

LES RUDISTES DU CRÉTACÉ INFÉRIEUR

**EVOLUTION
STRATIGRAHIE
PALEOECOLOGIE**

Jean-Pierre Masse et al.

LES RUDISTES DE QUOI S'AGIT- IL ?

CLASSE DES BIVALVES

**ORDRE DES HIPPURITIDA
DEUX SOUS-ORDRES
QUINZE FAMILLES**

**LONGEVITE OXFORDIEN –
MAASTRICHTIEN 100 millions d'années**

D'OÙ VIENNENT T- ILS?

**Ils dérivent de
formes à byssus et coquille aragonitique :
MEGALODONTIDAE**



MEGALODONTIDAE



PINNA

HIPPURITIDA

**Perte du byssus et
acquisition d'une coquille à deux couches
calcitique externe et aragonitique interne**

Immobilité



Alcide d'Orbigny



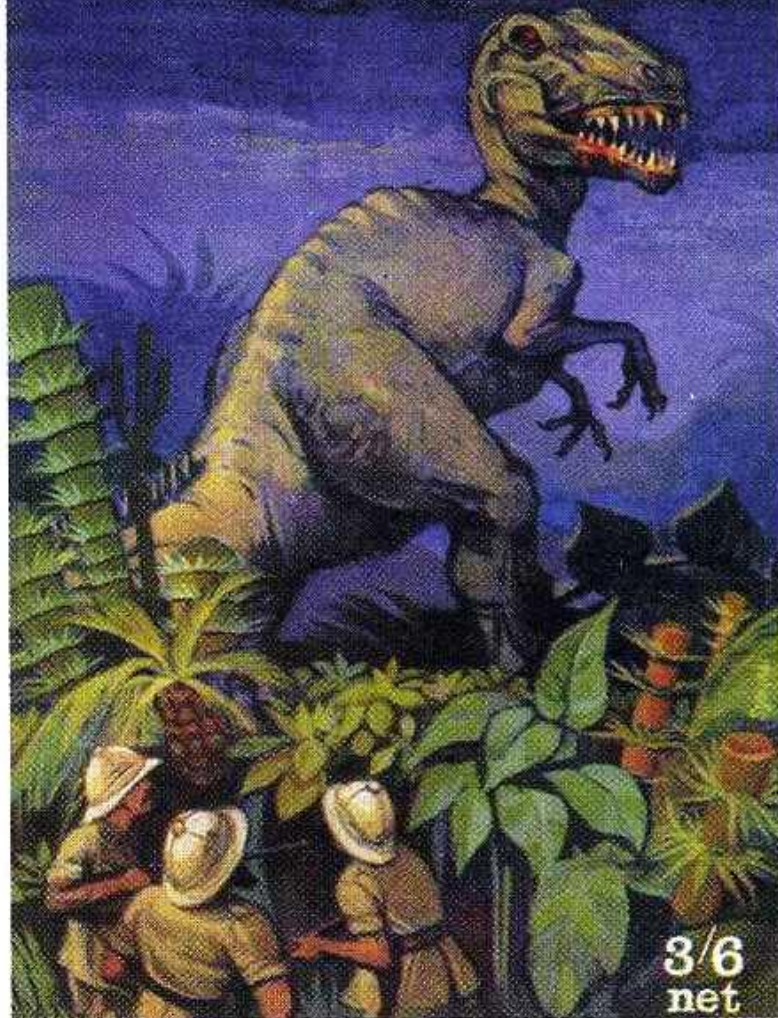
Philippe Matheron



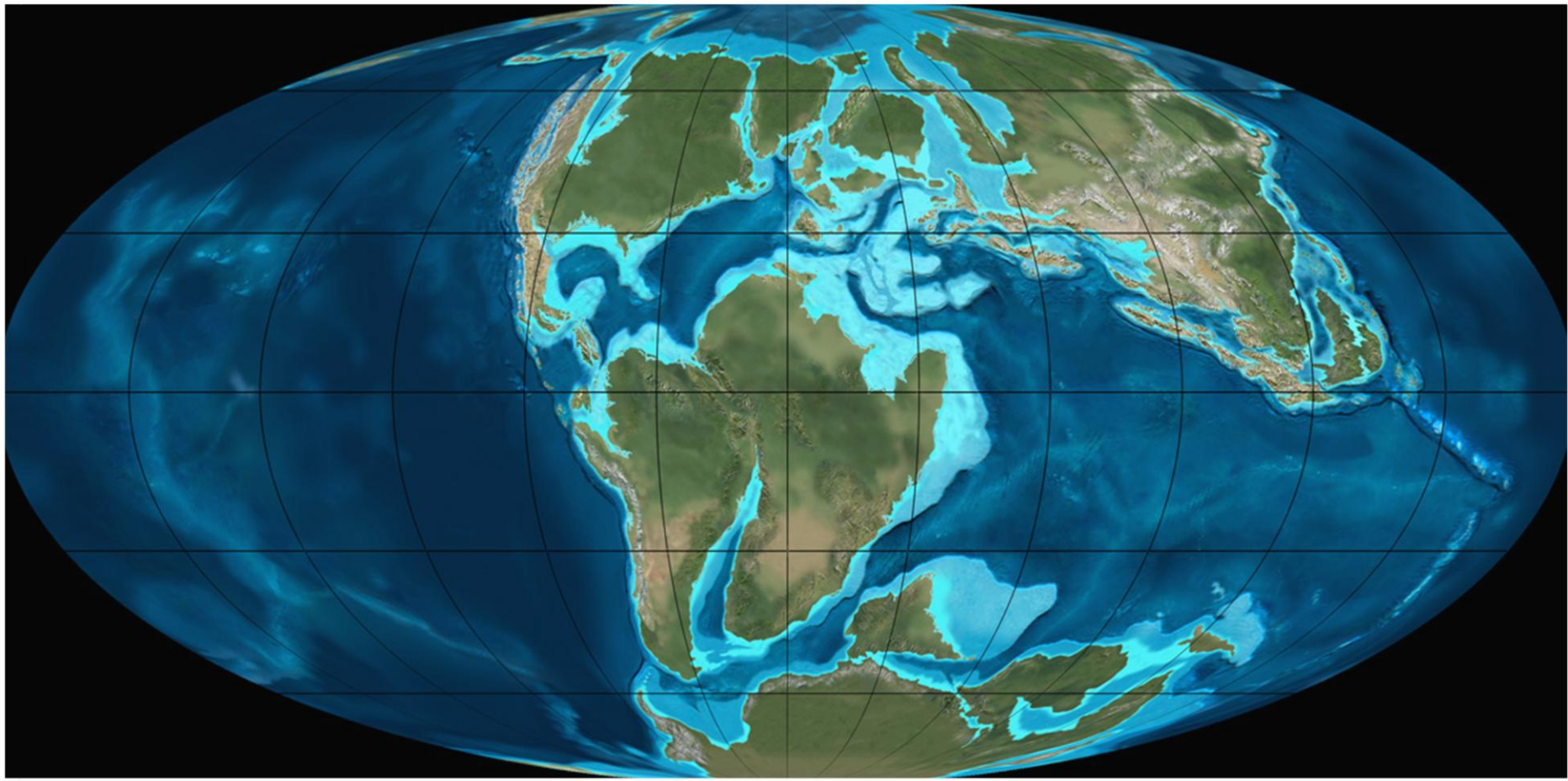
Henri Douvillé

THE LOST WORLD

Sir Arthur Conan Doyle

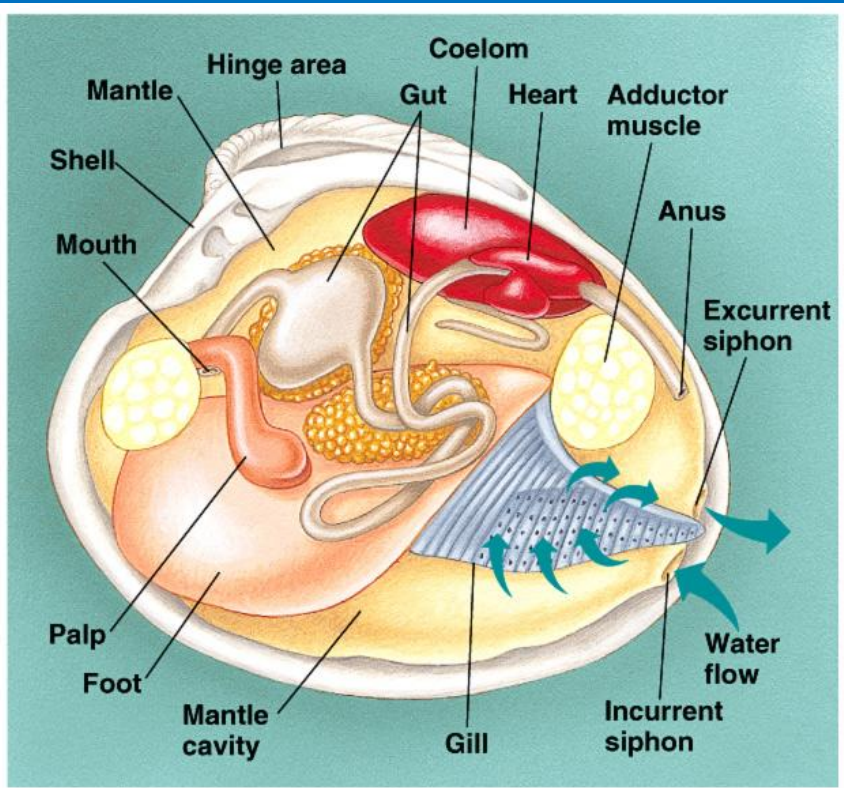


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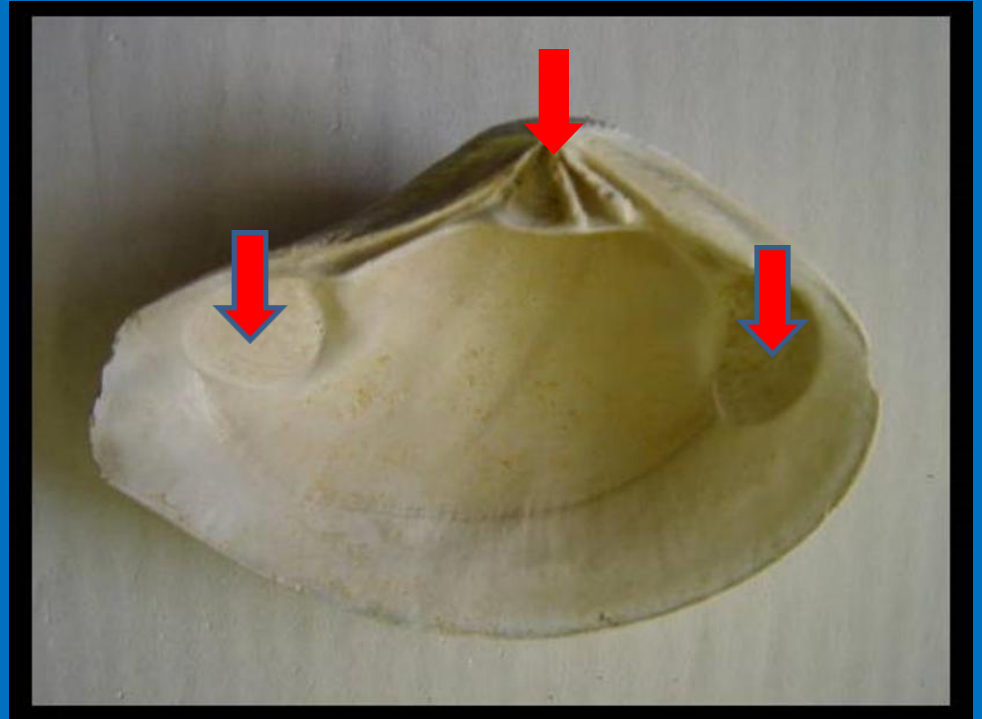


- Crétacé inférieur 120 Ma

Anatomie d'un Bivalve actuel



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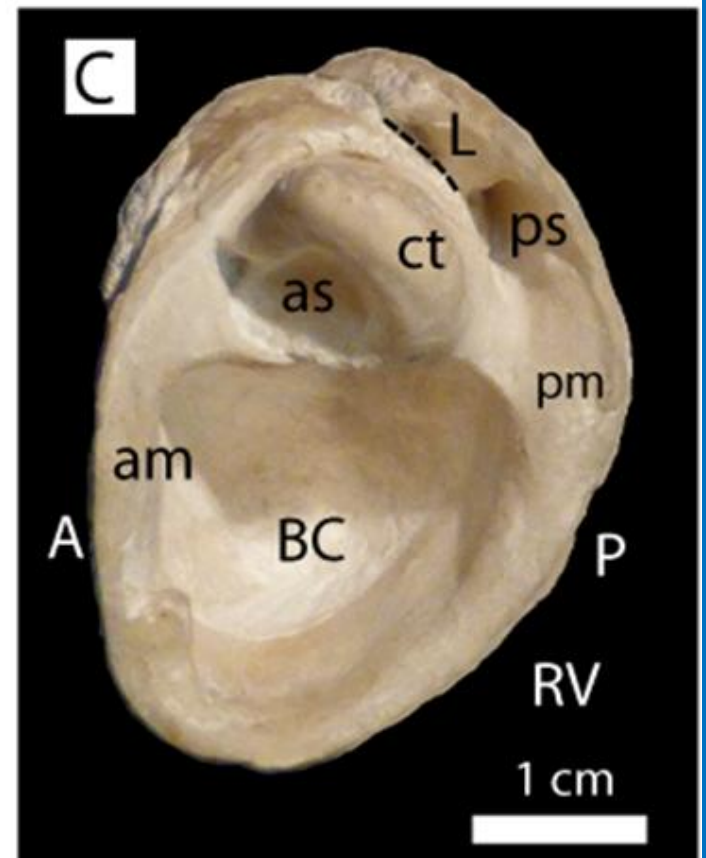


trace du ligament
dents et fossettes
empreintes musculaires

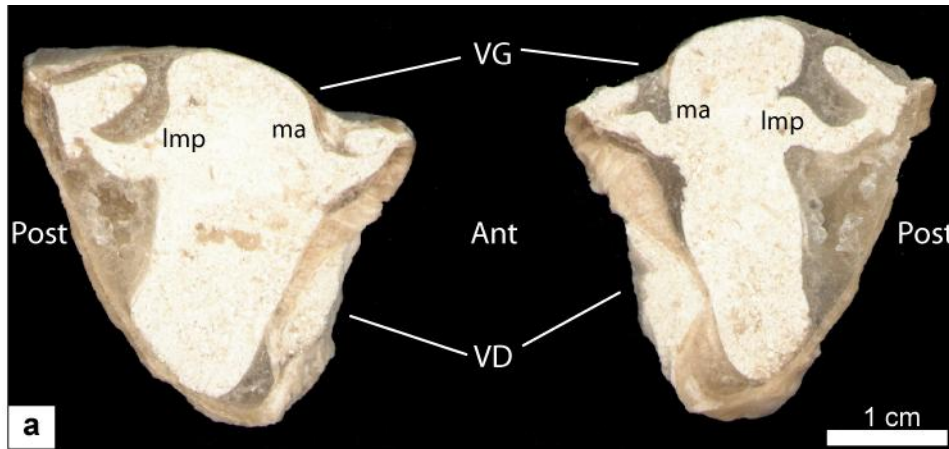
Himeraelites



Monopleura alesta

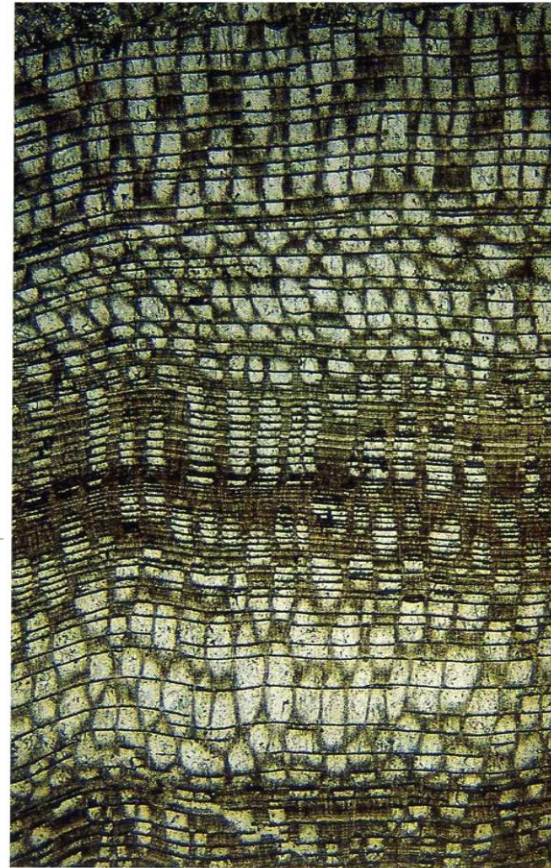


APPAREIL CARDINAL



Horiopleura dumortieri, , sections antero-posterieures d'un spécimen bivalve montrant les caractères internes, Barrémien supérieur (Orgon)

■ Radial thin section of *Radiolites* showing horizontal *laminae* separated by vertical *muri*. Coniacian of Trentinara, Campania, southern Italy. x 1,8.

