

The fairy shrimps of Seewinkel soda pans

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Neusiedler See - Seewinkel



Erasmus+

Overview

1. Introduction

2. Food spectrum of fairy shrimps



3. Effect of turbidity on feeding of fairy shrimps



4. Phylogeny of fairy shrimps



5. Conclusions

1. Introduction



Fairy shrimps

Branchinecta orientalis - female



male

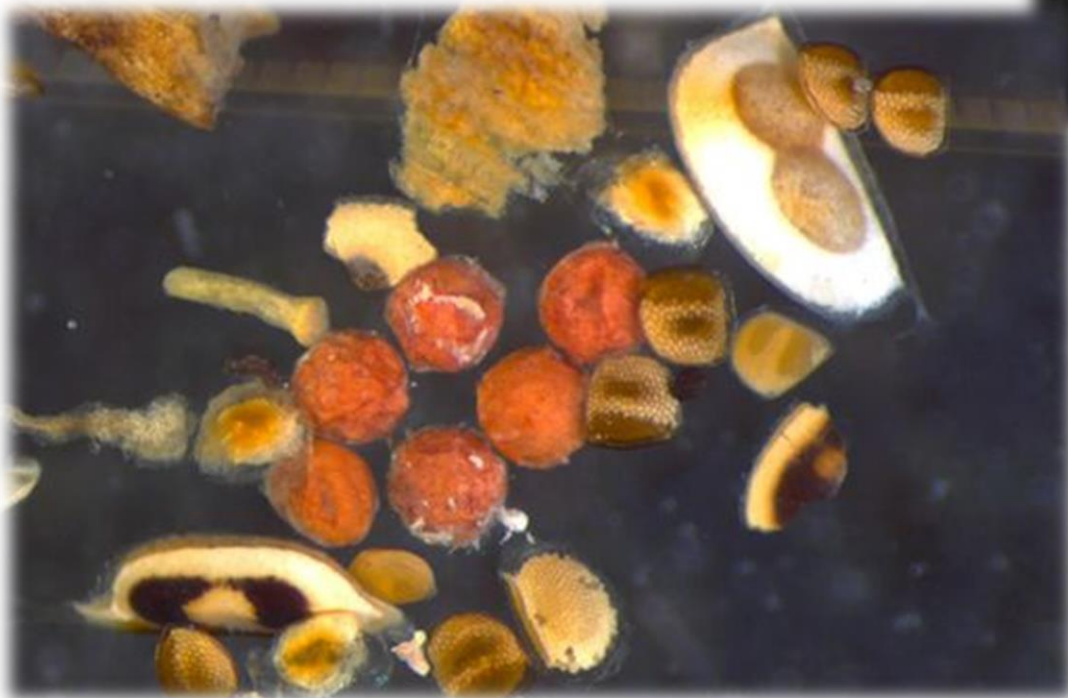
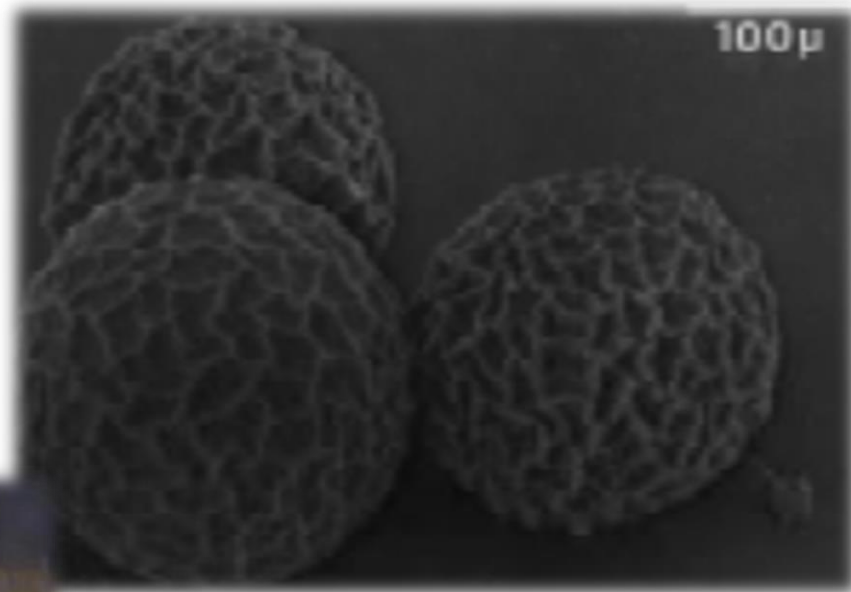


