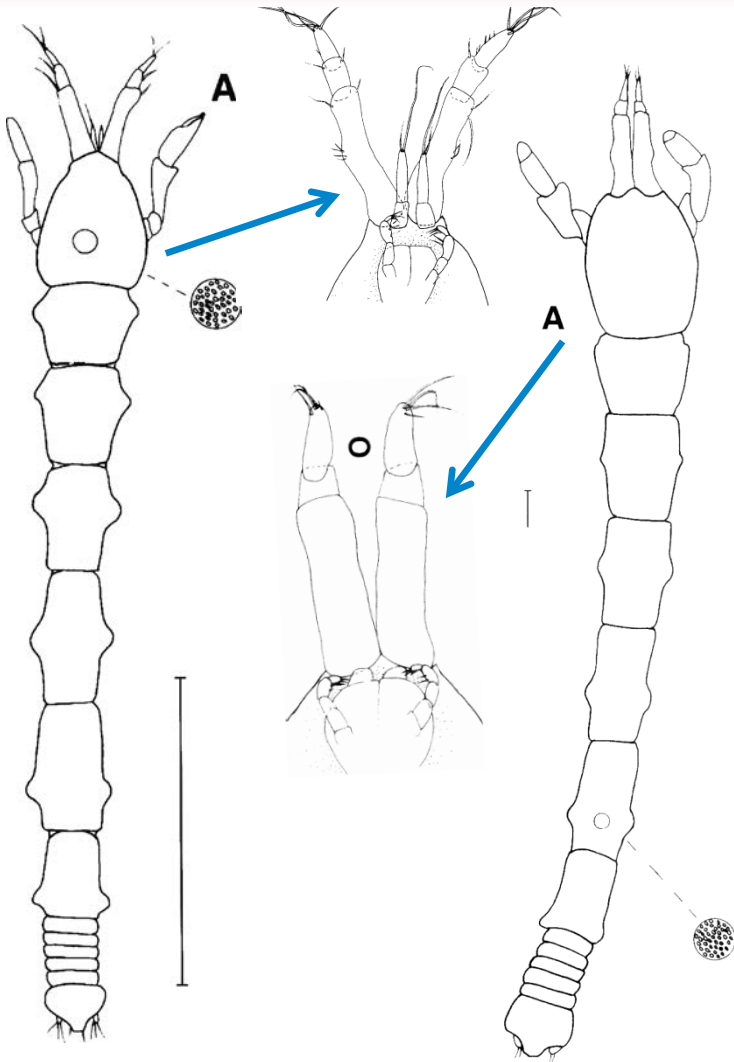


Cheliasetosatanais spinimaxillipedus
Larsen & Araujo-Silva, 2014
fam: Colletteidae



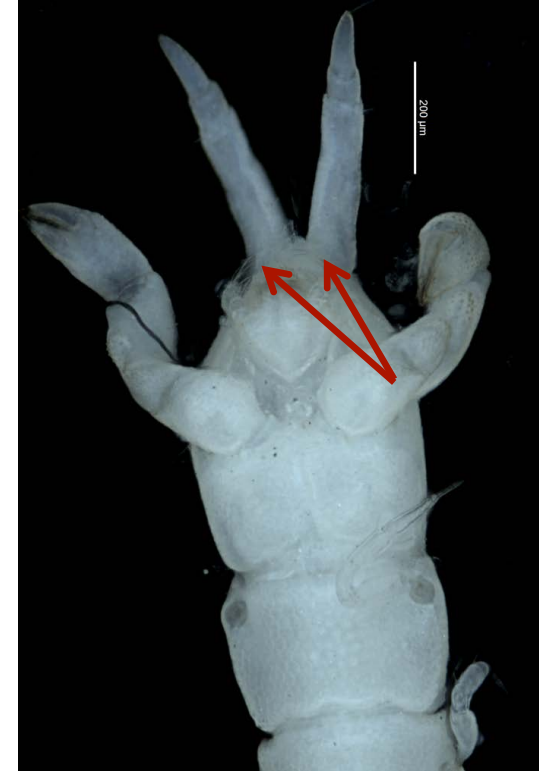
Paranartrurella sp.
fam.: incertae sedis