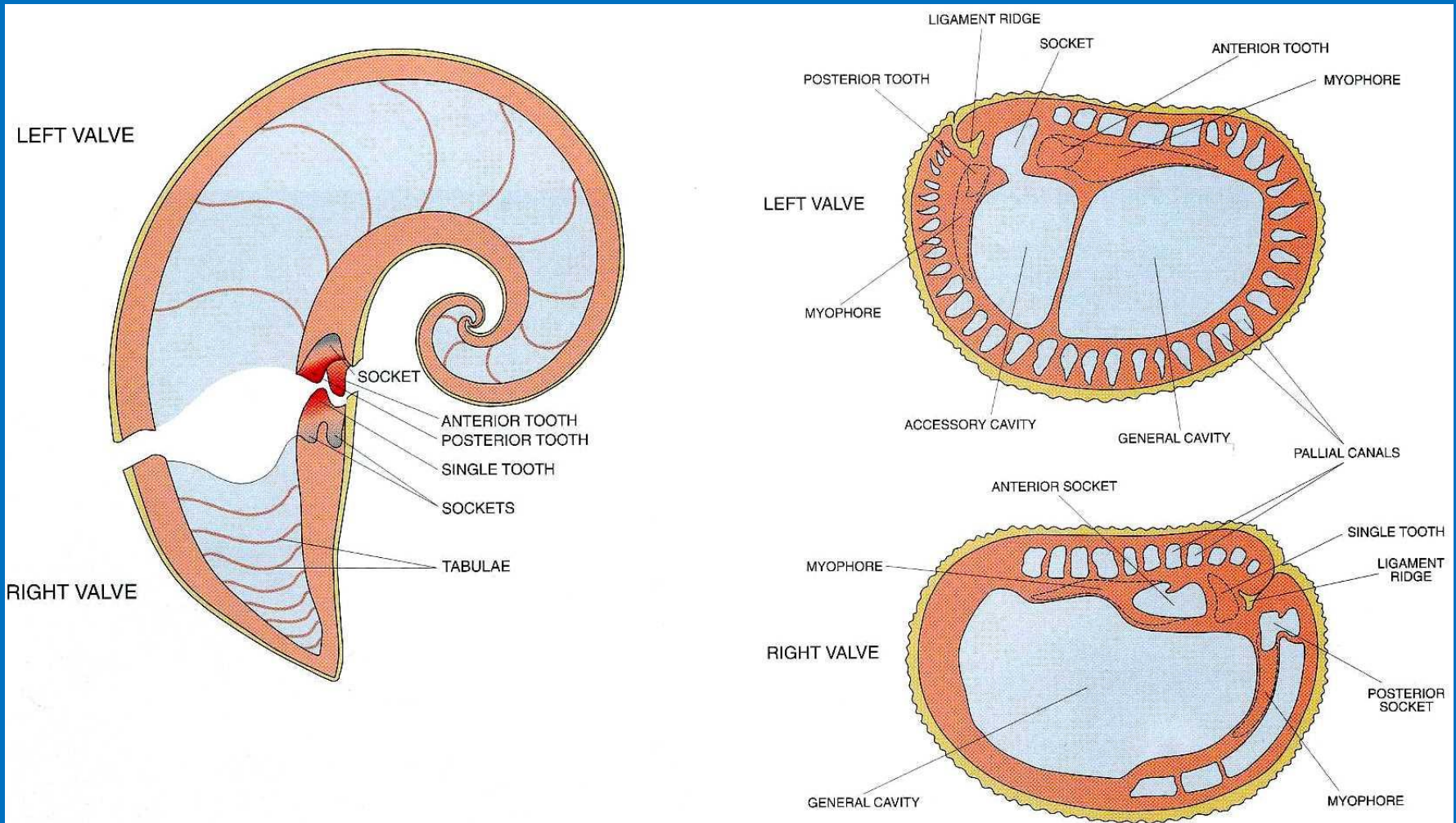


Coradiolites livatus (CONRAD),
outer valve. Cenomanian of
Lebanon. x 2,4.

MA COLL. DIP. SCIENZE DELLA TERRA UNIV. TORINO



In Radiolitiidae the growth lines, corresponding to main growth cycles, are well marked and give origin to the shell ornamentation.



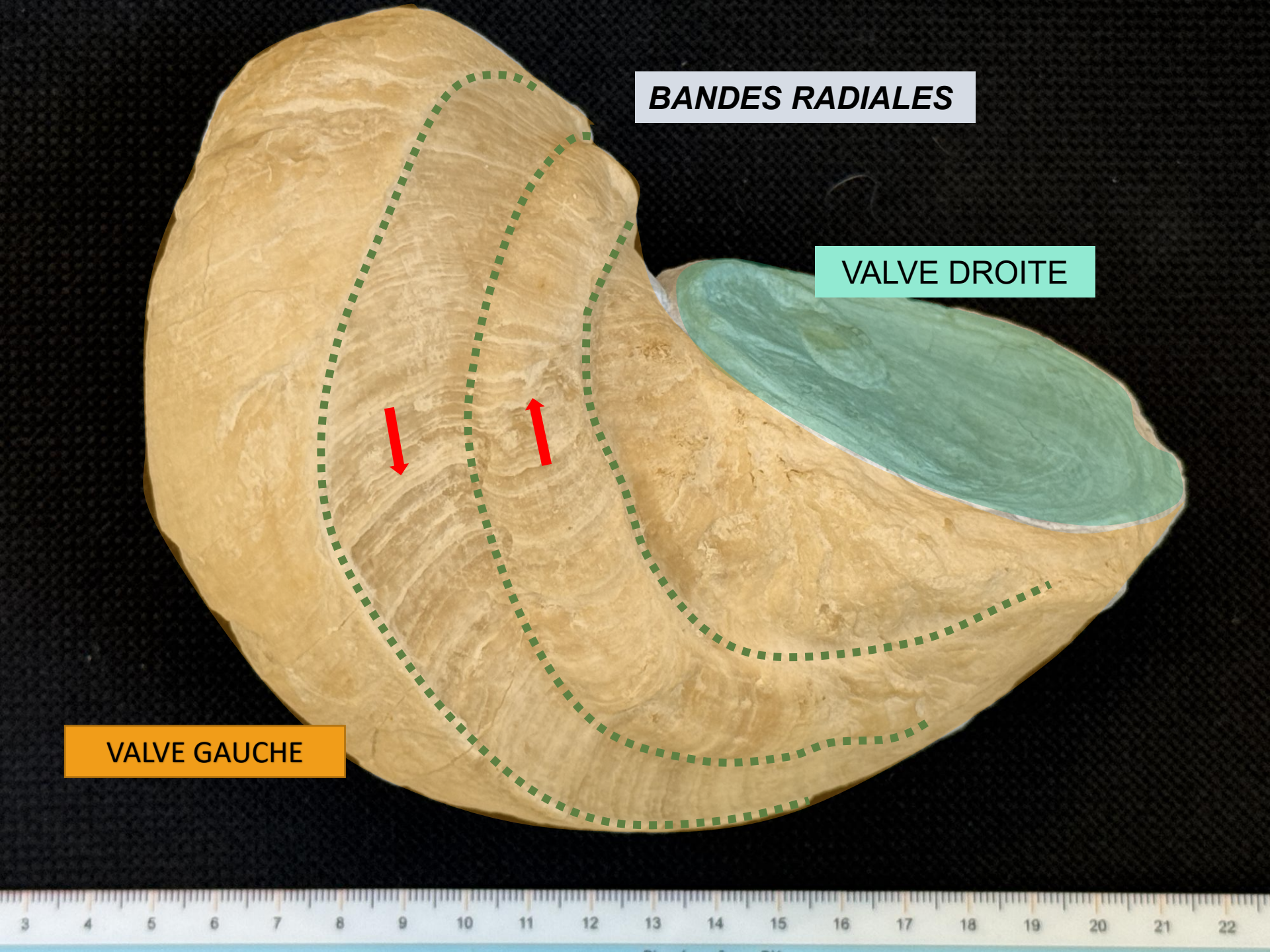
STRUCTURE DU TEST

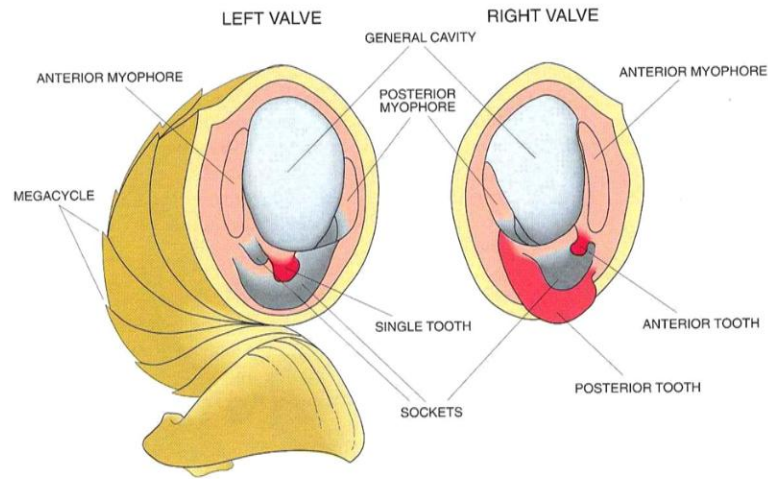


BANDES RADIALES

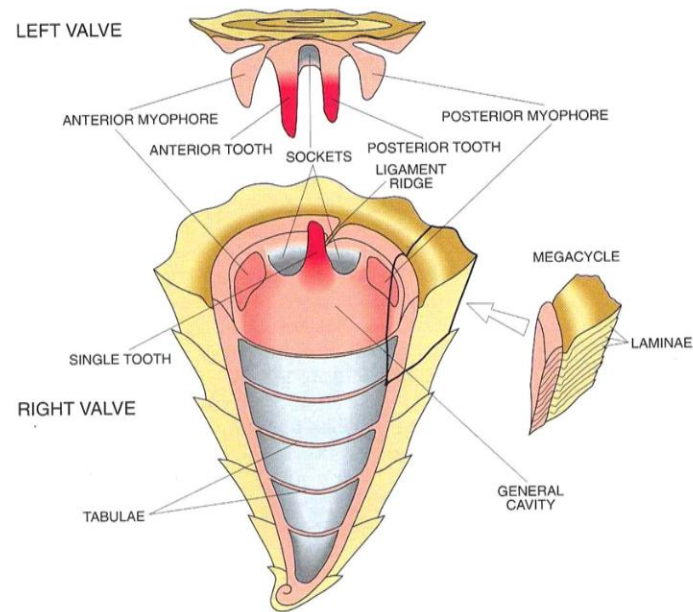
VALVE DROITE

VALVE GAUCHE






Fixés par la
valve gauche



Fixés par la
valve droite

LES RUDISTES : DES BIVALVES SINGULIERS

ORDRE DES HIPPURITIDA

 **Sous -ordre des REQUIENIIDINA**

Super-famille des Requienioidea

 **Sous-ordre des HIPPURITIDINA**

Super-famille des Radiolitidoidea

Super-famille des Caprinoidea

EXIGENCES VITALES

MANGER
NE PAS ÊTRE MANGÉ
SE REPRODUIRE

MANGER + SE REPRODUIRE NE PAS ÊTRE MANGÉ



manteau



coquille

FONCTIONNEMENT TROPHIQUE

ORGANISMES PHOTOSYNTHETIQUES OU FILTREURS DU PHYTOPLACTON ?



