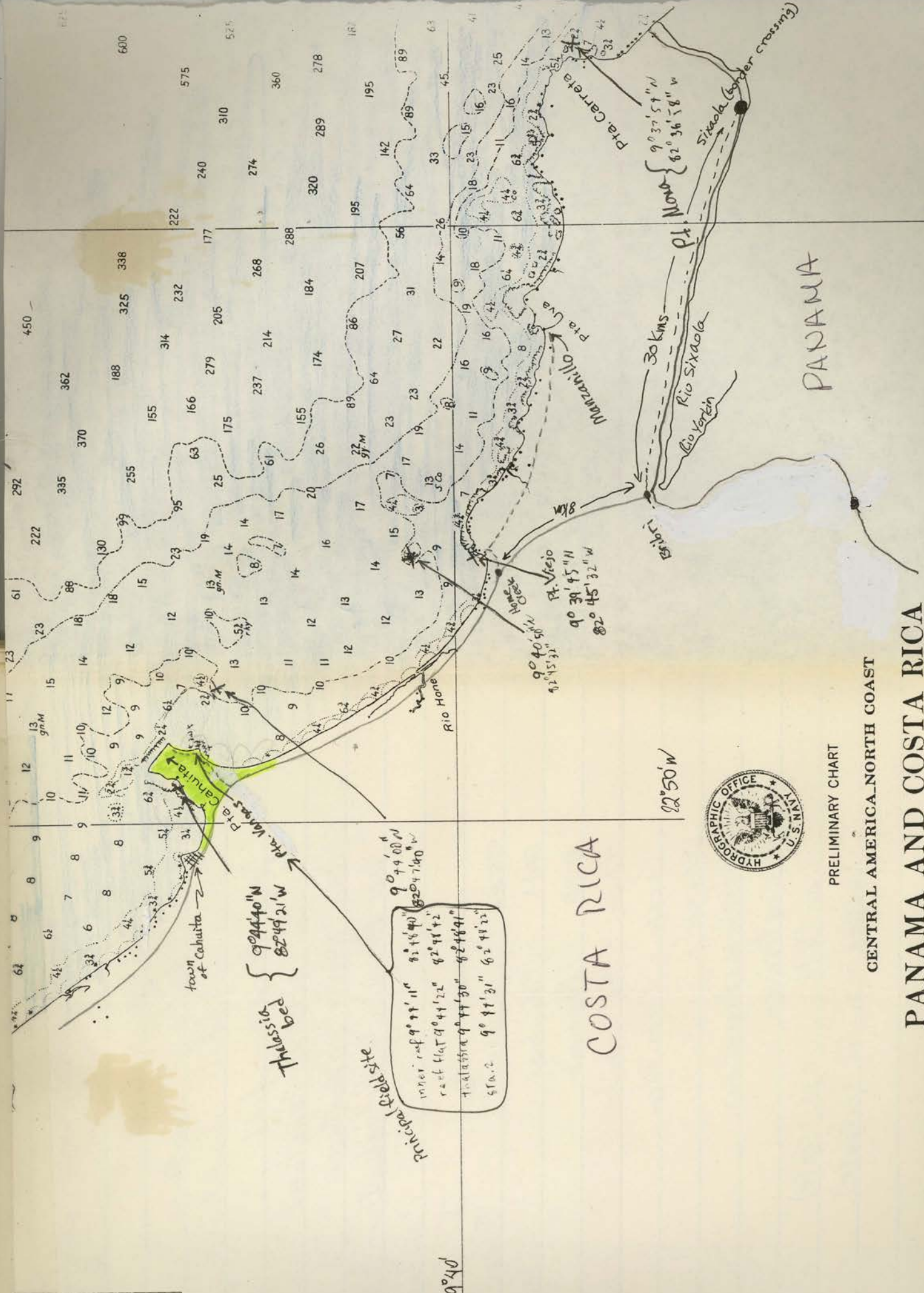




PRELIMINARY CHART

CENTRAL AMERICA NORTH COAST

PANAMA AND COSTA RICA

BOCCA DEL TORO

HO 5013a (28048) 1st ed. 1938 revised 1951

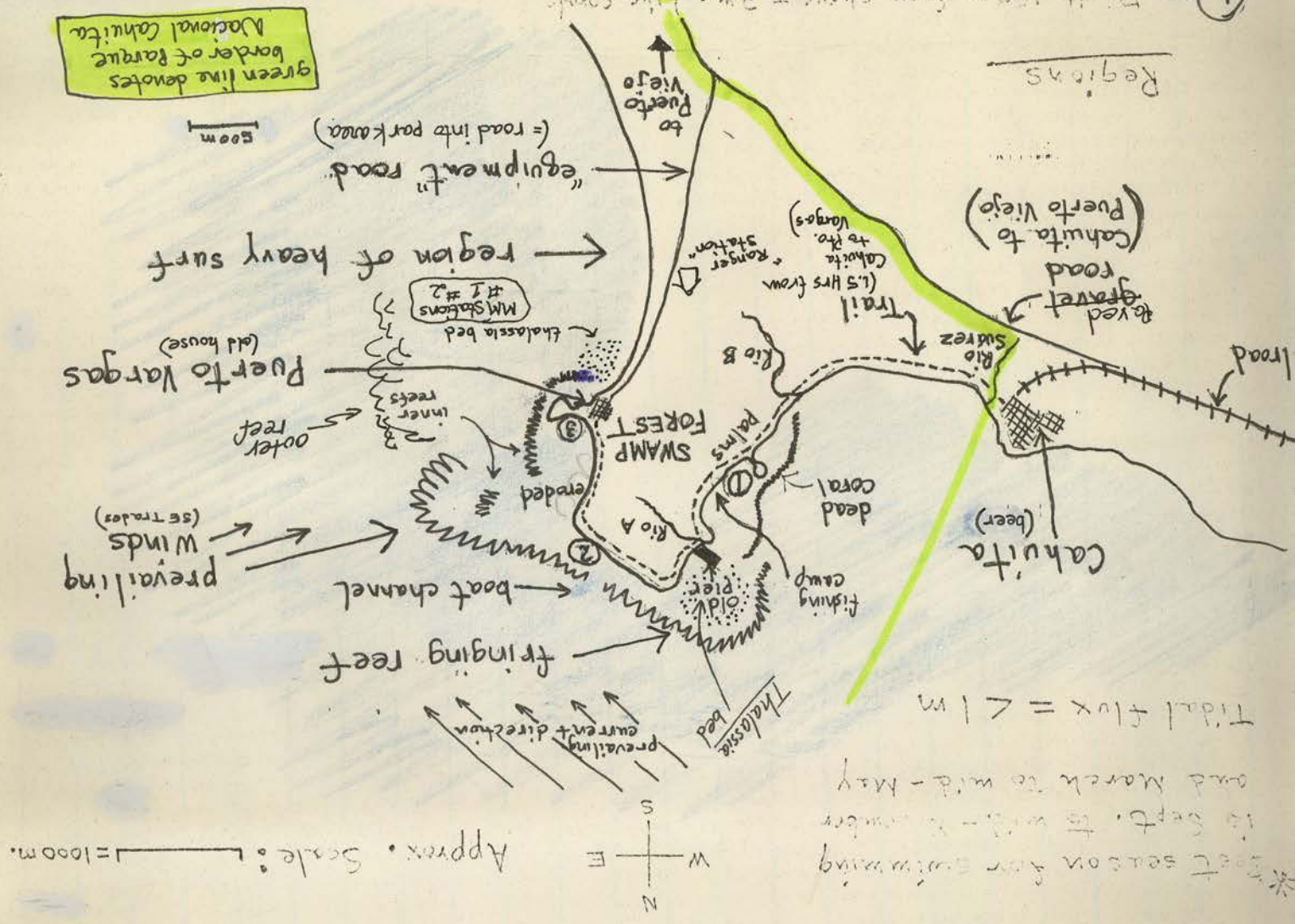
92° 40' W

Punta Cahuita

(Costa Rica - Caribbean side)

* Best season for swimming is Sept. to mid-October and March to mid-May

Tidal flux = < 1 m



- Turbidity**
- ① = Turbid (visibility 5-10m in mid-october)
 - ② = quite clear
 - ③ = moderate clarity
- Regions**
- ① = Depth 150m from shore = 2m. Life coral lacking due in part to discharge from rivers. Fishes poor. Thalassia = 0. Large fan corals abundant 200m offshore.
 - ② = 1 1/2 m deep. Thalassia abundant. Rich in invertebrates and fishes.
 - ③ = deeper, more surge. Fishes more diverse and abundant. Lobsters common.

Rio A = Rio Perezoso

Thalassia

Collections made on inner reef lagoon at Cahuita Reef. Approx. $9^{\circ}45'N$ $82^{\circ}48'W$. Brusca, Wotzer, Delaney.

LACM 86-98 Collections 1-5: Subtidal algal & coral rubble seawater washes, ~ 60 min, depth = 3-4 m. 3/4 April 1986. $H_2O T^{\circ} = 28^{\circ}C$ (500 m. from shore). Coll: R.C. Brusca & P.M. Delaney. ~ $9^{\circ}45'N$ $82^{\circ}48'W$

LACM 86-99 Collection #6: Same area. Underwater washes of algae covered rocks, swept by plankton net. ~ 45 min. Same coordinates as above.

LACM 86-100 Collection #7: Same area. Brown algae washes (mostly Sargassum).

LACM 86-102 Night light collection, 4 April 1986, ~ 300 m offshore, drifting in Zodiac just after dark (1830-1930). Coll: Wotzer, Delaney, Brusca Same coordinates as above. (collection #9)