Tanaidacea of Clarion-Clipperton Fracture Zone



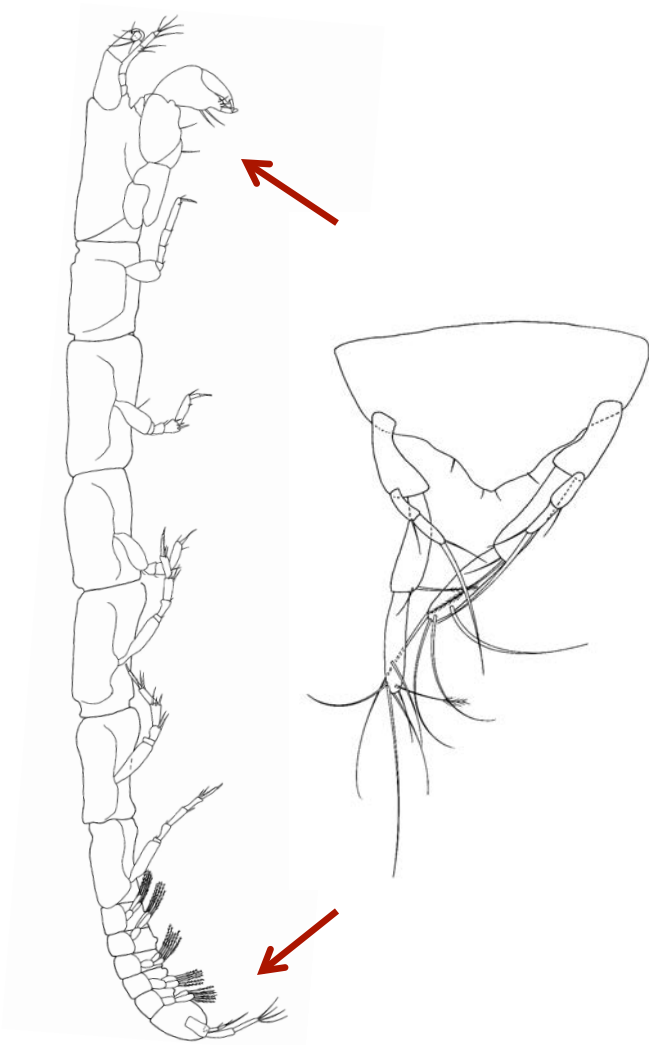
Agathotanis manganus
Larsen, 1999

Agathotanis ahyongi
Larsen, 1999

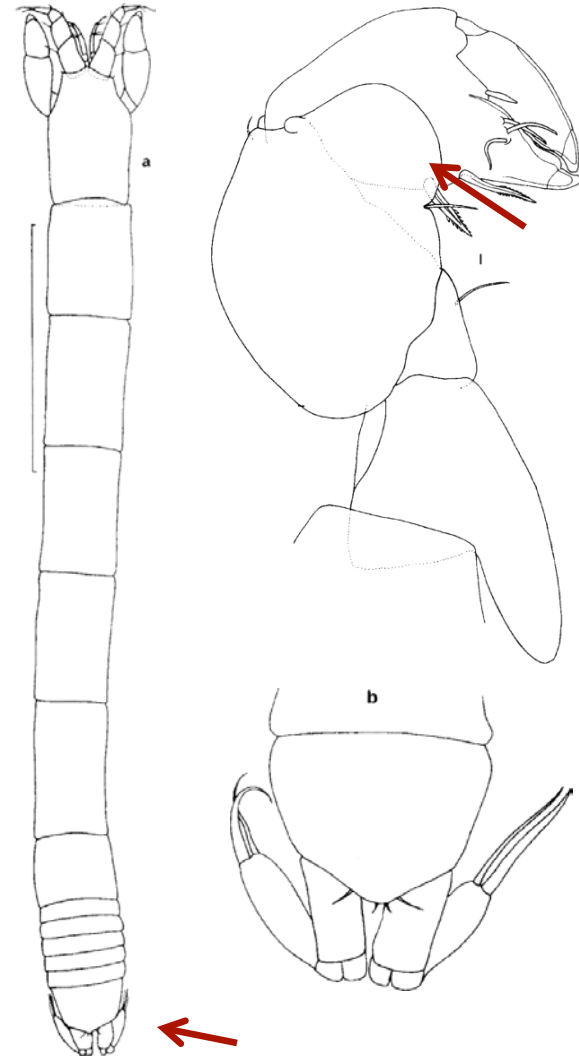


Agathotanis sp.