Tridacna



Corculum

Bivalves actuels photosynthétiques
avec zooxantelles

**DISTRIBUTION
PALEOGEOGRAPHIQUE DES
RUDISTES CRETACE INFERIEUR**



Pseudotoucasia

Atlas marocain

Pachytraga



Caprina



Offneria



Provence

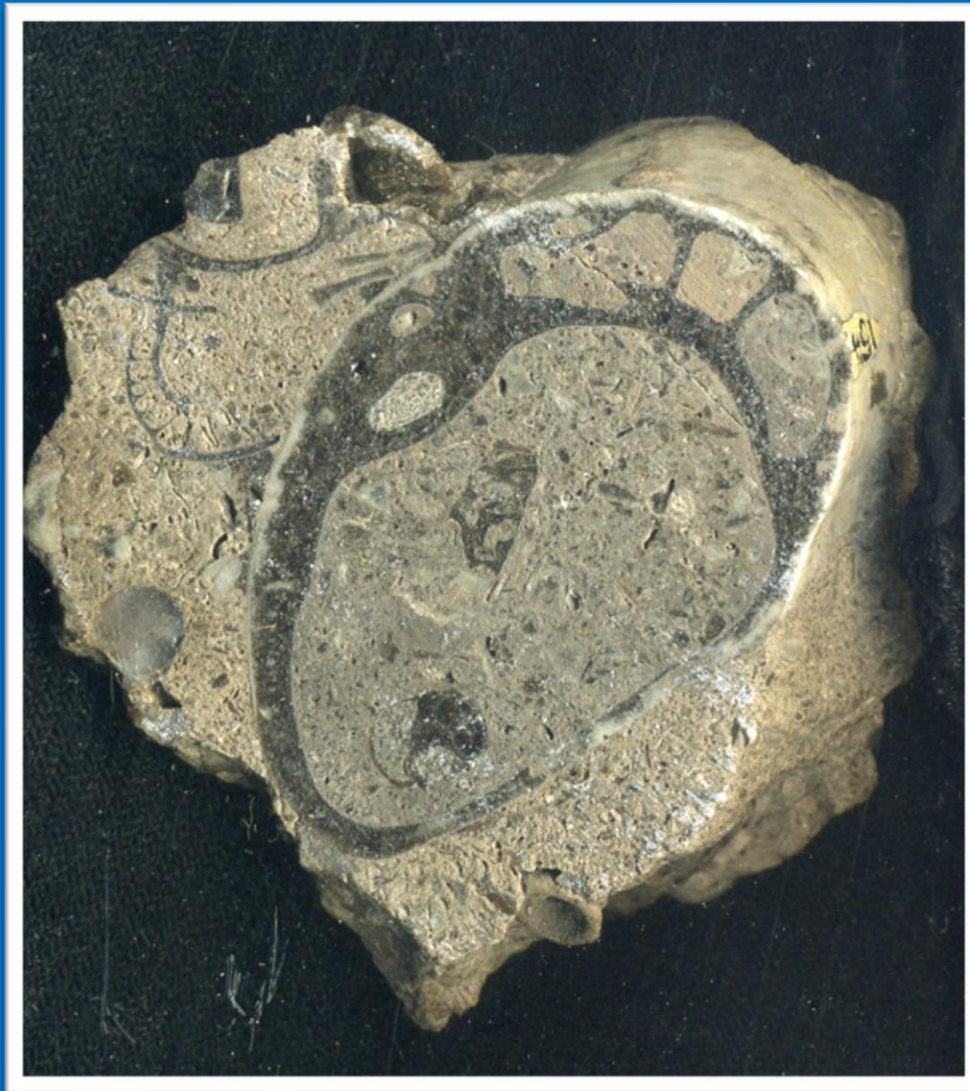


Monopleura marcida



Toucasia patagiata

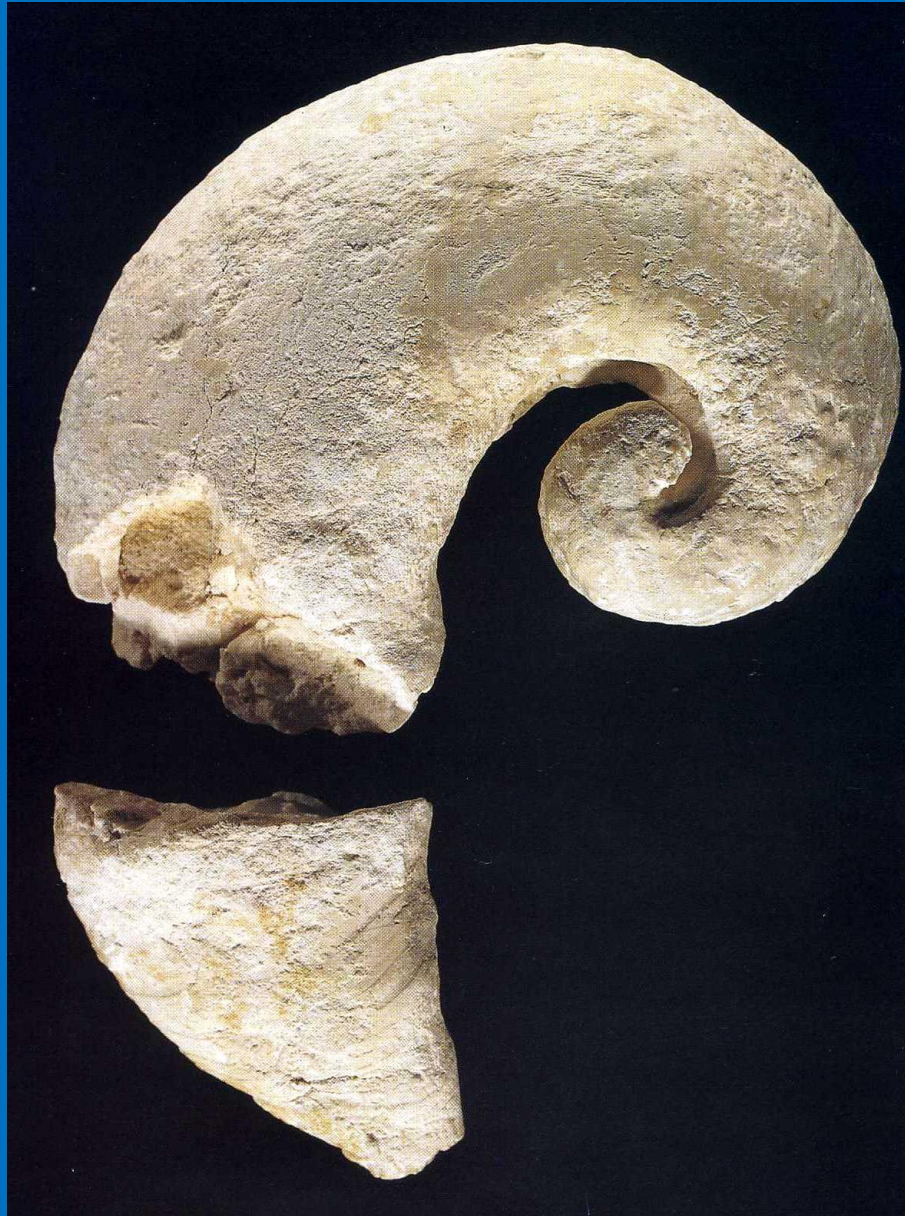
TEXAS



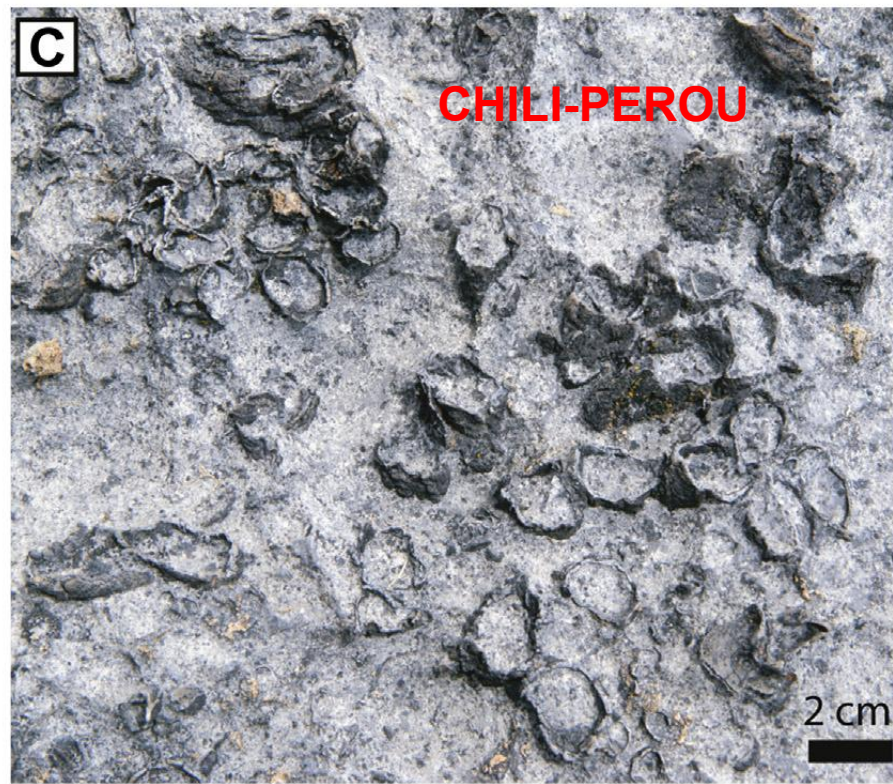
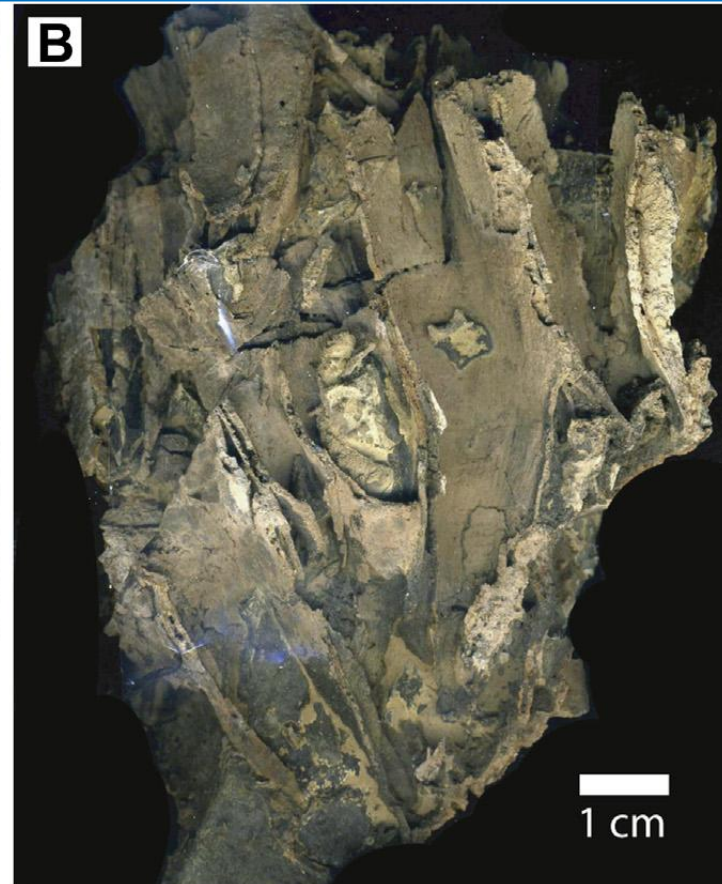
Pseudocaprina

Trinidad

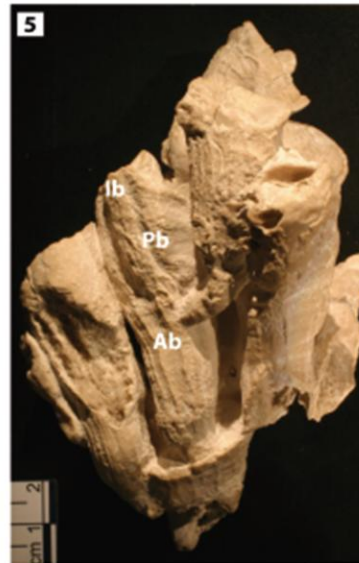
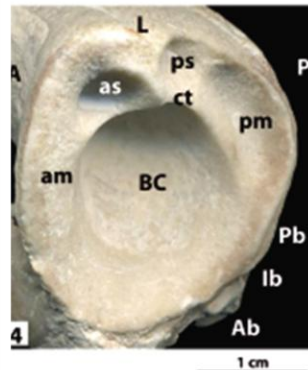
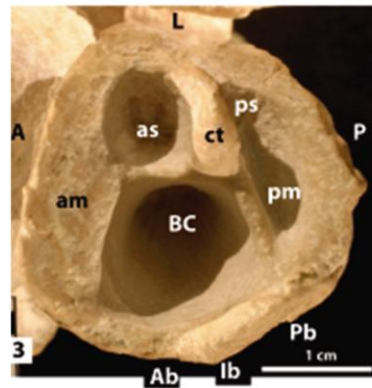
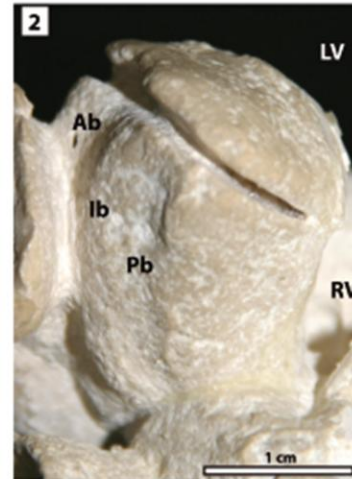
Caprina



