PHARMAMAR MEDITERRANEAN EXPEDITION
September 1991

Scientific Crew

*Andrés Gómez (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 (Aidaries - Blanes/Pharmamar Contractor)
Bob Hughes
José Antonio Moya (photographer)
Francisco ? (Pharmamar)

Taxonomist

Divers

* = Divers

Ship's Crew

D.J. Octavo Moreno (Cptn.)
Jordi (1st mate)
Ester (cook)
Arnando (dining 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:

Pseudodostoma crucigaster - tunicate
Maeella edwardsi - algovarian (rare)
Bugula neritina - bryozoan
Hemigera hamigera - sponge (blood red)
Oscarella lobularis - sponge (filmy blue bubbly-thin encrustation)
Myriopora truncata - bryozoan (orange, coralline, branching)
An chinone tenacior - sponge (very thin encrusting, blue)

Ophiacanth, ophielianus - seastar (giant purple)
Cliona celata - sponge (yellow-borer)
Hoplaxia dorothea - coral
Books to Obtain


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)
10/09/91 - 1002 Ophidaster ophidianus (purple star)
10/09/91 - 1003 Echinaster sepositus (orange star)

→ + 30-35 sponges, including the slimy gray-black or blue
filmy-bubbley 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
sampled this region on several occasions, we will
be focusing on the re-collection of active species,
including Bugula neritina, Halimeda tuna (algae),
Hydroclathrus clathratus (algae), Lobophora variegata
(algae), Zanardinia prototypus (algae), Oscarella
lobularis (sponge), Hippospongia communis (sponge).
Las Islas Colombretes

Dive #2: Same area, for more H. hamigera.
I. Mespella edwardsii. Brown w/greenish tints; encrusting; to 25 mm thick; on rocks or certain sponges; rare (in Cembranites); resembles a zoanthid but w/polyps not free. Large polyps.


3. Parereythropodium coralloides. Encrusting, not erect, but often encrusting gorgonians. Red, violet. Occasionally forms unbranched lobes to 4 cm. tall. Polyps small, concentrated into elevated modules, 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
Hamiigera & Ascarella (esp. in cave). Inverts
include:
- Myriapora truncata (the common orange coral-like bryozan)
- Echinaster sepositus (common orange star) (*018)
- Ostrea edulis (*11/4/91-197)
- Anomia ephippium (*01a)
- Furcata furcata (cowrie)
- Phallosia fumigata (solitary tunicate) (*020)
- Moasella edwardsi (encrusting green-brown alcyonarian;
  resembles Alcyonium or Parerythrophodium 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 Febrero (Isla de Navarrete) 39°52.4'N 0°40'E.
Inverts include: Serella sp. (bryozan) (*2-028)
- Cladocora caespitosa (?) (*7-029)
- Thais haemastoma (*2-020)
- Margareta cereoides (Bagula-like bryozan, with
distinguishing zooid)

H_2 O 70° = 26°C
thermocline at 60'-70'
We were joined for this afternoon's dive by 3 people from the Columbretes Nature Reserve facility on Isla Grosse. 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 collection meetings in Madrid next May.

12 Sept. 1991

Today we put Pilar Ruiz ashore on Isla Grosse 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 Barra Alta", 39°30'N 0°35'E.
50'-130'. (ebb decom 5 min. @ 20', 10 min. @ 10').
Inverts includes: 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 diveship.
Inverts include:
- Pentapora (= Hippodiplosia) fascialis (erect orange bryozoan w/ flattened branches). - (w/ commensal goby of the precise same color)
- Unidentified calcareous bryozoan (similar to Margareta cereoides).
- Parazoanthus axinellae (colonial zoosperm on orange sponge Axinella)
- Sphaerechinus granularis (purple within w/ white spines)
- Holothuria subpoli (brown; tips of papillae white)
- Ophiocoma longicauda (common brown brittle star)
- Aplidium cònicum - showed R-338 & A-547 activity.
- Platydoris argo (large brown mottled nudibranch)
Coral: Madracis ?asperula (#2030)
12 Sept 1991 - Dive 2 (cont):

mystery tunicate - slimey baby shit brown,
no internal structure, no spicules, no atria!