Tanaidacea of Clarion-Clipperton Fracture Zone

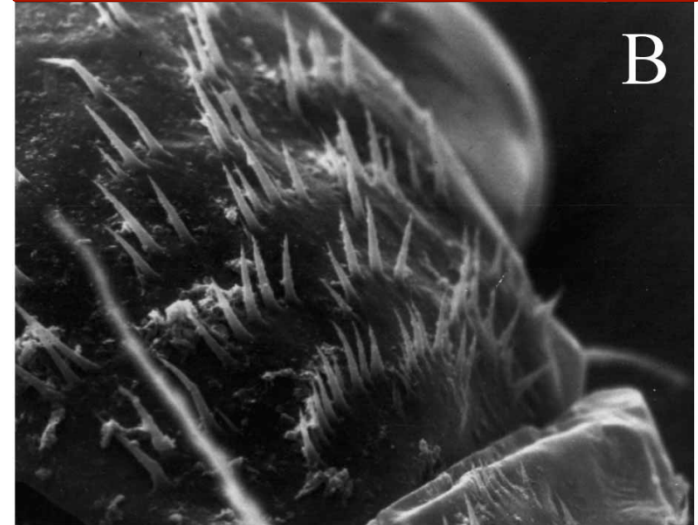
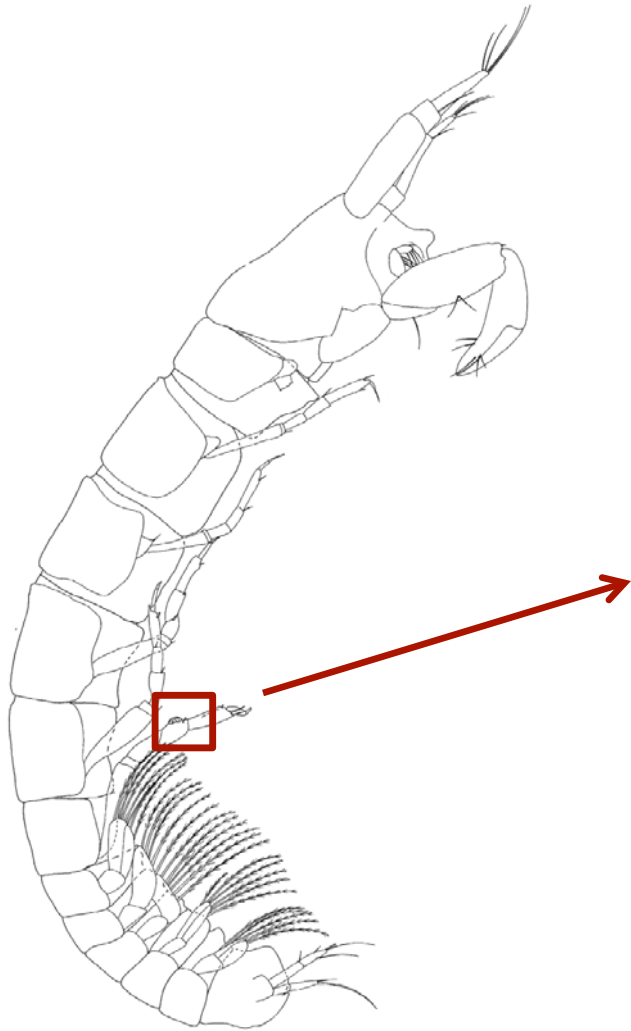