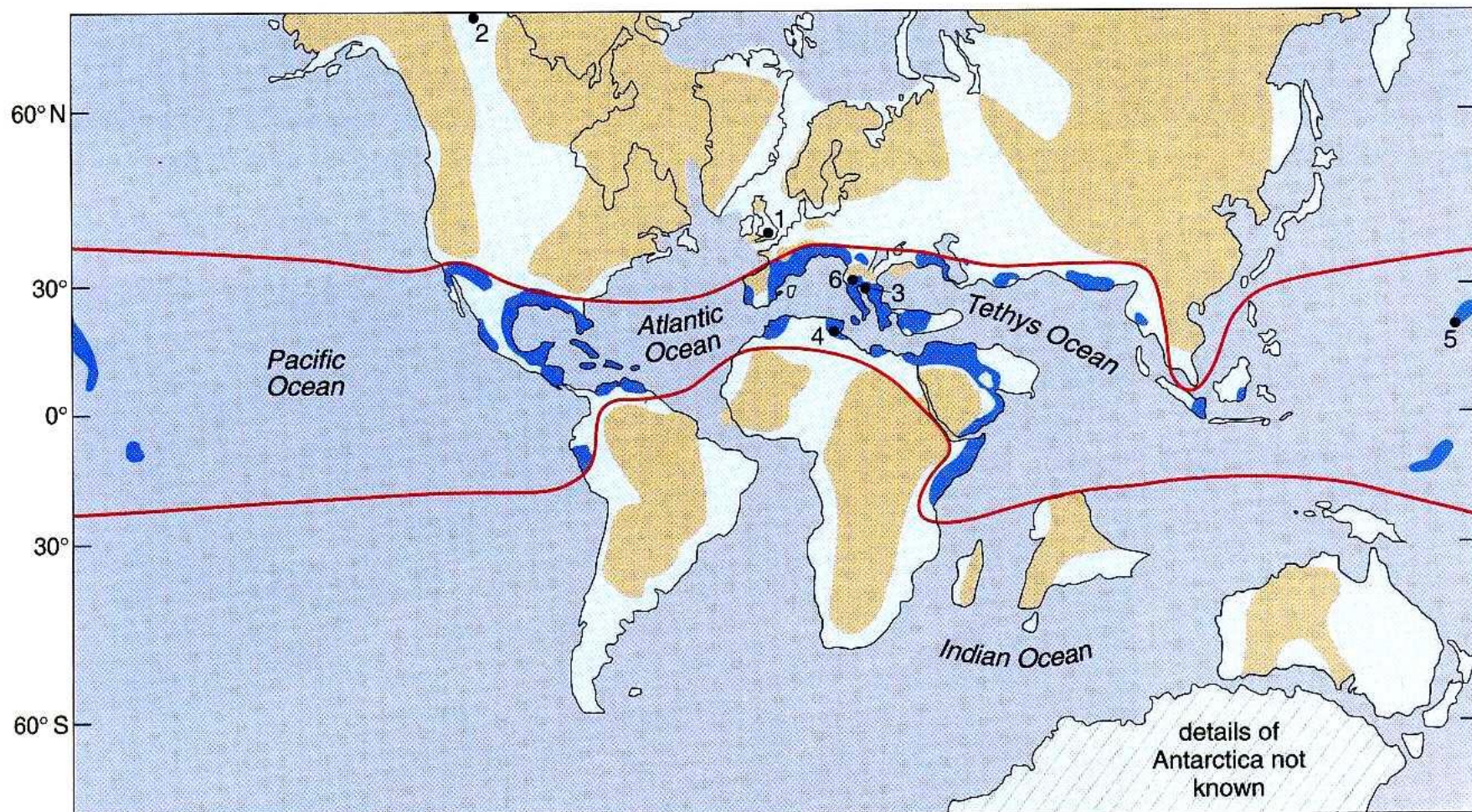
Italie



Praecaprotina



Japon



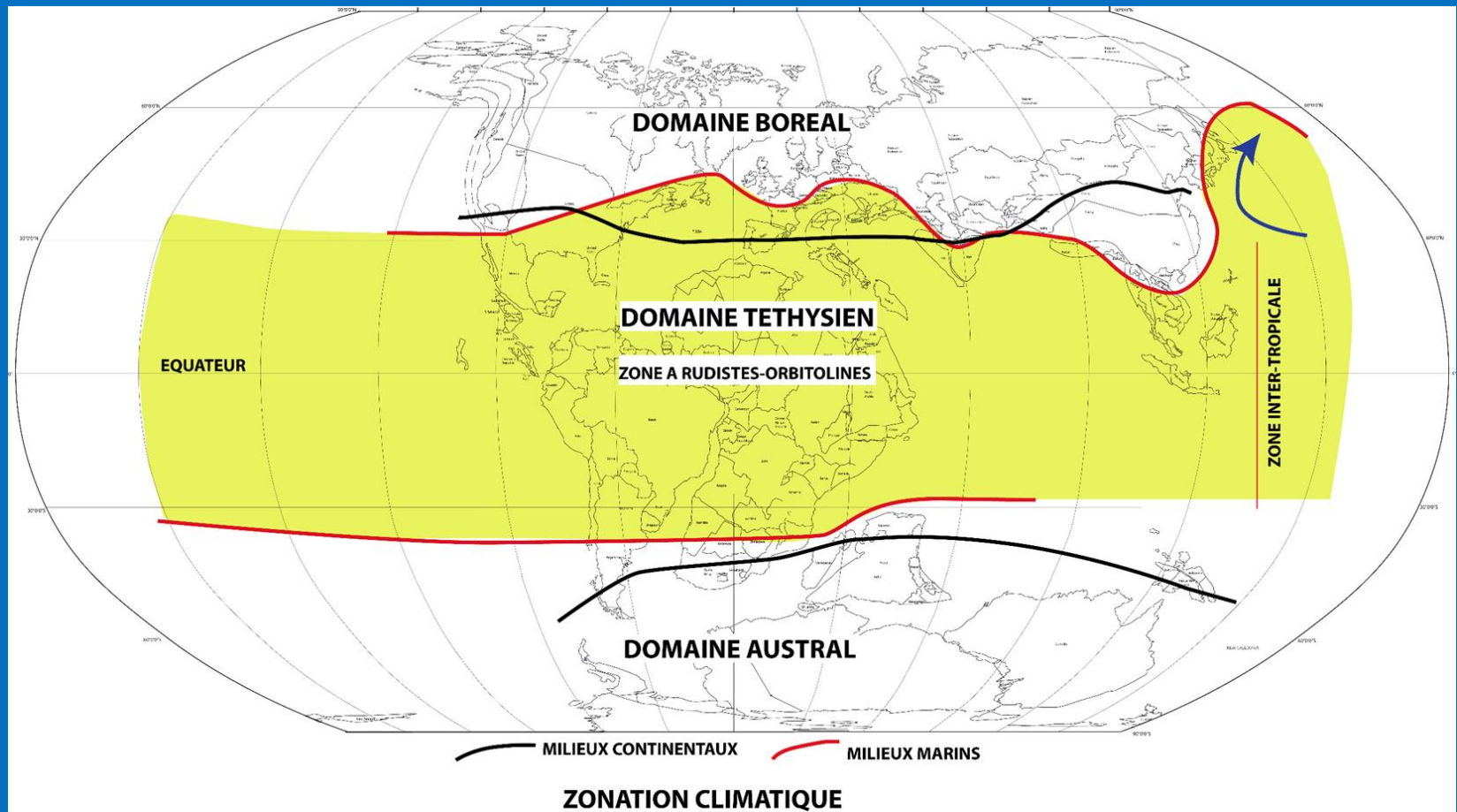
KEY

land

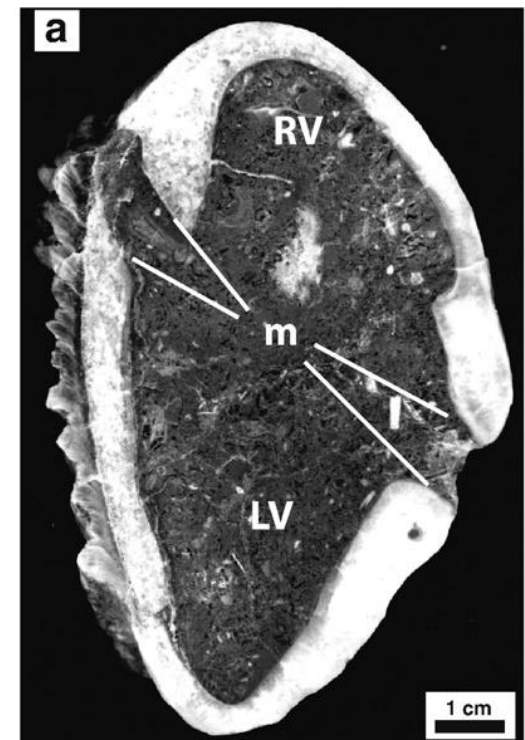
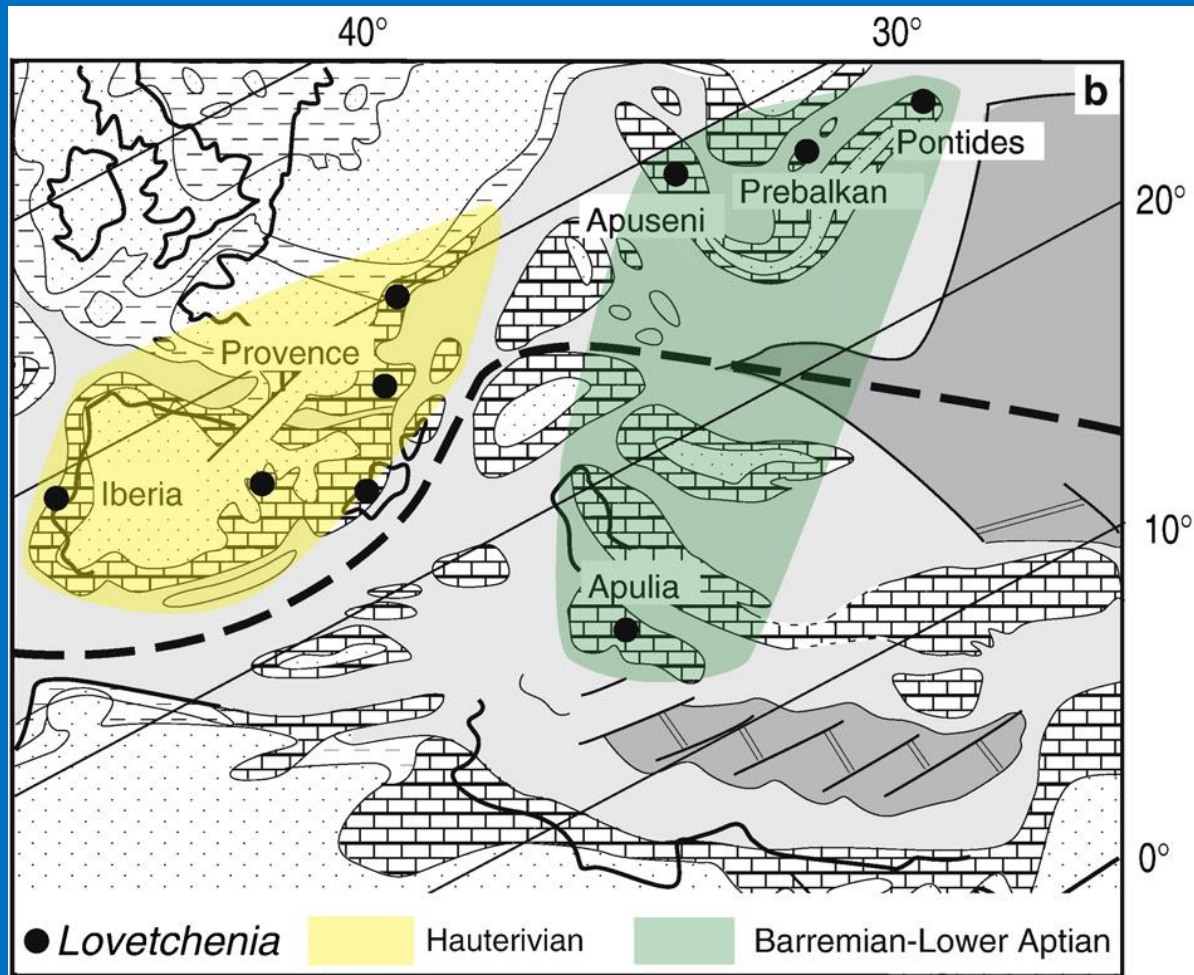
warm-water
shallow-marine carbonates

shelf sea including
pelagic chalk

deep ocean including
pelagic chalk



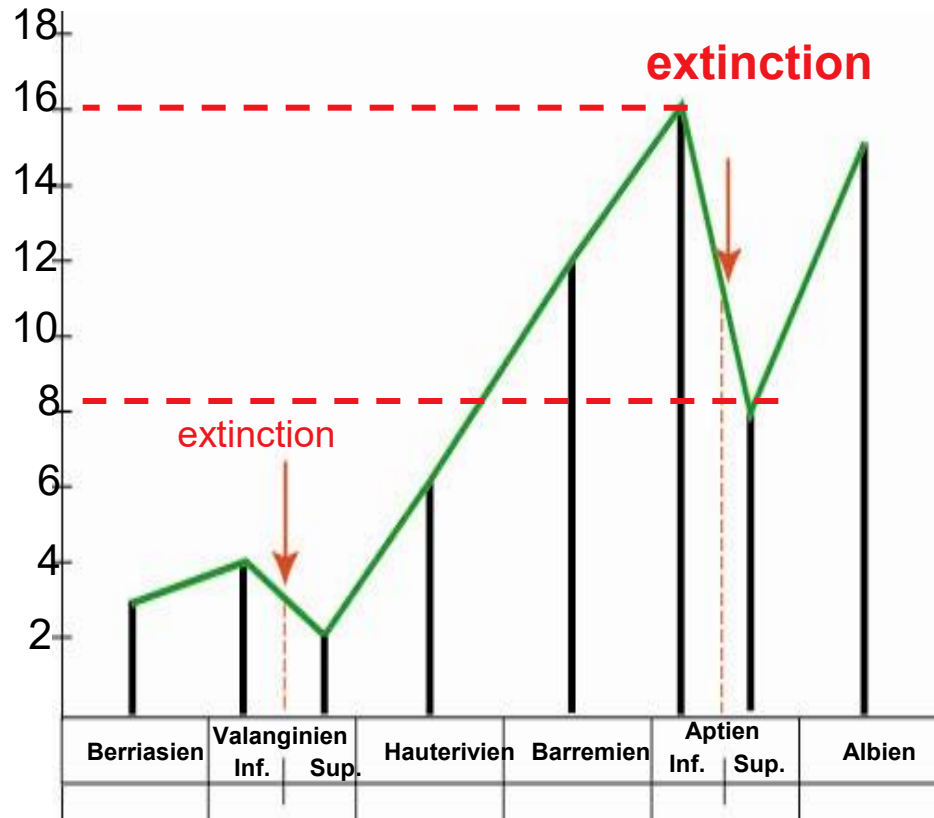
Répartition latitudinale des rudistes au Crétacé inférieur