12/09/91 - 2025


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

Dive #1. Baleares Islands, Menorca Is., Punta
del Escuá. 40°04'N 3°51.7'E. 3-25 m depth

(#1011) Encrusting orange bryozoan sp
(hard, thick, coral-like)
(1012) *Dardanus arrosor* w/ *Calliactis parasitica* (#1013)

(1014) *Anemonia sulcata*

(1015) *Peltodoris atromaculata*

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

(1017) *Pentapora fascialis*

Dive #2. Baleares Islands, Menorca Is., Bahia de Formentes. 40°03.1'N 4°08'E. 0-3.5 m. 

13/09/2008 *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 *Actiniscidia turbinata*. Very similar to *Clavellina* (see ascidian keys).
2013 Schizobrachiella sp. C. Purple foliose; generally pentagonal zooids but often irregular; round apertures; dark spots in zooidal areas.

2014 Schizobrachiella sanguinea. Orange foliose bryozoan, round apertures; zoid surface papillate.

2015 Balanophyllia europaea

2016 Pinctada radiata

2017 Mytilus galloprovincialis

2018 Arca noae. Small ark shell covered with orange sponge. Served in some restaurants in Spain. We ate it in the Balearics, but it was not very good (like strong conch).

2019 Halocynthia papillosa

Spent the evening in Mahón, at the eastern tip of Menorca (the “capital” of the island). Fantastic city with about 6 centuries of architecture, apparently including Moorish, French, Morrocan, 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 & arrayed. 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 (as apparently much of Italy) “cappachino” means expresso with dipped whole sweet cream on top (delicioso), and “café con leche” is our American style cappachino (with steamed milk).
Dive #1: Balearic Islands, Menorca, Torre Artuix, near Pta. Gobernado. 39° 55.5’ N 3° 54.6’ E. 1-20 m depth. Breaco/Rapidos + others.

1015 Inachus leptochirius. 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 granularus. Short spined echin; same exact color as S. purpuratus; spines short (to 1 cm) & white-tipped; diameter = 7.5 cm.

1020 Hypselodoris elegans

1021 Halocynthia papillosa

1022 ? Sidmus turbinatum. Matrix colorless; zooids orange; separate & not in any pattern w/in matrix, scattered; colonies squat growths ~ 3.5 mm thick, to 3 cm wide.

1023 ? S. sp. As above, but coated w/sand.
Microcosmus sulcatus. Inner surface of funic pearlescent white; zooiid carmen red. 45 mm long.

Leptochiton geronensis. Solid white; plates not keeled.

Chiton olivaceus.

Hexaply trunciulus

Conus ventricosus

Thais ? haemastoma. Fits description & photos except has black patches on inner lip fringe.

Arca noae

Electra posidoniae

Pteroaanthus axinellae

(10 - 35 m depth) 39°57.6' N 3°12.9' E

T° = 27°C Sal. = 37.5‰

14/09/12 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 Doridide (orange w/ white papillae)

2019 Corallium rubrum (w/ cliona inside- boring)
2020  ? Schizobrachiella sp. A (voucher retained) Enormous, tan with faint green hues (may be an alga); voucher saved; apertures raised like volcanos.

2021 Schizobrachiella sanguinea

2022 Bryozoa sp. A.

Into port in Alcudia for water. Nice vacation/fishing village, but not as nice as Mahón, Ibiza, or Palma.

Sangria at "Freddys," picked up a plastic doggie float ring for Ken, who we pick up tonight in Puerto Solé.

The deep pockets of Piamar continue to pick up the tab for all meals, drinks, etc.

15 September 1991. Baleares Is., Mallorca,
Pt. Topina. 39°56.1'N 3°02.2'E. 3-35 m depth. (One dive only today).

15/9/91 1010 Pelldoris atramacula
Serpulidae- white crown in single whorls
Mound atop C. tube.
Arrived Puerto Solle ~3 p.m, to drop off Andres & pick up Ken. RCB joined Karen, Judy & Diene to take bus across island to Palma (1½ hours). Explored Barrio Gotico de Palma & the Cathedral. Drinks & tapas, then busked it back to Solle in time to meet Rinchart (who had just arrived by taxi from Palma - ~8:35 p.m). The villages between Solle & Palma are beautiful, & the countryside & views are fantastic. Returned as sunset fell on Mediterranean, quaint villages, 17th - 19th century stone walls & building, red tile roofs, etc.

