

Phylum Nemertea (ribbon worms or proboscis worms)

translates as "unerring one"

→ refers to animals ability to very accurately shoot its long proboscis to capture prey

(formerly, Rhynchocoela or Nemertini)

~1150 species

3 fossils might be nemerteans

first described in the 1700's; until 1850's considered platyhelminthes

share many basic characteristics

slender, very fragile ribbon-like worms
→ resemble tangled mass of slimy string

most < ~8" (20 cm)

but longest animal in existence is a nemertean

Lineus longissimus = 197' (60 M) long

regardless of length most are <1" (23mm) wide

often very brightly colored

some white, red, yellow, green, purple

most use cilia to glide on a trail of slime

Animals: Phylum Nemertea; Ziser Lecture Notes; 2015.9

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larger species use muscular waves to crawl

some swim by undulating body

some species construct mucus or cellophane-like tubes

others curl up into balls and secrete a covering of mucus around themselves

almost all are free living, benthic marine worms

found in every ocean; from surface to abyssal zone

most are benthic; a few pelagic species

fairly common on beaches; often found inside shells, under stones or in tangles of algae; some burrow into mud and sand

arctic ribbon worms commonly wash ashore by the billions

about a dozen species are found in freshwaters

about a dozen species are terrestrial in moist tropical soils

a very few are parasitic

Body Plan

Animals: Phylum Nemertea; Ziser Lecture Notes; 2015.9

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general body plan similar to platyhelminthes:

triploblastic, acoelomate, bilaterally symmetrical

ciliated epidermis
few with rhabdites

Feeding

carnivores

eat earthworms, sea worms, small mollusks and any small soft bodied animal, clams and crabs

use eversible **proboscis** (pharynx) to capture prey

proboscis everted and retracted by muscle bundles in rhynchocoel (a space around proboscis)

often at front of proboscis is sharp pointed spear-like **stylet** that impales prey

often tipped with poison

sometimes impales with such force that it breaks off

writhes for hours

animal can grow a new one

in some the proboscis is a sticky lasso that coils around its prey

Animals: Phylum Nemertea; Ziser Lecture Notes; 2015.9

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proboscis (pharynx) is unusual because it is not connected to GVC in most

have **complete digestive tract** with **anus**
→ one way path from mouth to anus

like snakes they can devour animals larger than themselves

without food some can live up to 1 yr by self digesting like planarians

most can shrink at will to < 1/3 their ordinary length

Circulatory System

true blood vascular system

Nervous System

have a 4 lobed "brain" and two nerve cords extending down the length of the body

nervous system is similar to but somewhat more elaborate and complex than flatworms

Excretion

excretory system of **protonephridia** with flame cells like flatworms

Reproduction

Animals: Phylum Nemertea; Ziser Lecture Notes; 2015.9

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Asexual

some reproduce asexually

fragmentation

some can break into 100's of fragments

makes them difficult to collect whole

each fragment can grow into a complete worm

regeneration

some with great powers of regeneration

Sexual

most are **dioecious** (unlike flatworms)

fertilized egg develops into **ciliated larva**

some fragment in warm weather and reproduce sexually in colder weather

Ecology

nemerteans have few predators: a few bottom feeding fish, some sea birds, a few invertebrates such as horseshoe crabs and other nemerteans

nemertean skin secrete toxins that deter predators

some crabs "clean" the skin with one claw before eating them

Evolutionary Relationships

molecular evidence shows them more closely related to lophophorates than to turbellaria

eg. *Cerebratulus*

best known example of phylum

may reach lengths up to 2 meters

eg. *Prosoma*

tiny worm

is common in freshwater ponds

Human Impacts of Nemerteans

one species found near San Francisco is blamed for the collapse of the dungeness crab fishery

it eats about half of the egg production of the crab population

other coastal nemerteans have devastated clam beds

In South America a couple of species are sold as fish bait (locals call them "tapeworms")