LACM 86-101 Collection #8: Ocyropsis taken on shore.

April, 1986

LACM 86-103 Excursion to Monteverde, Reserva Biología del
: Bosque Nuboso de Monteverde. ca. $10^{\circ}18'N$ $84^{\circ}48'W$.

(Rio Guacinal)
7 April 1986. Isopods & insects collected under
logs in forest & freshwater ponds. Coll: R.C. Brusca,
R. Wetzer, P. Delaney. (also freshwater amphipods) (sample #10)

Pacific Costa Rica, Guanacaste Prov., Ocotal (just
So. Playa Cocos). $\sim 10^{\circ}33'N$ $85^{\circ}44'W$. 8 April 1986.
Misc. inverts (no isopods) taken from littoral. Coll:
R.C. Brusca, R. Wetzer, P. Delaney. (sample #11)

Costa Rica, ~~Pacific~~^{Atlantic} Coast, Cahuita Region.
G. Hendler, R. Wetzler, M. Morillo, Tenaro A. Acuña (CIMAR chemist),
& Carlos Gamboa (CIMAR tech.).

- LACM 86-109 7/26/86 Cahuita Coral Reef, inner reef flat. Snorkeling;
brown & green algae washes, under water with
plankton net. (sample #1)
- LACM 86-110 7/26/86 Cahuita Coral Reef, inner reef flat. Snorkeling.
coralline algae washes into bucket (w/ net).
(sample #2)
- LACM 86-118 7/27/86 Pt. Mona. Coral rubble wash over plankton
net, 4.5-11 m. OH breaking up coral w/ hammer.
(sample 3a)
- LACM 86-119 7/27/86 Pt. Mona. Coralline algae wash; 7-8 m; washed
at surface. (sample 3b)
- LACM 86-128 7/27/86 Pt. Viejo. Outer reef crest. Mostly Sargassum,
some coralline; 1 full plankton net collected from 6-11 m.
washed at surface in E+OH. (sample #4)

7/28/86 Cahuilla Reef.

