

FIELD TRIP GUIDE

THE SAN JOSE CALCAREOUS SILT MEMBER OF THE MANZANILLA FORMATION, MANZANILLA BAY

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MANZANILLA Formation

Author of name: WARING (G.A.) (1926). The geology of the Island of Trinidad B. W. I. The John Hopkins Univ., studies in Geology no 7, p. 59

Type locality: Manzanilla Bay in the south to just north of Point Paloma, on the east coast of Trinidad.

Thickness: About 6,300 feet.

The upper and lower contacts are subjective although the contact with the Brasso/Tamana is unconformable in places. Lithologically this Formation is charcterised by the predominantly blue-black colours of the silty clays, by the abundance of glauconite in some of the sands, and by the silts with lignitic beds, fine sand conglomerates in the upper parts.

The Manzanilla has been sub-divided into 3 members: the San Jose Calcareous Silt, the Montserrat Glauconitic Sandstone and the Telemague Sandstone.

The type section for the San Jose Calcareous Silt is best exposed in the San Jose River, but outcrops can be found in the Forres Park area and in Manzanilla Bay. Typically it is an inky blue calcareous silt, with pockets of broken mollucscs, thin fine grained quartzoses and glauconitic sands.

The Montserrat Glauconitic Sandstone's type section is north of the bridge on the Gran Couva Road over the Savanneta River. It is a blue-green massive rock that weathers olive-green and brown. The matrix also contains small angular to edge rounded fragments of shells and scattered rounded quartz grains. Other fossils collected include echinoids, bryozoans, ostracods and fish remains.

The Telemaque Sandstone has its type section in the Telemaque River north of the old Brasso Railway Station.

Geographically it is found along the north flank of the Central Range and extends from the east coast at Manzanilla Bay (and into Block 2ab) westward into Venezuela in the Gulf of Paria. The Los Bajos Fault traditionally marks the southern limit of this Formation, but recent work has suggested that it represents a shallow water facies of the Cruse Formation and both are age equivalent.

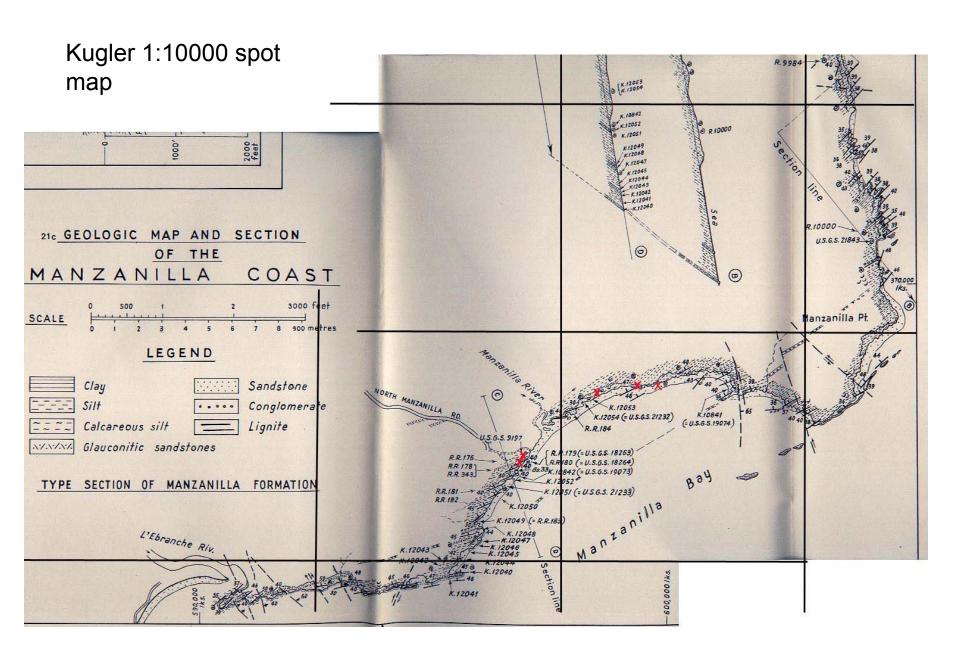
In onshore Trinidad no hydrocarbons have been found except in Flanagin#1, In the North Marine and North Field area of Trinmar commercial quantities have been found.

