

FRIDAY HARBOR

SUMMER 1973/73

Field Trip #1

18 June 1973

WASHINGTON STATE, SAN JUAN ISLAND,

① Jensen's Boat Yards (ca. 3 mi. E. Friday Harbor, near San Juan Boat Works).

Collections made on boat docks, wood & styrofoam.

Scypha sp. - present but not abundant. all very small (.1 - 1.0 cm. tall). All individuals, no branching or colonies noticed.



looks like both species to me ←

Haliclona (permollis or rufescens?) - Abundant.

Metridium - extremely abundant Kozloff I.D.

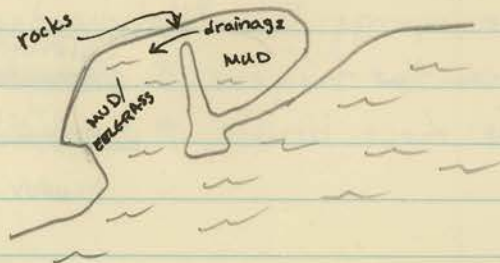
Obelia - abundant


HALICHONDRIA - abundant.

② Argyle Lagoon

Collections made on rocky out wash of lagoon into main bay - water flow good, clear. Hemigrapsus, flatworms, Cancer productus, amphipods all abundant. In lagoon itself ribbon worms Paranemertes ^{peregrina} ~~sp.~~ ^{coe} abundant on mud. Mud highly anaerobic (H₂S layer shallow).

Met Jane E. from U of A.



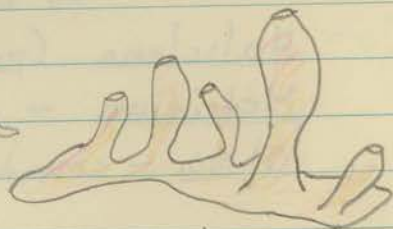
Scyphaactual size → 

Found clinging to boat decks (wood & styrofoam) & epifaunal on hydroid stems

Basal attachment in form of amorphous mass "wrapped" around substrate.

Haliclona rufescens

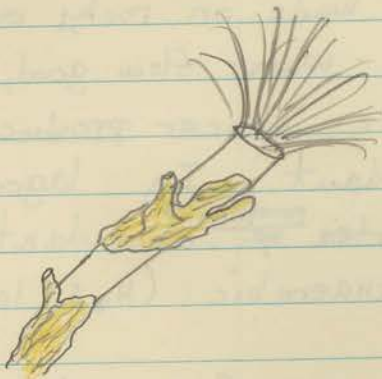
brown encrusting form



violet to pink erect form

Halichondria sp.

pale yellow; encrusting on or sabellid tubes



note: Haliclona is more spongy than Halichondria & can be rolled between the fingers & stay intact, whereas Halichondria is more brittle & crumbles.

20 June 1973

"Hydah" cruise #1

San Juan Island, Friday Harbor Marine Laboratories, research vessel "Hydah" cruise 0800 - 1230. Peavine Pass (10 mi. E. Friday Harbor) sunny, clear day - rocky bottom. Kozloff/Fontaine attending. (Between Obstruction Is. & Blakely Is.).

Dredge 1 Rock Dredge, rocky bottom, 6-12 fms. (30 min. at depth)

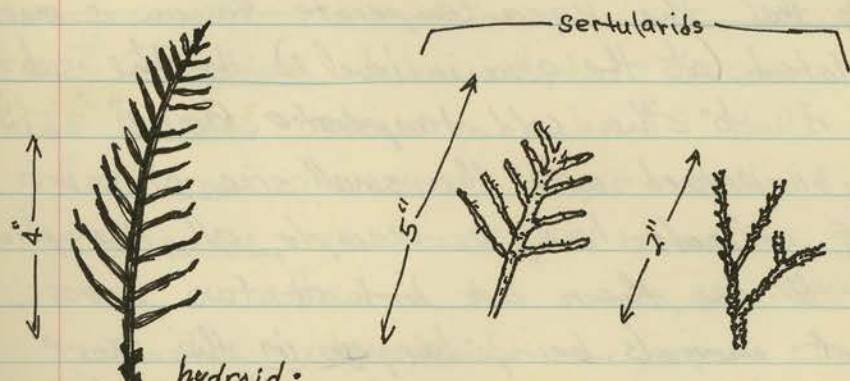
Echinoderms: Evasterias troschelli, Pycnopodia helianthoides

Crustacea (crabs) Gracilopoda: immature Cancer's, Petrolisthes cinctipes, ~~gracilopods~~

numerous oxyrhyncha, various hermits, Balanus rubius,

Cnidarians: Allopora, Aglaophenia, Tubularia, Sertularia, Telia

Others: Cliona (abundant), Calliastoma (w/Crepidula), serpulids, Strongylocentroides franciscanus (8" across)



hydroid:
yellow ~~orange~~
resembles Aglaophenia
but more robust

can
be yellow

Dredge 2 Rock Dredge; sand/shell rubble/pebble Bottom
20 min. at 4-10 fms.

Many many Strangylecumatotus ^{echinoides &} droëbachuensis & jingle shells.