LACM 86-132

Cahuilla, inner reef flat. Thalassia on coral rubble. One full plankton net of algal-Thalassia & rubble; washed at surface in EtOH. (2-4 m depth). (sample #5)

LACM 86-133

Cahuilla, inner reef flat. 2 Crab traps set at MUM's stations at 3m & 9m. (set on 7/26, midday; baited w/sardines in oil, canned). (sample #6)

LACM 86-134

Cahuilla, inner reef flat, coral rubble crush in 10 m. (sample #4)

LACM 86-135

Cahuilla, inner reef flat, MUM's station #1, night-light for 35 min. in rain (2300-2335 Hrs). (sample #8)

7/29/86

LACM 86-145

Cahuilla, outer crest of inner reef, 7-8m. Sargassum collected in plankton net & washed at surface in EtOH. (sample #9)

July, 1986

LACM 86-148

7/30/86

Cahuita, outer reef crest; 14-16 m; sponge-covered coral rubble; poor visibility; rubble washed on bottom with plankton net. (sample #10)

LACM 86-153

@ Cahuita, Thalassia bed between Pt. Vargas & Cahuita; $\frac{1}{2}$ m - 2 m depth; plankton net dragged across bottom in grass. (sample #11)

LACM 86-160

7/31/86

Pt. Viejo, inner reef (45-60 min. drive so. Cahuita); 0.5-1.5 m depth, 300-500 m from shore; mixed algae & rock scrapplings; collected in plankton net & washed at surface in formalin. (sample #12)

July, 1986

LACM 86-109 1-3 m, brown/green algal wash, inner reef flat, Punta Cahuita Reef, Parque Nacional Cahuita, Limon Prov, Costa Rica (9°44.18'N, 82°48.7'W). Leg. Regina Wetzer, 26 JUL 1986. 186-1091. #1	LACM 86-110 1-3 m, coralline algal wash, inner reef flat, Punta Cahuita Reef, Parque Nacional Cahuita, Limon Prov, Costa Rica (9°44.18'N, 82°48.7'W). Leg. Regina Wetzer, 26 JUL 1986. 186-1101. #2	LACM 86-118 4.5-11 m, coral rubble washings, coral reef SE of small island, off Punta Mona (Pta. Carreta), Limon Prov, Costa Rica (9°37.90'N, 82°36.97'W). Leg. Regina Wetzer, 27 JUL 1986. 186-1181. #3a
Los Angeles Natural History Museum	Los Angeles Natural History Museum	Los Angeles Natural History Museum
LACM 86-119 7-8 m, coralline algae, coral reef SE of small island, off Punta Mona (Pta. Carreta), Limon Prov, Costa Rica (9°37.90'N, 82°36.97'W). Leg. Regina Wetzer, 27 JUL 1986. 186-1191. #3b	LACM 86-128 6-11 m, coralline algae from Sargassum reef, outer crest of reef, N of Puerto Viejo, Limon Prov, Costa Rica (9°40.8'N, 82°45.53'W). Leg. Regina Wetzer, 27 JUL 1986. 186-1281. #4	LACM 86-132 2-4 m, Thalassia on coral rubble, shoaling seagrass flat, Punta Cahuita Reef, off Puerto Vargas, Limon Prov, Costa Rica (9°44.5'N, 82°48.68'W). Leg. Regina Wetzer, 28 JUL 1986. 186-1321. #5
Los Angeles Natural History Museum	Los Angeles Natural History Museum	Los Angeles Natural History Museum
LACM 86-133 3-9 m, 48 hour duration crab traps, inner reef, Punta Cahuita Reef, Parque Nacional Cahuita, Limon Prov, Costa Rica (9°44.52'N, 82°48.37'W). Leg. Regina Wetzer, 28 JUL 1986. 186-1331. #6	LACM 86-134 10 m, coral rubble wash, inner reef, Punta Cahuita Reef, Parque Nacional Cahuita, Limon Prov, Costa Rica (9°44.52'N, 82°48.37'W). Leg. Regina Wetzer, 28 JUL 1986. 186-1341. #7	LACM 86-135 Night light collecting, inner reef, Punta Cahuita Reef, Parque Nacional Cahuita, Limon Prov, Costa Rica (9°44.52'N, 82°48.37'W). Leg. Regina Wetzer, 28 JUL 1986. 186-1351. #8
Los Angeles Natural History Museum	Los Angeles Natural History Museum	Los Angeles Natural History Museum
LACM 86-145 7-8 m, Sargassum, outer crest of inner reef, Punta Cahuita Reef, off Puerto Vargas, Limon Prov, Costa Rica (9°44.18'N, 82°48.7'W). Leg. Regina Wetzer, 29 JUL 1986. 186-1451. #9	LACM 86-148 14-16 m, sponge covered coral rubble wash, outer crest of Outer Reef, Punta Cahuita Reef, off Puerto Vargas, Limon Prov, Costa Rica (9°44.0'N, 82°47.7'W). Leg. Regina Wetzer, 30 JUL 1986. 186-1481. #10	LACM 86-153 0.5-2 m, Thalassia bed, old pier, SW of Sloth River mouth, Punta Cahuita, Limon Prov, Costa Rica (9°44.7'N, 82°49.35'W). Leg. Regina Wetzer, 30 JUL 1986. 186-1531. #11
Los Angeles Natural History Museum	Los Angeles Natural History Museum	Los Angeles Natural History Museum
LACM 86-160 0.5-1.5 m, algae and rock scrapings, 300-500 m from shore, inner reef, off Puerto Viejo, Limon Prov, Costa Rica (9°39.8'N, 82°45.53'W). Leg. Regina Wetzer, 31 JUL 1986. 186-1601. #12		
Los Angeles Natural History Museum	Los Angeles Natural History Museum	Los Angeles Natural History Museum

Costa Rica, Atlantic coast, Cahuita area.

R.C. Brusca, P.M. Delaney, M.M. Marillo, Jenaro Acuña,
Carlos Gamboa, Jorge (CIMAR tech.), Bill Bullis (Weiler Ed.)

10/29/86. Pt. Vargas, Inner reef lagoon, R.C. Brusca &
P.M. Delaney. (Parque Nacional Cahuita)

LACM 86-196

Sample #1. Inner reef flat, 1-3 m. depth. Brown
algae washes. Approx. 15 min. (Delaney & Brusca
each fill one plankton net each). Some Sargassum,
but mostly other browns & a few Halimeda.

9°44.18'N, 82°48.7'W

LACM 86-197

Sample #2. Inner reef flat, 1-5 m depth,
coral rubble & stones turned over & washed
into plankton nets. ~20 min. of collecting.
Delaney & Brusca fill one plankton net each.

