

DHARMAMAR MEDITERRANEAN EXPEDITION
September 1991

Scientific Crew

- *Andres Gomez (first leg)
- *Ken Rinehart (second leg)
- *Eduardo Vega (PharmaMar)
- *Diane Tapiolas (PharmaMar - via Townsville)
- Pilar Rodríguez (PharmaMar)
- Pilar Ruiz (PharmaMar)
- *Judy Connor (Monterey Bay Aquarium)
- *Karen Green (San Diego)
- *Rick Brusca
- *José María Tur (Cnidarians - Blanes/PharmaMar contractor)
- Bob Hughes
- *José Antonio Moya (photographer)
- Francisco ? (PharmaMar)

taxonomist
divers

* = Divers

Ship's crew

- D.J. Octavo Moreno (Capt.)
- Jordi (1st mate)
- Ester (cook)
- Armando (dinning room waiter)

Depart Barcelona 2030hrs, 9/9/91. Tentative
schedule as follows:

9/10 - 9/12: Columbretes Is. marine Reserve

9/13 - 9/19: Islas Baleares

9/20: Hormigas Is. (near Alicante)

9/21: Tabarca Island Marine Reserve

9/22: Columbretes Is.

Assays: Antitumor activity assays (using P388 & A549 tumor
cell lines) and microbial screening.

→ Target organisms at start:

Pseudostoma crucigaster - tunicate

Maasella edwardsi - alcyonarian (rare)

Bugula neritina - bryozoan

Hamigera hamigera - sponge (blood red)

Oscarella lobularis - sponge (filmy blue bubbly-thin
encrustation)

Myriapora truncata - bryozoan (orange, coralline, branching)

Anchinoe tenacior - sponge (very thin encrusting, blue)

Ophidiaster ophidianus - sea star (giant purple)

Cliona celata - sponge (yellow borer)

Hoplania durothrix - coral

ordered by phone from
Sarah Robinson at
Blackwell (1-800-458-3706)
on March 20, 1992.

Books to obtain

- ① Campbell, A.C. The Seashore & Shallow Seas of Britain & Europe. The Hamlyn Publ. Group Ltd., London.
- ② Campbell, A.C. Guía de campo de la Flora y Fauna de las Costas de España y de Europa. Ediciones Omega, S.A., Barcelona. (1989)
- ✓ ③ Connor, J. & Charles Baxter
Kelp Forests. Publ. by Monterey Bay Aquarium.
- ④ Fiala-Médioni, A., C. Pétron, & C. Rives. 1988.
Guía Submarina del Mediterráneo. Ediciones Mundi-Prensa, Madrid. [just so-so; more textual than taxonomic]
- ⑤ Riedl, Rupert. Fauna y Flora del Mar Mediterráneo. Ediciones Omega, Barcelona. 1986. (ISBN: 84-282-0767-4)
- ⑥ Monograph on Med corals, by Helmut Zibrowius (at Marseilles lab, France). Publ. in Monaco series.

10 Sept 1991

Columbretes Is. 39°53.6'N 0°41.5' E

Dive #1: Brusca/Tapiolas + 5 other divers
(20'-40' on slanting wall)

10/09/91-1001 Halocynthia papillosa (solitary tunicate)

" - 1002 Ophidiaster ophidianus (purple star)

" - 1003 Echinaster sepositus (orange star)

→ + 30-35 sponges, including the slimy gray-black or blue filmy-bubbly Oscarella (according to Jose Maria), and several encrusting orange & red species. The red is Hamigera hamigera (deep blood red with tiny warts)

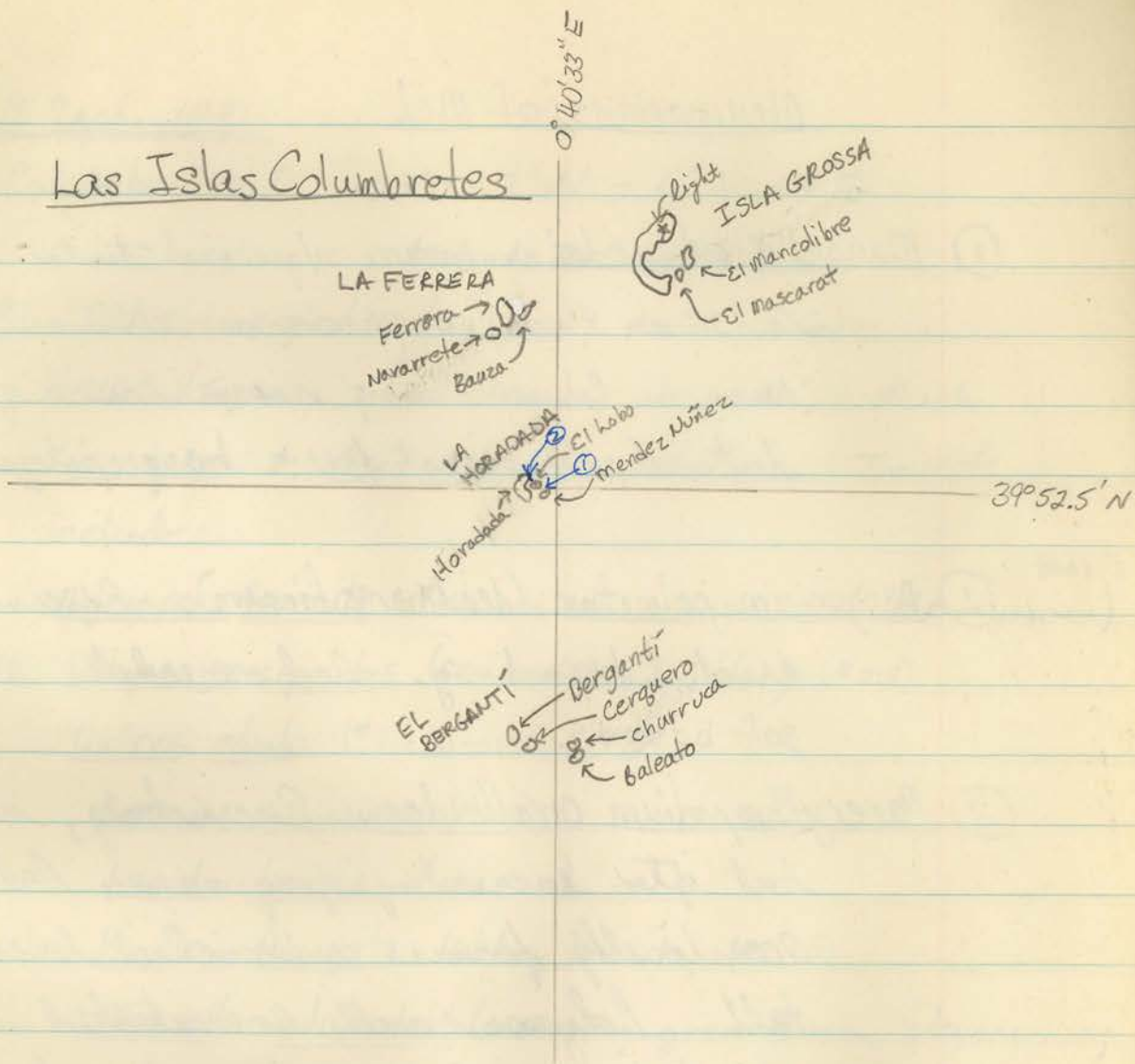
→ + some algae, including Codium bursa (the big green balls), Dictyopterus (membranacea?).