The galatheid Munniopsis (one w/epicarid)

numerous shrimp (1-3" long) (one w/epicarid) → shrimp & epicarid
done both braced-red
in life.

many gastropods including calyptraea, Tonicella, limpets

many polychaetes including scale-worms, nerieds &
a "cirriformia-like" worm.

several small ephiroids & a couple nemerteans

very few Balanophyllia & Parastichopus & Henricia leucon

~~Henricia~~ Cancer oregonensis (1-2") - prefer to live in Balanus
shells or other types of empty shells (secluded). One large
clam had 4 of these crabs spaced evenly about its empty inside.

The fauna is much newer to me than I had
expected. Even genera are difficult to place. I am
beginning to feel the warm-temperate fauna is more
closely related (at the generic level?) to the subtropical
than it is to the cold temperate fauna. I've
also been impressed with the small size of some
groups of animals here, for example, all the ophiroids
seem to be less than an inch or two across. This
business of animals being larger in the more
northern latitudes seems to fail 100% here since
subtropical & tropical brittle stars average closer
to 2"-12" across. The gastropods may exhibit the
same phenomenon. I was also surprised to see
galatheids up here - perhaps this isn't a warm-water

shells.
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 both briza-red
 in life.
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Henricia leviuscula
Balanus
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empty inside.
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group. The anemones however do exercise the size phenomenon - some of these coldwater fellows get really high. Same for the barnacles. I am continually impressed w/ Kozloff. I feel he is in the same league as Heppeth insofar as knowing the fauna - perhaps even beyond him. I've yet to hear him rap on biogeology or biogeography though. Both Fontaine & Kozloff seem to feel Paul D. is a bit hard to get along with. Liz is beginning to disprove my theory on red-heads.

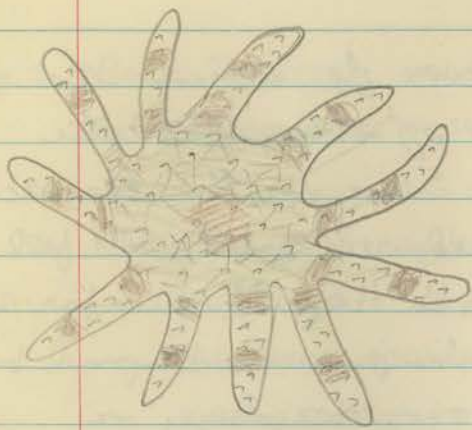
note: The Hyda is a private vessel operated by ~~Clare~~ Cleve VanderSloiyth. He has owned the boat since the early 40's. Used to use it for fishing (double stern trawler) but now just rents it out (time-wise) to F.A.L. She's a beautiful vessel - immaculate, about 40', shallow.

Dredge 2
 (cont.)

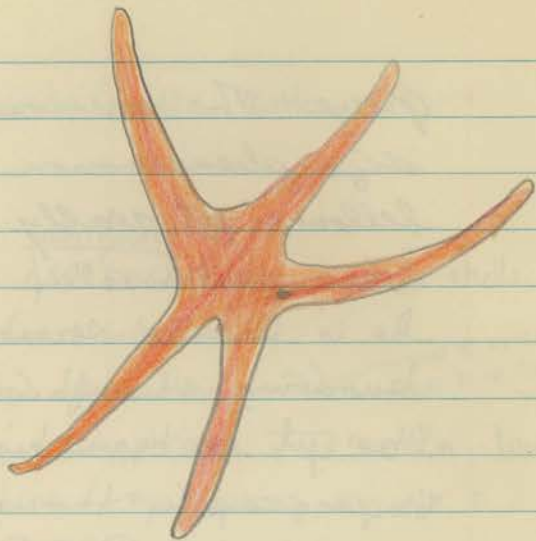
- Corophium tubes collected - discreet mud tubes, en masse! (soft & mushy but intact)
- Balanus nubius on rocks (5" tall)
- Cliona on most larger shells & Balanus.
- Laqueus - a brachiopod resembling Terebratulina, attached to rocks, differs: ^{Other opogone shell} longer than wide
- Jingles - abundant on larger clam valves (living clams)!
- Crossaster papposus - A really neat sea star
- Eupentacta pseudoquinquesemita - white cucumber (3")
- Henricia leviuscula - bright orange sea stars
- Allopora - common; encrusting on rocks
- Pandalus jordani ?

Hydractinia - on shell of hermit crab
Stomphia - the sea anemone

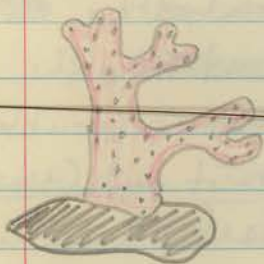
didn't get this
 species - it was Terebratulina



Crossaster



Henricia leviuscula



an ectoproct:

Heteropora pelliculata



Corophium tubes (mud), amphipoda



Terebratalia

(the brachiopod)

Dr. Fontaine showed the opercular muscles of Balanus nubilus and remarked that each muscle strand was actually a single muscle cell ($\pm 2-3$ mm. thick) and that these were some of the largest muscle cells in the animal kingdom. This particular species has the base permeated by pores or "parietal tubes" as do the plates of many other species of barnacles.

- Balanus nubilus - large; ribs thin & uniform; heavily placed but not heavy or robust themselves
- Balanus cariosus - downward pointing spines
- Balanus glandula - heavy ribbing but not downward directed spines

amphipoda

note: The Aquatic Oligochaeta of the World
by Brinkhurst

"Hydah" cruise #2

Buck Bay (mouth of East Sound), Orcas Is., San Juan Archipelago, Washington.