9°44.18'N, 82°48.7'W

LACM 86-198

Sample #3. Inner reef flat/lagoon,
Thalassia bed near old pier, 1-5 m,
some coral rubble present & washed;
some Caulerpa. Aegids attacking Paul.

9°44.5'N, 82°48.68'W

LACM 86-199

Sample #4. Beach in front of Park station/residence,
sandy beach near high tide line. Isopods emerging
to munch on Paul Delaney's toes. 9°44'N 82°48'W

10/29/86 (cont.)

LACM 86-200 Sample #5. Large gravid ♀ crab taken on road in front of Cabinas Vaz, Cahuita. (Cardisoma sp.).
 8°44'40"N 83°51'W

10/30/86 Pto. Vargas/Pto. Viejo area. R.C. Brusca & P.M. Delaney

LACM 86-201 Sample #6 Pto. Viejo, Thalassia bed on shore, .5-1 m depth. Thalassia and some other algae, including a thick carpet of fleshy stoloniferous green (blue-green?). Plankton nets scraped across surface of bed. Two ½ plankton net-falls.
 9°39'N 82°45'W

LACM 86-202 Sample #7. Pto. Viejo. Algae washes in 1-8 m. on reef crest and outer face. Numerous species of algae, including many large reds. Algal clumps pulled off rocks & coral, including holdfasts when possible.
 9°40'15"N 82°45'W

LACM 86-203 Sample #8. Pto. Vargas. Beach collection on sand in front of Park Administrator's house. Two Cecypode, one sand crab, several amphipods dug out of sand above water line.
 9°44'N 82°48'W

10/31/86 Cahuita, reef in front of Parque,
 Brusca & Delaney, morning dives near M.
 Murillo's most shoreward habitat structure.
 Surface $T^{\circ} = 27^{\circ}\text{C}$, $10' = 27^{\circ}\text{C}$, $20' = 25^{\circ}\text{C}$.

2ACM 86-204

Sample #9. Cahuita, Inner reef lagoon,
 isolated coral heads near M. Murillo's
 inner-most habitat. Live coral pieces taken,
 & later broken apart. Delaney & Brusca (2-4 m.)
 $9^{\circ}44.52'N$ $82^{\circ}48.37'W$

2ACM 86-205

Sample #10. Cahuita, inner reef lagoon,
 plankton net washes of misc. algae, coral
 rubble & rocks near M. Murillo's most shoreward
 habitat. Brusca & Delaney. (4 bags) (2-7 m.)
 $9^{\circ}44.18'N$ $82^{\circ}48.7'W$

2ACM 86-206

Sample #11. Cahuita, inner reef lagoon, two
 traps set for 24 hrs., one filled with
 tuna, the other with sardines in tomato
 sauce. Both nearly empty - contents eaten
 (or lost in surge?). No crustaceans
 noticed in traps. (2 m.) not so, plenty of ostracods
 + at least one isopod.
 $9^{\circ}44.52'N$ $82^{\circ}48.37'W$

Oct. 1986

11/1/86 Pto. Limon area, Moin, Playa
Portete & beach at Hotel Las Olas.
Brusca & Delaney.