Dinner w/service crew in Solle. Perhaps the best calamari dish I've ever had (whole peeled, cooked in olive oil, garlic & porcini). 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.

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

**Aplidium sp.** Like A. Inordinani but fleshly (dying?)

**Aplidium sp. B.** Short encrusted stalk.

**Aplidium conicum.** Dark orange oblong; to 6” tall; ~60’ depth. (weekly active)

**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 1½” tall; 90’ + depth. (all samples but 16-02.9.1-2020 active)

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

**Aplidium nardmanni.** Short mushrooms to rounded lobes; ¼”-1” across; 20’-30’, under ledges in shade.

**Aplidium sp. A.** Most of colony coated w/sand; ~10’6” Exposed as clear tunic w/orange zooids; flat & mobile like a rare (active)
16 September 1991
Baleares Is., Isla Dragonera, Cabo Tramontana
(39° 36.0' N 2° 20.4' E) H2O ° = 27°C. surface - 42 m.

Bruno opts out of today's dives due to right ear infection. KP recommends against ear drops containing neomycin, as it is known to cause deafness in some people. RB goes back on amoxicillin. Shit! Richert 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/scraps.

1012 Thais haemastoma
1013 Ophidiaster ophidianus
1014 Hacelia attenuata
1015 Hoplantia dactylophora
1016 Sertella beaniana (mermaid's veil)
1017 Alcyonium aculeum. Purple-red, hard, gorgonian-like soft coral.
1018 coralline bryozoan - resembles a hydrocoral (e.g. stylasterine)

"Bryozoa sp. 8"
Ile September 1991
Baleares Is., Isla Dragonera, Cabo Tramontana
(39°36.0' N 2°20.4' E) Temp. = 27°C, Surface = 42 m.

Bruce opts out of today's dive due to right ear infection. KP recommends against ear drops containing neomycin, as it is known to cause deafness in some people. RB goes back on Amoxicillin. Sh*t. Rinhardt should know, he was the person who first determined the structure of Neomycin.

16/09/1999
Balanophyllia regia. Yellow-orange solitary coral (e.
europa is similar, but brown-purple). Voucher retained.

1010  Myriapora truncata
1011  Cotylorchiza tuberculata. Commensal fish taken for
museum/scrips.

1012  Thais haemastoma
1013  Ophidiaster ophidianus
1014  Hacelia attenuata
1015  Hoplantia durotix
1016  Sertella berniana (mermaid's veil)

{ Aleyxium acule. Purple-red, hard, gorgonian-like soft coral.
coralline bryozoan - resembles a hydrocoral (e.g. stylonere)

"Bryozoa sp. B"
Henricia-like Mediterranean species

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.

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
Seastars

2. Aboral surface uniform purple to dark carmine-red; arms slightly narrowed at base; body out of water slimy & mucoid; arms sag & tend to break off. ... *Ophidiaster opidianus*

- 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 aculata* (= *H. sanguinolenta*).

(Note: look up family/ordinal characters)
Dive #2: Baleares Is., Isla de la Dragonera, Cabo Kleinber. 39°34.5'N 2°18.3'E.

16/09/2015 Ophidiaster ophidianus

2016 Hacelia attenuata
2017 Myriapora truncata
2018 Haliotis tuberculata
2019 Holocynthia papillosa

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

2021 Aplidium sp. A. A little tougher than A. proliferum (more like A. caniculum) & without the stalk;

85% of surface coated with sand.

2022 ? Botrylloides sp. A (very small sample)

Outer tunic smoky black, light pit's (abundant); inner tunic light gray; zooids black

2023 Balanophyllia regia (yellow & orange specimens)
2024 Hoplia gia durotrix
2025 Caryophyllia incornata
2026 Sertella beani ana
2027  ?Carpobota papyrea
2028  Lithophaga lithophaga (1 specimen)

17 Sept. 1991
Baleares Is., off Isla Ibiza, Isolote 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
19/09/91/02  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 thick, smoky, black; faint pits; zooids indistinguishable; cistlets of calicles spicules throughout, esp. at colony edge.
1019 ?Ascidia mentula 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 polypse; tissue salmon, on a brown stalk.