37		FORAMINIFERAL ZONES	NORTHERN BASIN	CENTRAL RANGE	SOUTH
STOCENE		Globorotalia t. truncatulinoides **		CEDROS FM.	CED
BLEI:				Chin Chin Clay Mbr.	· · · · · · · · · · · · · · · · · · ·
3	LATE	runcatulinoides cf. tosaensis *	TALPARO FM.	Caparo Clay Mbr.	
EN	MIDDLE	" miocenica *	Comparo Rd. Beds	Uurham Sand Mbr.	E S S
10C			Melaio Beds SPRINGVALE FM.	Chickland Clay Mbr.	
ld	EARLY	. שמה בה המלוח ביי היי היי היי היי היי היי היי היי היי		Gransauli Clay Mbr.	O.Morne Lot 7 Sil
		Neogloboquadrina dutertrei *		Telemaque Sst. Mbr.	L'ENFER\L.Morne FM. Morne l'E
	LATE		MANZANILLA FM.	Montserrat Glauc, Sst. Mbr.	FOREST Forest S
3		Globorotalia acostaensis *		San Jose Calc. Silt Mbr.	SE
N		" menardii	ĺ	Upper Concord Calc. Silt Mbr. Guaracara Impertante Mbr.	
3		" mayeri	LAMANA FM.	Lower Concord Calc. Silf Mbr.	Z Z II
Э	MIDDLE	" fohsi robusta			***************************************
0		" fohsi lobata		Navarro River Clay Mbr.	\
1		" fohsi fohsi	BRASSO /	Corial Lst	
W		" fohsi peripheroronda		Biche Lst. Tunnel Hill	1 Silty Clay Mbr.
		Praeorbulina glomerosa	₹ <u>Σ</u>	Esmeralda Calc. Clay Mbr.	ly Mbr.

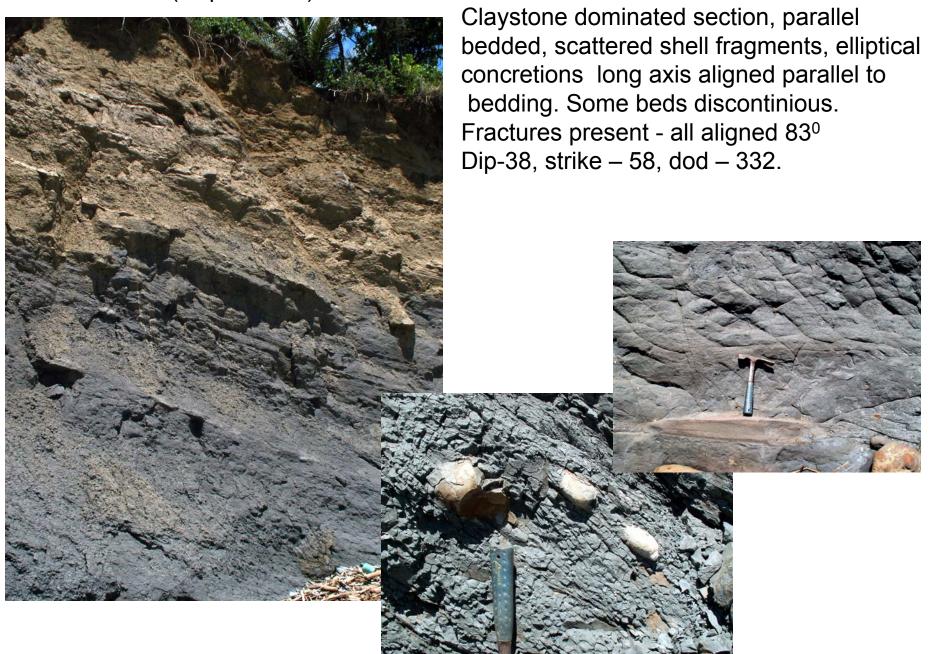
The dark calcareous silts are rich in small molluscs and foraminifera together with other organisms (e.g. the bryozoan Cupuladria). The environment is open marine, inner sublittoral. In the silts will be found numerous specimens of the Manzanilla marker pelecypod *Noetia trinitaria* while another characteristic species, Chione walli occurs in the silts and also in harder claystone concretions. In many places in the silts bioturbation is strongly visible with tiny Corbula sp. and other pelecypods concentrated in the burrows. Towards the point to the South the silt becomes more glauconitic and somewhat conglomeratic and finally forms a resistant bed constituting the Point itself. Eastwards across Manzanilla Bay can be seen the same bed forming a number of islands offset by faulting and finally Manzanilla Point itself.

