Protocol Appendix: Animal Class

– by the COMPADRINOs

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The COMADRE Plant Matrix Database includes animals of numerous taxonomic classes. This document outlines some basic information about them.

Figure 1: *Larus argentatus* – Silbermöwe

Aves (Vögel)

Birds are found mostly **terrestrial** in different ecoregions from costal to rain forests. Reproduction type is **sexual**.

Figure 2: *Cerastoderma edule* - Herzmuschel

Bivalvia (Muscheln)

These organisms have a two-piece shell and that's why they're called bivalvia. They live in **freshwater** and **marine** ecoregions burried in the sediment, fixed on rocks or on the ground. **Sexual** Reproduction is common. In their life-cycles free-living **larvae** are the stages after hatching. First larvae are called trochophora larve which are developing into veliger larvae. The latter one settles on the ground and grows to juvenils. A few species are **hermaphrodites** (male and female organs in same individual).

Figure 3: *Daphnia* sp. - Wasserfloh

Branchiopoda (Kiemenfußkrebse)

Here we have crustaceae which have gills, like shrimp, Daphnia (Wasserfloh), {*Artemia salina* (Urzeitkrebs). Ecoregions are mostly **freshwater**, sometimes **marine** (*Daphnia*). Their reproduction is sexual but there are some exceptions: for *Daphnia* we have **parthenogenesis**, females asexually produce not fertilized but viable eggs.

Figure 4: Lamprey - Neunauge

Cephalaspidomorphi

In this class there are jawless (kieferlose) fishes, most of them fossil. Recent organisms are lampreys. They live in **freshwater** and **marine** (mostly costal, seldom open sea) ecosystems. In their life cycles **larvae** live buried in the sediment for several years.

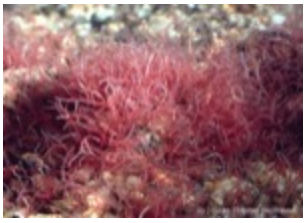

Figure 5: *Tubifex* sp.

Clitellata (Gürtelwürmer)

These class includes worms like earthworms (Regenwürmer), leeches (Egel) and e.g. *Tubifex* (used for fish food). Their ecoregions are mostly **terrestrial** but also **freshwater** and **marine**. Reproduction is **sexual** and they are **hermaphrodites** (male and female organs in same individual).

Demospongiae (Hornkieselschwämme)

This class represents 81 % of sponges. Largest species are over 1 m in length. They are **marine**, one species occures in fresh water. These sponges have both **sexual** and **asexual** reproduction. Life cycles are complicated regarding to complex asexual reproduction with budding (Knospung) and/or gemmules (Dauerstadium=dormancy).

Figure 6: *Spongia officinalis* - Badeschwamm

Diplopoda (Doppelfüßer)

Here we have the millepedes (Tausendfüßer). These animals live in terrestrial, mostly tropical ecoregions. Reproduction types are **sexual** and **asexual**. A special feature of their life cycles is **parthenogenesis** (females asexually produce not fertilized but viable eggs).

Figure 7: Millipede

Echinoidea (Seeigel)

Sea urchins live in marine ecoregions. They reproduct **sexually** and hava a **larva stage** called pluteus.

Figure 8: *Sphaerechinus granularis*

Elasmobranchii (Plattenkiemer)

This class includes sharks as well as rays (Rochen). These fishes only live in **marine** ecoregions and reproduce **sexually**.

Figure 9: *Carcharodon carcharias*

Gastropoda (Schnecken)

Snails are molluscs with or without a shell. They live in different environments in **terrestrial**, **marine** and **freshwater** ecoregions. Some species are **hermaphrodites** (male and female organs in same individual). In the life cycle there are **larvae** (in water, called veliger or trochophore).

Figure 10: *Helix pomatia* - Weinbergschnecke

Gymnoleamata

This group is a class of bryozoa (Moostierchen), which are small multicellular organisms living in water. So they are found mostly in **marine** and also **freshwater** ecosystems. Reproduction includes **sexual** and **asexual** parts. The single animals build big colonies via **asexual budding** (Knospung).

Figure 11: *Flustra foliaceae* colony

Homo sapiens

Homo sapiens are not a class (they are in Class Mammalia) but they are recorded in our Excel spreadsheet within their own Worksheet. Their ecoregions are **terrestrial** and reproduction is **sexual**.