First dive was excellent. ~70'-80' visibility, H₂O T° = 27°C (thermocline @ ~80'). Having heavily

Salinity at surface = 37‰

sampled this region on several occasions, we will be focusing on the re-collection of active species, including Bugula neritina, Halimeda tuna (alga), Hydroclathrus clathratus (alga), Lobophora variegata (alga), Zanardinia prototypus (alga), Oscarella lobularis (sponge), Hippospongia communis (sponge).

Las Islas Columbretes



Dive #2²: Same area, for more H. hamigera.

Alcyonarians of Med

- ① Maasella edwardsi. Brown w/ greenish-tints; encrusting; to 25 mm thick; on rocks or certain sponges; rare (in Columbretes); resembles a zoanthid but w/ polyps not free. Large polyps.
- ② Alcyonium palmatum. (deadman's fingers). Encrusting, but erect & branching. Red or white. Always on soft bottoms.
- ③ Parerythropodium coralloides. Encrusting, not erect but often encrusting gorgonians. Red, violet, ^{white}. Occasionally forms unbranched lobes to 4 cm. tall. Polyps small, concentrated into elevated nodules, with polyp-free areas in between. In Med, usually forms thin encrusting sheets on gorgonians, shells, & rocks.
- ④ Alcyonium acaule. Erect; highly variable in reds, oranges, & purples. I have photographs. Always on hard bottoms.

11 Sept. 1991

Columbretes Is. ~39°51.9'N ~ 0°40.29'E

(Banco de Don Jorge Juan)

Dive #1. On submerged rocks, ~25' from surface.

Brusca/Tapiolas 30'-40'. Others 30'-120'. Much

Hamigera ≠ Oscarella (esp. in cave). Inverts

include:

Myriapora truncata (the common orange coral-like bryozoan) (#021)

Echinaster sepositus (common orange star) (#018)

Ostrea edulis (#11/9/91-1017)

Anomia ephippium (#019)

Lurida lurida (cowrie)

Phallusia fumigata (solitary tunicate) (#020)

Moasella edwardsi (encrusting green-brown alcyonarium; resembles Alcyonium or Parerythropodium but grows as a thick encrustation - to 25 mm - on rocks or overgrowing sponges. (#022)

Dive #2. small emergent rock on w. side of

Isla Ferrera (Isbte Navarrete) 39°52.4'N 0°40'E.

Inverts include: Sertella ^{cellulosa} ~~beaniana~~ (bryozoan) (#2-028)

Cladocora caespitosa? (#2-029)

Thais haemastoma (#2-030) (#2027)

Margaretta cereoides (Bugula-like bryozoan, with distinctive zooids)

(Brusca/Tapiolas (30'-80')
+ 5 other divers (30'-120'))

H₂O T° = ~26°C

thermocline at ~60'-70'

Note: this may have been Hacelia attenuata

We were joined for this afternoon's dive by 3 people from the Columbretes Nature Reserve facility on Isla Grossa. Two were park service personnel; one was a researcher (research assistant) from the National Museum of Natural Sciences in Madrid (Maria Ali).

Maria is one of the key people organizing the collections meetings in Madrid next May.

12 Sept. 1991

Today we put Pilar Ruiz ashore on Isla Grossa for a few hours to rest her stomach. She's been sea sick since we left Barcelona & hasn't eaten in 4 days. We will send her home from Palma, where she will be replaced by Lola (from PharmaMar, Madrid). ¡Hola Lola!

Dive #1. Columbretes, on sea mount "Placer de la Barva Alta", 39°50'N 0°35'E.

50'-130'. (RCB decom 5 min. @ 20', 10 min. @ 10')

Inverts include: ? Clavelina lepadiformis (clear matrix, yellow zooids) (#1-016)

Peltodoris atromaculata (#1-014)

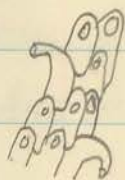
Halocynthia papillosa (#1-015)

Dive #2. Columbretes, on sea mount just so. of Navarrete (in La Ferrera group). 3-30 m depth. Many sponges, much algae. Karen's 1st dived trip. 39°52'N
0°40.1'E

Inverts include:

Pentapora (= Hippodiplosia) fascialis (#2029) (erect orange bryozoan w/ flattened branches). - w/ commensal goby of the precise same color)

Unidentified calcareous bryozoan (similar to Margaretta cereoides).