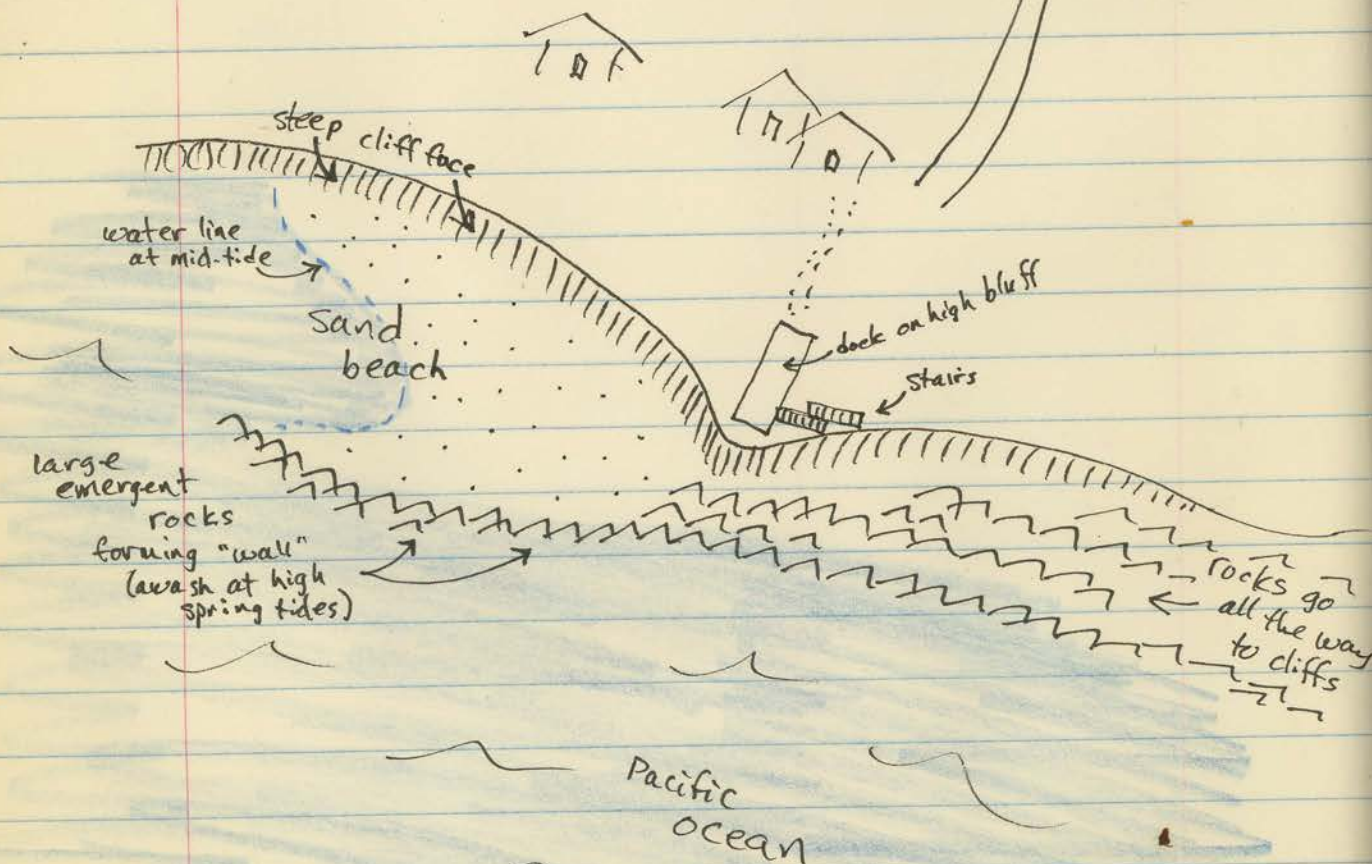
LACM 86-207

Sample #12. Algae covered rocks washed in
dilute solution of sea water & Matusalem
Rum. ~ 1 hr. each at Playa Portete &
beach at Hotel Las Olas, intertidal to 1m
10°00'30"N 83°02'W

Playa El Tránsito, Nicaragua



dirt
road to main
highway (to
coast Hwy -
#12)



Expedition #4
Dec./Jan. 1986/87

Leon Province

LACM 86-247

Nicaragua, Playa El Velero, So. of Puerto Sandino (= Pto. Somoza) - approx. due west of Managua. 27 Dec. 1986. Rocky high intertidal; barren rocks, very little algae. Coll. R. Brusca & A.M. Mackey (accompanied by John Southerland & Sonia Ortega).

Leon Prov

12°10'N 86°45'W

Nicaragua, Playa El Tránsito, ~30 mi So.

Playa El Velero (So. of Pt. Sandino).

28 Dec. 1986. Rocky upper-mid intertidal, well protected region of basaltic outcroppings. Modest algae cover. Coll. R. Brusca & A.M. Mackey (accompanied by John Southerland & Sonia Ortega).

12°10'N, 86°45'W

LACM 86-248

Costa Rica, Limón Province, Parque Nacional Cahuita

Sample #1.

LACM 87-3

Cahuita, Pt. Vargas area, inner reef lagoon, 1-3 m depth. Algal washes. Approx. 40 min.

(Wetzer & Brusca each fill one plankton net). Much

Sargassum, other browns, greens, corallines, coralline greens, Caulerpa, etc. 9°44.18' N

82°48.7' W. 8 Jan. 1987.

cks go
all the way
to cliffs

Sample #2. Same area as sample #1. 1-12 m depth.
HACM 87-4 Coral rubble washes. Brusca & wetzer each
"fill" plankton net (~30 min). Rubble with
little or no macroscopic algae washed; sediment
(and diatoms?) abundant on rubble. 8 Jan. 1987.
9°44.18'N, 82°48.7'W

Sample #3. Same area. 1-13 m depth. general collecting
of rocks, rubble, algae, etc. large rocks
HACM 87-5 & dead coral pieces turned & washed with
plankton net. wetzer hand collects ophiuroids
for Dr. Gordon. 8 Jan. 1987.
9°44.18'N, 82°48.7'W

Sample #4. Drift algae on shore washed in sea water
for amphipods. 8 Jan. 1987. (Mostly Sargassum
HACM 87-6 from recent storms 1-2 weeks ago).
9°44.18'N, 82°48.7'W

Sample #5. Skimming Thalassia bed of point; Brusca
HACM 87-7 & wetzer for ~20 min. .3-1 m depth. Two
kinds of sea grass present (mixed) in bed: a typical
broad-bladed Thalassia & a very narrow-bladed
species (almost round-bladed). 8 Jan. 1987
9°44'30"N, 82°4'22"W

Sample #6. : Same locality as sample #1 (at MMM station #1).

2ACM87-8

Two 8-gallon buckets of coral rubble collected, returned to Cabinas Vaz, and broken apart with a geology pick. 1-3 m. depth. Wetzer/Brusca.

8 Jan. 1986

9°44.18' N 82°48.7' W

General comments on Cahuita Reef. The reef is "healthier"-looking this trip than any of my previous trips (since April 1986). Although still heavily silted, there is more algae, superficially more variety of invertebrates, & perhaps more new small coral heads than I've noticed before. The visibility is also the best I've seen at Cahuita (8'-10'). Although there is evidence of recent storm activity, the sea was flat during these days. MMM is in a jolly good mood - at his best. From Xmas on (for several months) is the heavy tourist season in Costa Rica, coinciding with the start of the dry season - reservations for rooms & rental cars are a must.

Sample #7: Puerto Viejo, $9^{\circ}40'15''$ N $82^{\circ}45'$ W.
Collections on fore reef crest wall, &
along sand bottom-wall junction (same area
as sample #7 of October trip). Algae
modestly abundant, many gorgonians (mostly
Eunicea), surface texture highly rugose &
porous - breaks apart easily. No large
grazing herbivores seen (parrot fish, trigger
fish, etc.). Brusca/Wetzer dive for
 ~ 30 min., wash algae & scrape rock
surfaces with plankton nets - 1-6 m. depth.
9 Jan 1987.

Sample #8. Pto. Vargas - Cahuita - at MAM site #1
($9^{\circ}44.18'$ N $82^{\circ}48.7'$ W). Crustacea traps collected
in morning (9 Jan '87) after sitting out
overnight (16 hrs.). Two traps, one on
bottom, one ~ 1 m off bottom. Baited with
Tuna.

Sample #9. Same as #8, but trap tied ~ 1 m
below surface (~ 4 m. off bottom).
($9^{\circ}44.18'$ N $82^{\circ}48.7'$ W)

Limon Province

Sample #10. 10 Jan 1987. Puerto Limon area,
: N. of town, between Hotel Las Olas &
Hotel Matama, large tidepool (~100m X 20m)
below abandoned hotel on main coast road.
Tidepool with abundant Caulerpa (fernlike
& grapelike species), Halimeda, & some odd
reds & browns. shallow to 1m. depth.
Brusca/Wetzer. Large lobster fishery
off shore. Viva isopodos.