Stenotanais arenasi
Larsen & Araujo-Silva, 2011



Stenotanais hamicauda
Bird & Holdich, 1984

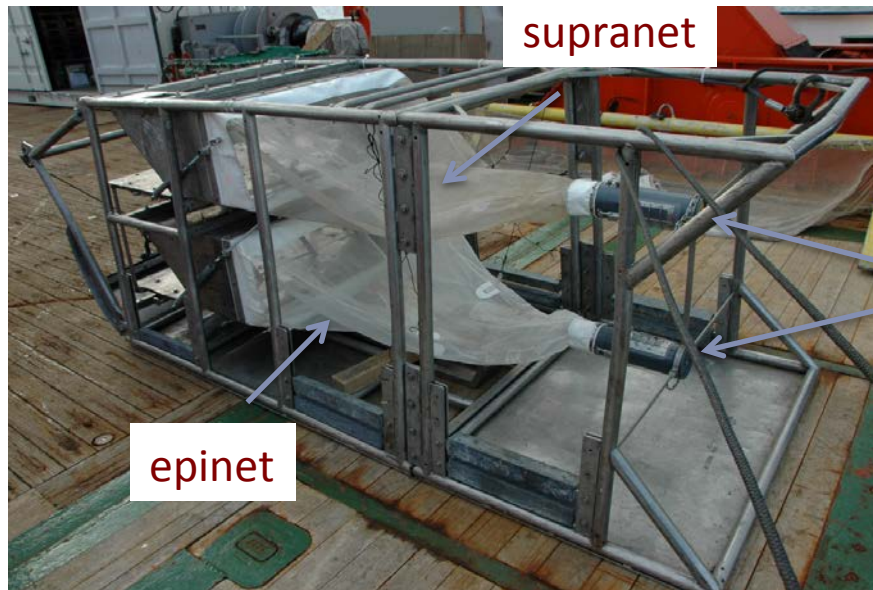
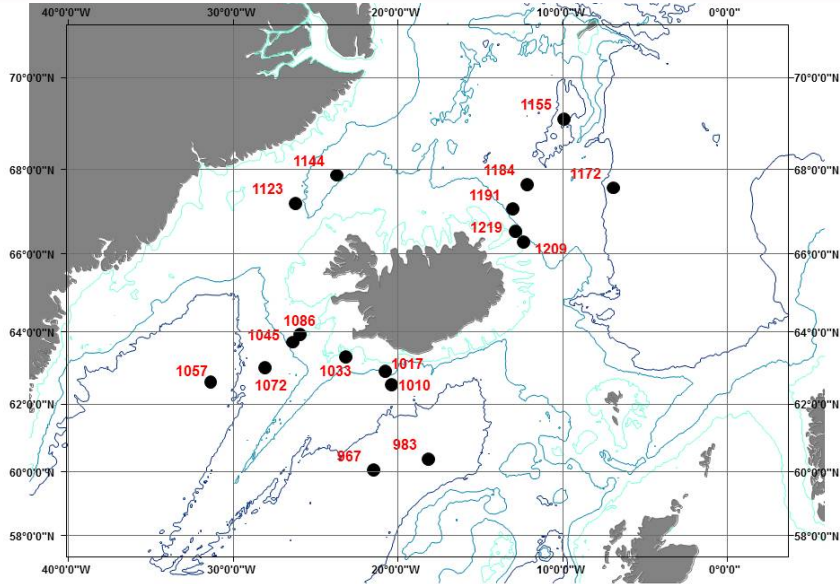
Tanaidacea of Clarion-Clipperton Fracture Zone



Typhlotanais froufusae Larsen & Araujo-Silva, 2014

IceAGE (Icelandic marine Animals: Genetic and Ecology)

Senckenberg Research institute-University of Iceland; September 2011



COI SEQUENCES

IceAGE – 141 COI sequences

GenBank - 29 COI sequences

IceAGE = 4.8 x more COI sequences



collecting and preservation

- *codend* – washed with water precooled to 4°C
- sieve 0.3 mm
- preserved in ethanol precooled to -20°C
- stored in -20°C
- ethanol exchanged after 24 hours
- samples sorted on ice
- cool chain*



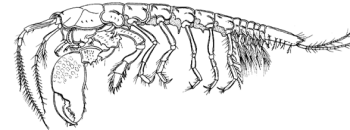
* At each stage (collecting, washing, preserving, storing, identifying, transporting etc.) the sample/material has been kept cold