Temporary ponds → soda pans



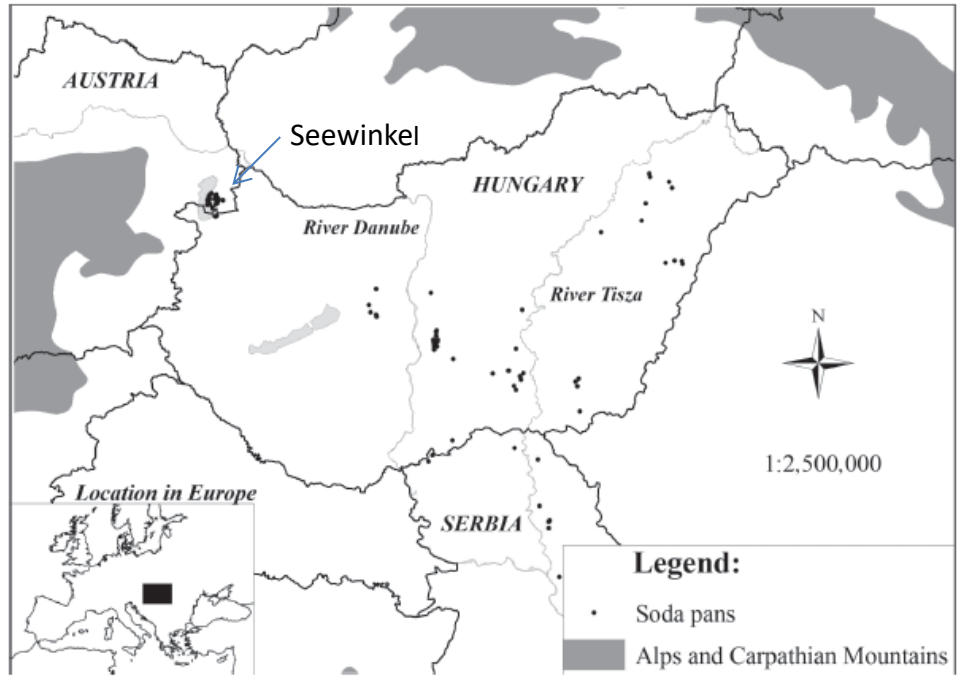
Resting eggs

Resting eggs of *Branchinecta orientalis*,
Mura & Takami 2000, *Hydrobiologia*



Resting eggs
in soda pans

Soda pans of Carpathian Basin



Importance to waterbirds

Freshwater Biology

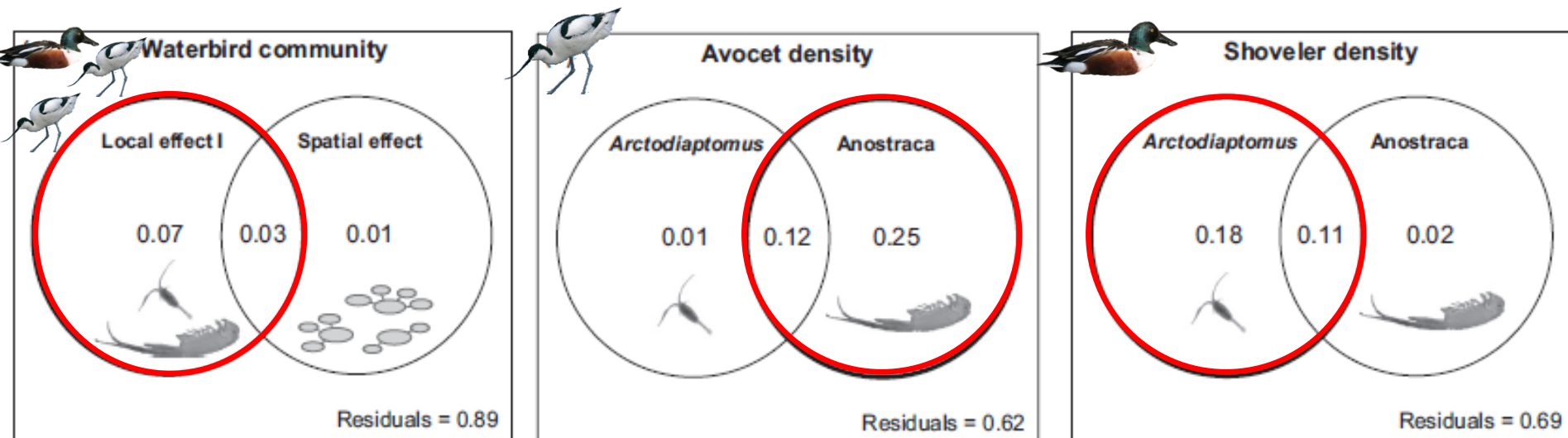
Freshwater Biology (2013) 58, 430–440

doi:10.1111/fwb.12071

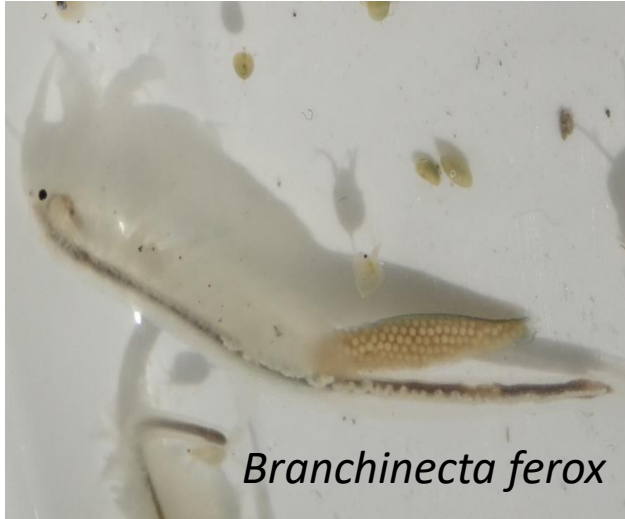
The keystone role of anostracans and copepods in European soda pans during the spring migration of waterbirds

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Fairy shrimps in soda pans



Branchinecta ferox



Branchinecta orientalis



Chirocephalus carnuntanus

Most frequent fairy shrimp species –
Branchinecta orientalis

- present in **29 pans** (out of 91)
- range of TSS (total suspended solids) **62.5 – 29 360 mg L⁻¹**



2. Food spectrum of fairy shrimp

Journal of
Plankton Research

academic.oup.com/plankt



J. Plankton Res. (2018) 40(4): 436–445. First published online May 30, 2018 doi:10.1093/plankt/fby017

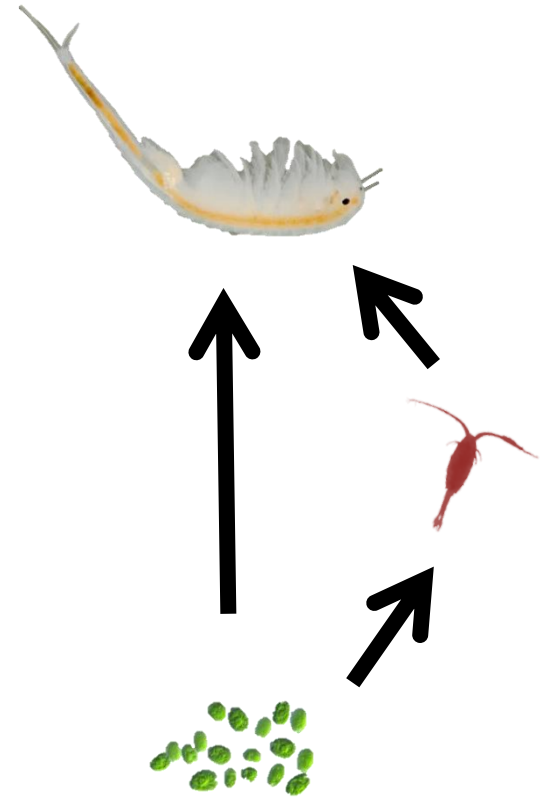
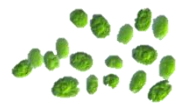
Food spectrum of *Branchinecta orientalis*—
are anostracans omnivorous top
consumers of plankton in temporary
waters?