Excursion #1. Manzanilla Coast. J.B. Saunders, Trans. 4th Caribbean Geological Conference, 1965,p 427-429





Location UTM (Nap. Datum): E 0715830.202 N 116344.982



Bivalve and gastropod fragments

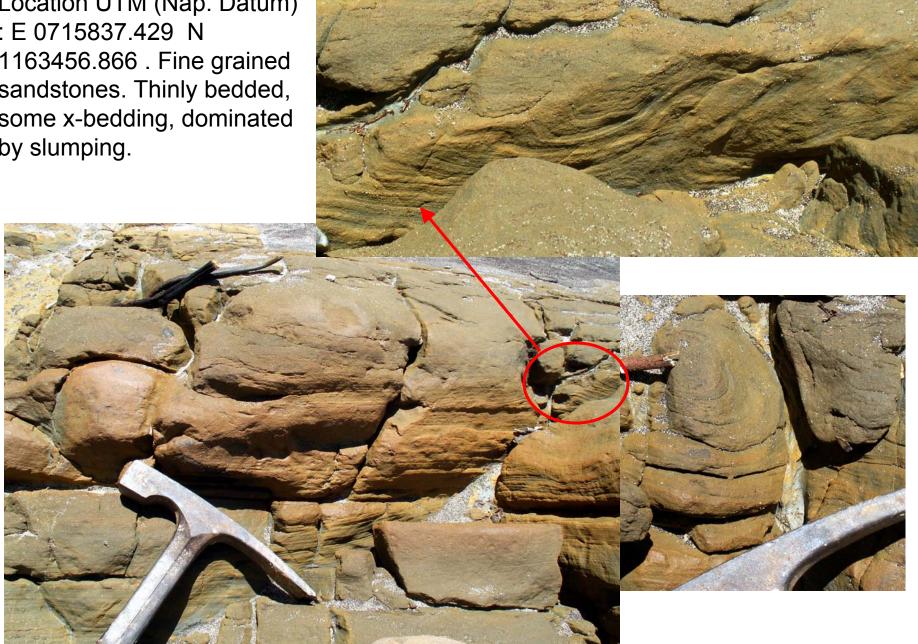








Location UTM (Nap. Datum) : E 0715837.429 N 1163456.866 . Fine grained sandstones. Thinly bedded, some x-bedding, dominated by slumping.



Close-up of claystone (San Jose Cacl. Silt), it is an inky blue calcareous silt, with pockets of broken mollucscs

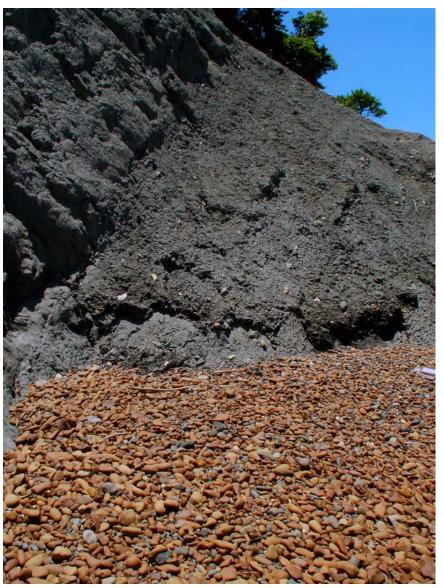


Massive claystone has parallel vertical fractures and conchoidal fracture. No shell fragments are visible.





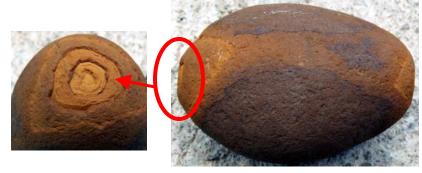
Location UTM (Naparima Datum) : E 0716317.647 N 1163786.146



Thinly bedded claystone with elliptical concretions aligned parallel to bedding. The beach is made up of concretions eroded from the rock.