Parazoanthus axinellae (colonial zooidid on orange sponge Axinella) (#2035)

Sphaerechinus granularis (#2034) (purple urchin w/ white spines)

Holothuria ? poli (#2030) (brown; tips of papillae white)

Ophioderma longicauda (#2031) (common brown brittle star)

Aplidium conicum (#2032) - showed A-388 & A-549 activity

Platydoris argo (#2033) (large brown mottled nudibranch)

Coral: Madracis ? asperula (#2036)

Madracis pharensis is a very similar species in the Mediterranean. It is smooth to the touch, whereas M. asperula is rough to the touch.

es.-like
e-like structure
ten, polyps
small.

12 Sept 1991 - Dive 2 (cont):

mystery funiculate - slimey babyshit brown,
no internal structure, no spicules, no
atria!



12/09/91-2025

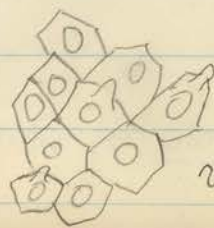
13 September 1991.

Steamed to Balears overnight. Will dive Menorca
today, perhaps put Pilar Ruiz ashore tonight to return to
Madrid.

Dive #1. Balears Islands, Menorca Is., Punta
del Escua. $40^{\circ}04' N$ $3^{\circ}51.7' E$. 3-25 m depth

(#1011)

Encrusting orange bryozoan →
(hard, thick, coral-like)



? Alcyonidium sp. A

(#1012) Dardanus arrosor w/ Calliactis parasitica (#1013)

(#1014) Anemonia sulcata

(#1015) Peltodoris atromaculata

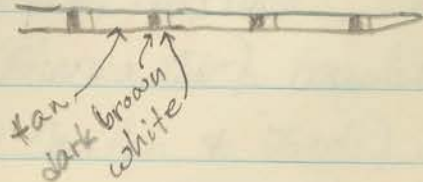
(#1016) Balanophyllia europa (solitary brown-purple coral; polyps 6-16 mm across; round, oval, or rarely compressed; septa highly rugose).

(#1017) Pentapora fascialis

Dive #2. Balearic Islands, Menorca Is., Bahía de Fornells. $40^{\circ}03.1'N$ $4^{\circ}08'E$. 0-3.5 m.
 $T^{\circ} = 26.5^{\circ}C$ Sal. = 37.5‰ Posidonia beds.

13/9/91 2008 Holothuria forskali. Black w/ white-tipped tube feet not in 5 distinct rows; also w/ tall scattered papillae.

2009 Sabella pavonina. Tentacles in 2 whorls (that appear as one); banded



2010 Maja verrucosa

2011 Hexaplex trunculus

2012 Actinascidia turbinata. Very similar to Clavellina (see ascidian keys).

2013

Schizobrachiella sp. C. Purple foliose; generally

pentagonal zooids but
often irregular; round
apertures; dark spots
non-zooid areas.

2014

Schizobrachiella? sanguinea. orange foliose bryozoan, round
apertures; zooid surface papillate.



2015

Balanophyllia europa

2016

Pinctada radiata

2017

Mytilus galloprovincialis

2018

Arca noae. small ark shell covered with orange

sponge. Served in some restaurants in Spain. we ate

2019

Halocynthia papillosa

it in the Balearics, but it
was not very good (like strong
conch).

Spent the evening in Mahón, at the eastern tip of Menorca (the "capitol" of the island). Fantastic city with about 6 centuries of architecture, apparently including Moorish, French, Moroccan, British & Spanish. Andres (PharmaMar) bought the scientific crew (+El Capitan & Jordi) an incredible dinner that included "every shellfish known to occur in the Med", many of which we have collected & analyzed. Judy dragged me all through the city (at her usual breakneck speed). 2:30 AM - to bed. Dive

in the morning (ugh). Mahón is lovely almost beyond words, quieter than Ibiza. Karen is having a good time & fitting in well with the group, as I felt she would. Day after tomorrow the Godfather arrives in Palma. For the Spanish, dining is a major event - a process of love. Gina would appreciate Spanish dining. Dishes are always made especially attractive, & only one item is served/eaten at a time (so, many plates are used for each meal). On board, all meals are served with Spanish olives, "French" bread loaves, and wine. Coffee is excellent, fresh ground for each meal & made with an espresso machine. In Spain (& apparently much of Italy) "cappachino" means espresso w/whipped whole sweet cream on top (delicioso), and "cafe con leche" is our American style cappachino (with steamed milk).

14 September 1991

Dive #1:

Balaeres Islands, Menorca, Torre Artuiz,
near Pta. Gobernado. $39^{\circ}55.5'N$ $3^{\circ}54.6'E$.
1-20 m depth. Brusca/Topiolas. + others,

1015 Inachus leptochirus. p. 494, Riedl.

1016 Ophidiaster ophidianus. Largest star in Med; brick red;
Henricia-like. Diameter = 24 cm.

1017 Henricia sanguinolenta. Brick-red upper, orange-red
lower; arm-tips weakly curl; smaller & redder than
Echinaster; smaller & same color as Ophidiaster.
Diameter = 10 cm

1018 Echinaster sepositus, Diameter = 11 cm.

1019 Sphaerechinus granularis. Short spined urchin; same
exact color as S. purpuratus; spines short (to
1 cm) & white-tipped; diameter = 7.5 cm.

1020 Hypselodoris elegans

1021 Halocynthia papillosa

8 or
7 ← 1022 ^{Adidiyum nordmanni} Sidnyum turbatum. Matrix colorless; zooids orange;
separate & not in any pattern w/in matrix, scattered;
colonies squat growths ~ 3-5 mm thick, to 3 cm
wide.



A-549 ←
? ^{Aplidium sp. A} Sidnyum sp. As above, but coated w/sand.