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Feeding of *Branchinecta orientalis*





Food spectrum

Algae:

Mychonastes sp.
diameter 2-3 μm

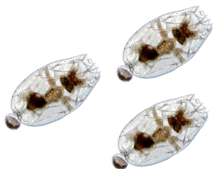


Chlamydomonas sp.
diameter 7-18 μm



Rotifers:

B. asplanchnoidis



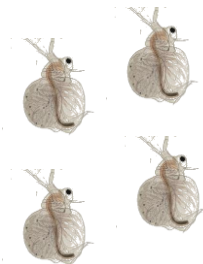
Copepod:

A. spinosus



Cladoceran:

M. brachiata



Cladoceran:

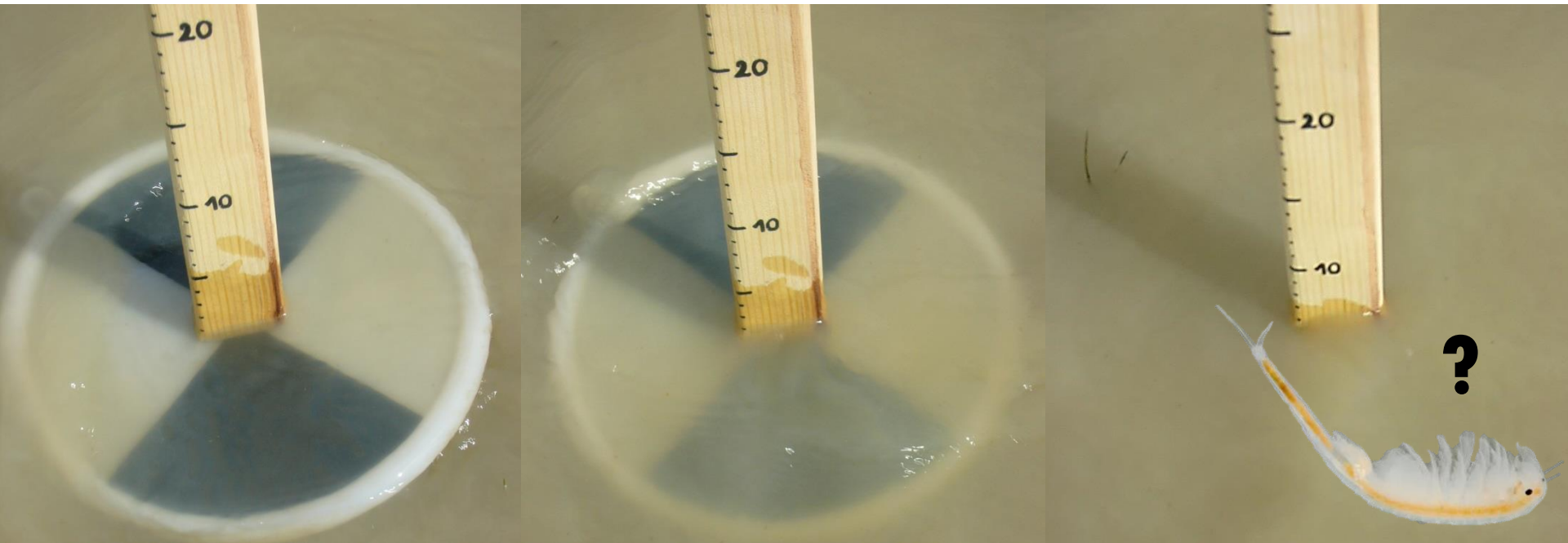
D. magna -
juveniles



D. magna - adults



3. Effect of turbidity on feeding of fairy shrimps

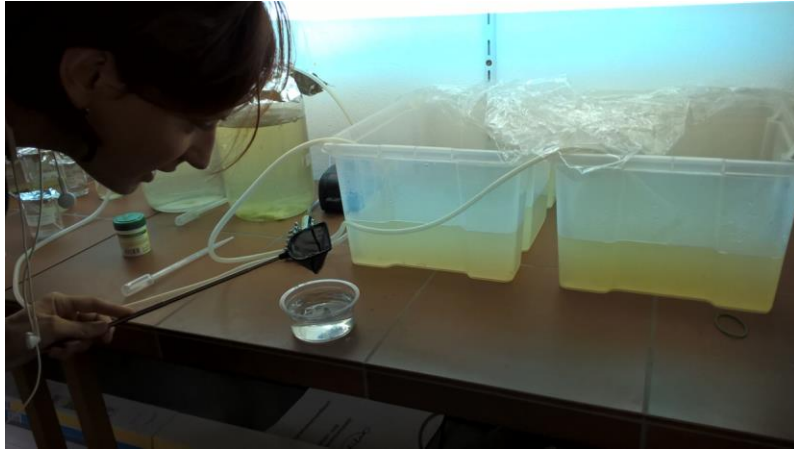


Lukić et al. (accepted) *Freshwater Biology*

Soda pans are usually shallow with relatively big surface area, strongly mixed by the wind.