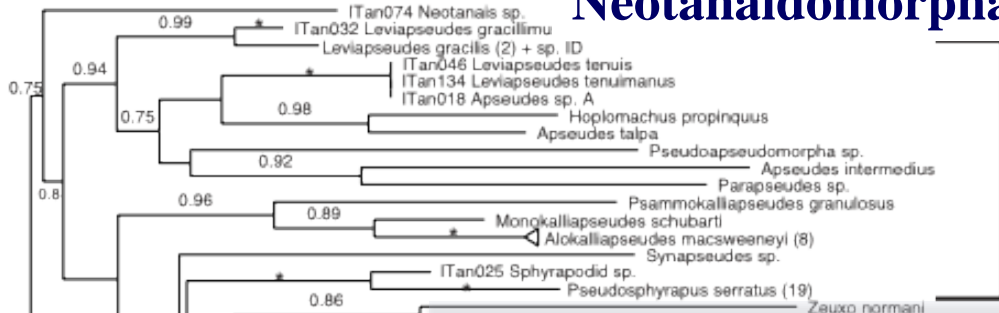
Riehl et al. (2014)

Neotanaidomorpha

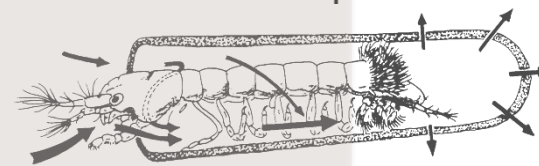
COI; phyml
maximum likelihood



Apseudomorpha

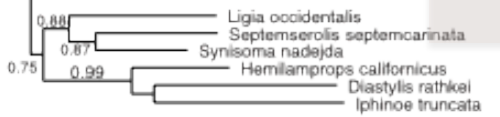
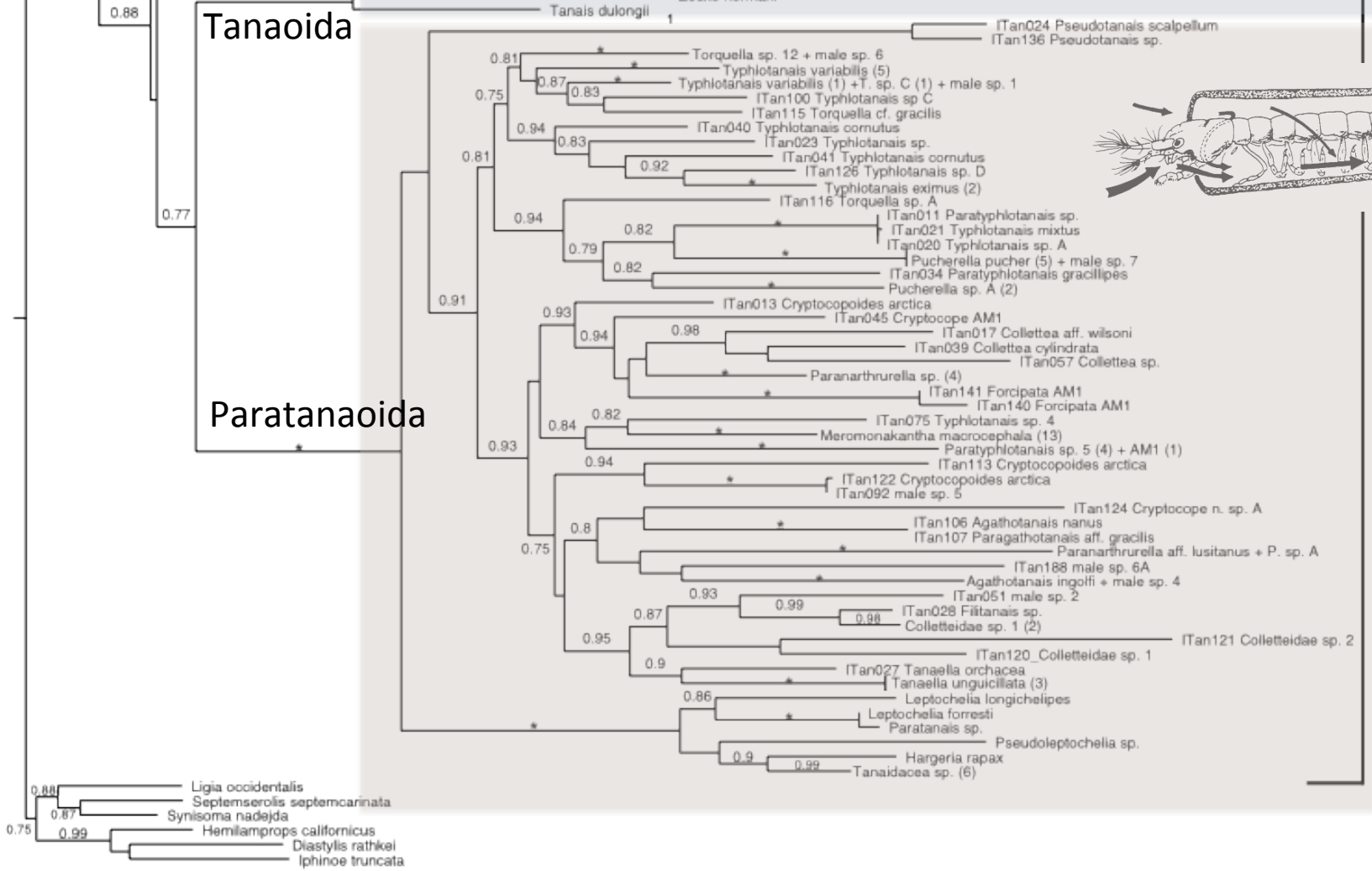