1023

- 1024? Microcosmus sulcatus. Inner surface of tunic
 : pearlescent white; zooid carmen red. 45 mm long.
- 1025 Leptochiton geronensis. solid white; plates not keeled.
- 1026 Chiton olivaceus.
- 1027 Hexaplex trunculus
- 1028 Conus ventricosus
- 1029 Thais ? haemastoma. Fits description & photos
 except has black patches on inner lip fringe.
- 1030 Arca noae
- 1031 Electra posidoniae
- 1032 Parazoanthus axinellae

Dive #2. Mallorca. Cabo de Formentor.
 (10-35 m depth) 39°57.6'N 3°12.9'E
 T° = 27°C Sal. = 37.5‰

(14/09/91-2012) Dardanus arrosor w/ Calliactis parasitica (2013)

← 2014 Aplidium conicum

← 2015 ? Aplidium conicum (zooids not visible on surface; looks like
 candied apricot.)

2016 Eunicella singularis (white gorgonian)

2017 Thais ? haemastoma

2018 Doridiide (orange w/ white papillae)

2019 Corallium rubrum (w/ cliona inside-boring)

2020

? Schizobrachiella sp. A (voucher retained)



: Encrusting; tan w/ faint green hues (may be an alga); voucher saved; apertures raised like volcanos.

2021

Schizobrachiella sanguinea

2022

Bryozoa sp. A.



point on top of hood like projector - Dark gray to black.

Into port in Alcudia for water. Nice vacation/fishing village, but not as nice as Mahón, Ibiza, or Palma. Sangria's at "Fred's". Picked up a plastic doggie float ring for Ken, who we pick up tonight in Puerto Solle. The deep pockets of Pharmax continue to pick up the tab for all meals, drinks, etc.


15 September 1991. Balears Is., Mallorca,

Pt. Topina. 39°56.1'N 3°02.2'E. 3-35 m depth. (one dive only today).

15/9/91 1010

Peltodoris atramaculata

1011

Serpulidae - white crown in single whorl → 
Mound CaCO₃ tubes.

- #1012 Holothuria tubulosa
- #1013 Cotylorhiza tuberculata (scyphozoan)
- #1014 Condylactis aurantiaca (common anemone)
- #1015 Corallium rubrum (red "coral" - an alcyonarian)
- #1016 Hoplangia duratrix (coral - voucher retained)
- #1017 ? Cystodytes dellechiaiei (Black-grey, semi-translucent tunic; whitish zooids; CaCO_3 ^{appearing} spicules; ID by Jose Maria Tur). - ascidean (voucher retained)

Arrived Puerto Solle ~3 PM, to drop of Andres & pick up Ken. RCB joined Karen, Judy & Diane to take bus across island to Palma (1 1/2 hours). Explored Barrio Gotico de Palma & the Cathedral. Drinks & tapas, then bused it back to Solle in time to meet Rinehart (who had just arrived by taxi from Palma - ~\$35⁰⁰). The villages between Solle & Palma are beautiful, & the countryside and views are fantastic. Returned as sunset fell on Mediterranean, quaint villages, 17th - 19th century stone walls & buildings, red tile roofs, etc.

Dinner w/ science crew in Solle. Perhaps the best Calimari dish I've ever had (whole peeled, cooked in olive oil, garlic & parsley). Excellent local wine.

Med Sertella's (mermaid's veil bryozoa)

Sertella cellulosa. Colony to 10 cm tall; color yellow-orange-rose.

Sertella beaniana. Colony to 10 cm. tall; color uniform salmon.

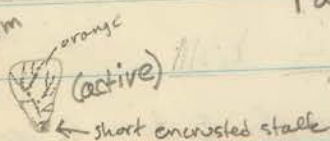
MED ASCIDIANS (+ tumor activity)

Aplidium ?nordmanni. Typical, ~30', but encrusting rather than mushrooms. (not active) (this might not be Aplidium!)

Aplidium sp. D; like A. conicum but fleshy (dying?)

Aplidium sp. C. Like A. ?nordmanni, but opaque white (not orange). (not active)

Aplidium sp. B
110'-140'



Aplidium conicum. Dark orange obliisk; to 6" tall; ~60' depth. (weakly active) ↓ Diazona?



Aplidium ?conicum. As above, but distinct zooids not visible; resembles candied apricot. (not active)

Aplidium proliferum (= A. albicans). Arrowhead shaped colony on tubular stalk; stalk rugose & often w/algae; to 1 1/2" tall; 90' + depth. (all samples but 16-09-91-2020 active)

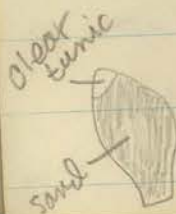


Aplidium ?proliferum. As above, but tunic opaque (not clear) and stalk very short.

Aplidium nordmanni. Short mushrooms to rounded lobes; (active/inactive) 1/2" - 1" across; 20'-30', under ledges w/ shade



Aplidium sp. A. Most of colony coated w/ sand; ~10% exposed as clear tunic w/ orange zooids; flat of paddle like; rare. (active)



16 September 1991

(small islets off Mallorca)

Baleares Is., Isla Dragonera, Cabo Tramontana
(39° 36.0' N 2° 20.4' E) H₂O T° = 27°C. surface - 42 m.

Brusca opts out of today's dives due to right ear infection. KR recommends against ear drops containing neomycin, as it is known to cause deafness in some people. RB goes back on amoxicillin. Shit. Riehart should know, he was the person who first determined the structure of neomycin.

16/09/11009 Balanophyllia regia. Yellow-orange solitary coral (B. europa is similar, but brown-purple). Voucher retained.

1010 Myriapora truncata

1011 Cotylorhiza tuberculata. Commensal fish taken for museum/scripps.

1012 Thais haemastoma

1013 Ophidiaster ophidianus

1014 Hacelia attenuata

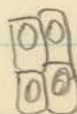
1015 Hoplangia durotrix

1016 Sertella beaniana (mermaid's veil)

1017 43 m. } Alcyonium acaule. Purple-red, hard, gorgonian-like soft coral.

1018 } coralline bryozoan - resembles a hydrocoral (e.g. stylasterine)

"Bryozoa sp. B"



pore edges slightly raised



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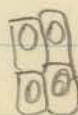
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"Bryozoa sp. B"



pore edges slightly raised



Henricia-like mediter ra

Ophidiaster ophidianus: Purple to dark carmen-red;
yellow ambulacra; diameter to 20 cm; arms
slightly narrowed at base; aboral depressions in
parallel rows.