I Feeding experiments



II Empirical study: stable isotopes

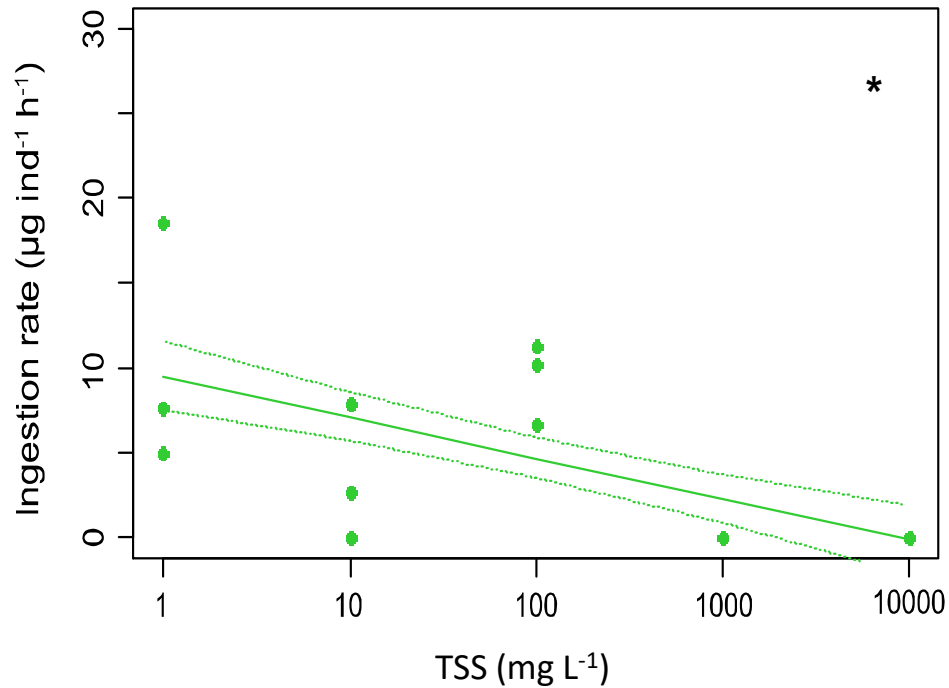


I Feeding experiments

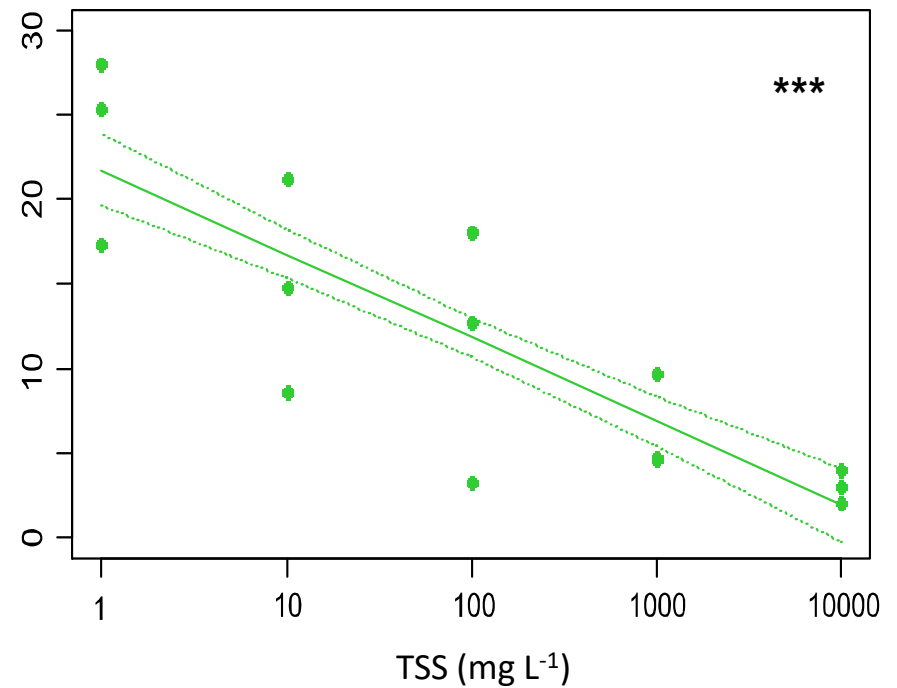


Feeding on algae

a) Feeding on *Mychonastes* sp.



b) Feeding on *Chlamydomonas* sp.