Attending: Dr. A. Fontaine, Anna Mary, Steve Bloom, Ken Sebens, Liz, Mary & Pat Schoenwals, Ted & Patsy Hatfield, etc.

Took snap #3 of instamatic roll, upon departure, of nearly vertical rock face in front of marine station - low tide shows excellent zonation: black layer on top (lichen & bluegreen algae mixed); fucus layer; Ulva (green algae) layer; pale white Balanus layer water. Fontaine guesses ± 9' tidal fluctuation here.

DREDGE #1 Mud Dredge - 10 min, ± 30'. 5' Blake dredge w/ chicken wire net. Very silty, fine mud bottom.



Cuspidaria^{californica} - a carnivorous polychaete (Septabranchia).
Many; many Cucumaria piperata (Stimpson)



Telepsorus^{costarum} (a chaetopterid polychaete)

snaps #9 - Rosario Hotel, E. Sound, Orcas Island.
snaps 15-20 False Bay, San Juan Is. (3 ft. tide)

DREDGE #2 Same type of fine mud but no cucumaria.
Instead a few sweet potatoes Molpadia intermedia ;
one Dentalium (about 3" long but very slender);
the sea pens Virgularia sp. ; lots of
polychaetes; including verid's & terbellids;
many tubes of the burrowing "sea anemone"
Cerianthus; ~~2~~ 3 Priapulus caudatus, about 1"
long, with the caudal appendages
missing or retracted.

The tubes of this Cerianthus are identical to the
tubes of the burrowing "anemone" that is so
common in the inner bay of Miramar
(Guaymas). I only collected one specimen
of the "anemone" & lost it - but now feel
certain it is Cerianthus or a close relative.
The weather's really nice today, $\pm 65^{\circ}\text{F}$, sunny.
Waters cold, $\pm 45^{\circ}\text{F}$. The water's deep green
in color (probably diatoms & tree reflection),
the islands green. Upright Head stands majestic,
like a solitary guardian, overlooking the
shimmering straits to San Juan. A great
bald eagle soars high overhead, silent.

It's interesting how some animals, Echinoderms in particular, show clumped distributional patterns. These aren't nearly as evident in the littoral as in the subtidal & deeper benthos. These Cucumaria piperata we collected today must have been incredibly dense - the trawl was on bottom no more than 5 minutes & brought up ± 1000 animals (cucumbers). Yet, the 2nd trawl was in identical substrate (so far as I could tell ~ which wasn't much - visually & by feel) but contained no Cucumaria. Sand dollars do this, so do sea pens and ophiuroids. Why? It's an obvious advantage at mating time for sure - but why crowd together when the whole ocean floor awaits their larvae. There is certainly some critical factors either in the ecology or the individual life history of these beasts that is yet to be determined. I think it isn't analogous to clumping seen in highly motile land animals. I've yet to have what I consider an adequate Marine Ecology course. The only people I've met that I would think capable of teaching such a course are Joel Hedgpeth, Loue Montgomery, Sir Maurice Yonge, & Eugene Kozloff. Would a really good course of this nature have to be restricted to one local region I wonder??

0830-1200

June 29, 1973

False Bay (sw coast), San Juan Island, Washington

1/2 way out

Rocks - Balanus glandula, Balanus cariosus
Substrate - Macoma secta, Clinacardium sp., Macoma
Nasuta, Arenicola, Nereis bronndti,
Mytilus edulis, Mya, Protothaca, Calianassa
Upogebia

2/3 way out


Substrate - Dendroster excentricus, Parameertes
peregrina, Leptosynapta (clumped again) - very sandy,
Arenicola (very abundant)
Eel grass Beds: Epiactis prolifera, Polinices,
Membranipora, Henigrassus oregonensis (common
in fresh-water dilution areas - H. nudus in pure H_2O - open coast).

all the way out


Dendroster, Halodystis (on eel grass), Epiactis (on eel
grass), Arenicola (really abundant)

Weather: cool, cloudy but not heavily overcast.
False Bay: at today's low (-3.0 ft.) the bay
appeared approx. 1/2 mile wide by 1 mile long.
Upper most beach mud - grades into
sandy mud, then muddy sand &
finally (at the mouth) pretty much pure
sand. Many ~~big~~ large eelgrass
beds (rich) & at mouth, on either side
beautiful low-intertidal rocky heads w/ extremely
thick algae cover (laminarians, etc.).

KOZLOFF COMMENTS ↓

- ① Clinton Westerwelt was Kozloff's under-grad. student ~ now teaching at Chapman.
- ② Haloclyptis feeds on caprellids in eelgrass beds below 0' tide
- ③ Pugetia producta - smooth, clear coropace (large)
- ④ Pugetia gracilis - somewhat of a snicker (small)
- ⑤ Mytilus californianus - rough-ribbed shell - only found on open coast
- ⑥ Mytilus edulis - smooth, common in bays & flats
- ⑦ Chthamalus - highest occurring barnacle
- ⑧ Neris (~~brandti~~ ^{brandti} ?) - nocturnal orgies. jaws used to tear algae - not carnivorous. spawned out individuals die on beach.
- ⑨ Macoma feeds by using one siphon to sweep the surface (vacuum cleaner).
- ⑩ Mya arenaria - introduced; prefer brackish H₂O (soft shell clams)
- ⑪ Callianassa burrows  (relatively solitary)
- ⑫ Upogebia " " " " (numerous)
- ⑬ Acmaea digitalis - low - flat - small
- ⑭ " persona - very high shell - large
- ⑮ high intertidal limpets
- ⑯ L. sibbona is only common periwinkle
- ⑰ L. scutobata " " "

- (12) Pseudopythina (rugifera?) - The commensal class... on tail of Urogebia ~~commissa~~; belly of Aphrodite, & side of Blepharopoda. ~~commissa~~.