Lovetchenia lovetchensis

--- Boundary between the European and Arabo-African domains

Nombre de genres



DICERATIDAE

CAPRINIDAE

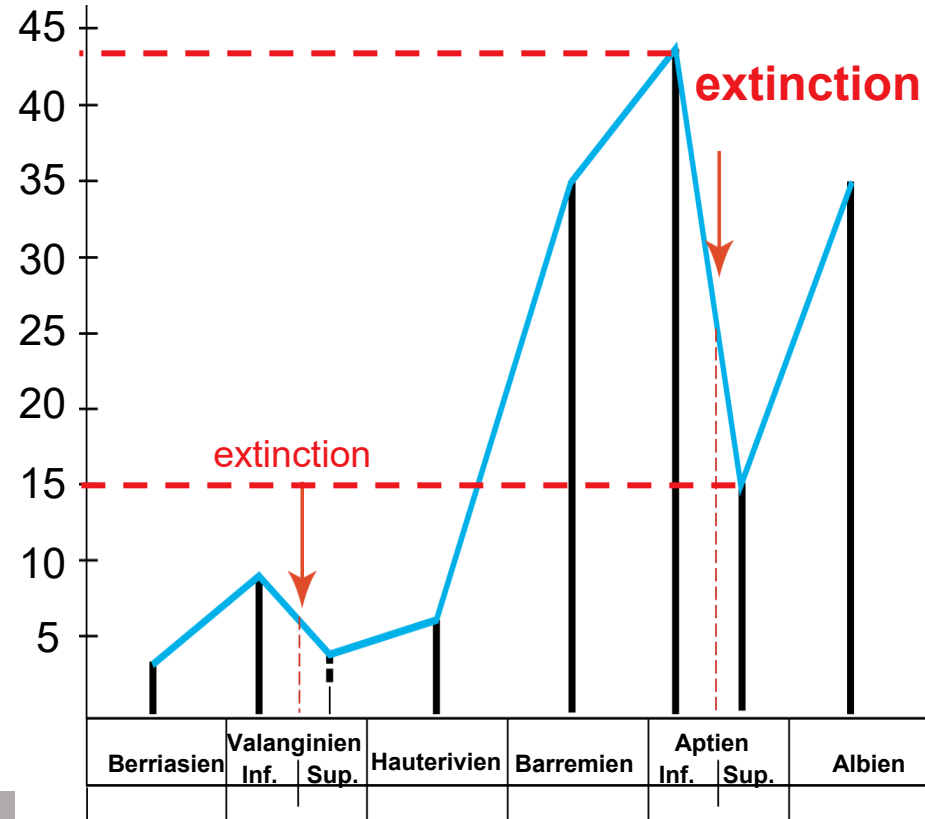
POLYCONITIDAE

RADIOLITIDAE

REQUIENIIDAE

MONOPLEURIDAE

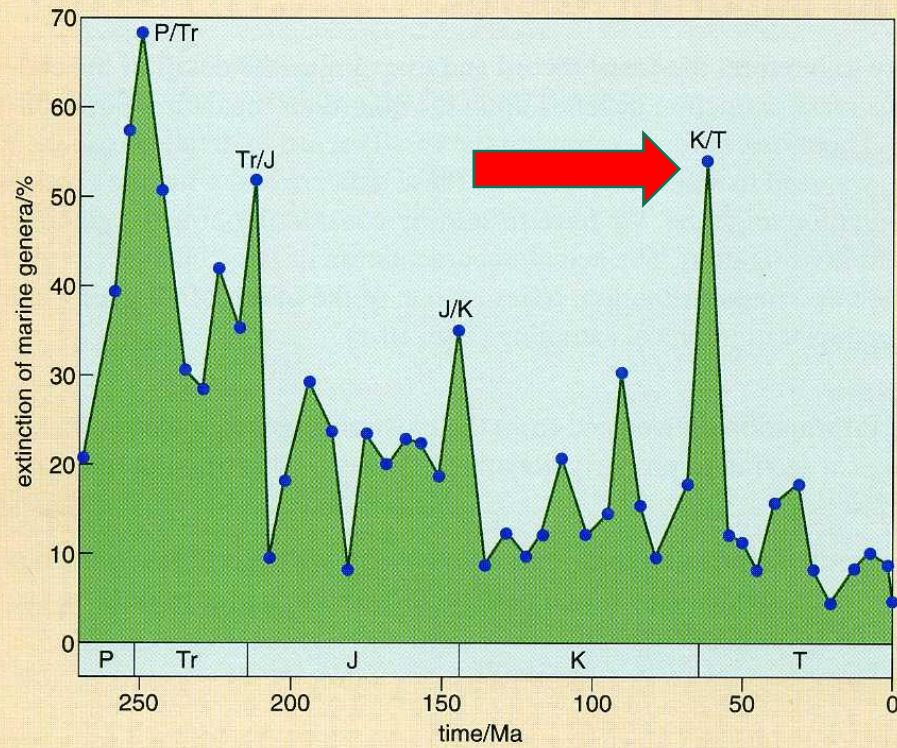
Nombre d'espèces

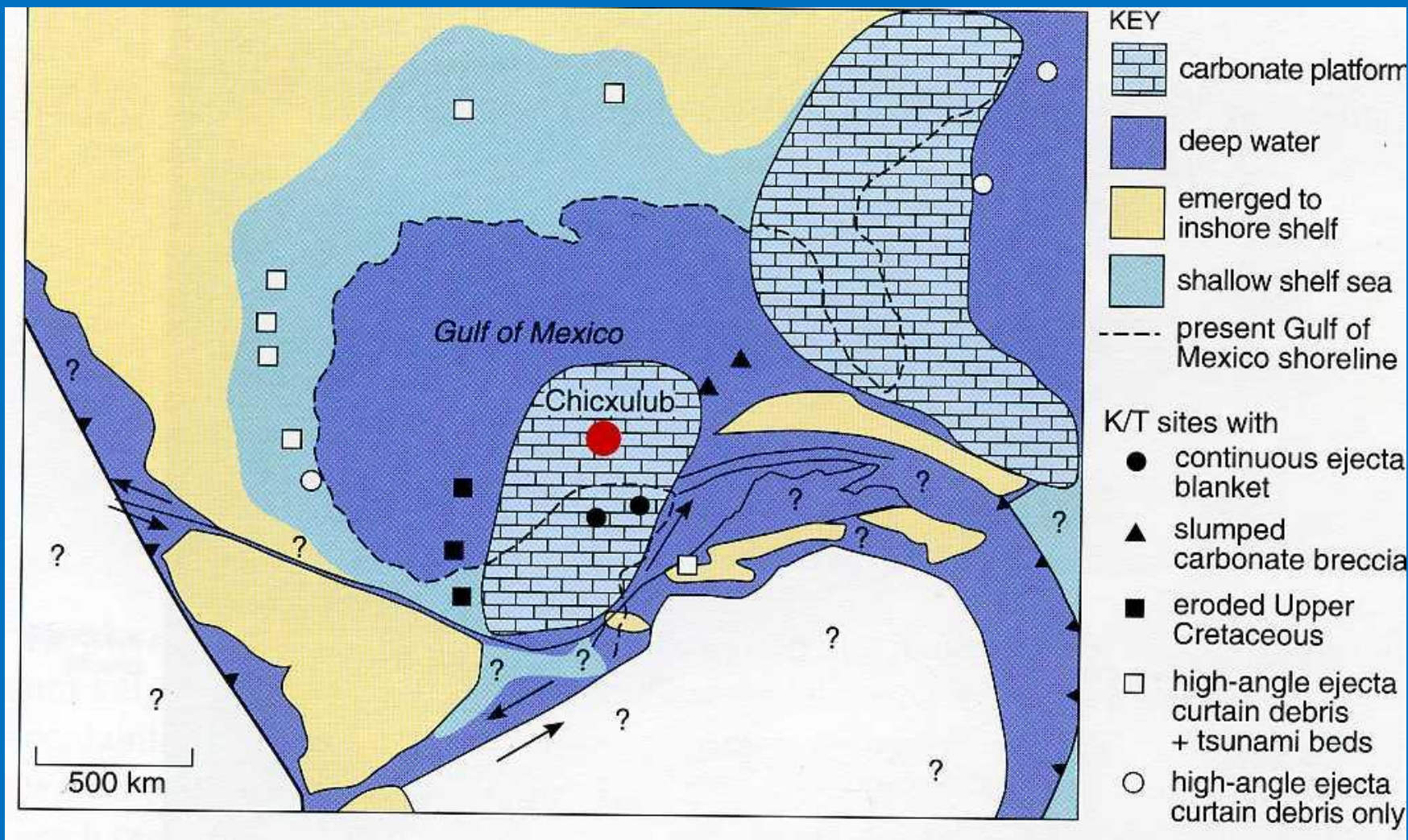


FAMILLES

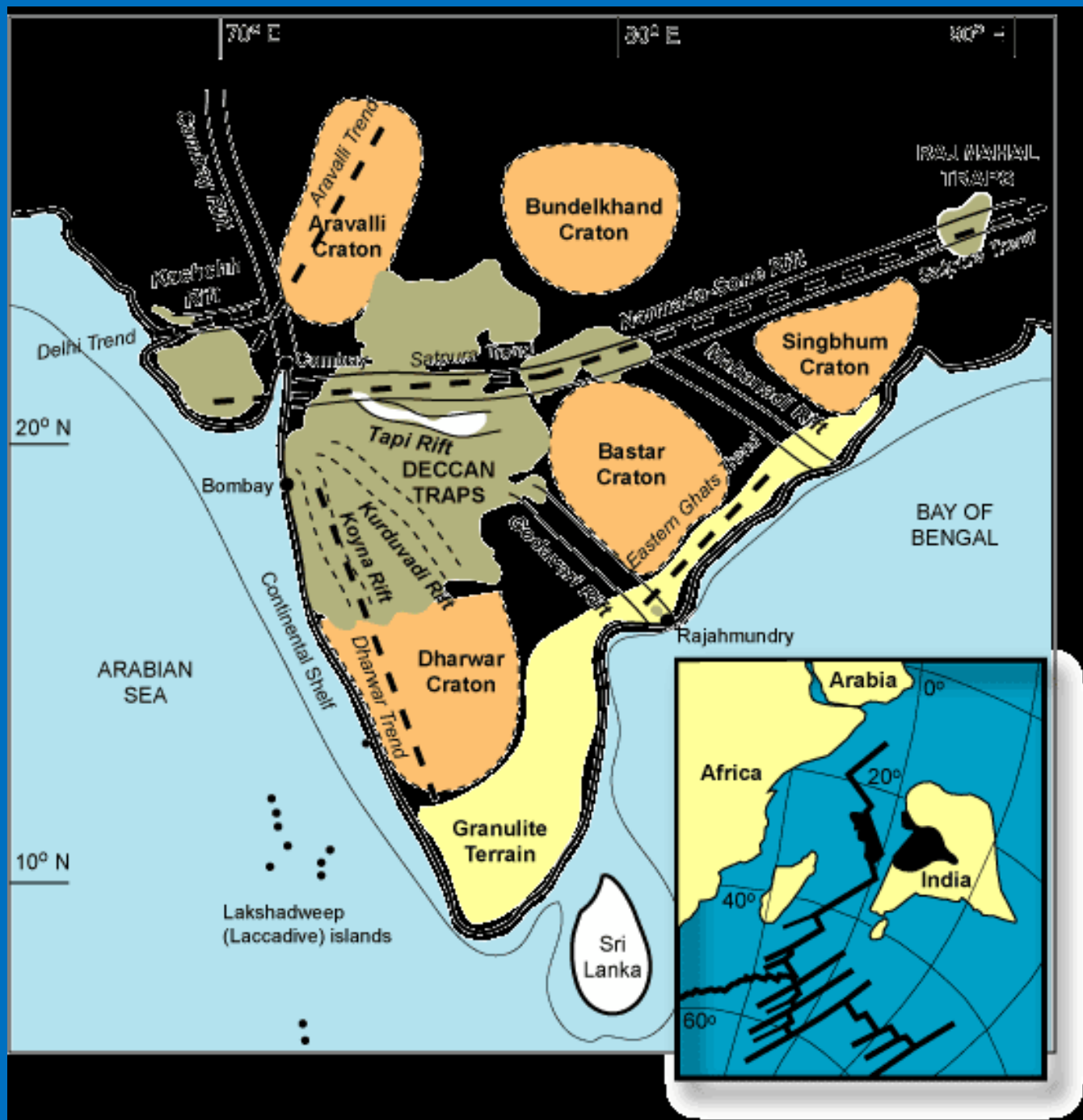
Région Méditerranéenne

CRISES BIOLOGIQUES





L'impact fatal?

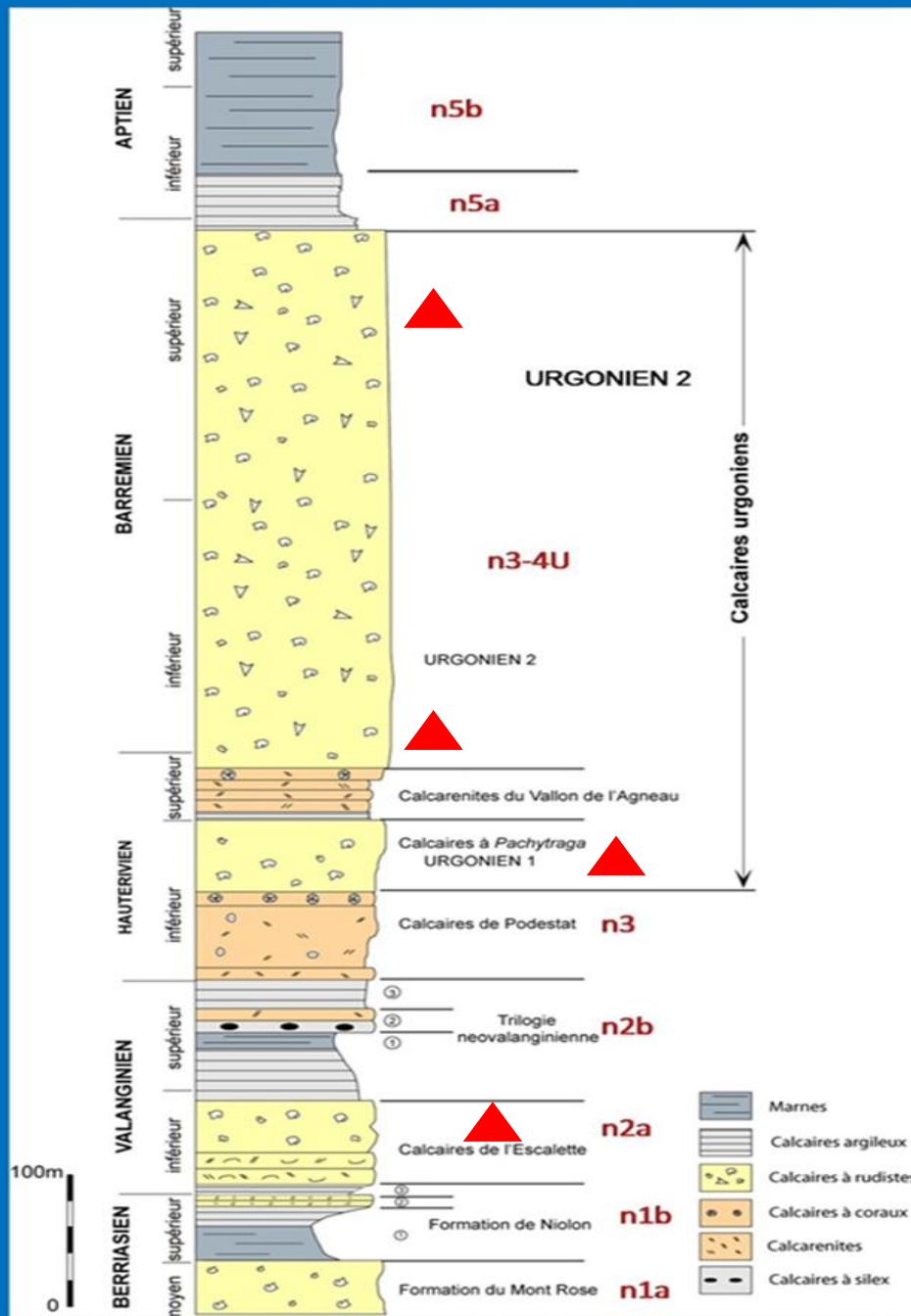


**Les rudistes: outils
biostratigraphiques
Applications à la Provence
Datation des Calcaires urgoniens**



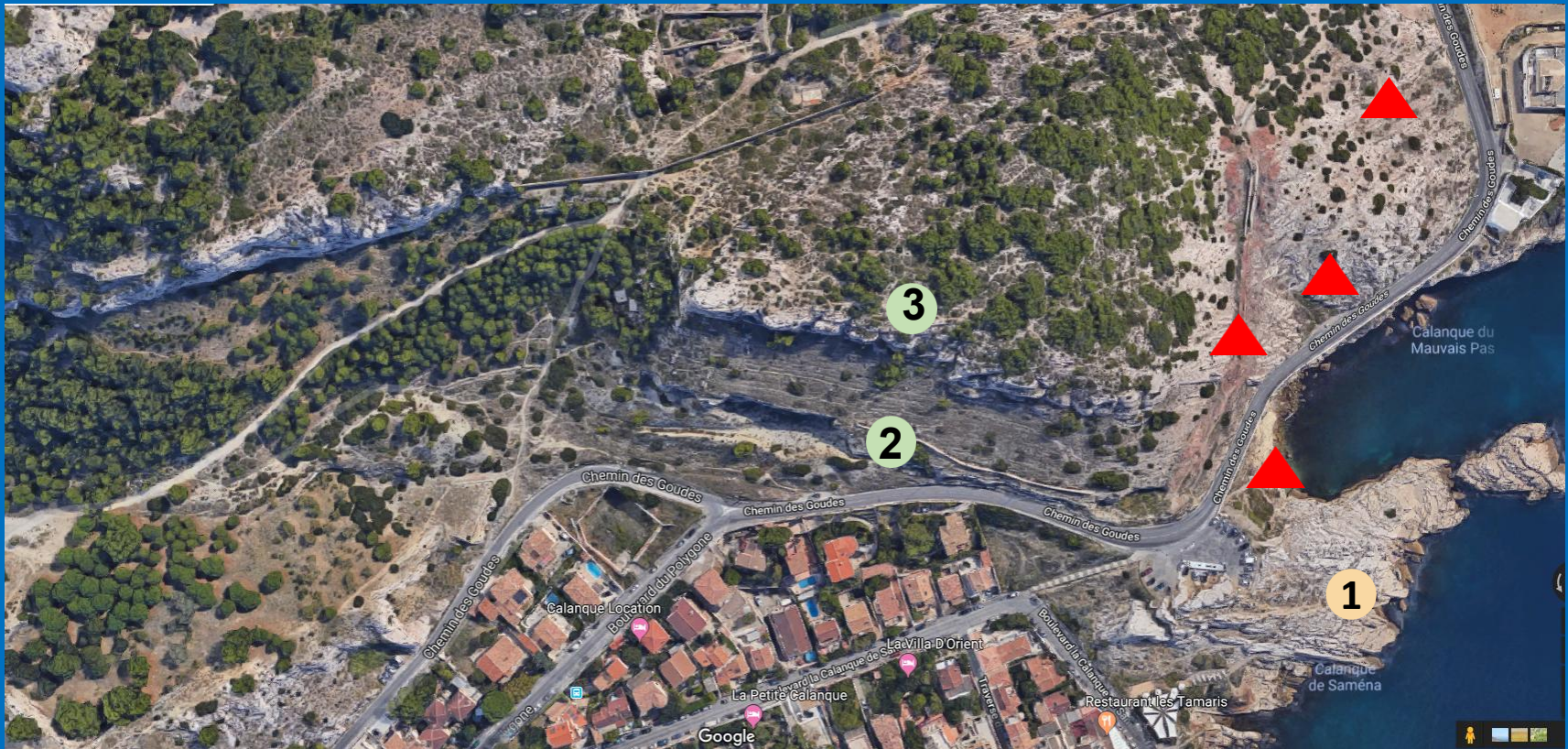
Massif des Calanques

**FAUNES DIFFERENCIEES DANS L'INTERVALLE
BERRIASIEN - BARREMIEN**



**Colonne
stratigraphique
du Crétacé
inférieur du
Massif des
Calanques**

Formation de Niolon et Calcaires de l'Escalette Faille de la Calanque du Mauvais Pas