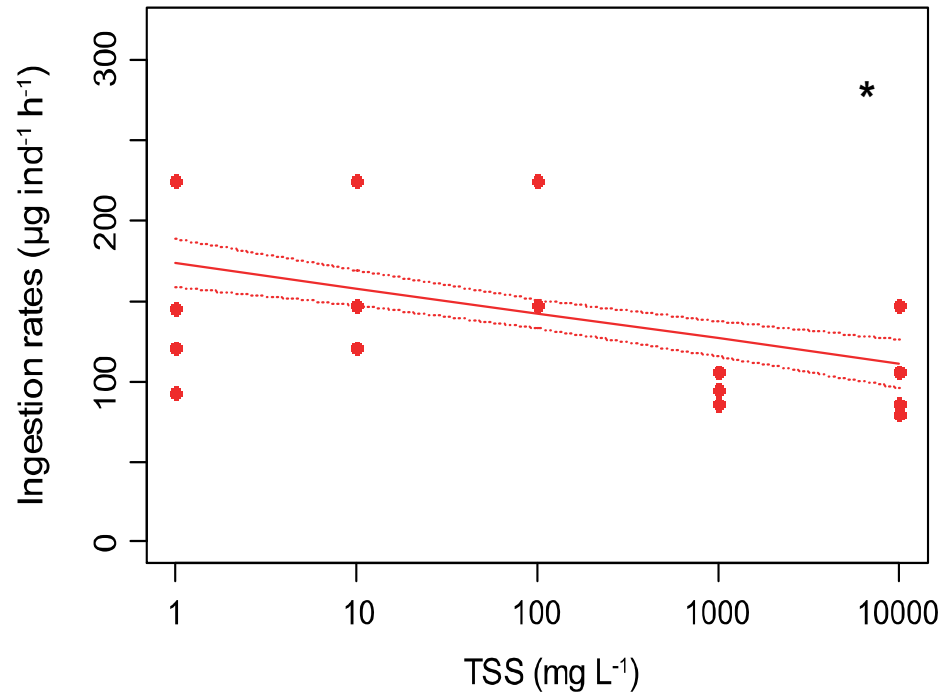


I Feeding experiments

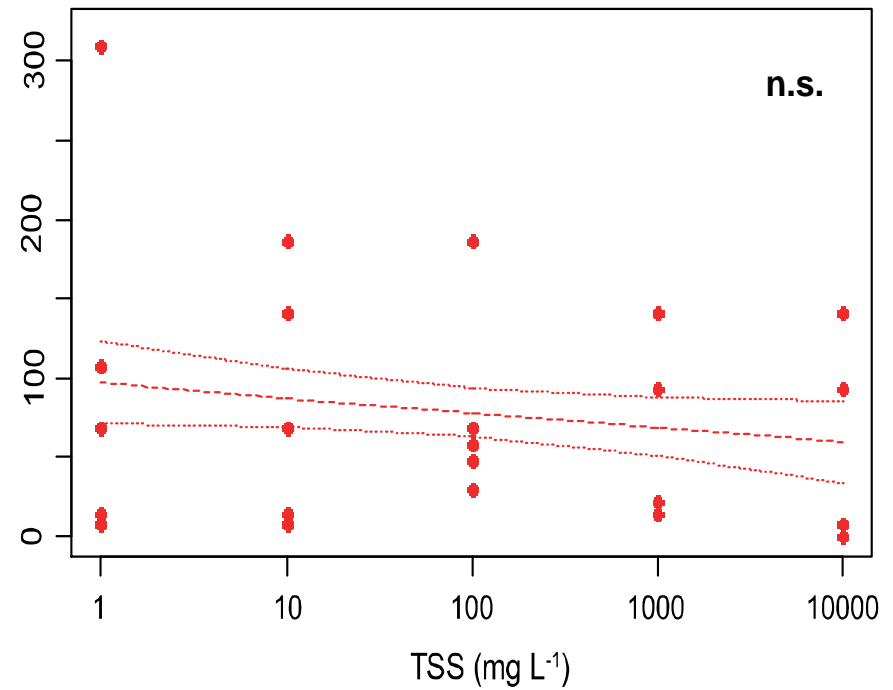


Feeding on zooplankton

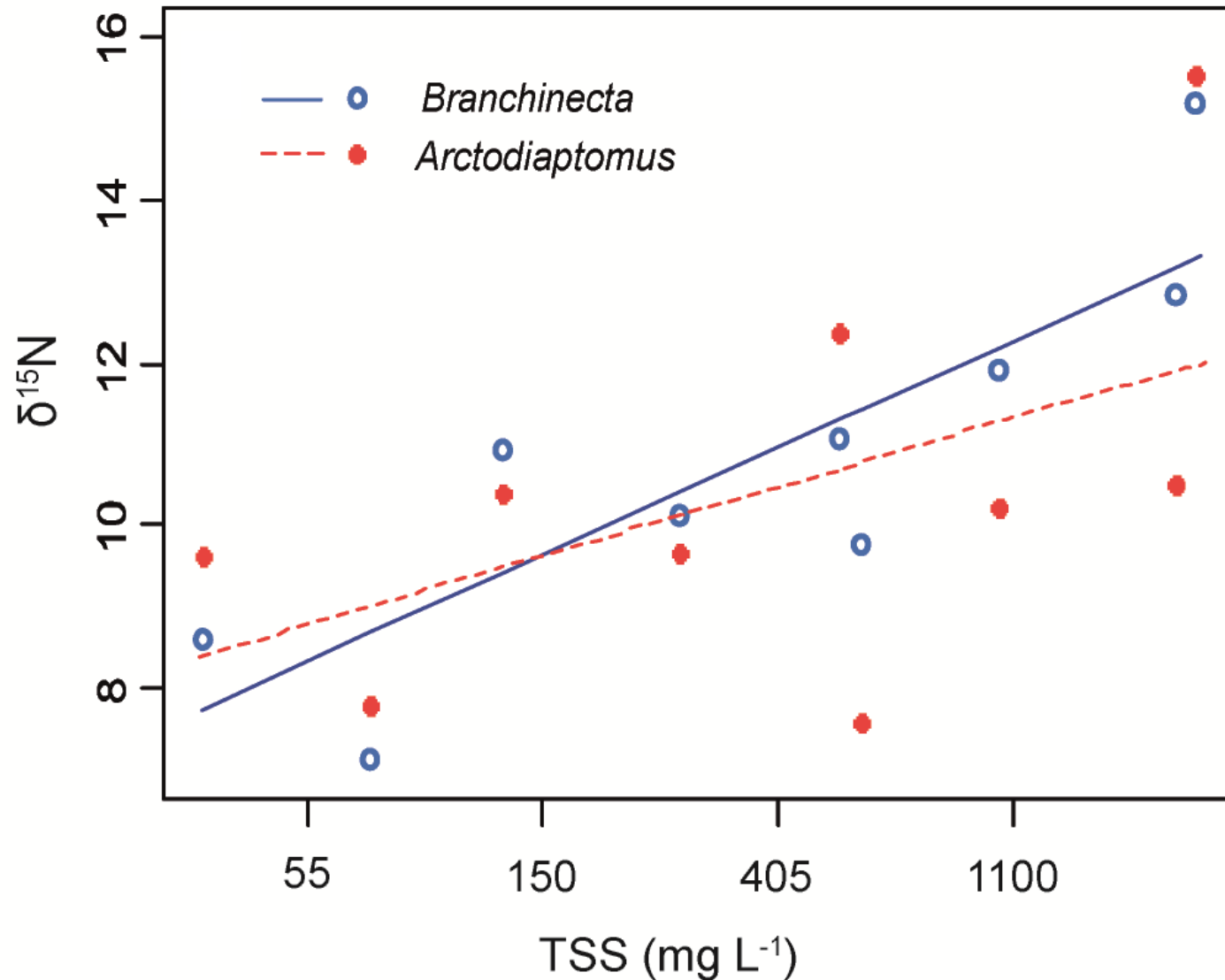
c) Feeding on *Brachionus asplanchnoidis*