Halse Bay is nice. I was at first surprised however by its apparent paucity of epibenthos. The only really rich regions of epifauna were in the eelgrass beds, and even the Dendroaster colonies were most abundant in & around the eelgrass. The importance of this spermatophyte cannot be overemphasized in terms of habitat. The beds are extremely rich in Epiactis prolifera, encrusting Bryozoa (Membranipora?), Polynices, Halsclystis (the sessile scyphozoan), and Diadema. They also appeared to be serving as nursery grounds for many species of juvenile fishes, including flounder. I ate a small flounder - 

Pentidotea
resectata

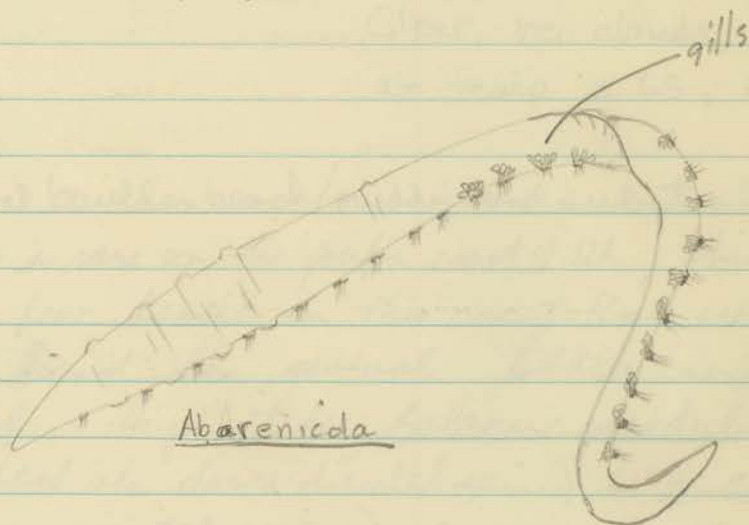
it was very tasty - no bones - good flavor. I wonder to what extent the eelgrass contributes to local detritus? Scagel (Victoria Museum Handbook #27) places it at Zostera marina var. latifolia. Dr. Fontaine mentioned Phyllo^{plasia}~~plasia~~ is usually common on the Zostera also, but we found none.

The tidal flat itself was populated principally by polychaetes (Arenicola, Nereis, etc.). The higher reaches had Callianassa & Upogebia, the lower reaches Leptosynapta (although these are most abundant under rocks set into the substrate). Of course clams were everywhere. Occasionally a Nereis (brundti?) could be found lying still on the very surface - were these spawned-out individuals? Arenicola was spread throughout the bay but increased in abundance as one approached the lower tide lines. Its distribution was apparently unaffected by O_2 in the substrate as it occurred just as readily in anoxic (H_2S) conditions near the head of the bay as in the highly porous (O_2) conditions near low tide. A couple of burrowing annelids were collected also (Halocampa? & Peachia?) as well as some tectibranchs of the genus Aglaja. However, our Aglaja looks ~~nothing~~ nothing like A. diomedea, which is the only species listed in MacFarland & the FHL keys. Our beak is solid in color (dark purple to smokey black).

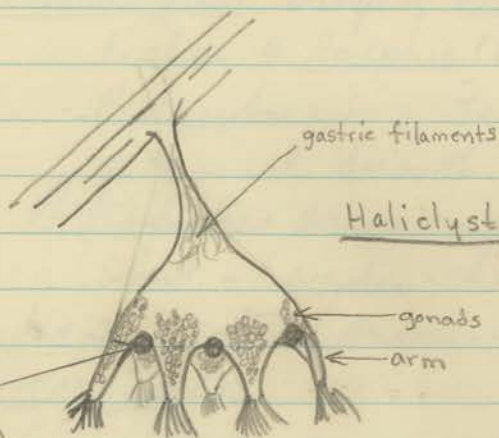
Robert Snow also collected one Chaetopterus in an odd, woody tube - not at all membranous or leathery like every other Chaetopterus tube I've ever seen.



Leptosynapta

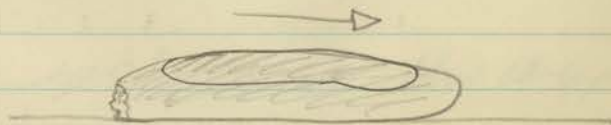


Abarenicida



Haliclystus (on Zostera)

anchor (or
rhopaloid) - an
adhesive organ



Aglaja

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June 30, 1973

Snug Harbor, north end
San Juan Island, Washington

0800 - 1200

Clear, no clouds, no breeze,
air temp. ± 65 , H_2O temp. ± 50

Limestone boulder beach/muddy sand substrate/selgrass mudflat

Limestone is rare on the pacific coast of N.A. this is one
of the few beaches in this coast that are limestone.
Puget Sound has several. Beach is very well

ZONE 2

zoned. High tide: Balanus glandula (smooth
or ribbed w/ down-directed spines) & B. carosius
(w/ down pointed spines).