Insecta (Insekten)

Insects are animals with three pairs of legs and compound-eyes. They live in **terrestrial** but also in **freshwater** and **marine** ecore-

gions. Reproduction is **sexual** and sometimes **asexual**. The life cycle includes the stages **larva** and **pupa** and can be partly in water also for terrestrial organisms. Sometimes there is **parthenogenesis** (females asexually produce not fertilized but viable eggs).

Figure 13: *Curcoinolidae* - Rüssekäfer

Malacostraca (Höhere Krebse)

In this class we found crab, lobster and shrimp. They live in **freshwater** and seldom **terrestrial** ecoregions. Reproduction is **sexual**. The larva stage is called nauplius. Few species are **hermaphrodites** (male and female organs in same individual).

Figure 14: *Cancer pargurus* - Taschenkrebs

Mammalia (Säugetiere)

Mammals live in different environments like **terrestrial**, **marine** and **freshwater** ecoregions. They reproduce **sexually**. Some exceptions lay eggs.

Figure 15: *Lotra provocax* - Flussotter

Maxillopoda (eine Klasse der Krebstiere)

These class which includes different crustaceans is found in **marine** and **freshwater** ecoregions. The type of reproduction is **sexual** and life history includes **larvae** called nauplius. Few species are **hermaphrodites** (male and female organs in same individual).

Figure 16: Balinidae - Seepocken

Merostomata (Hüftmünder)

This class includes recent horseshoecrabs (Pfeilschwanzkrebse) and extinct sea scorpions. They only live in **marine** ecoregions and reproduce **sexually**. **Larvae** are part of the life cycle.

Figure 17: *Limolus polyphemus* - Pfeilschwanzkrebs

Onychophorida (Stummelfüßer)

These organisms are the so-called 'worms with legs'. They live mostly in tropical regions of **terrestrial** ecosystems. Reproduction is mostly **sexual**, one species also reproduces **asexually** (**parthogenesis** for *Epiperiatus imthurni* (no males)).

Figure 18: *Eoperipatus totoro*

Ostrascoda (Muschelkrebse)

These small crustaceans are part of the plancton or live on the sea ground. So their ecoregions are **marine** and also **freshwater**. Type of reproduction is **sexual**, seldom **asexual**. Life history includes a **larval** stage which is calles nauplius. Few species are **hermaphrodites** (male and female organs in same individual), seldom **parthenogenesis**.

Figure 19: An ostracod

Polychaeta (Vielborster)

Bristle worms live in nearly every **marine** ecosystem, up to the deep sea. But they're also sometimes found in **freshwater** ecore-

gions. Reproduction is **sexual**. **Larva**, as a stage of their life cycle, are called trochophora.

Reptilia (Reptilien)

Reptiles live in **terrestrial**, **freshwater** and **marine** ecoregions. Next to **sexual** reproduction in some single cases also **asexual** reproduction occurs (**Parthenogenesis**).

Secernentea (Klasse der Fadenwürmer)

A member of this class is the famous nematode *C. elegans*, which was the first multicellular organism with a whole sequenced genome and is thenceforward handled as a model animal. These worms are living in **terrestrial** or in **freshwater** ecoregions and reproduce **sexually**. Sometimes they are parasites with complex life cycles.

Spirochaetes (Spirochäten)

This is a group of gram-negative bacteria which are living in **terrestrial**, **marine** and **freshwater** ecoregions. Reproduction includes both **sexual** and **asexual** systems. Here we found some parasites.

Thaliaceae (Salpen)

Salps are free-floating animals which could form big colonies. They only occur in **marine** habitats. The life-cycle includes an alteration of generations: first **sexual** than **asexual** reproduction.

Virus

A virus is not a cell itself but needs a host cell for reproduction via so called bacteriophages. They could occure in **terrestrial**, **marine** as well as **freshwater** ecoregions.

Figure 20: Worm

Figure 21: *Batagur baska* – Batagur-Schildkröte

Figure 22: *Caenorhabditis elegans*

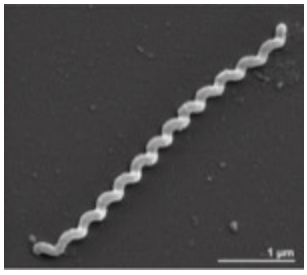

Figure 23: spirochaete

Figure 24: *Pegea confoederata* colony

Figure 25: Virus