Tanaoidea



Tanaidomorpha

Paratanaoidea



Tanaidacea IntKey – Spała 2013



Best Characters (253)

- telson entire/cleft
- gnathopod 2 (chelation)
- gnathopod 1 (chelation)
- uropods 1-2 apices of rami (robust setae)
- body (shape - AHT)
- head (eyes shape)
- pereopod 5 coxa (lobation - AHT)
- antenna 1 (length relative to antenna 2)
- (antenna 2) peduncle (fossorial - REASSESS)
- uropod 3 number of rami
- pereopods (3-7, prehensile or not)
- antenna 1 peduncle (fossorial or not - AHT)
- (urosome) urosomites (free or coalesced)
- A1-A2 calceoli (type NEW, JKL)
- pereopod 7 (length relative to pereopod 5 - AHT)
- pereopod 6 (length relative to pereopod 7 - AHT)
- (pereopod 7) dactylus (length)
- gnathopod 1 (size relative to gnathopod 2) START
- head (length to depth)
- uropod 1 (peduncle, presence of basofacial robust seta - AHT)
- (gnathopod 2) coxa (size relative to coxa 3)
- gnathopod 1 coxa (size relative to coxa 2)
- pereopod 4 coxa, posteroventral lobe
- pereopod 5 basis (expansion)
- gnathopod 2 carpus, length relative to propodus
- (pereopod 7) basis (expansion - RESCORE)
- pereopod 6 basis (expansion)
- gnathopod 1 carpus (length relative to propodus)
- (uropod 3) inner ramus (size relative to outer ramus)
- pereopod 5 coxa (size relative to coxa 4)
- pereopod 3 coxa (shape REORDER)
- maxilla 1 inner plate ((coxal endite) setae)
- pereopods (3-7 propodus with distal spurs - AHT)
- (pereopod 6) dactylus (setae present/absent - AHT)
- pereopod 4 coxa (size relative to coxa 3)
- pereopod 5 dactylus - setae present/absent
- telson (form - AHT)

Used Characters (0)



Remaining Taxa (276)

- Acanthogammaridae
- Abyssogammarinae
- Eulimnogammarinae
- Hyallelopsinae
- Odontogammarinae
- Plesiogammarinae
- Poekilogammarinae
- Baikalogammaridae
- Macrohectopidae
- Crypturopodinae
- Ilinoidea
- Uropodinae
- Sychesidae
- Psellidae
- Amariidae
- Gammaridae
- Thonotozomatinae
- Thonotozomellinae
- Costoma Group
- Minodeutopinae
- Stella Group
- Pedipesidae
- Alidae
- Trangonyctidae
- Gyllidinae
- Thilipsidae
- Thilipsinae
- Nardopsinae
- Pimerinae
- Asia Group
- Heliscidae
- Phlochidae
- Goididae
- Althoinae
- Pronoidae
- Gyllinae
- Amexinae