ZONE 1

Petrocyclus (stage of Gigartina) just below
lichen & Ralphia (brown algae) of splash zone.Petrocyclus is a "tar spot" algae, thick, black
& raised. Smooth. (Gigartina is "turkish towel" algae)

ZONE 3

Petrolithes arionerus - identical at 1st glance to P. grac.
but w/ wider chelae & pale, sky-blue chelae margins.Haplogaster (Anomuron - eyes inside antennae)TonicellaCupentacta quinquesemita - straight; long feetPuggetia gracilisMimulus - the spider crab - blue chelae
margins.Evastorus troschelli? Strongilocentrotus franciscanus

ZONE 4

Donoemus adults w/ brilliant red or brown gonads.Helyclistus - on selgrass again

Henricia levinsculi - juveniles not red-orange
but tan w/ purple outer arms. Very
attractive to a splendid color metamorphosis
into the adult form. It would be really
nice to collect a series of cultures
then to record (color film) the changes.

Eelgrass Beds

Paramecetes & Thubalonus & Mercurio

Leptostreous (^{Epi-}Nebalia)

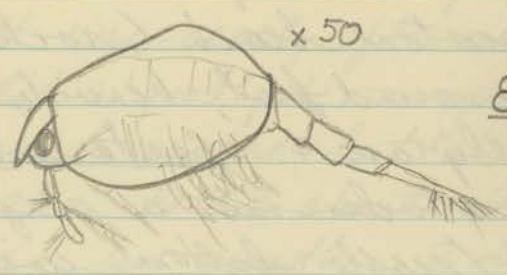
Tanaiceans

Podarke pygmaea

This is an extremely rich area - because of its habitat
diversity - not because it appears to be particularly
abundant in life. I keep getting this impression
that we've yet to locate the really good
collecting sites but I suppose I'm just
spoiled - it really is true that diversity
increases in lower latitudes. Southern
California, in the old days, much have
been much richer than this. Even
now places like Dana Point have a
much ^{greater} diversity than anything I've seen
up here yet. And subtropical waters
are of course way ahead of California's
warm temperate fauna in terms of diversity.

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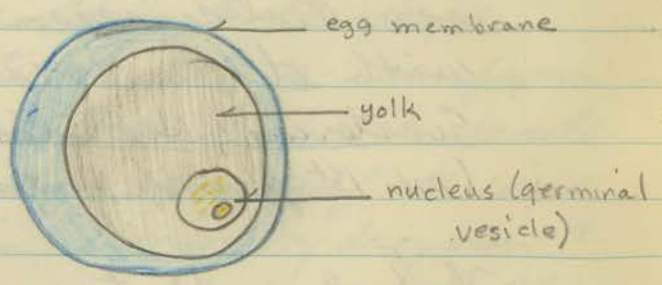


Epinebalia paggettensis
(the leptostracan)



Micrura verrilli
(the nemertean)

egg →
(stained with .5%
methylene blue)



egg with
germinal vesicle
broken down (in prepara-
tion for fertilization)

But - this "Snug Harbor" region is really nice. The limestone beach (rocky) grades slowly into a mud flat, heavily overgrown with eelgrass & Costaria costata. This eventually grades into a slightly muddy sand/pebble bottom with similar flora. The eelgrass here may be Zostera marina var. latifolia.

The rocky shore harbored high crab fauna: Cancer oregonensis (the small secretive cancer); Cancer productus (the larger cancer); Petrolithes of at least 2 or 3 species; Triopha & some Aeolids resembling Hermisenda but with different coloring; Haplogaster sp.; Evasterias; Heuricia leviuscula; and others (see 1st page of notes).

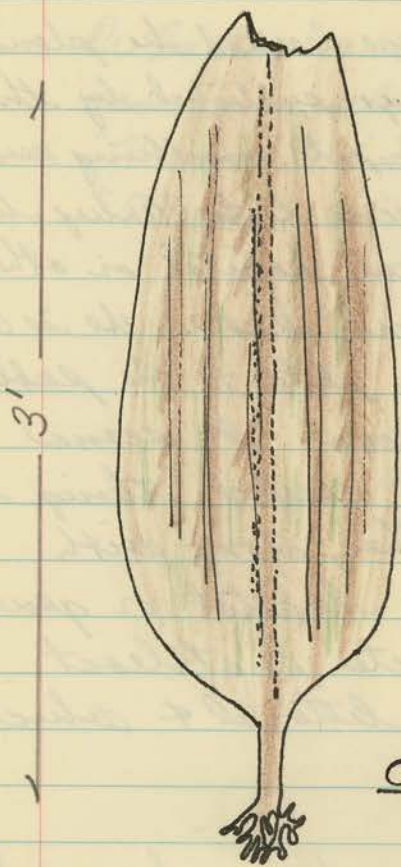
The eelgrass/Costaria beds harbored many tanaidaceans, leptostracans (Epinebalia); several nemertean (Paranemertes perigrina, Micrura verrilli, & Tubalanus sp.); the ophiuroid (which we collected a great many of to look for parasitic orthoectids - Kozloff estimates a 5% infection in this brittle star at this area); Podarke pugettensis (in great abundance, free living); Halicystis; ~~and~~ a great many groid Gonionemus; Archidaris (?)