10°00.5' N, 83°02' W

Sample #11. 12 Jan. 1987 Pacific Coast, Puntarenas
Prov., N. edge Parque Nacional Manuel Antonio
(~10 km So. Quepos). Scuba collection at No.
base of Pt. Cathedral, 10'-15'. Basaltic rocks
on fine sand/mud substrate. Minimal algal
cover. Gorgonians, Urchins, Phataria
pyramidata, Diadema mexicanum, purple
solitary ascideans (common) - Rhopalium?
Pacificorgia sp., many grunt, - some
parrotfish, small puffer fish. Visibility
poor, ~10'. H₂O T° approx. 28°C.
Rocks scrapped & washed into plankton
nets. Brusca/Wetzer.

9°22' N 84°8' W

LACM 86-196	1-3 m, brown algal wash, inner reef flat, Punta Cahuita Reef, Parque Nacional Cahuita, Limon Prov, Costa Rica (9°44.18'N, 82°48.7'W). Leg. R.C. Brusca & P.M. Delaney, 29 OCT 1986. 186-1961.	LACM 86-197	1-5 m, coral rubble and stone wash, inner reef flat, Punta Cahuita Reef, Parque Nacional Cahuita, Limon Prov, Costa Rica (9°44.18'N, 82°48.7'W). Leg. R.C. Brusca & P.M. Delaney, 29 OCT 1986. 186-1971.	LACM 86-198	1-5 m, coral rubble wash, Thalassia bed near pier, inner reef flat, Punta Cahuita Reef, Parque Nacional Cahuita, Limon Prov, Costa Rica (9°44.5'N, 82°48.68'W). Leg. R.C. Brusca & P.M. Delaney, 29 OCT 1986.
LACM 86-199	0 m, sandy beach near high tide line, in front of park station, Parque Nacional Cahuita, Limon Prov, Costa Rica (9°44'N, 82°48'W). Leg. R.C. Brusca & P.M. Delaney, 29 OCT 1986. 186-1991.	LACM 86-200	Elev 0 m, on road, in front of Cabinas Vaz, Cahuita, Limon Prov, Costa Rica (9°44.7'N, 83°51'W). Leg. R.C. Brusca & P.M. Delaney, 29 OCT 1986. 186-2001.	LACM 86-201	0.5-1 m, Thalassia and algae, Puerto Viejo, Limon Prov, Costa Rica (9°39'N, 82°45'W). Leg. R.C. Brusca & P.M. Delaney, 30 OCT 1986. 186-2011.
LACM 86-202	1-8 m, algae and algae holdfasts wash, on outer reef crest, Puerto Viejo, Limon Prov, Costa Rica (9°40.3'N, 82°45'W). Leg. R.C. Brusca & P.M. Delaney, 30 OCT 1986. 186-2021.	LACM 86-203	0 m, sandy beach near high tide line, in front of park station, Puerta Vargas, Parque Nacional Cahuita, Limon Prov, Costa Rica (9°49'N, 82°48'W). Leg. R.C. Brusca & P.M. Delaney, 30 OCT 1986. 186-2031.	LACM 86-204	2-4 m, isolated coral heads, inner reef lagoon, Punta Cahuita Reef, Parque Nacional Cahuita, Limon Prov, Costa Rica (9°44.52'N, 82°48.37'W). Leg. R.C. Brusca & P.M. Delaney, 31 OCT 1986. 186-2041.
LACM 86-205	2-7 m, algae, coral rubble, & rock wash, inner reef lagoon, Punta Cahuita Reef, Parque Nacional Cahuita, Limon Prov, Costa Rica (9°44.18'N, 82°48.7'W). Leg. R.C. Brusca & P.M. Delaney, 31 OCT 1986.	LACM 86-206	2 m, crab traps, inner reef lagoon, Punta Cahuita Reef, Parque Nacional Cahuita, Limon Prov, Costa Rica (9°44.52'N, 82°48.37'W). Leg. R.C. Brusca & P.M. Delaney, 31 OCT 1986. 186-2061.	LACM 86-207	Intertidal-1 m, algae covered rock wash, Playa Portete and beach at Hotel Las Olas, Puerto Limon, Limon Prov, Costa Rica (10°00.5'N, 83°02'W). Leg. R.C. Brusca & P.M. Delaney, 1 NOV 1986. 186-2071.

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LACM 86-247

Intertidal, rocky, Playa El Veleiro, S. of Puerto Sandino (= Dept, Nicaragua (12°10'N, 86°45'W). Leg. R. Brusca, A.M. Mackey, 27 DEC 1986. 186-2471.

LACM 86-248

Intertidal, rocky, Playa El Veleiro, S. of El Transito, 30 mi. S of El Dept, Nicaragua (12°10'N, 86°45'W). Leg. R. Brusca, A.M. Mackey, 28 DEC 1986. 186-2481.

LACM 87-3

1-3 m, algal washes, inner reef lagoon Pto. Vargas, Parque Nacional Cahuita, Atlantic coast, Limon Prov, Costa Rica (9°44.18'N, 82°48.71'W). Leg. R. Brusca & R. Wetzer, 8 JAN 1987. 187-31.

LACM 87-6

Los Angeles Natural History Museum

LACM 87-5

1-13 m, rock, coral rubble, algal washes, inner reef lagoon, Pto. Vargas, Parque Nacional Cahuita, Atlantic coast, Limon Prov, Costa Rica (9°44.18'N, 82°48.71'W). Leg. R. Brusca & R. Wetzer, 8 JAN 1987. 187-51.

LACM 87-9

Intertidal, shore drift algal washes, Pto. Vargas area, Parque Nacional Cahuita, Atlantic coast, Limon Prov, Costa Rica (9°44.18'N, 82°48.71'W). Leg. R. Brusca & R. Wetzer, 8 JAN 1987. 187-61.

LACM 87-7

Intertidal-1 m, skimming Thalassia bed off point, inner reef lagoon, Pto. Vargas area, Parque Nacional Cahuita, Atlantic coast, Limon Prov, Costa Rica (9°44.51'N, 82°48.37'W). Leg. R. Brusca & R. Wetzer, 8 JAN 1987. 187-71.