Echinaster sepositus: Vivid brick-red; oral surface
lighter brick-red; arms not narrowing at base;
aboral depressions scattered randomly, not in
rows; diameter to 20 cm.

Henricia oculata: Usually to 10 cm diameter
(rarely to 20 cm); arms not narrowing at
base; blood-red to purple, lighter on
oral surface; aboral depressions irregular & shallow.

H. sanguinolenta

Hacelia attenuata: Diameter to 20 cm, but
generally much smaller; aboral depressions in
parallel rows; mottled brown-red.

KEY

1. Aboral depressions in parallel rows; max. diameter 20 cm 2
- Aboral depressions scattered, not in clear rows; max. diameter
usually 10-20 cm. 3

Anterian Seastars

2. Aboral surface ^{uniform} purple to dark carmen-red; arms slightly narrowed at base; body out of water slimy & mucoid; arms sag & tend to break off. Ophidiaster ophidianus
- Aboral surface ^{yellow-}orange-red w/darker colored depressions; arms not narrowing at base; body always rigid and w/sandpaper feel; arms do not autotomize Hacelia attenuata
3. Aboral surface vivid brick-red; oral surface lighter brick red; often to 15-20 cm. diameter Echinaster sepositus
- Aboral surface blood-red to purple; oral surface same color but lighter; usually ~ 10 cm. diameter, but some 20 cm specimens have been taken Henricia oculata
(= H. sanguinolenta)

(Note: look up family/ordinal characters)

16 Sept. 1991 (cont.)

Dive #2. Balears Is., Isla de la Dragonera, Cabo
Flebeix. $39^{\circ}34.5'N$ $2^{\circ}18.3'E$.

16/09/1912015 Ophidiaster ophidianus

2016 Hacelia attenuata

2017 Myriapora truncata

2018 Haliotis tuberculata

2019 Halocynthia papillosa

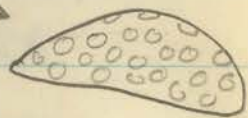
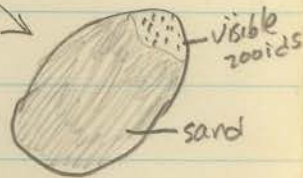
2020 Aplidium albicans (= A. proliferum) - classic arrowhead
shaped colony on stalk; tunic clear, zooids orange.

collected at 30-35m
(~100') on sunlit
shelf

2021 Aplidium sp. A. A little tougher than A. proliferum
(more like A. conicum) & without the stalk; 85% of surface coated with sand.

2022 ? Botrylloides sp.^A (very small sample)

Outer tunic smoky black w/
lighter pits (abundant); inner
tunic light gray; zooids black



2023 Balanophyllia regia (yellow & orange specimens)

2024 Hoplania durotrix

2025 Caryophyllia inornata

2026 Sertella beaniana

2027 ? Carbasea papyrea

2028 Lithophaga lithophaga (1 specimen)

17 Sept. 1991

Baleares Is., off Isla Ibiza, Islote de Tagomago.

39° 01.9' N 1° 39.1' E. 1-40 m depth. T° = 27°C.

RCB dives shallow (30') w/karen + Diane.

DIVE #1

17/09/91 1012 Aplidium albicans (= A. proliferum). Stalked form.

1013 Aplidium nordmanni. stumpy mushroom to encrusting

1014 Aplidium ? albicans (= A. ? proliferum). Tunic opaque;
stalk short

1015 Myriapora truncata

1016 Halocynthia papillosa

1017 Echinaster sepositus

1018 ? Botryllus sp. A. Tunic ^(tan-like) smoky black; faint pits;
zooids indistinguishable; circlets of white
spicules throughout, esp. at colony edges.

1019 ? Ascidia mentata. Tunic glassy, thick, tough; zooid orange-
red; 6 cm long.

1020 Ophioderma longicauda

1021 Maja verrucosa

1022 Schizobrachiella sp. B. Brown-green; encrusting



1023 Eudendrium rameum. Thick tree-like stalks; naked polyps; tissue salmon, on a brown stalk.

DIVE #2. Balears, off Isla Ibiza,

17/09/91 2017 Myriapora truncata (2 bags)

2018 Ophidiaster ophidianus

2019 Holothuria sp.

2020 Echinaster sepositus

2021 Thalassoma pavo (urasse)

2022 Hypselodoris elegans

2023 Halocynthia papillosa

2024 Balanophyllia europa

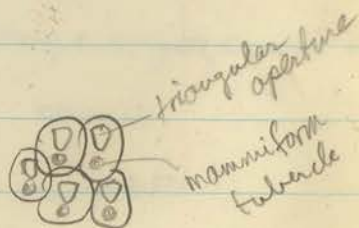
2025 Dardanus calidus

2026 Hoplania durotrix

2027 Dromia personata

2028 Erosaria spurca (cowrie)

2029 Bryozoa sp. C. Encrusting golden honey color.



1030 Schizobrachiella sp. B

- 2031 Microcosmus sulcatus
 2032 Eudendrium racemosum
 2033 Madracis ? asperula

18 September 1991.

DIVE #1 Balears Is., Formentera Is., Cabo
 Berberia. $38^{\circ}38.3'N$ $1^{\circ}22.8'E$, 12-14 m.
 Brusca not on this dive. (Posidonia beds)

18/09/91 1005 Schizobrachiella sp. A (= 14/09/91 - 2020)

1006 Halocynthia papillosa

Dive #2. Balears Is., Formentera Is., small
 bay - Estanque Peix. Brusca/Tapiolas/José Antonio.
 $38^{\circ}43.8'N$ $1^{\circ}24.7'E$, 0-5 m.