I ventured to chew up & eat a gonosomus.
 It was nearly flavorless but its nematocysts
 did a good job on my tongue. The sting
 was severe but ^{not} at all intolerable. The
 pain lasted about 2 hours then tapered
 off for another 2 or 3 hours. No swelling
 occurred. I am convinced one builds
 up a resistance to nematocyst toxin
 (while others may build up a severe
 allergy to it!!). I recall well the winter
 of 1964 aboard USRV Eltanin in Antarctic
 waters. During the 6 months onboard
 I went from a point of being mildly
 stung by large Atolla & Periphylla ^{sp.}
 to getting no reaction what-so-ever from
 them. Since that time I have made
 a point of allowing my self to come
 into contact with every hydrozoan &
 Scyphozoan I happened to meet. This
 includes small Cyanea (the lion's mane)
 from Friday Harbor, Physalia (from
 the Sea of Cortez) and Pelagia
 (from So. California). I received no
 reaction to any of these. Perhaps
 my skin is simply thicker than
 normal??

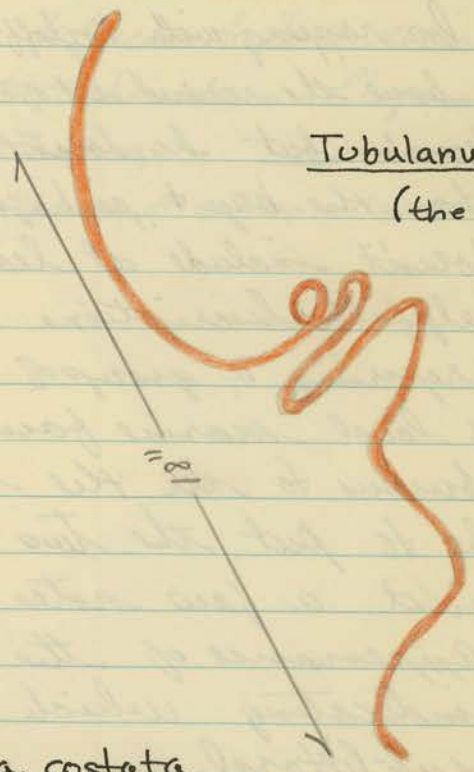
Micrurus spawned as soon as I dumped her into my table-top aquaria. Probably due to the rapid increase in temperature. It was a beautiful sight to witness. The egg strings came right out the side of the body, from many many gonoducts, very close together so it looked like a single sheet until it hit the bottom & all the eggs dispersed. The length of worm bearing gonoducts was about $\frac{1}{2}$ his total length, beginning about $\frac{1}{4}$ of the way back from the head.

I don't understand these people who are surprised at one who tastes an animal at the seashore. We have but a few limited senses - why restrict ourselves to sight & touch alone. One must smell & taste & if possible listen to the life he sees around him. One must truly attempt to grok nature in its fullest. The juvenile halibut I ate yesterday was delicious. A plate-full of washed, "4" halibut would be a gourmet's delight, I'm sure. I don't, however, recommend Gamoneius. I have even learned to recognize the encrusting sponge Halicondria by its smell, rather like garlic, or perhaps closer to gunpowder.

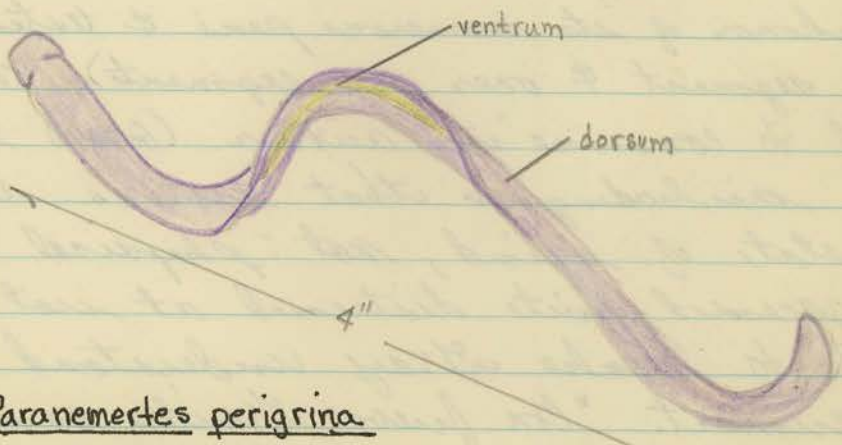
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Castaria costata



Tubulanus polymorphus
(the nemertean)



Paranemertes perigrina
(the nemertine)

July 11, 1973

"Hydah" cruise #3

1/2 mile sw "Upright Head", near San Juan Island, San Juan Islands, Washington State

Attending: Ned & Patty Hatfield, Arthur Fontaine, Anna Mary, Jonis, Karston, Linda Priel, Rindy Jaffe, etc.

Trawl #1 - Small beam dredge w/ chicken wire net (6' wide); 30-40 fathoms; 20 minutes. Rubble bottom (on mud) [2 fathoms at end]

Many scallops, nearly all covered with yellow, encrusting demospongia.