DIVE #2. Baleares, off Isla Ibiza.

17/09/19  Myriapora truncata (2 bags)

2018  Ophidiaster ophidianus

2019  Holothuria sp.

2020  Echinaster sepositus

2021  Thallasoma pavo (wrasse)

2022  Hypselodaris elegans

2023  Holocynthia popillosa

2024  Balanophyllia europae

2025  Dardanus calidus

2024  Hoplantia durotrix

2017  Dromia personata

2028  Erosoria spicula (corrie)

2019  Bryozoa sp. C. Encrusting golden honey color.

2030  Schizobrachiella sp. B
Microcosmus sulcatus

Eudendrium racemosum

Madracis ?asperula

18 September 1991.

DIVE #1 Baleares Is., Formentera Is., Cabo Berberia. 38° 38.3' N 1° 22.8' E, 12-14 m.
Brusca not on this dive. (Posidonia beds)


1006 Halocynthia papillosa

38° 43.8' N 1° 24.7' E, 0-5 m.

18/09/12007 Actinoscidia turbinata (small Clavelina-like tunicate; orange)

2008 Halothuria poli (juveniles)

2009 Schizobrachiella sanguinea. Red-orange bryozoan:

2010 Bryozoa sp. A. Purpule to dk. brown; round apertures w/ mammiform elevation near aperture;
encrusting; irregular zooids
2011 Callista chione (bivalve)
2012 Loripes lacteus "
2013 Pagurus cuanensis

38°54.2' N 1°12.3' E. 7-50 m. Brusca/Tapiolas
(20' → 20').

2012 Bugula avicularia
2013 Echinaster sepositus
2014 Hacelia attenuata
2015 Ophidiaster ophidianus
2016 Myriapora truncata
2017 Halocynthia papillosa
2018 Aplidium sp. B
2019 ? Ascidia virginiana
2020 ? Attenuaria sp. (hydroid; long brown whips w/coriola
& bamboo-like stolons)

2021 Bonellia viridis
2022 Hypselodoris elegans
2023 Maja verrucosa
1024  Hoplagnostia sp.
1025  ? Botryllus sp. A (Same as 17/09/91-1018).
1027  Didemnidae. Pale salmon matrix w/deep salmon
growing; encrusting; very small sample;
speculae are spiked balls.

Spent last night in port in Eivissa. My memories of 1988 held true.
A hippy enclave, a la Perajachel, 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 (Pacho) and danced our asses off. Defi-
nitely, one of the all-time great discos. An
unbelievable gathering of Ibiza's richest & nicest.

Tonite, dinner & dancing in San Antonio (Isla
Ibiza) - a scaled-down version of Eivissa. Judy,
Karen & I hit every disco in town, including a wonder-
fully 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 (Bass & Wash) at St Pepper's clap.
19 Sept. 1991

Dive #1, Baleares Islands, Isla Vedorá (off Isla Ibiza), 5-55 m, Brusca/Green/Vega dive together (Green = 60', Brusca 110', Vega 190').
38°51.7'N, 1°11.2'E. 0940-1100. Very strong current in opposite direction as surface winds & swells.

19/09/91-1031 Hacelia attenuata
1022 Alicia mirabilis (= Cladodactis costae)
1023 Echinaster sepositus
Bonellia viridis (proboscis)
Alcyonium acaule (photographed), Hælge coral.

?Distegilla sp. (> 100'); 1-4 cm tall,
Flat-topped lobes w/algae encrusted "stalke" (>100' depth)

Aplidium albicans (>90') X X
Aplidium nodumanni (15-20)

Archidoris pseudoargus, Orange w/lighten elevated bumps.

029 Hoplagia duorotrix
030 Bryozoa sp. E (=17/09/91 2029)
031 Bryozoa sp. E
Schizobrachiella sp. A (= 14609 191 2020)

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

Too many late nites & cuba libres. 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 or each dive, with continual repetitive diving and decompression.
19 Sept. 1991 (cont.)

Dive #2 - Baleares Islands, Isla Bledas, off Is. Ibiza. 34°58.8' N 1°09.6' E. Deep dive.
RCB, Eirehart, Connor = 120'. Jose Maria & Jose Antonio = 190'. Karen snorkeling. Vertical wall, as at most sites.