Close-up of concretions found on beach showing concentric structure





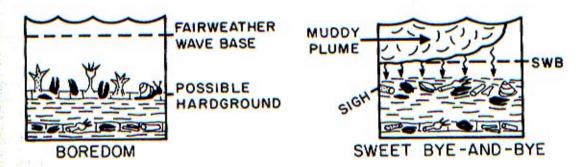
VF sandstone, poorly bedded, parallel laminated in places, slumped, flame structures, grades upwards into siltstones Location UTM (Nap. Datum) : E 0716393.077 N 1163759.371

Conglomeratic bed alternating with coarse X-bedded sandstones (poorly sorted, sub ang-sub rnd, lithic frags,qtz)



SUDDEN DEATH

BY QUIET SUFFOCATION



BY RUDE UPROOTING

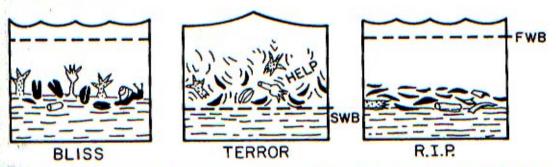
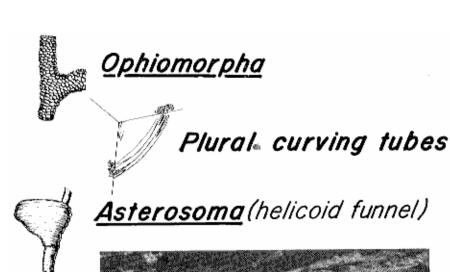


Fig. 14.—Two different origins of shell-rich layers by rare events. SWB indicates storm-wave base; FWB indicates fair-weather wave base. (Lower adapted from Specht and Brenner, 1979.)



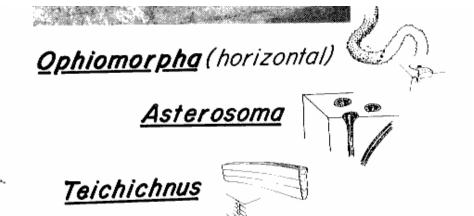


Fig. 4. Lower Shoreface. This facies is characterized by fine- to medium-grained, dirty sand and an abundance of trace fossils. The vertical arrangement of trace fossils illustrated here represents the general vertical sequence of traces in the lower shoreface.

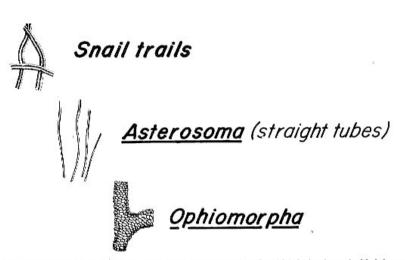


Fig. 3. Offshore-shoreface transition. This facies is characterized by thick beds of crossbedded fine sand. Burrowing is much less than in facies above and below. The trace fossils shown are generally the only forms and these are not abundant.

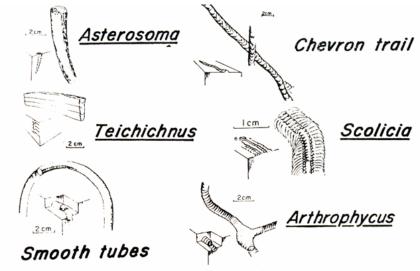


FIG. 7.11 Offshore facies. This facies is composed of very thin-bedded, highly burrowed siltstone. The most abundant trace fossils are illustrated and they show no obvious preferred vertical segregation.



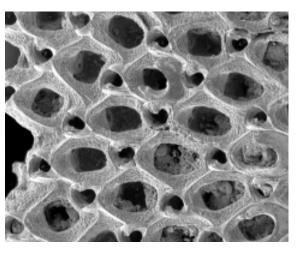
Discoperella umbrellata



Corbula gibba is found from the low shore to considerable depths in the sublittoral, living in muddy sand and gravel



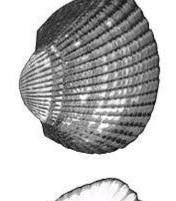
Chione



Cupuladria canariesis



Asterosoma



Anadara - From inshore brackish waters down to 30 m on sand,



LOCATION:	PAGE:	
DATE:	GEOLOGIST:	

THICKNESS	GRAIN SIZE >VC VC C M F VF SLT CL							BED SURFACE	LAMINAE GEOM.	SED. STRUCT	NOTES	PALEO CURRENT	SAMPLES & PHOTOS	
	>VC	VC	С	М	F	VF	SLT	CL						