18/09/91 2007 Actinascidia turbinata (small Clavelina-like tunicate; orange)

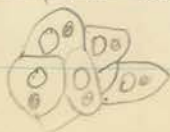
2008 Holothuria poli (juvenile)

2009 Schizobrachiella sanguinea. Red-orange bryozoan:

2010 Bryozoa sp. ^D ♂. Purple to dk. brown; round
 apertures w/ mammiform elevation near aperture;

encrusting;

irregular zooids



- ✓ 2011 Callista chione (bivalve)
- 2012 Loripes lacteus "
- 2013 Pagurus cuanensis

Dive #3. Balears Is., Isla Ibiza, Isla Conejera.
 38°59.2' N 1°12.3' E. 7-50m. Brusca/Tapiolas
 (20' → 20').

18/09/91 3012 Bugula avicularia

3013 Echinaster sepositus

3014 Hacelia attenuata

3015 Ophidiaster ophidianus

3016 Myriapora truncata

3017 Halocynthia papillosa

← 3018 Aplidium sp. B

3019 ? Ascidia virginiana

3020 ? Attenuaria sp. (hydroid; long brown whips w/ carabacula
 & bamboo-like stalks)




3021 Bonellia viridis

3022 Hypselodoris elegans

3023 Maja verrucosa

3024 ? Hoplongia sp.

3025 ? Botryllus sp. A (Same as 17/09/91-1018).

3027 Didemnidae. Pale salmon matrix w/ deep salmon zooids; encrusting; very small sample; spicules are spiked balls = 

Spent last night in part in Eivizza. My memories of 1988 held true. A hippy enclave, a la Parafachel, and very very sensuous. The women dress even ruder than in Rome, and the men do the same. A lot of gays, a fair number of transvestites, and a lot of drugs. Many expatriots (Africans, French, Italians, British, Germans). Dinner with gang (squid), then Karen & I hit the Casino (passport required for entry). Karen won; RCB lost. Then Karen & I walked to the hottest niteclub outside of Palma (Pach'o) and danced our asses off. Definitely one of the all-time great discos. An unbelievable gathering of Ibiza's richest & wisest.

Tonite, dinner & dancing in San Antonio (Isla Ibiza) - a scaled-down version of Eivizza. Judy, Karen & I hit every disco in town, including a wonderfully sensuous place called "Extasis". Another outstanding niteclub - far better (different) than anything I've seen in the U.S.A. Danced to a good English band (Hush Hush) at Sgt. Pepper's club.

19 Sept. 1991

Dive #1. Balearic Islands, Isla Vedrà (off Isla Ibiza), 5-55 m. Brusca/Green/Vega dive together (Green = 60', Brusca 110', Vega 170'). 38° 51.7' N, 1° 11.2' E. 0940 - 1100. Very strong current (in opposite direction as surface winds & swell(s)).

19/09/91-1021 Hacelia attenuata

1022 Alicia mirabilis (= cladactis costae)

1023 Echinaster sepositus

Bonellia viridis (proboscis)

Alcyonium acaule (photographed). Highly variable.

Aplidium albicans (> 90') X X

Aplidium nordmanni (15-20')

? Distaplia sp. (> 100'): 1-4 cm tall, flat-topped lobes w/ algae encrusted "stalk" (> 100' depth)



→ or perhaps this is Distoma adriaticum or Aplidium conicum

029 Archidoris pseudoargus. Orange w/ lighter elevated bumps.

030 Hoplanguia durotrix

031 Bryozoa sp. C (= 17/09/91 2029)

032 Bryozoa sp. E



Vouchers saved.
Relaxed in methanol
preserved in formalin.

1024
1025
1026
1027
1028

ve

P. 200

033 Schizobrachiella sp. A (= 14/09/91 2020)

034 Paramuricea clavata. Large purple gorgonian;
12" tall; stalks to 7mm across at base.
(photographed)

Too many late nites & cubalibres. This morning's
dive nearly killed me. Hung over, no sleep,
no coffee or food, too deep, current too strong,
ugh. As the days wear on and the dives
accumulate, "buddy" diving gradually disintegrates.
We're all used to each others dive style now, and
everyone pretty much does their own thing.
Not the best practice, but it seems to evolve
naturally. I must buy a dive computer. It
gets too complicated working at so many
different depths for different periods of time
on each dive, with continual repetitive diving
and decompression.

19 Sept. 1991 (cont.)

Dive #2. Baleares Islands, Isla Bledas, off

Is. Ibiza. $39^{\circ}58.8'N$ $1^{\circ}09.6'E$. Deep dive.

RCB, Rinehart, Connor = 120' Jose Maria & Jose Antonio =

190'. Karen snorkeling. Vertical wall, as at most sites.

19/09/91 2014 Frondipora sp. (Bryozoa)

2015 ? Distaplia sp. (= 19/09/91-1028) from ~ 130' (same as 19/09/91)

2016 Pinna nobilis

2017 Bonellia viridis (proboscis only)

2018 Marthasterias glacialis

2019 Apidium albicans (= A. proliferum) * *

2020 Ophidiaster ophidianus

2021 Hacelia attenuata

2022 Echinaster sepositus

2023 Hoplungia dumotriv

2024 Myriapora truncata

2025 Eunicella singularis (= 14/09/91 - 2016)

2026 Sertella beaneana

2027 Aglaophenia elongata

2028 Bryozoa sp. C. (= 17/09/91 - 2029)

2029 Balanophyllia europaea

Tonite we set steam for the mainland, the city of Alicante (the Roman "City of Light," or "Lucentum") and the coastal islands of Hormigas.

20 September 1991 - Dive #1.

Spanish coast, Gulf of Valencia, off Alicante, sea mount
(Bajo de Fuera), near Islas Hormigas. Brusca/Tupíolas
to 50'; others to 120'+, 37°39.7' N 00°38.1' W.

Sea surface = 26°C, thermocline @ 30' (~23°C) & at

~75' (~18°C).

20/09/91-1008 Ophidiaster ophidianus

1009 Echinaster sepositus

1010 Aplidium nordmanni

1011 Holothuria forskali

1012 Clavelina nana

1013 nudibranch eggs (sp.?)

1014 ? Distaplia sp. (= 19/09/91-1028)

1015 ? Botrylloides sp. B. like 16/09/91-2022, but
zooids white w/orange fleck (endostyle?).