19/09/91 2014 Enclitopora sp. (Bryozoa)
2015 ? Distopia sp. (= 19/09/91-1028) from ~130' (same as 2015)
2016 Pinna nobilis
2017 Bonellia viridis (proboscis only)
2018 Martnasterias glacialis

2019 Apidium alicarens (= B. proliferum) ***
2020 Ophidiaster alicarens
2021 Hecelia atropatana
2022 Echinaster sepositus
2023 Hoplasteria dunatriz
2024 Myriopora truncata
2025 Eunicella singularis (=14/09/91-2016)
2026 Sertella beaneana
2027 Aglaophenia elongata
2028 Bryozoa sp. C (=17/09/91-2029)
2029 Bolanophyllia europaea

Today we set steam for the mainland, the city of Alicante (the Roman "City of light," or "Lucentum") and the coastal islands of Hormios.
20 September 1991 - Dive #1.

Spanish coast, Gulf of Valencia, off Alicante, seamount (Bojo de Fuera), near Islas Hormigas. Brusca/Tapiolas to 50', others to 120', 37°39.7'N 00°38.1'W.

Sea surface ~26°C, thermocline at 30' (~23°C) & at ~75' (~18°C).

20/09/91-1009 Ophiodaster ophidianus

1009 Echinaster sepositus

1010 Apodium nordmannii

1011 Holothuria forskálí

1012 Clavelina nana

1013 nudibranch eggs (sp.?)

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

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

1016 Myriapora truncata

1017 Peltopora stromaculata

1018 Oculina patagonica. Similar polyps as Hoplura, but smaller

1019 Apodium ? nordmannii (large & encrusting; 2x3 cm)

1020 Ascidian sp. A. Encrusting sheets to 1 cm. thick; green tunic; zoids 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 zoids; each clump with ~15-30 zoids, 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'.
Bussca/Connor to 80'; others to 130'.

20/09/15

Halcelia attenuata

2016 Echinaster sepositus

2017 Ophidiaster ophiocids

2018 ? Botryloides sp. B (± 20/09/91 - 1015)

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

flat branches anastamose; zooid apertures w/pair of

lateral spines. collected @ 100' by KR.

2020 Aplidium sp. B. (Could be A. conicum) (voucher saved)

2021 Aplidium conicum. (voucher saved), from ~30 m.

2022 Aplidium conicum - white variety, (voucher saved), from 20-30 m.

2023 Aplidium nordmanni. ~10 m (typical mushrooms)

2024 Aplidium ? nordmanni. ~10 m (encrusting) (voucher saved)

2025 Aplidium sp. C. hike above species, but milky opaque white

(same as deep water form of white A. conicum)
2020  Myriapora truncata
2021  Parazoanthus axinellae
2022  Hexaplex trunculus
2023  Haliotis tuberculata
2024  Filograna implexa
2025  ? Distephanos rosea  (has compound of interest to Ken!)
2026  Eudendrium ameum

(near Alicante)

In port tonite in St. Paula. 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 Hamsa here.

Grand finale dinner in Santa Paula (3½ 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.
Hamsa is the young son of a wealthy Turkish
family. He is married to a Spanish woman &
living in Madrid. He will dive with us the last 2
days & assess the operation - in anticipation of an
investment in PharoMar 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.

21/09/91-10:39

Edrinus esculentus
1010  Martasterias glacialis
1011  Ophidiaster ophidianus
1012  Schisaster sepositus
1013  Petoboris otromaculata
1014  Aplidium sp. e (= A. nordmanni, clear/milky) voucher saved
1015  Myriapora truncata
1016  Parazoanthus acinella
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  ? Chorizeopora brongniartii
Dive #2. Spain, Gulf of Valencia, Isla Tabarca; shit dive on offshore rock near public beach (Isolete La Galera). 0'45'. Too shallow. Too many people. 38°09.7'N 00°28.6'W. H2O T° = 26°C.