Many Fusitriton & many small gastropods

One huge Pynopodia ($\pm 20"$ across)

Small crabs abundant, including many Cancer oregonensis & many spider crabs, including one Pugetia gracilis

Large weird tunicate

Large branching sponge

Aplysia phenia; Rat-fish egg cases; Chorella, the clear tunicate; many, many shrimp of all types (but all small); immature Parastichopus (1/2", clear or whitish w/ few red spots [like tealie] & a few papillae); many, many polychaetes

Fusitriton, Trichotropis cancellata

TRAWL # 2

20-26 fms. ; 20 min. at depth; some trawl;
Peavine Pass

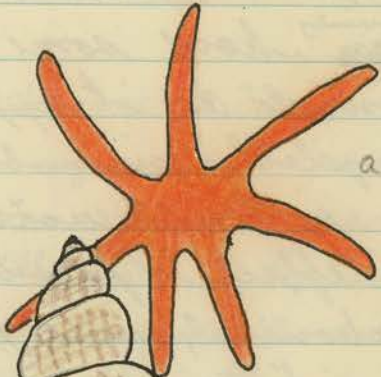
Strongylocentrotus pallidus "en masse" (+ 1 S. foxiscaus)
Some scallops; many jingles (rock scallops);
spider crabs; Cancer crabs; many Porastichopus;
small shrimps; Allophora; Pteraster;
Sertulariid hydroids; Crossaster; large
hermit crabs; annelids, including a
beautiful red-orange polynoid; Thais; caprellids;
one lg. psycnogonid; Corophium tubes

A beautiful day of 75° or so, sunny, clear
and friendly. I was pleased to see my old
friend from Mexico Calappa (fastigiata)
and my old friend from So. California
Calliostoma (annulatum). I am impressed by
the variety of small shrimps around
here. Kozloff lists (keys out) at least 55 species
of natantiate shrimps in his FHL keys.
It is interesting to see an Axiid occurs
here also, Axiopsis (deep waters of Puget Sound).
This Pteraster that puts out such copious amounts
of mucus blows my mind. This guy easily secretes
a weight of mucus equal to his own weight, which
may indicate the mucus is a gel-like mixture.

egg case of Ratfish



a seactar!



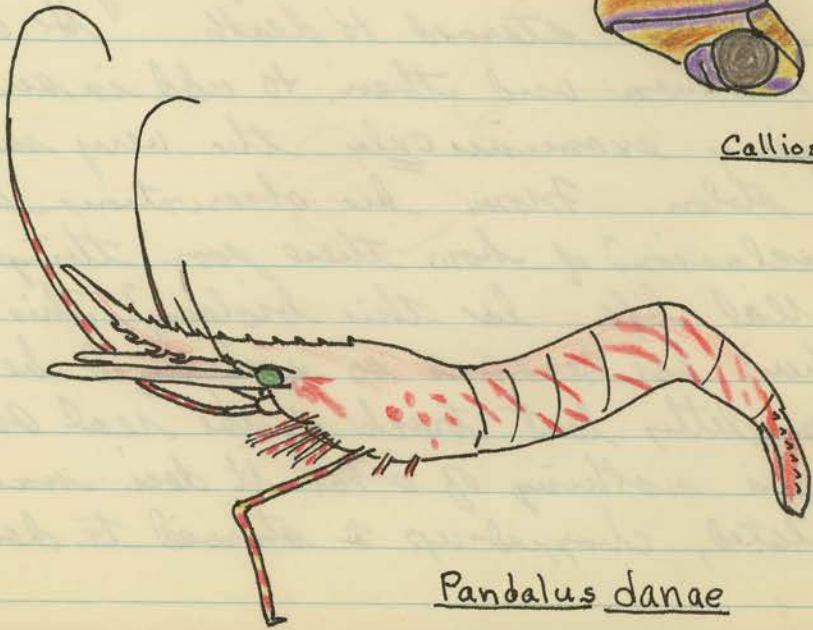
yellow demospongia



Trichotropis cancellata
(x 4)



Calliostoma annulatum



Pandalus danae

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of water & mucus strands. I think the mucus
~~obviously~~ ~~strongly~~ has some antagonistic effect on
animals as it appeared to kill, or at least
completely immobilize many types of insects
in a tank with it, especially shrimps.
The effect is possibly more than simply
mechanical, as a quick death would seem
to indicate.

July 14, 1973

Bastille Day

known locally as "Orthonectid Day"

It was this day, 6 years ago, that the old master himself found, after more than 5 years of diligent searching, his 1st Orthonectid. In honor of this memorable occasion a surprise party was gotten together for him (Dr. F.) at Cattle Point, San Juan Island, Washington. Linda Price did most of the logistical shit, including talking our delightful chef Vivian into some of her Gross "homerqéas" con frijoles. The day was warm & sunny & the wine flowed freely. The old master got a little juiced & the rest of us got quite a little juiced. It was a sentimental sight indeed to see Dr. K. standing at the water's edge, lost in thoughts and staring out, alone, to the sea as the tide came up and unknowingly washed about his old leather oxfords and his frayed pants cuffs. Tom & Nancy got close, Jonie got homesick and Mary Lou got horny. ~~It~~ a nice day all around and a record for the Valkyrie with 11 peoples riding home singing & letting the hormones take their course.

a field trip was made this morning to the cove at "Mar Vista" resort on San Juan Island. This bay is littered with trash (old tires, car batteries, bottles, etc.) but produced an abundance of marine life of the type normally overlooked by visitors to the seashore. In fact it is, as Dr. K. pointed out, the Letostroacum capital of the world and Epinephalia was taken in abundance.

also taken were crabs, Upogebia, Callinassa (with a parasite copepod on the pleopod), and shipworms in the pilings of a now-gone pier.

July 18, 1973

"Hydah" cruise #4

The final 'Hydah' cruise for me. I opted to go on the afternoon trip as all previous trips I had chosen to go on the morning trip. We headed for the vicinity of "Flat-top" island and a nearby gorge that drops to about 170 fms. We're after Crustacea today as that is the concern of this week's lab and lecture. Dr. Fontaine delivered some of the most excellent Crustacea lectures (basic Arthropodin trends, etc.) I've ever heard this week. For the first time ever I am clear on what "green glands", "maxillary glands", "antennal glands" and "coxal glands" are - they're all fancy coelomoducts!