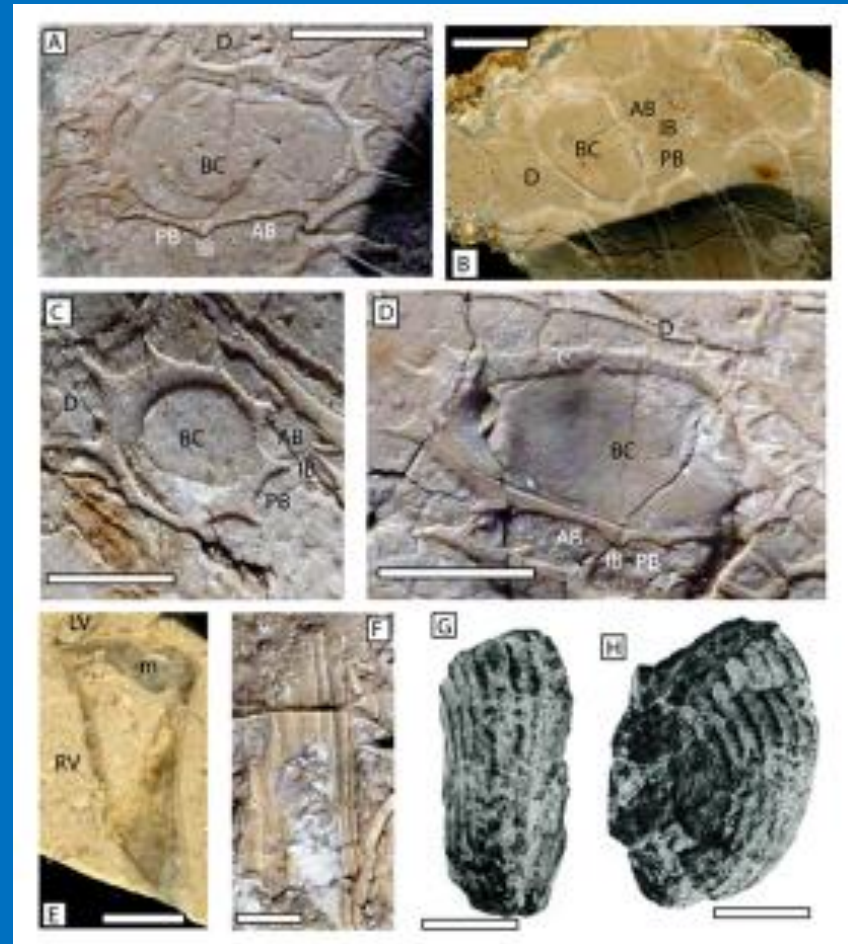
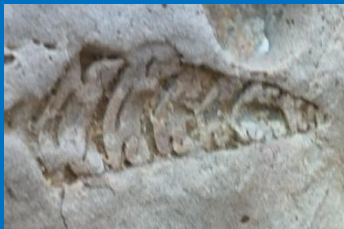


- 1 Calcaire du Mont Rose
- 2 Formation de Niolon
- 3 Calcaire de l'Escalette

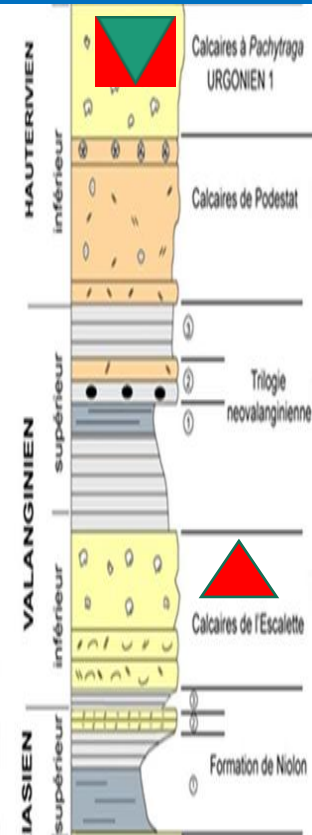
Rudistes et Gastéropodes des Calcaires de l'Escalette



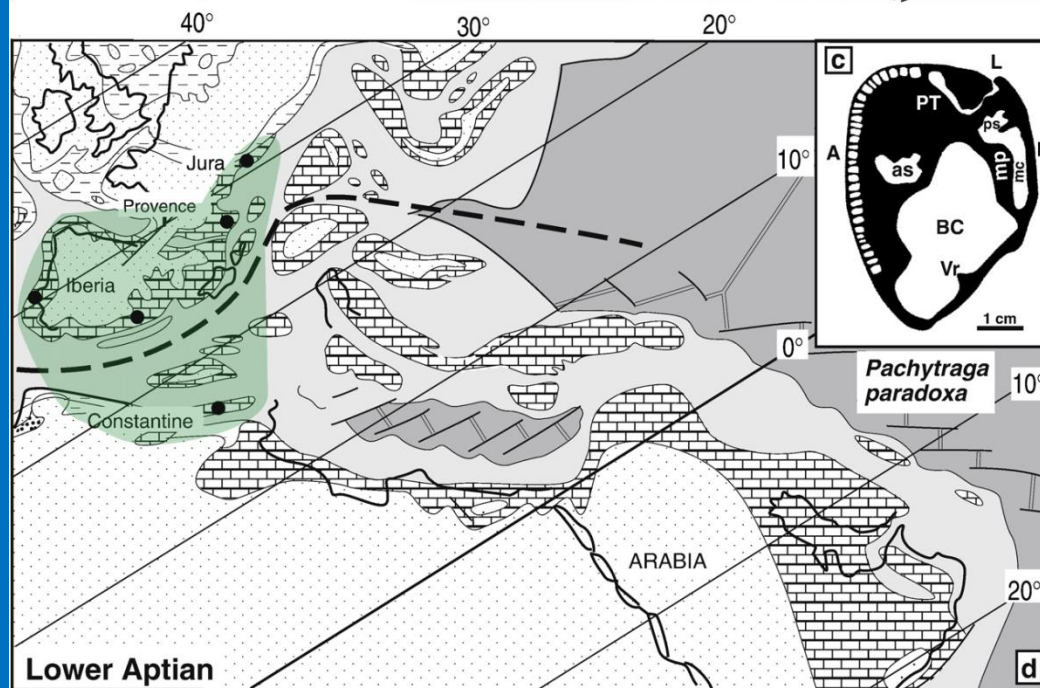
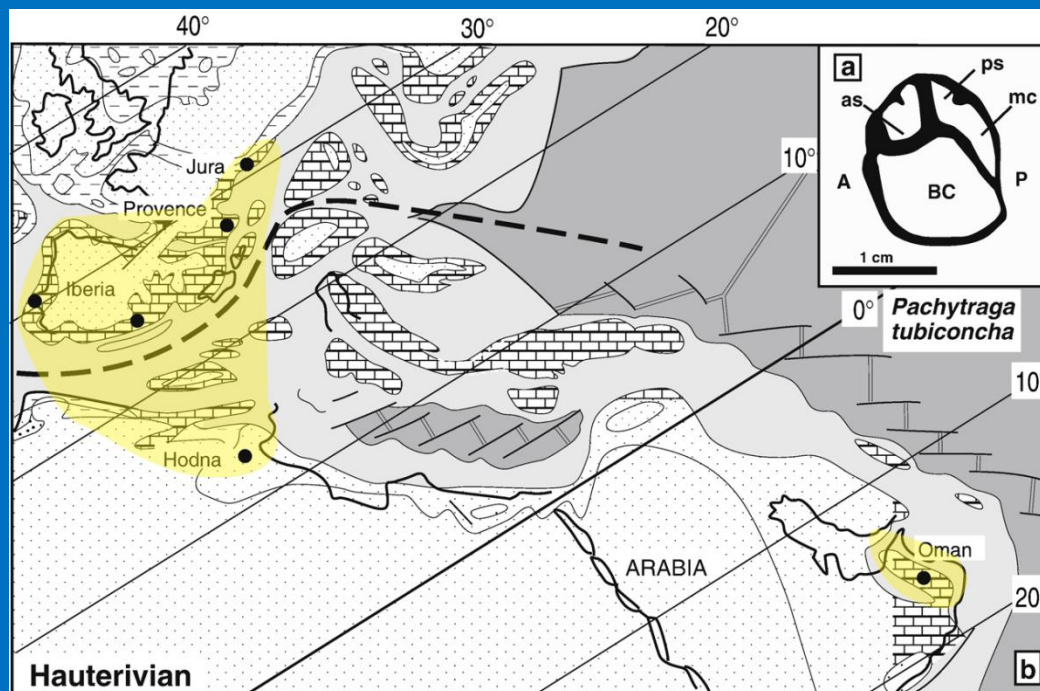
Nérinées