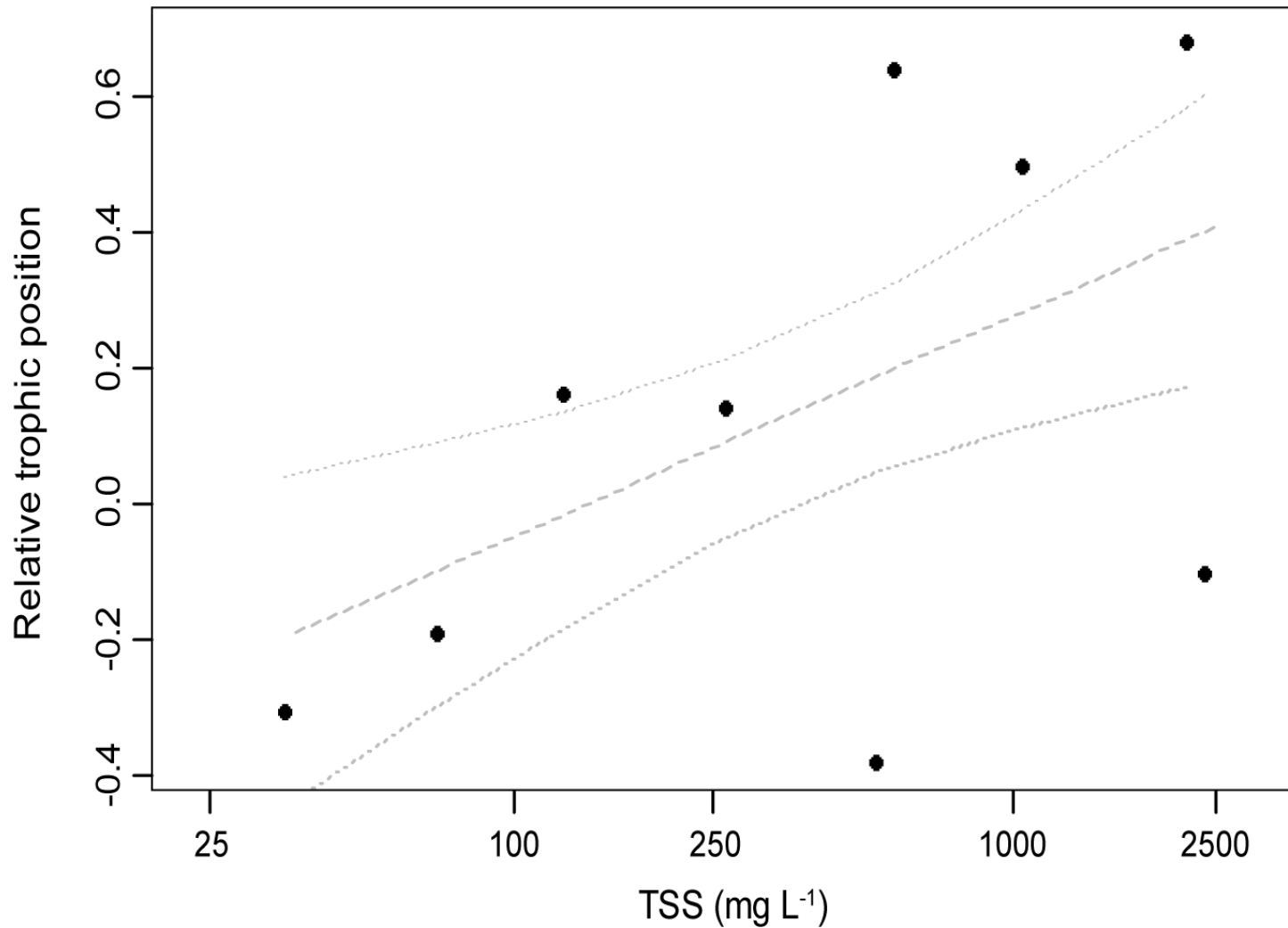
d) Feeding on *Arctodiaptomus spinosus*



II Empirical study: Stable isotopes



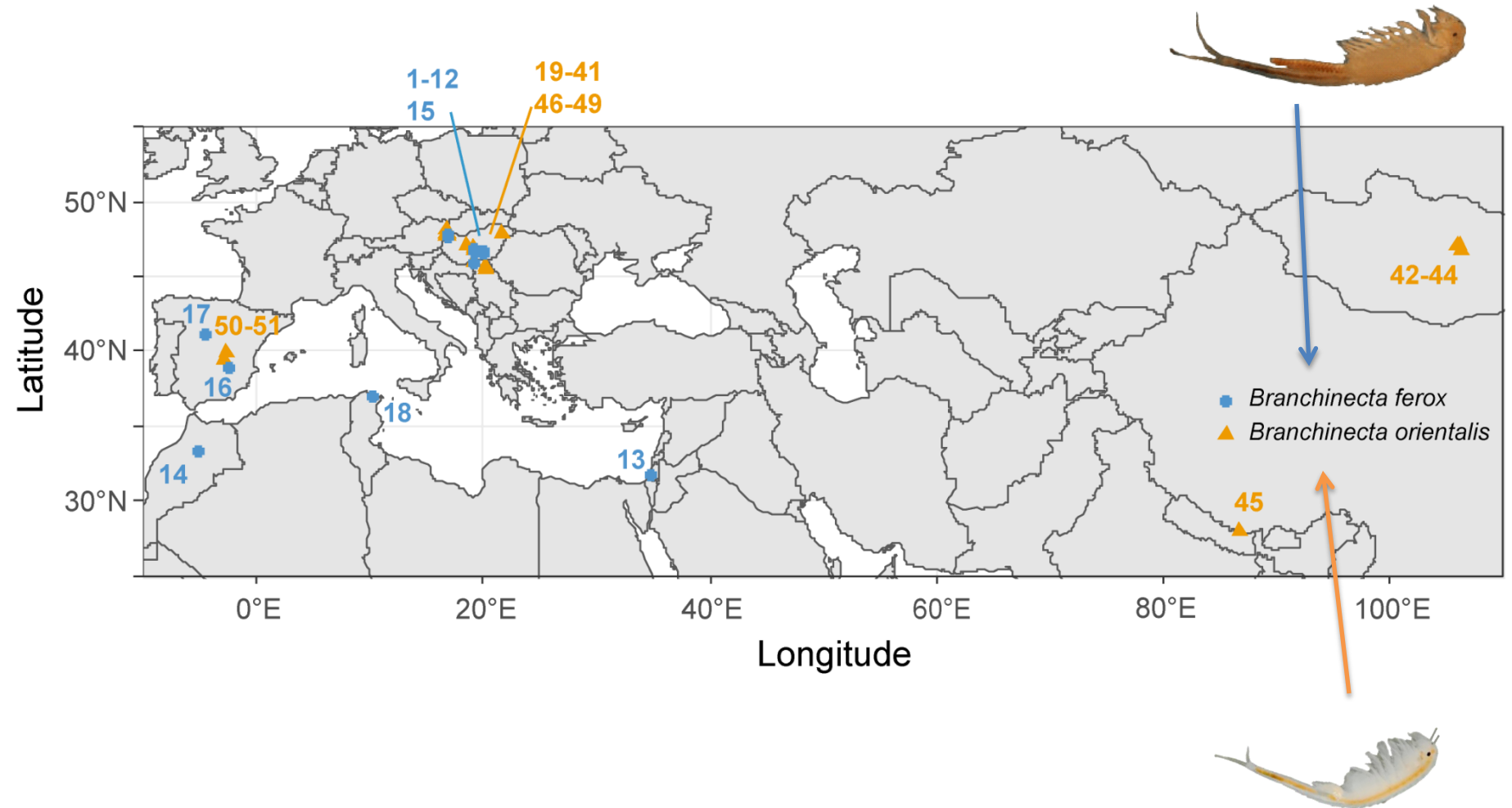
II Empirical study: Stable isotopes

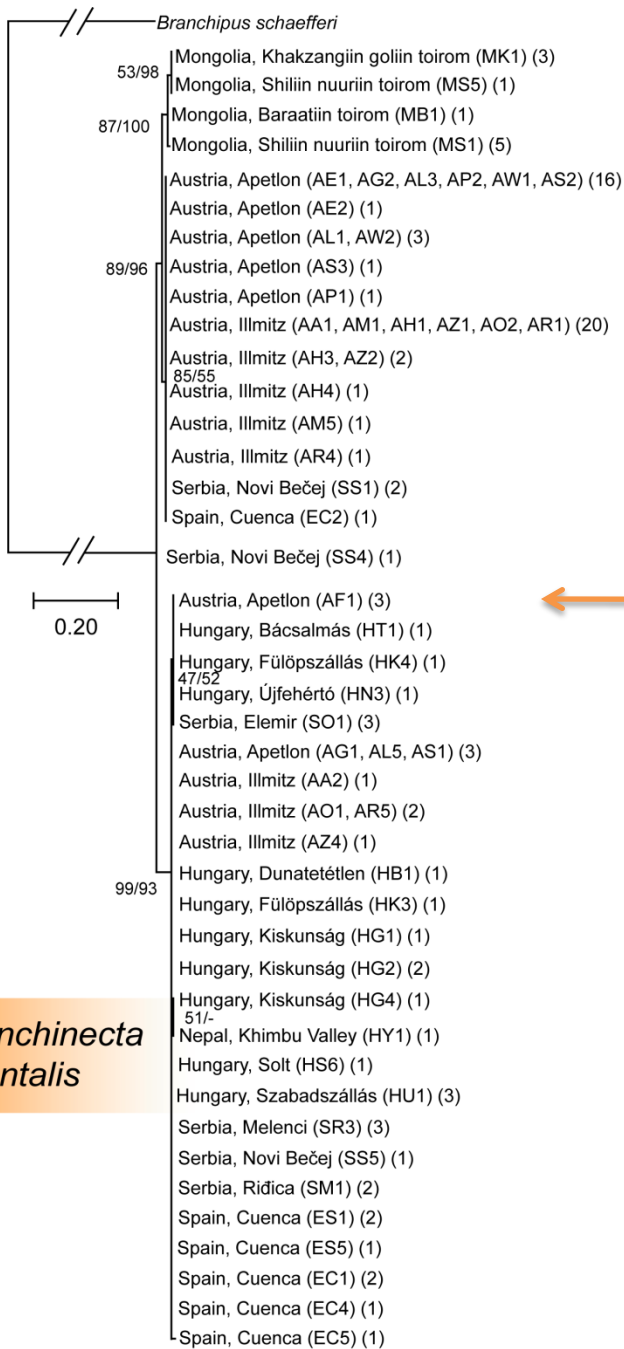


4. Phylogeny of fairy shrimps



Distribution of *Branchinecta*