Plankton Tow #1

20 minutes at 100 + fms. (1400-1420). Very coarse mesh, 1 m plankton net.

Rich tow for this depth: Mysids, Euphausiids, Hyperiid amphipods, macho arrowworms, a few stenophorans (*Pleurobranchia*) and a single, large, red cumacean. Also a single aeolid nudibranch, a few *Aglaantha*.

Plankton tow #2

Same net; same depth (1430-1500).

Same fauna but with more megalops than before & with Aglantha and an immature, planktonic Gobiosox w/ the sucker already developed.

Today is warm and sunny. You can see the effects of the warming weather on the people, as they wear less & their skin begins to glow with those good old chromatophores. Karen is getting especially tan - she looks very nice today. I spoke with Dr. K today about the U of W hiring me to come up here for a summer & put together a synaptic collection. He liked the idea very much but felt if the money was ever made available that internal pressure would probably force the job to be given to a U of W grad student.

This business of telling a Mysid from a Euphausiid is beginning to get clear - the fog is rising. Below is a list of differences, the ones

checked with red being usable in the field (w/o a scope) usually.

Mysids

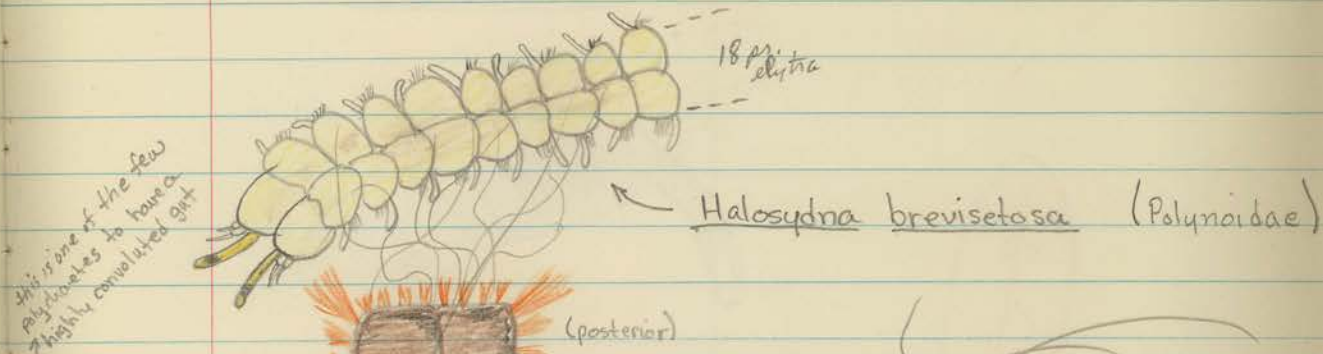
Euphausiids

(visible in gravid ♀)

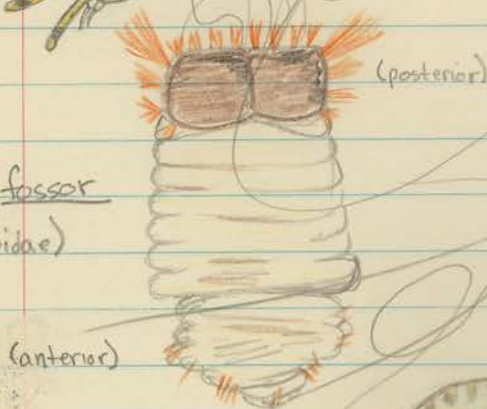
- | | |
|---|---|
| ✓ with a brood pouch | w/o a brood pouch |
| ✓ w/ statocyst at base of uropod | w/o statocyst |
| ✓ carapace covers gills ^(or w/o gills) | gills stick out of carapace |
| ✓ w/o reflective photophores | w/ reflective photophores |
| carapace not fused w/ last 4 thoracic segments | carapace fused with all thoracic segments |

The reflective photophores are visible as a row of red spots along the side; the gills are visible as a short row of little finger-like clumps coming up from the sides of the carapace. Cleve claims you can tell them apart by watching the eyes for awhile - soon or later the Euphausiid will bring his eyes together & touch them to one another - a mysid will not (or cannot) do this. I'm not sure about this though.

FRIDAY HARBOR POLYCHAETES



Sternaspis fossor (Sternaspidae)

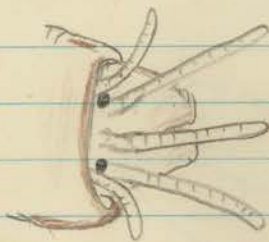


Thelepus sp. (Terebellidae)



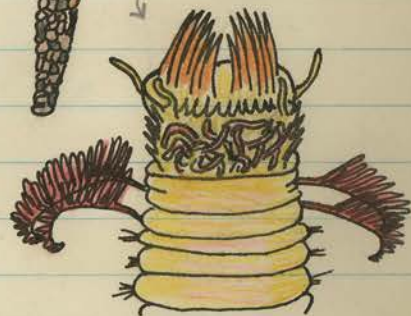
the unusual Sabellid

Myxicola infundibulum (Renier, 1804)



Eunice longicirrata?

Pectinaria (Cistenides) granulata



from dredge hauls off Hecla