Unrated Taxa (0)

Select state or states

Subject Control Window

Body

1. laterally compressed

2. dorsoventrally flattened

3. subcylindrical

Image 1 of 2

Ok

Cancel

DELTA – DDescription Language for Taxonomy

<http://delta-intkey.com/>

The screenshot displays the Intkey software interface, which is used for creating taxonomic keys. The window is titled "Intkey:" and has a menu bar with "File", "Window", and "Help".

The main workspace is divided into four quadrants:

- Top Left: Best Characters (36)** - A list of 36 characters available for selection. The first character, "uropod exopod (number of articles)", is currently selected and highlighted in blue. Other characters include "pereopod 2 merus (width)", "cheliped basis (distance from pereonite 1 ventrally)", "Body (calcification)", and "Antennule with (number of articles)".
- Top Right: Remaining Taxa (45)** - A list of 45 taxa that have not yet been placed in the key. The list includes "Bascestus (Colletteidae) Blazewicz-Paszkowycz & Bamber, 2012", "Caudalonga (Colletteidae) Larsen, 2005", "Cetiopyge (Colletteidae) Larsen & Heard, 2002", "Collettea (Colletteidae) Lang, 1973", "Filttanais (Colletteidae) Kudinova-Pasternak, 1973", "Haplocope (Colletteidae) Sars, 1882", "Isopodidus (Colletteidae) Larsen & Heard, 2002", "Tumidochelia (Colletteidae) Knight et al., 2003", "Leptognathiella (Colletteidae) Hansen, 1913", "Leptognathiopsis (Colletteidae) Holdich & Bird, 1986", "Macrinella (Colletteidae) Lang, 1971", "Nematotanaia (Colletteidae) Bird & Holdich, 1985", "Nippognathiopsis (Colletteidae) Blazewicz-Paszkowycz et al., 2013", "Pseudoleptognathia (Colletteidae) Sieg, 1986", "Subulella (Colletteidae) Holdich & Bird, 1986", "Araphura (Tanaellidae) Bird & Holdich, 1984", "Arhaphuroides (Tanaellidae) Sieg, 1986", "Arthrura (Tanaellidae) Kudinova-Pasternak, 1966", "Inconnivus (Tanaellidae) Blazewicz-Paszkowycz & Bamber, 2012", "Tanaella (Tanaellidae) Norman & Stebbing, 1886", "Leptognathia (Leptognathiidae) Sars, 1882", "Androtanais (incertae sedis) Sieg, 1976", "Kanikipa (incertae sedis) Bird, 2011", "Armatognathia (incertae sedis) Kudinova-Pasternak, 1987", "Armaturatanaia (incertae sedis) Larsen, 2005", "Bifidia (incertae sedis) Sieg & Zibrowius, 1998", "Coalecerotanaia (incertae sedis) Larsen, 2003", "Exspina (incertae sedis) Lang, 1968", "Insociabilitanaia (incertae sedis) Larsen, 2005", "Leptognathioides (incertae sedis) Bird & Holdich, 1984", "Metatanaia (incertae sedis) Shiino, 1952", "Mimicarhaphura (incertae sedis) Sieg, 1986", "Monstrotanaia (incertae sedis) Kudinova-Pasternak, 1981", "Parafilttanais (incertae sedis) Kudinova-Pasternak, 1989", "Paranarthrurella (incertae sedis) Lang, 1971", "Portarathrum (incertae sedis) Guerrero-Kommitz, 2003", and "Pseudoarthrura (incertae sedis) Larsen, 2005".
- Bottom Left: Used Characters (0)** - A list of characters that have been used in the key, currently empty.
- Bottom Right: Eliminated Taxa (0)** - A list of taxa that have been eliminated from the key, currently empty.

At the bottom of the window is a Windows taskbar with various application icons and a system tray showing the time as 16:27 and the date as 2014-11-14.

Thanks are due to **KIOST** and **ISA**
for organising and hosting
Thank you for your attention