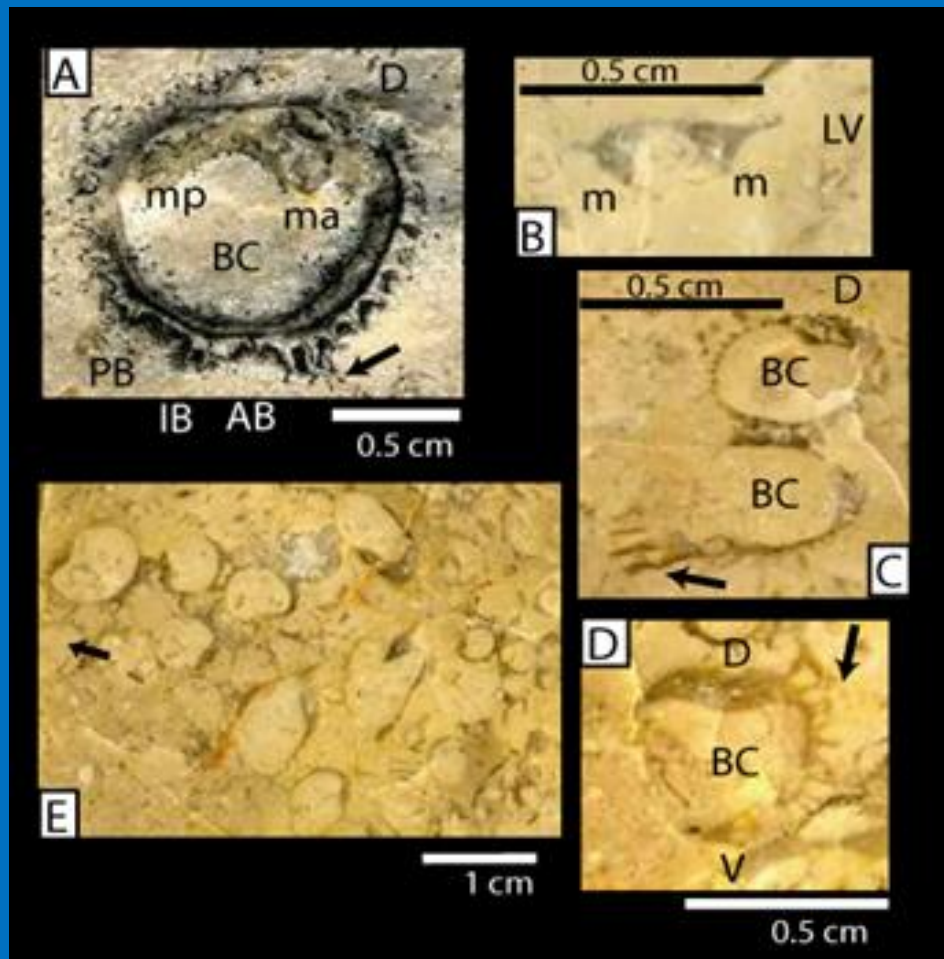


Debrunia massiliana

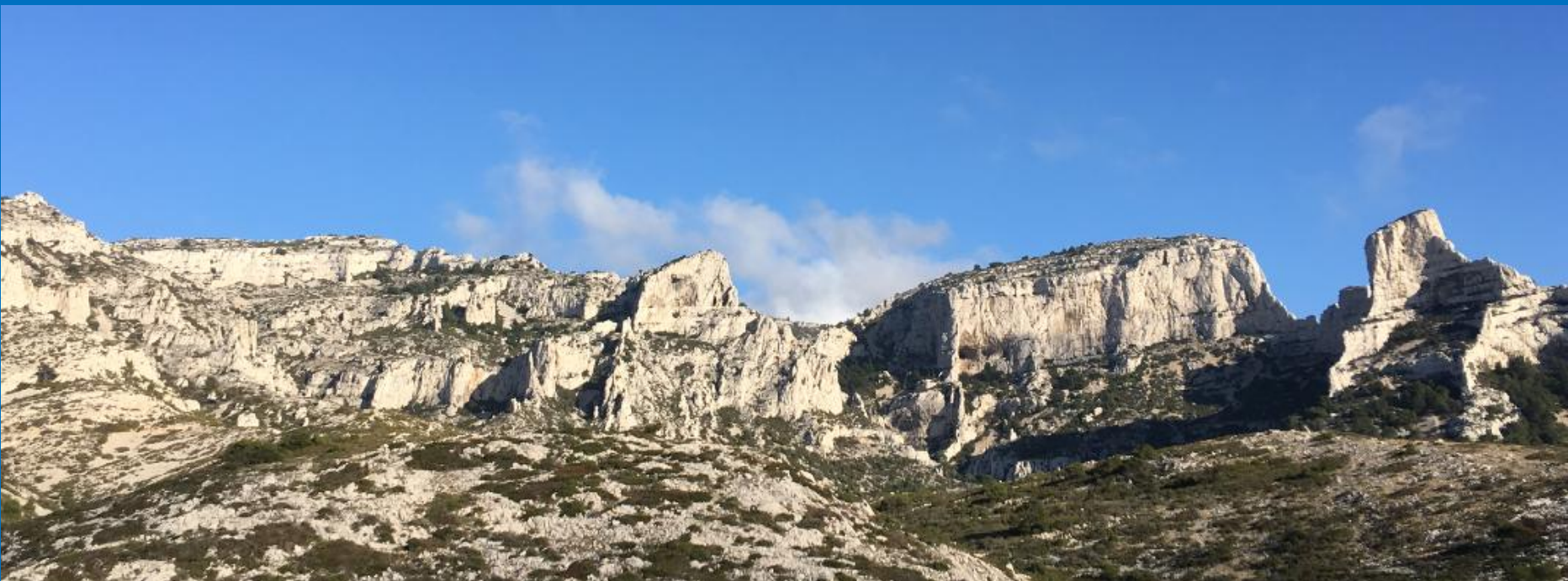


Massif de Marseilleveyre - Grotte Rolland

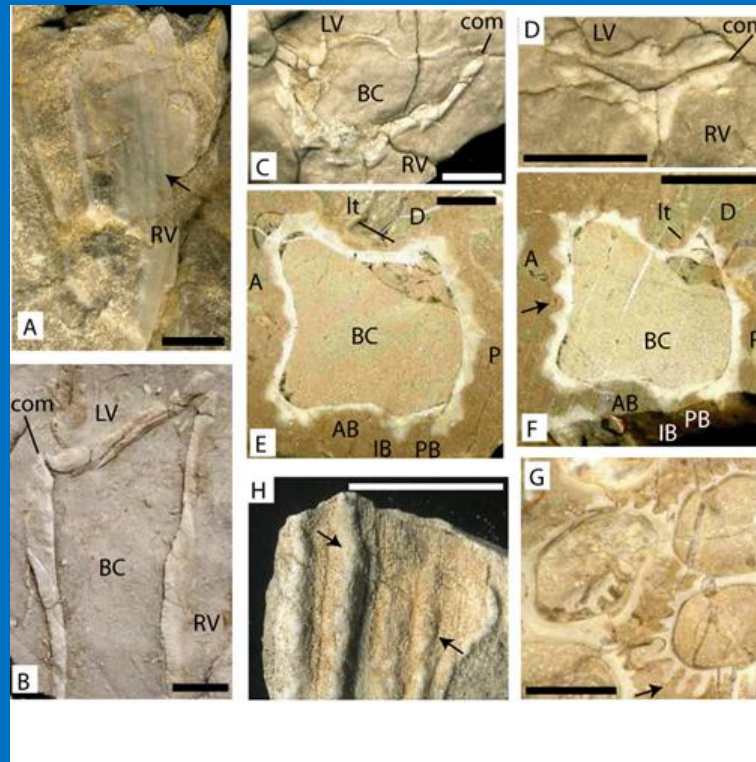




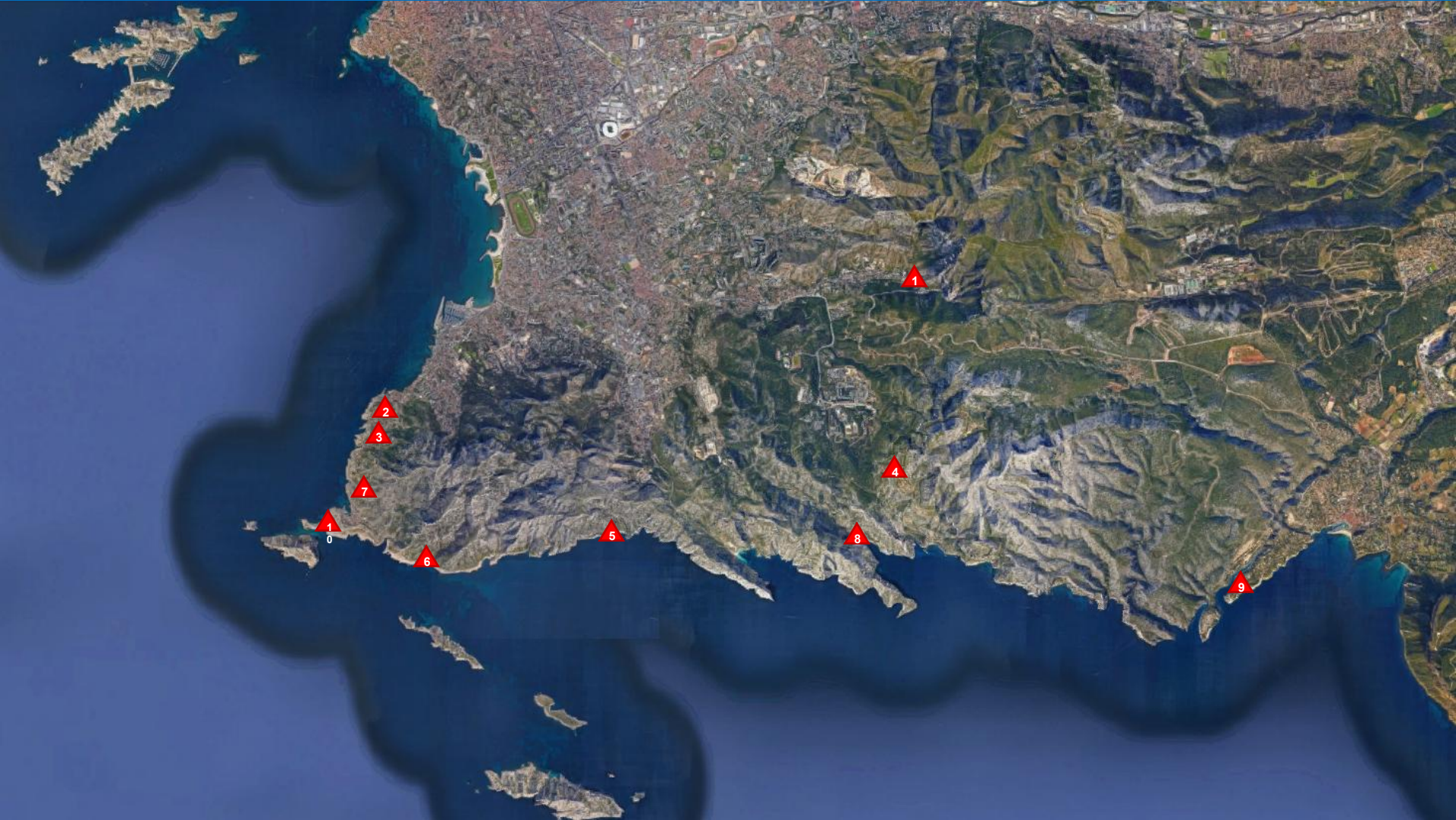
Debrunia heliomorpha -
Hauterivien inférieur