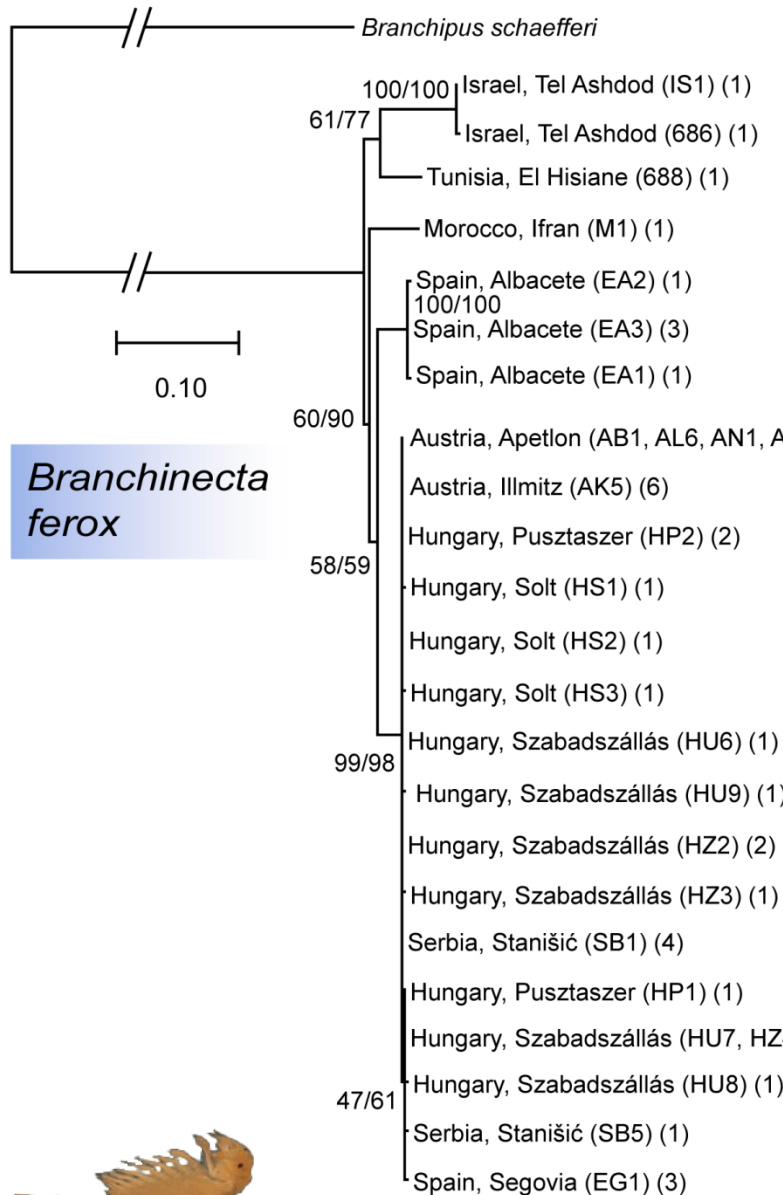
Seewinkel,
Austria

Seewinkel,
Austria

Seewinkel,
Austria

*Branchinecta
orientalis*

Ice Age refugia were likely in the
Balkan Peninsula, limited to only
couple of surviving populations



North Africa and/or the Middle East Asia were the likely refugia during the Ice Age