8/6/1/2017

Echinaster sepositus

2018 Membranipora pilosa (sensu Hütter & Fiedler)

2019 Aplidium s. nordoniani

2020 Aplidium sp. D

2021 Aplidium sp. E (large milky white clump color 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 needed)

2024 Hypselodoris elegans

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

2026 Hexaplex trunculus

2027 Actinia equina. Brilliant red littoral anemone.
2028 Filograna implexa
2029 Parazoanthus axinellae
2030 Eudendrium rameum
2031 Halcium 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 Q 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 Jaquín. 38°52.7′N 00°40.1′E.
Surface T° = 26.5°C. Depth of collections 3-50 m. Sal. = 38%
Brusca/Risewart = 130’. Jose Maria Tur = 160’. Others 3′-100′.

(also on 11/09/91- dive 2)

1029 Echinaster sepositus
1030 Myriapora truncata
1031 Sertularella sp. (Hydroid)
1032 Cyrtodytes dellechiajei (Cu. 1966). Non-calcareous spicules (white),
not arranged in circles; zooids in encapsulations;
uniform dark smoky 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

Syncium bichmani. Deep blood-red; same morphology
as Aplidium albicans. (Photo taken by Karen Greene)
1038 Cladocora cespitosa (Photo taken by RCB)

Beautiful dive - incredible. Arrays, stenophores, salps,
octopuses, unlimited visibility. Everyone's in a great
mood!
DIVE #2: Columbretes, Isla de 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 1986.

2009/10/29 Platydoris argo
2020 Cladocora cespitosa
2021 Myriapora truncata
2022 Echinaster sepositus
2023 Holothuridae tuberculata
2024 Coscinasterias tenuispina
2025 Margarreta cereoides
2026 Chlamys opercularis
2027 Paparoctena 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; blade exterior, grey interior; zooids not evident; no CaCO₃. (voucher saved)

Note: All ascidian vouchers returned to the recommender. PCB recommends Francoise Manriot to do ID's for the Lamberts.
DIVE #2: Columbretes, Isla de 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 1986.

2009 Platydorids argo
2020 Cladocora cespitosa
2021 Myriapora truncata
2022 Echinaster sepositus
2023 Heliocid tuberculata
2024 Coccyasterias tenispigia
2025 Margaretha cereoides
2026 Chlamys opercularis
2027 Pteroaustichia axinelloides
2028 Aplidium sp. G. Encrusting, to 1 cm. thick & 8 cm. wide; tunic opaque golden-orange (same color as Platydorid's argo); zooids yellow, w/non-CaCO3 spicules. (voucher saved)
2029 Ascidian sp. C. Encrusting to 1 cm. thick; dark exterior, grey interior; zooids not evident; no CaCO3. (voucher saved)

Note: All ascidian vouchers returned to Francoise 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 with cheddar/mushroom sauce, an outrageous coconut-cream layered cake, Torres wine, and Irish coffee). Armandos is serving in his white tux (instead of his usual black). The new people on board experience the "ceremony" (Karen, Pilar, Fernando, Diane, & Hansa). 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 batters 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.).
<table>
<thead>
<tr>
<th>Algae collected on PhaMAr 941 Expd.</th>
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<tbody>
<tr>
<td>Halimeda tuina</td>
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<tr>
<td>Codium bursa</td>
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<tr>
<td>Dictyopteris membranacea</td>
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<tr>
<td>Padina paponica</td>
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<tr>
<td>Chrysomenia ventricosa</td>
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<tr>
<td>Lobophora variegata</td>
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<tr>
<td>?Phyllariopsis brevipes</td>
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<tr>
<td>Zonaria tournefortii</td>
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<tr>
<td>Udotea petiolata</td>
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<tr>
<td>Nesophyllum ?lichenooides</td>
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<tr>
<td>Peyssonnelia ?squameria</td>
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<tr>
<td>Jania rubens</td>
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<tr>
<td>Jania ?corniculata</td>
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<tr>
<td>Cryptomenia sinuosa</td>
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<tr>
<td>Codium ?decorticatum</td>
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<tr>
<td>Lithophyllum ?racemus</td>
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<tr>
<td>Sargassum vulgare</td>
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<tr>
<td>Cystoseira sp. A, B, C, D</td>
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<tr>
<td>?Halymentia floresia</td>
</tr>
<tr>
<td>Bonnemainia asparagoides</td>
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<tr>
<td>Ulva ?rigida</td>
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<tr>
<td>Amphiroa rigida</td>
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