LACM 87-11

1 m, Crustacea trap baited with tuna, inner reef lagoon, Pto. Vargas area, Parque Nacional Cahuita, Atlantic coast, Limon Prov, Costa Rica (9°44.18'N, 82°48.71'W). Leg. R. Brusca & R. Wetzer, 9 JAN 1987. 187-111.

LACM 87-12

Intertidal-1 m, large tidepool with Caulerpa & Halimeda, between Hotel Las Olas and Hotel Matama, N of Puerto Limon, Atlantic coast, no locality (10°00.51'N, 83°02'W). Leg. R. Brusca, R. Wetzer, 9 JAN 1987. 187-91.

LACM 87-13

3-5 m, basaltic rocks on fine silt substrate, N base of Pt. Cathedral, 10 km S of Quepos, Para. Nac. Manuel Antonio, Pacific, Puntarenas Prov, Costa Rica (9°22'N, 84°08'W). Leg. R. Brusca, R. Wetzer, 12 JAN 1987.

Los Angeles Natural History Museum Los Angeles Natural History Museum Los Angeles Natural History Museum

Station Data from expedition #5: Hendler & Peck

LACM 87-44

1-3 m, algae, on and shoalward of inner reef crest, Punta Cahuita Reef, off Puerto Vargas, Limon Prov., Costa Rica
(9 44.18°N, 82 48.7°W)
Coll. G. Hendler & R. W. Peck (CR-87-5)
20 May 1987

LACM 87-45

1-3 m, coral rubble, on and shoalward of inner reef crest, Punta Cahuita Reef, off Puerto Vargas, Limon Prov., Costa Rica
(9 44.18°N, 82 48.7°W)
Coll. G. Hendler & R. W. Peck (CR-87-6)
20 May 1987

LACM 87-46

1-3 m, live coral, on and shoalward of inner reef crest, Punta Cahuita Reef, off Puerto Vargas, Limon Prov., Costa Rica
(9 44.18°N, 82 48.7°W)
Coll. G. Hendler & R. W. Peck (CR-87-7)
20 May 1987

LACM 87-47

1-2 m, Thalassia, reef flat shoalward of "Acroporita", Punta Cahuita Reef, off Puerto Vargas, Limon Prov., Costa Rica
(9 44.37°N, 82 48.70°W)
Coll. G. Hendler & R. W. Peck (CR-87-8)
20 May 1987

LACM 87-48

1-3 m, coral rubble, reef flat shoalward of "Acroporita", Punta Cahuita Reef, off Puerto Vargas, Limon Prov., Costa Rica
(9 44.37°N, 82 48.70°W)
Coll. G. Hendler & R. W. Peck (CR-87-10)
20 May 1987

LACM 87-58

1 m, rubble and sand, shoalward of inner reef, Punta Cahuita Reef, off Puerto Vargas, Limon Prov., Costa Rica
(9 44.5°N, 82 48.68°W)
Coll. G. Hendler & R. W. Peck (CR-87-20)
21 May 1987

LACM 87-65

0-1 m, Thalassia, shoalward of inner reef crest, Punta Cahuita Reef, off Puerto Vargas, Limon Prov., Costa Rica
(9 44.70°N, 82 48.68°W)
Coll. G. Hendler & R. W. Peck (CR-87-27)
23 May 1987

LACM 87-44

1-3 m, algae, on and shoalward of inner reef crest, Punta Cahuita Reef, off Puerto Vargas, Limon Prov., Costa Rica
(9 44.18°N, 82 48.7°W)
Coll. G. Hendler & R. W. Peck (CR-87-5)
20 May 1987

LACM 87-45

1-3 m, coral rubble, on and shoalward of inner reef crest, Punta Cahuita Reef, off Puerto Vargas, Limon Prov., Costa Rica
(9 44.18°N, 82 48.7°W)
Coll. G. Hendler & R. W. Peck (CR-87-6)
20 May 1987

LACM 87-46

1-3 m, live coral, on and shoalward of inner reef crest, Punta Cahuita Reef, off Puerto Vargas, Limon Prov., Costa Rica
(9 44.18°N, 82 48.7°W)
Coll. G. Hendler & R. W. Peck (CR-87-7)
20 May 1987

LACM 87-47

1-2 m, Thalassia, reef flat shoalward of "Acroporita", Punta Cahuita Reef, off Puerto Vargas, Limon Prov., Costa Rica
(9 44.37°N, 82 48.70°W)
Coll. G. Hendler & R. W. Peck (CR-87-8)
20 May 1987

LACM 87-48

1-3 m, coral rubble, reef flat shoalward of "Acroporita", Punta Cahuita Reef, off Puerto Vargas, Limon Prov., Costa Rica
(9 44.37°N, 82 48.70°W)
Coll. G. Hendler & R. W. Peck (CR-87-10)
20 May 1987

LACM 87-58

1 m, rubble and sand, shoalward of inner reef, Punta Cahuita Reef, off Puerto Vargas, Limon Prov., Costa Rica
(9 44.5°N, 82 48.68°W)
Coll. G. Hendler & R. W. Peck (CR-87-20)
21 May 1987

LACM 87-65

0-1 m, Thalassia, shoalward of inner reef crest, Punta Cahuita Reef, off Puerto Vargas, Limon Prov., Costa Rica
(9 44.70°N, 82 48.68°W)
Coll. G. Hendler & R. W. Peck (CR-87-27)
23 May 1987

Aug. 18-22, 1987

19 Aug. 1987

Cahuita National Park, Pto. Vargas area.

Collections made in area near M. Morillo's station #1. Moderately high waves & much rain have reduced visibility to near zero this trip. Although today is good weather, the previous few weeks have been very wet. The area between MMH sta. #1 and the Thalassia bed/inner reef was best (~8" visibility); the rest of the area was very bad (~1" visibility) so we avoided it. H_2O $T^\circ \sim 3'$ from surface = $30^\circ C$.