Seewinkel, Austria



Central Europe

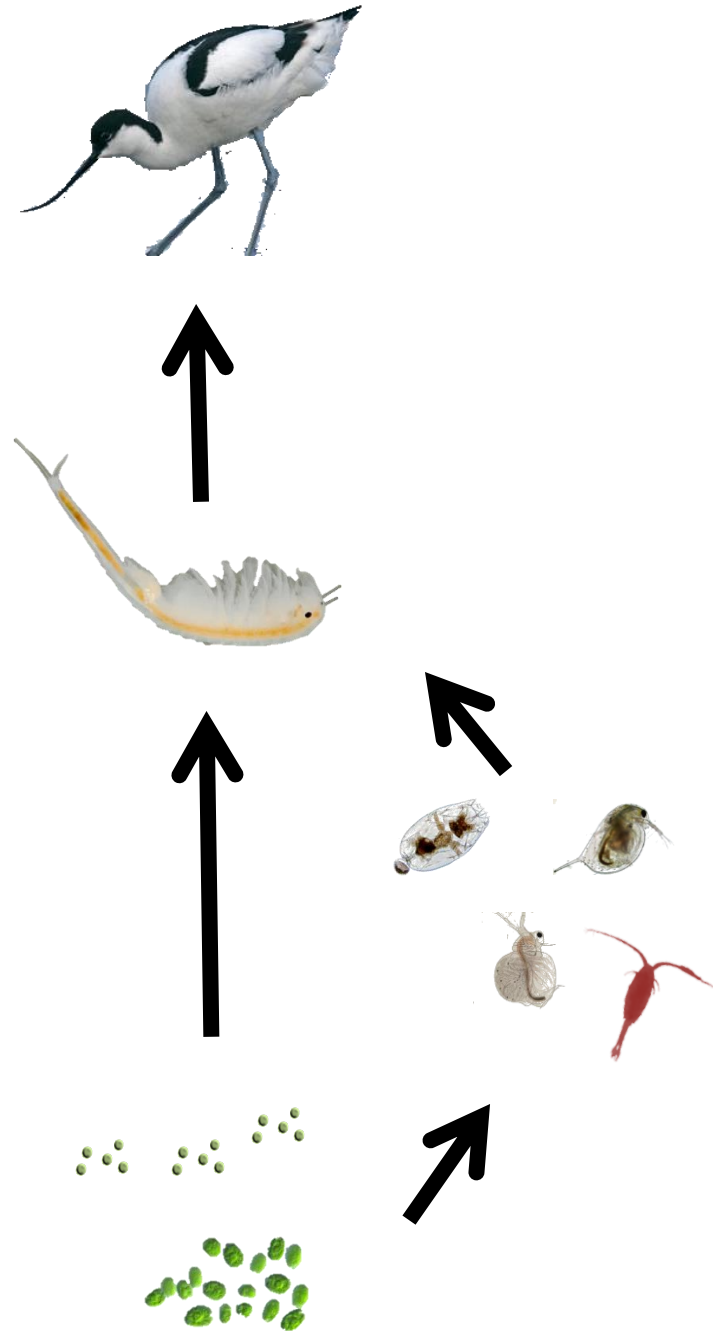


5. Conclusions

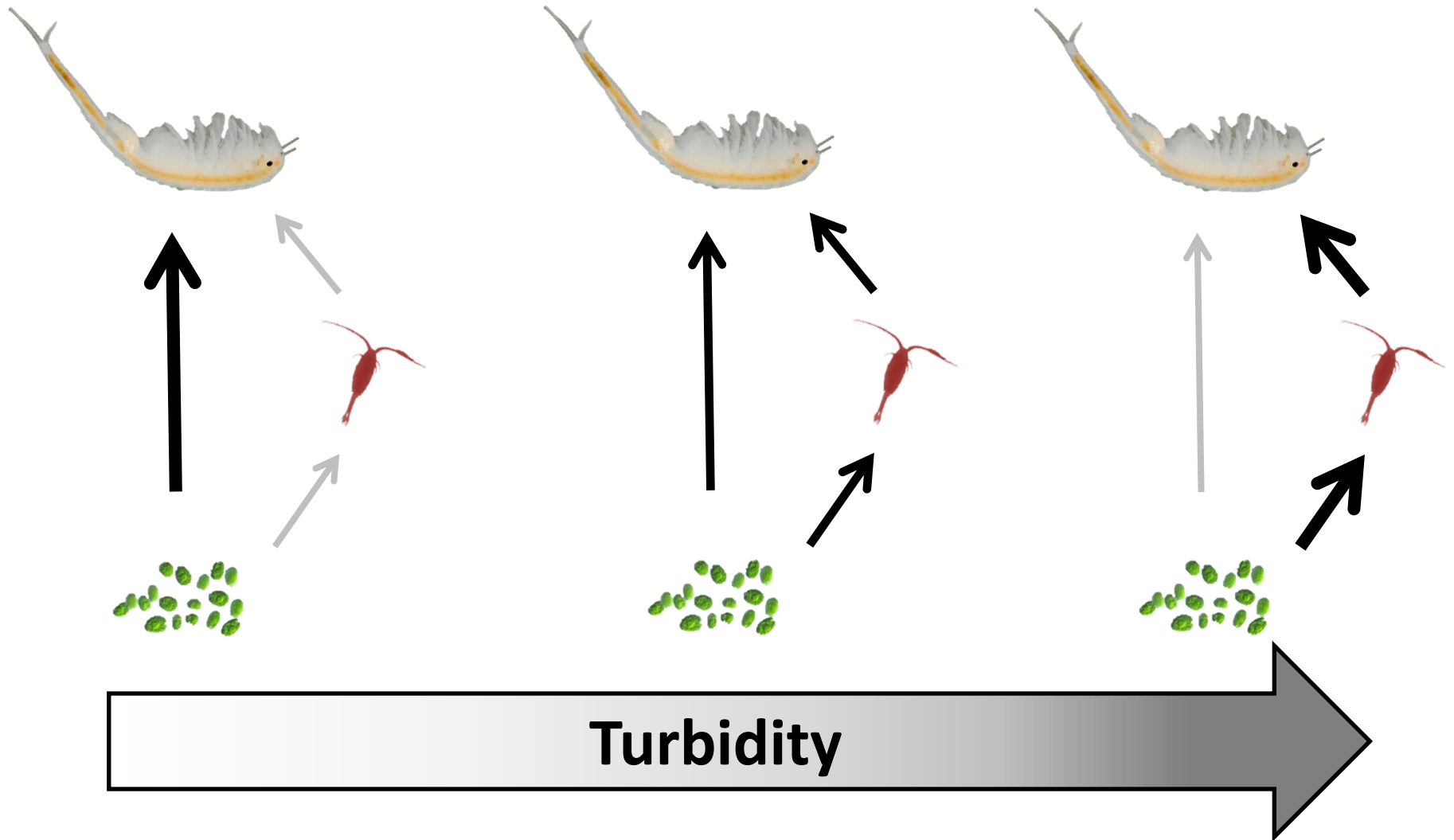


Chapter 2

B. orientalis is **omnivorous predator**, capable of **ingesting** a wide range of food particles



Chapter 3



Chapter 4



- Wide distribution of *Branchinecta* fairy shrimps in Palearctic happened only **after the Ice Age**

Chapter 4



- **Migratory waterbirds** played the most important role in their dispersal

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Thank you!