1016 Myriapora truncata

1017 Peltodoris atromaculata

1018 Oculina patagonica. Similar polyps as Hoplungia, but smaller and on thick calcareous matrix (Coralium)

1019 Aplidium ? nordmanni (large & encrusting; 2x3 cm.)

1020 Ascidian sp. A. Encrusting sheets to 1 cm. thick;
green tunic; zooids not in systems, uniformly
placed; ring of white spicules (not CaCO₃).
(Voucher saved) ~30'-50'

1021 Ascidian sp. B. Colonial; clear jellylike flacid tunic
w/yellow zooids; each clump with ~15-30 zooids.
deep water

20/09/91. Dive #2

Gulf of Valencia, off Alacante, Islas Hormigas, large island (w/great lighthouse) = Hormiga Grande.

37°39.4'N 00°39.0'W. Surface T° = 36°C.

Strong current again, and thermocline at ~40'.

Brusca/Connor to 80'; others to 130'.

20/09/91 2015 Hacelia attenuata

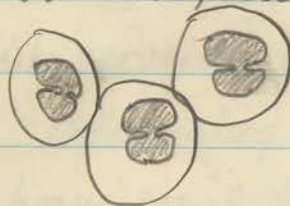
2016 Echinaster sepositus

2017 Ophidiaster ophidianus

2018 ? Botrylloides sp. B (= 20/09/91-1015)

2019 ? Hippodiplosia sp. A, Resembles H. foliacea; orange-salmon;

flat branches anastomose; zooid apertures w/ pair of lateral spines. collected @ 100' by KR.



- P-388 + activity ←
- 2020 Aplidium sp. B. (could be A. conicum) (voucher saved)
- 2021 Aplidium conicum. (voucher saved). from ~30m.
- 2022 Aplidium conicum - white variety. (voucher saved). from 20-30m.
- 2023 Aplidium nordmanni. ~10m (typical mushrooms)
- 2024 Aplidium ? nordmanni. ~10m (encrusting) (voucher saved)
- 2025 Aplidium sp. C. like above species, but milky opaque white (some as deep-water form of white A. conicum)
- ca. P-388
by ←
- ca. P-388
only ←
- 388 activity ←
- 88 or
ty ←
- 88 or
ty ←

- 2026 Myriapora truncata
2027 Parazoanthus axinellae
2028 Hexaplex trunculus
2029 Haliotis tuberculata
2030 Filograna implexa
2031 ? Distaplia rosea (has compound of interest to Ken.!)
2032 Eudendrium rameum

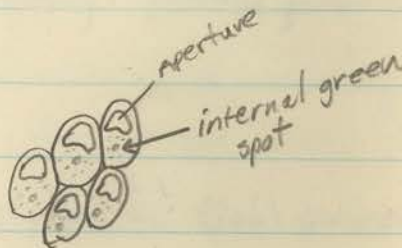
In port tonite in Sta. Paula. ^(near Alacante) Jose Antonio disembarks here. His movie will be initially broadcast on NTSC but he presumes will be picked up by other station in Europe also. My "interview" was horrible, of course (I hope it gets cut). We pick up Hamza here.

Grand finale dinner in Santa Paula (3 1/2 hrs). Every imaginable seafood dish served, with excellent local rosé wine, beer, etc. Outstanding meal. For the Spanish, dinner is a heavy social trip - much conversation. Hamza is the young son of a wealthy Turkish family. He is married to a Spanish woman & living in Madrid. We will dine with us the last 2 days & assess the operation - in anticipation of an investment in PharmaMar by his family.

21 September 1991

Dive #1: Spain, Gulf of Valencia, Isla Tabarca (a national marine reserve); dive on 60' submerged reef (Bajo de La Nao). 38° 09.5' N 00° 26.5' W. 50-50.

- 21/09/91-1009 Echinus esculentus
- 1010 Marthasterias glacialis
- 1011 Ophidiaster ophidianus
- 1012 Schinaster sepositus
- 1013 Petodorus atromaculata
- 1014 Aplidium sp. c (= A. nordmanni, clear/milky) Voucher saved
- 1015 Myriapora truncata
- 1016 Parazoanthus acinellae
- 1017 Aplidium sp. D. like A. nordmanni but very large masses (to 11 cm. across). (Voucher retained)
- 1018 Aplidium nordmanni
- 1019 Phallusia fumigata
- 1020 Sertella beaniana
1021. ? Chorizopora brongniarti



Dive #2. Spain, Gulf of Valencia, Isla Tabarca; shit
dive on offshore rock near public beach (Islote la Galera).
0'-45'. Too shallow. Too many people.
38°09.7'N 00°28.6'W. H₂O T° = 26°C.

21/09/2017 Echinaster sepositus

2018 Membranipora pilosa
(sensu Kuther & Fiedler)



encrusting bases
of Posidonia.

2019 Aplidium ? nordmanni

2020 Aplidium sp. D

2021 Aplidium sp. E (large milky white clump w/ orange zooids;
on Posidonia)

2022 Aplidium sp. C

2023 Aplidium sp. F. Large (to 8 cm) encrusting round
colonies; milky white tunic, yellow zooids.
(Voucher saved)

2024 Hypselodoris elegans

2025 Tridemnum tenerum. Fits description in Riedl perfectly
(including star-shaped CaCO₃ spicules), except this specimen
was very large (~15 cm wide). In Posidonia bed.

2026 Hexaplex trunculus

2027 Actinia equina. Brilliant red littoral anemone.

- 2028 Filograna implexa
2029 Parazoanthus axinellae
2030 Eudendrium rameum
2031 Halecium halecinum
2032 Myriapora truncata
2033 Phyllangia mouchezi (ID by Jose Maria Tur). A tropical coral, rare in the Mediterranean; large polyps connected at bases; reddish.

Any dive shallower than 40' has become uncomfortable for me. Shallower than this means buoyancy & surge problems. 60'-80' seems like the most comfortable depth.