Collectors: R.C. Brusca, R. Wetzer, Giovanni Bassey (a student at U.C.R. & Morillo's assistant at CIMAR). Joe DeVita along for the ride & cheap thrills.

LACM 87-155
 $9^\circ 44.18' N$
 $82^\circ 48.4' W$

Sample #1. Algae washes in 3'-10'. Mostly Sargassum & a Halimeda. Washed into plankton nets underwater, for ~30 min. (Brusca & Wetzer @ with a net.)

LACM 87-156 Sample #2. Coral rubble washes in 3'-10'.

Brusca & Wetzer each with a net for ~30 min.

LACM 87-157 Sample #3. Coral rubble collection, broken apart with hammer at cabins; ~5 gallons of rubble.

$9^\circ 44.37' N$
 $82^\circ 48.70' W$

LACM 87-158 Sample #4. Misc. rock & algae wash near shore, inside inner reef by Thalassia bed (near "old house" on S. side of point.) This was a good sample

and contained numerous isopods and small crabs, including swimming crabs & a Rocinela that was biting Brusca's leg (~1cm. long).

LACM
87-159

Sample #5. Coenobita collected near "Ranger Station" by Joe DeVita.

LACM 87-160

Sample #6. "Cand" crabs collected on road to station. Giovanni identified them as Geotice lateralis. (This sample not labeled as "sample 6", but simply as "Cahuíta, etc."). Bright brick red carapace.

LACM 87-161

Sample #7. Millipede from lawn at Cabinas Vaz, Cahuíta. (same as I collected at Monteverde years ago? Identified by Hogue).

Day ended w/ 2.5 Hrs. of sample processing at Cabinas. DeVita broke apart most of the rubble. No rain today - a few mosquitos tonight, but not bad. DeVita saw pack of howler monkeys today near end of park road. Last night we saw either a Coati or an anteater (Giovanni thinks it was an ant-eater).

20 Aug. 1987

ACM 87-162 Sample #8. Pto. Viejo. Algae washes (and a few small rocks) in front of "Restaurant Stanford". Depth ~ 1m. Coll: Giovanni Bassey.
9°40.3'N 82°45'W

ACM 87-163 Sample #9. Pto. Viejo. Plankton net scraped over top of algal mat in front of "Restaurant Stanford". Mixed stand of numerous algae species (Caulerpa, various greens & reds, etc.) plus Thalassia and two other thin-bladed, "reedlike" grasses. Sample of algae taken for identification. Brusca/Wetzer. 9°40.3'N 82°45'W

Pto. Viejo.

ACM 87-164 Sample #10. ~ Plankton net scraped across surface of Thalassia bed. A few other algae were mixed in, but primarily Thalassia (perhaps 99% by cover Thalassia). Brusca/Wetzer. 9°40.3'N 82°45'W

notes: Temperature of sand surface on white sand beach (frente al "Restaurante Stanford") = 44 °C. Temperature on black sand beach just N. of town = 47 °C.

21 Aug 1987
LACM 87-165: Sample #11. Pto Vargas (Cahuita Park). General sampling in area of Murillo's stations #1 & #2. 0.5-10 m depth. Rock & algae washes, coral rubble washes, etc. Two plankton nets for ~ 35 min. Brusca/Wetzer.

This was the general survey collection, to pick up the pods missed in the algae & coral rubble collections. *Diadema* present > 2.5 m (below thermocline). Good visibility today, ~ 2 m. It's amazing how the water turbidity can change so quickly, overnight, when the surf dies down & the rains let up.

This sample filled 8 plastic bags, including one with a red-orange cucumber only.

9° 44.52' N 82° 48.37' W

26 Aug 1987

Panama (Atlantic), San Blas Is.

Grass Island

Sample #15. Intertidal hand collection from deeping

and filled poly net - small red w. *Erythraea*?

Brusca/Wetzer in 9° 54.8' N 82° 33.3' W

21 Aug. 1987

Pto. Limon area. Rock/algae washes in big tidepool (same tidepool as sample #10 of 10 Jan 1987). Lots of Thalassia, an encrusting brown, and a jointed calcareous red alga. No Sargassum, Caulerpa or Halimeda, like last January. 5 bags taken from this sample, including some splash zone Littorina & Nerita.

LACM 87-166 Sample #12. Bruce/Wetzer $10^{\circ} 00.5' N$
 $83^{\circ} 02' W$

LACM 87-167 Sample #13. Algae samples from Pto. Viejo (from sample #9 area).

LACM 87-168 Sample #14. Trap sample - baited with tuna & left out overnight, $9^{\circ} 44.18' N$ $82^{\circ} 42.7' W$

26. Aug. 1987

Panama (Atlantic), San Blas Is.

Grass Island

SDNHM
A. 0013

Sample #15. Intertidal hand collection from decaying sand filled palm root - small vial w. Excirolana?
Bruce/Wetzer ca. $78^{\circ} 56.8' W$ $9^{\circ} 33.3' N$

SDNHM

A.0013

Sample #16. Subtidal algal/rock washes / *Thalassia*
with plankton net, 1-4 m. Brusca/Wetzer
ca. $9^{\circ}33.3'N$ $78^{\circ}56.8'W$

Malunega Island

SDNHM

A.0013

Sample #17. Night light of Hotel San Blas pier
0-1 m. Brusca/Wetzer
ca. $9^{\circ}33.0'N$ $78^{\circ}57.4'W$

27. Aug. 87

Day Island

SDNHM

A.0013

Sample #18. Algal and rock washes w. plankton
net, 2-6 m off ship wreck. Brusca/Wetzer
ca. $9^{\circ}33.3'N$ $78^{\circ}56.8'W$

SDNHM

A.0013

Sample #19. Intertidal hand collection of crabs and
isopods (*Cirolana* sp.?) from under shore
debris. Brusca/Wetzer ca. $9^{\circ}33.3'N$ $78^{\circ}56.8'W$

SDNHM

A.0013

29. August 87

Panama, (Pacific), Isla Taboga

Sample #20. 1st rocky point W. of Hotel
Taboga. Intertidal rock washes. Brusca/Wetzer.
ca. $9^{\circ}32'W$ $8^{\circ}54'N$