Funny how life seems to go in circles, like a wheel. It's odd to arrive back at a place you once were at, but to know it for the first time. Jerry's death, visiting Rome, and time away from ♀ seem to have pushed me that last step I needed to see myself clearly, to know where I am for the first time. The new road map is being laid out in my mind at last.

Tonight we steam back to the Columbretes. On any dive expedition, the last day of diving should be memorable. Diving the Columbretes guarantees this.

22 September 1991.

DIVE #1. Columbretes, Piedra Jaaguín. $38^{\circ}52.7'N$ $00^{\circ}40.1'E$.
surface $T^{\circ} = 26.5^{\circ}C$. Depth of collections 3-50 m. Sal. = 38‰
Brusca/Rinehart = 130'. Jose Maria Tur = 160'. Others 3'-100'.

22/09/91-1028 Margaretta cereoides. A branching alga-like bryozoan.
(also on 11/09/91 = dive 2)

1029 Echinaster sepositus

1030 Myriapora truncata

1031 Sertularella sp. (hydroid)

1032 ? Cystodytes dellechiaiei (see 09/09/91-1017). Non-calcareous spicules (white),

(Voucher saved)

not arranged in arclets; zooids in encapsulations;
uniform dark smokey black w/ greenish hue; zooids
not obvious; encrusting to 1 cm. thick; 80'-100'.

1033 Aplidium nordmanni

1034 Aplidium sp. C

1035 Aplidium ? conicum (encrusting, large masses)

1036 Maasella edwardsi

(Voucher saved)

¹⁰³⁷ Synoicum blochmani. Deep blood-red; same morphology
as Aplidium albicans. (photo taken by Karen Green)

1038 Cladocora cespitosa (photo taken by PCB)

Beautiful dive - incredible. Norays, ctenophores, salps,
octopuses, unlimited visibility. Everyone's in a great
mood!

DIVE #2: Columbretes, Islote Lobo, La Horadada.

39°52.4'N 00°40.3'E. surface to 40'

This is the same locality where my regulator hose blew in 1988.

2209/91 2019 Platydoris argo

2020 Cladocora cespitosa

2021 Myriapora truncata

2022 Echinaster sepositus

2023 Haliotis tuberculata

2024 Coscinasterias tenuispina

2025 Margaretta cereoides

2026 Chlamys opercularis

2027 Parazoanthus axinellae

2028 Aplidium sp. G. Encrusting, to 1 cm. thick & 8 cm. wide; tunic opaque golden-orange (same color as Platydoris argo); zooids yellow; w/non-CaCO₃ spicules. (voucher saved)

2029 Ascidian sp. C. Encrusting to 1 cm. thick; black exterior, grey interior; zooids not evident; no CaCO₃. (voucher saved)

Notes: All ascidian vouchers returned to PharmaMar. PCB recommends Françoise Monniot to do ID's (or the Lamberts).

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2029 Ascidian sp. C. Encrusting to 1 cm. thick; black exterior, grey interior; zooids not evident; no CaCO₃. (voucher saved)

Notes: All ascidian vouchers returned to Pharma Mar. PCB recommends Françoise Monniot to do ID's (or the Lamberts).

Last night of the expedition. Ester out-does herself in the kitchen (seafood soup, fresh vegetable salad, sirloin steak w/ cheese/mushroom sauce, an outrageous coconut-cream layered cake, Torres wine, and Irish coffee). Armando is serving in his white tux (instead of his usual black). The new people on board experience the "ceremony" (Karen, Pilar, Fernando, Diane, & Hamsa). The Cptn. presents their "diplomas" and all hell breaks loose. Raw egg fight turns into water hose fight - pitcher after pitcher of Sangria, way too much Champagne, and hidden stores of candy & cheese appear. The 2nd mate tries to talk the Cptn. into stopping the boat so we can all go skinny-dipping, but 20 drunk bathers at midnight in the middle of the Med is unacceptable (though I'm sure he considered it - his wife is a flamenco dancer). Instead, we dance the night away in the dining hall. Even Dr. K. boogies. Ester did the bump and packing, got left for morning (ETA for Barcelona - 7 A.M.).

Algae collected on Phamamar 9/91 Exped.

- | | |
|-----------------------------------|-----------------------------------|
| <i>Halimeda tuna</i> | <i>Valonia macrophysa</i> |
| <i>Codium bursa</i> | ? <i>Chylocladia verticillata</i> |
| <i>Dictyopteris membranacea</i> | ? <i>Halymenia dichotoma</i> |
| <i>Padina pavonica</i> | <i>Anadyomene stellata</i> |
| <i>Chrysomenia ventricosa</i> | <i>Galaxaura oblongata</i> |
| <i>Lobophora variegata</i> | <i>Asparagopsis ?armata</i> |
| ? <i>Phyllariopsis brevipes</i> | <i>Posidonia oceanica</i> |
| <i>Zonaria tournefortii</i> | <i>Halopteris scoparia</i> |
| <i>Udotea petiolata</i> | <i>Plocamium cartilagineum</i> |
| <i>Mesophyllum ?lichenoides</i> | <i>Dasycladus vermicularis</i> |
| <i>Peyssonnelia ?squameria</i> | <i>Caulerpa prolifera</i> |
| <i>Jania rubens</i> | <i>Halopteris filicina</i> |
| <i>Jania ?corniculata</i> | <i>Cladophora sp.</i> |
| <i>Colpomenia sinuosa</i> | <i>Corallina ?officinolis</i> |
| <i>Codium ?decortcatum</i> | <i>Cladostephus hirsutus</i> |
| <i>Lithophyllum ?racemus</i> | <i>Dictyota linearis</i> |
| <i>Sargassum vulgare</i> | <i>Jania ?corniculata</i> |
| <i>Cystoseira sp. A, B, C, D</i> | <i>Caulerpa prolifera</i> |
| ? <i>Halymenia floresia</i> | ? <i>Lithophyllum expansum</i> |
| <i>Bonnemaisonia asparagoidea</i> | <i>Laurencia papillosa</i> |
| <i>Ulva ?rigida</i> | ? <i>Lithophyllum</i> |
| <i>Amphiroa rigida</i> | |