LES GOUDES – LES FALAISES



Debrunia acuta des Goudes
Base de l'Urgonien





Toucasia carinata



Requierenia ammonia



*Debrunia
mutabilis*

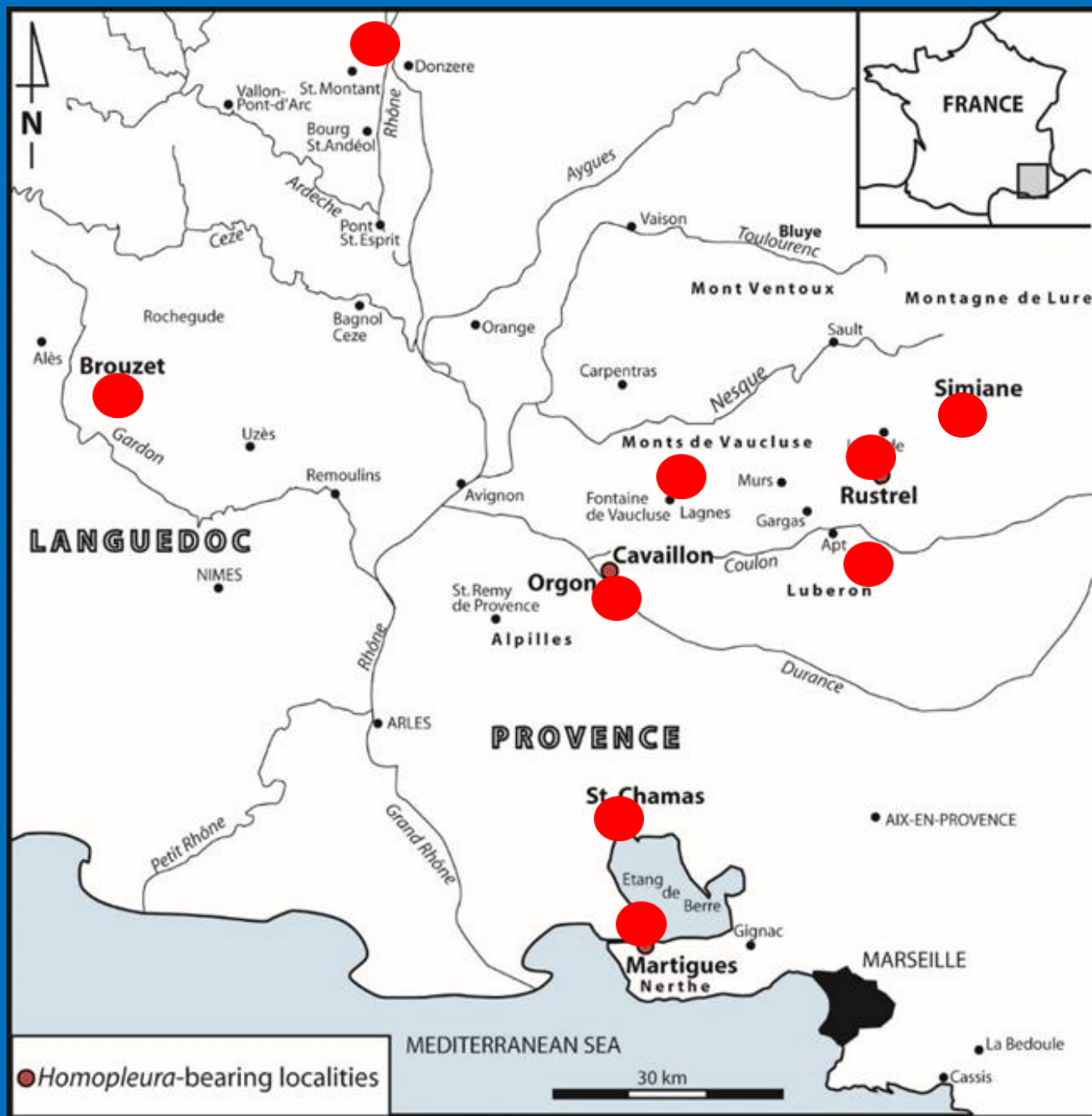


*Requienia
migliorinii*

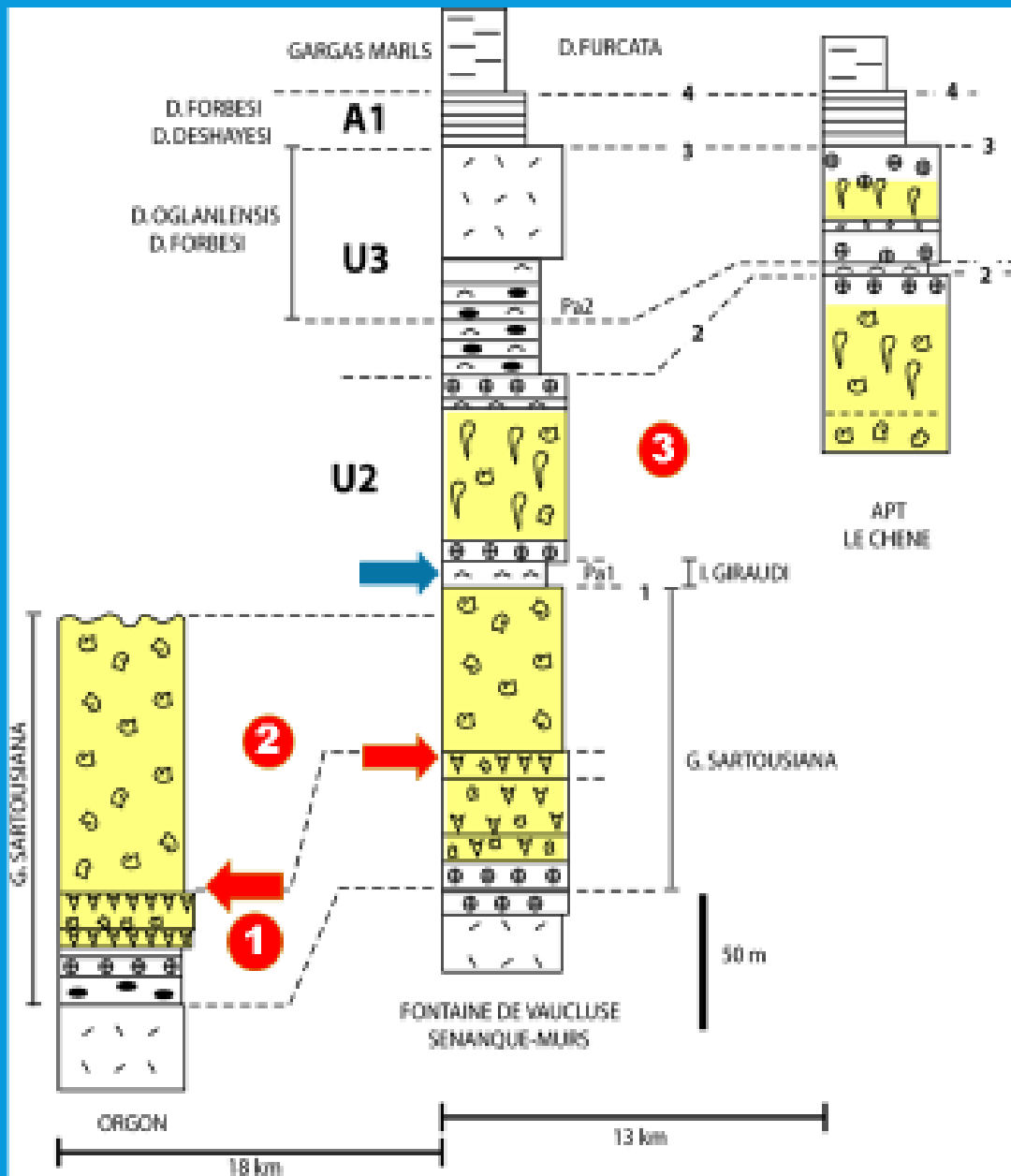


*Agriopleura
marticensis*

Rudistes du Barrémien
de la région de Cassis



**TROIS FAUNES
SUCCESSIVES DANS LE
BARREMMIEN SUPERIEUR**



➡ ECLIPSE

➡ EMERSION

Faunes

1 Brouzet

2 Orgon

3 Rustrel



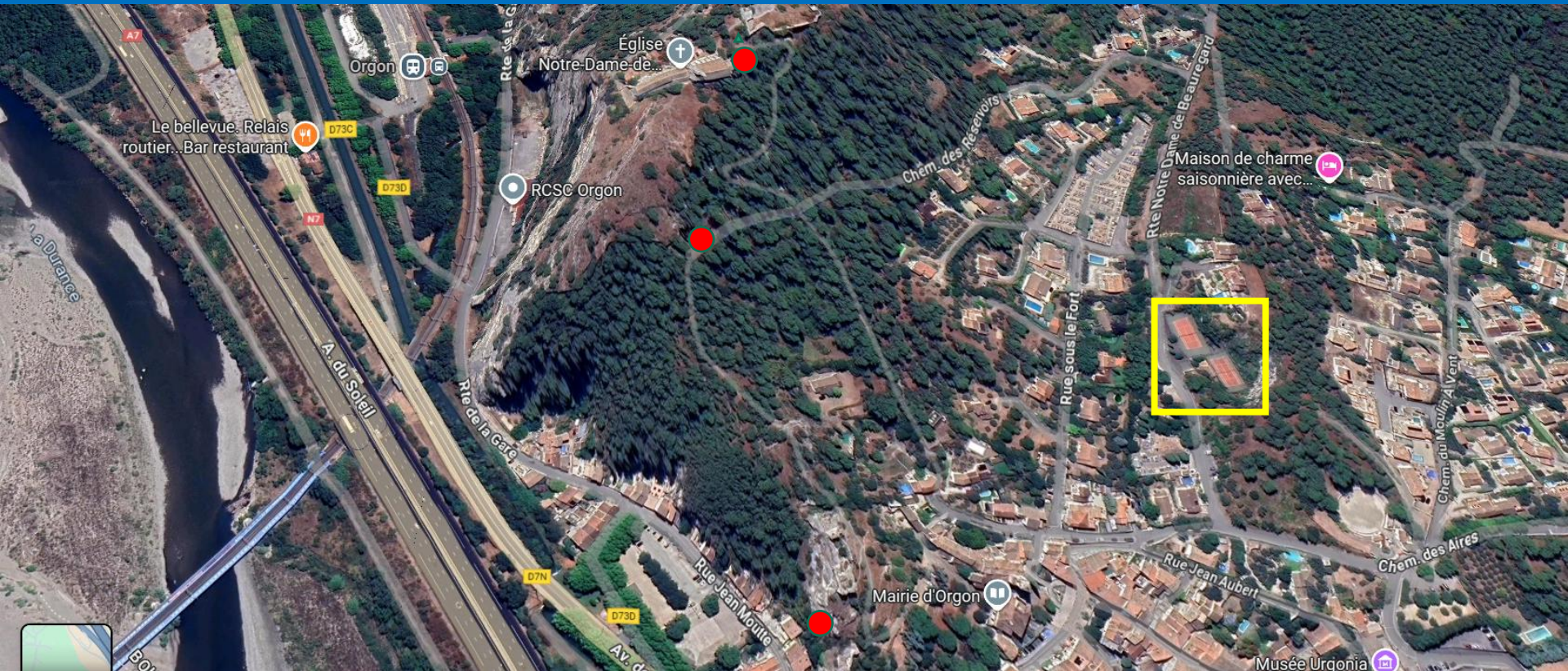
Agriopleura



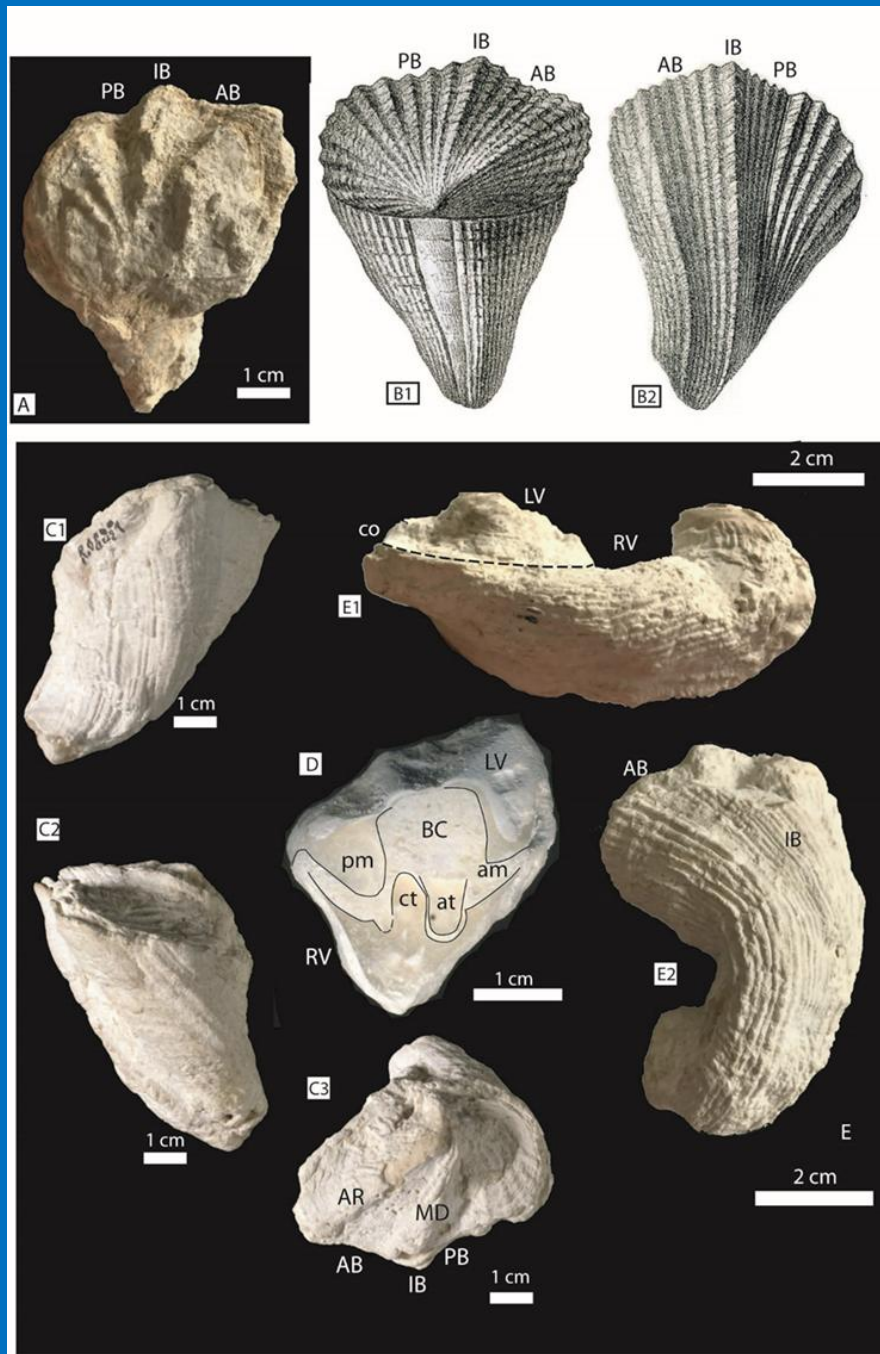
Debrunia

● Gisements à *Agriopleura*

□ Gisement à *Requienia*

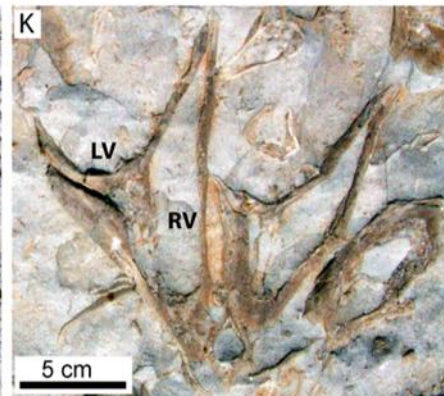
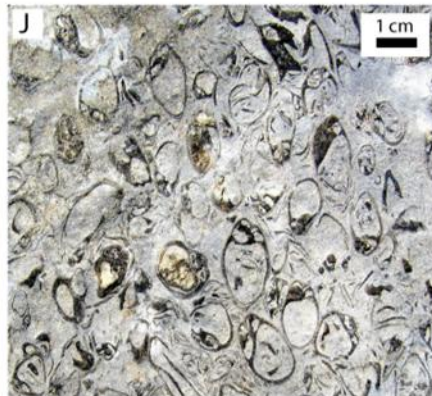
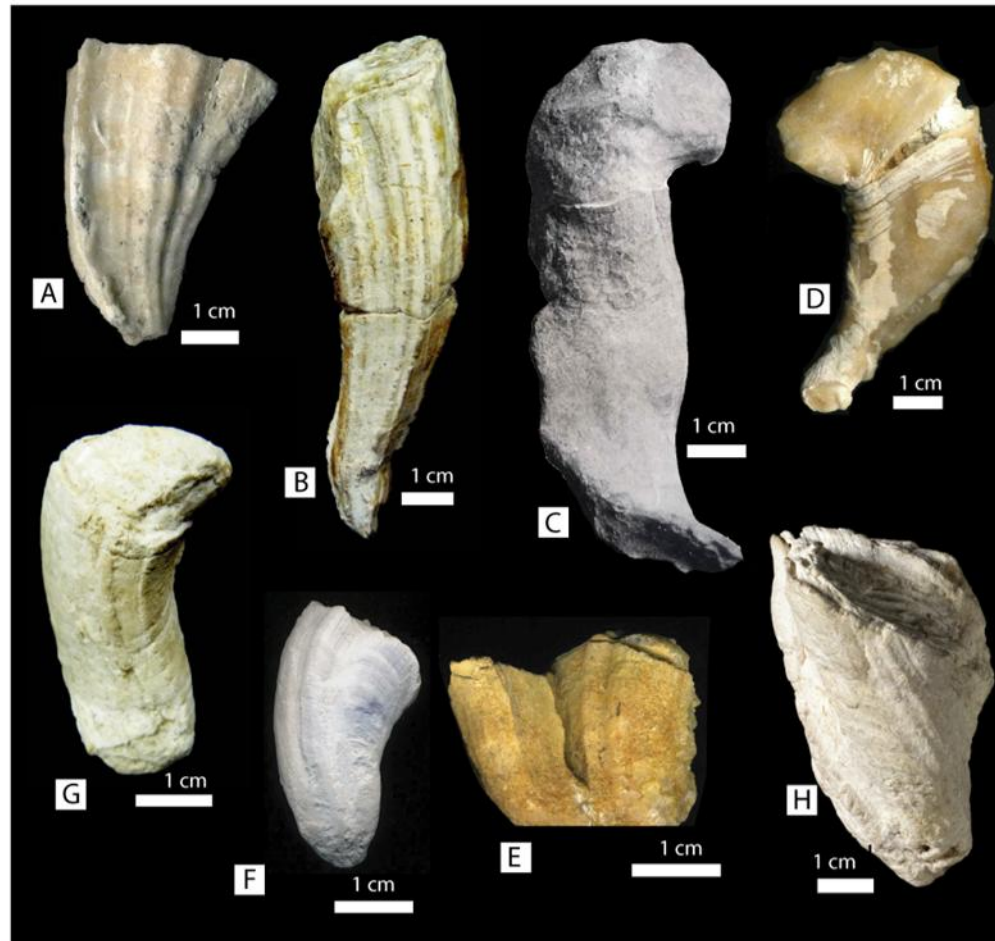


Orgon



Genre *Homopleura*
Brouzet les Alès

Agriopleura et Monopleuridae



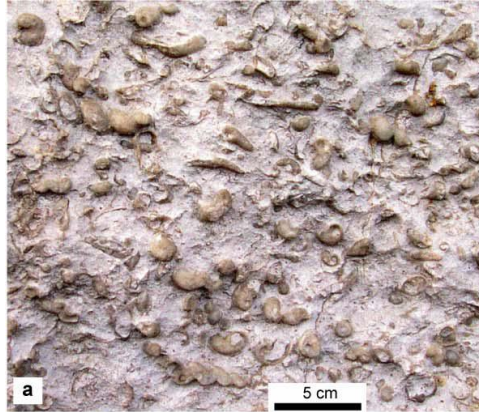


Toucasia carinata

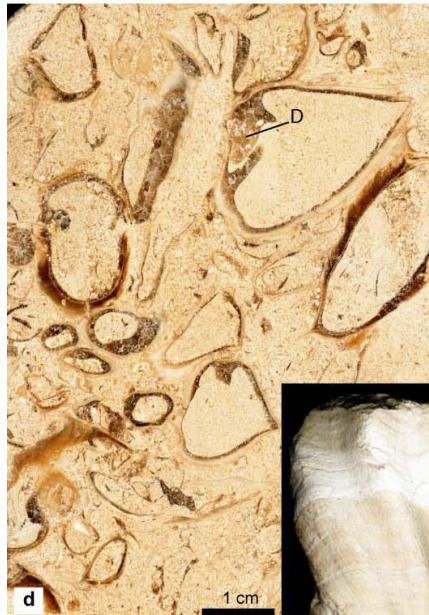


Requienia ammonia

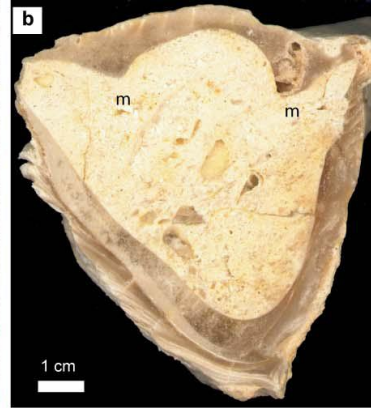
Communauté et Taxons caractéristiques du Barrémien supérieur à Orgon



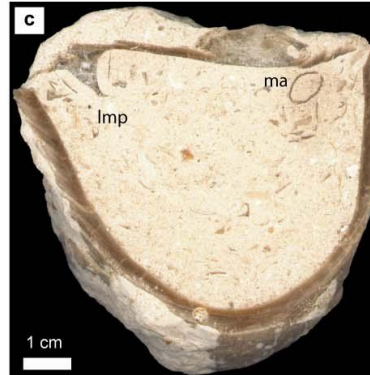
d- Communauté à
Monopleura urgonensis



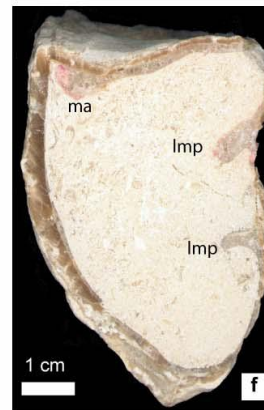
e- *Monopleura urgonensis*,
spécimen dégagé en vue ventrale



b- *Matheronia cf. munieri*,
section antéro-postérieure d'un
spécimen bivalve montrant les
myophores



c- *Requienia ammonia*, section
antéro-postérieure d'un spécimen
bivalve montrant les myophores



f- *Toucasia* sp., section antéro-
postérieure d'un spécimen bivalve
montrant les lames myophores
postérieures

FAUNE D'ORGON

Matheronia munieri Paquier
Requienia ammonia (Goldfuss)
Requienia gryphoides Matheron
Requienia semirugata Matheron
Toucasia carinata (Matheron)
Toucasia transversa Paquier
Monopleura varians Matheron
Monopleura cingulata Matheron
Monopleura trilobata (d'Orbigny)
Monopleura martini Matheron
Monopleura depressa Matheron
Debrunia mutabilis (Matheron)
Debrunia favrei (Matheron)
Debrunia occitanica Masse and Fenerci-Masse
Retha munieri (Matheron)
Horiopleura dumortieri (Matheron)

Pachytraga



Caprina



Offneria



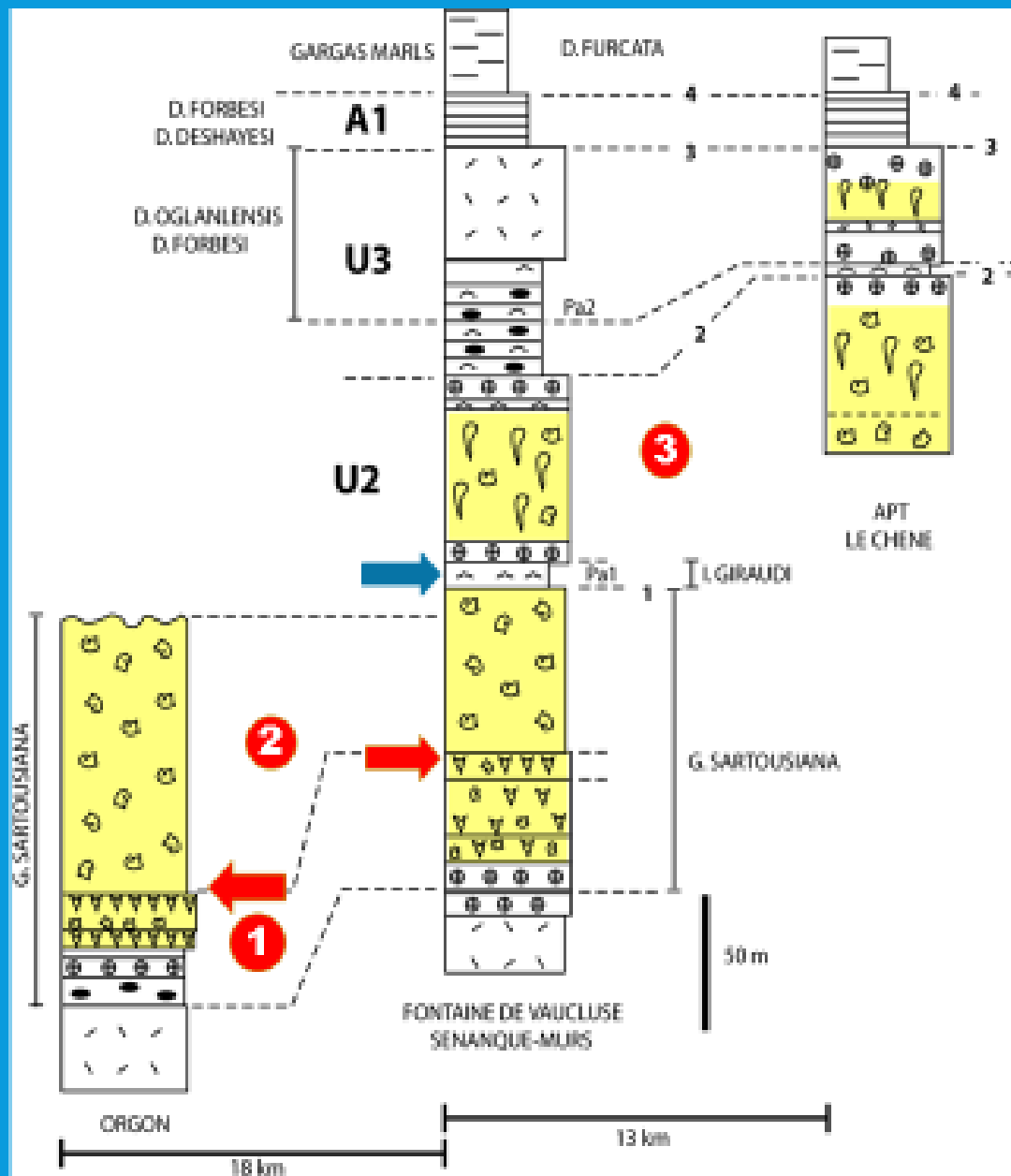
Provence



FAUNE DE RUSTREL

Matheronia aptiensis Matheron
Matheronia virginiae (Gras)
Requienia gryphoides Matheron
Requienia ammonia (Goldfuss)
Toucasia carinata (Matheron)
Toucasia transversa Paquier
Monopleura varians Matheron
Monopleura trilobata (d'Orbigny)
Debrunia occitanica Masse and Fenerci-Masse
Debrunia favrei (Matheron)
Debrunia ucetiae Masse and Fenerci-Masse
Horiopleura brevis Masse and Fenerci-Masse
Retha munieri (Matheron)
Pachytraga paradoxa Paquier
Praecaprina varians Paquier
Praecaprina gaudryi Paquier
Caprina douvillei Paquier
Offneria rhodanica Paquier
Offneria interrupta Paquier

Homopleura coquandi (Matheron) *Homopleura rustrella* Masse et Fenerci-Masse



➡ ECLIPSE
➡ EMERSION

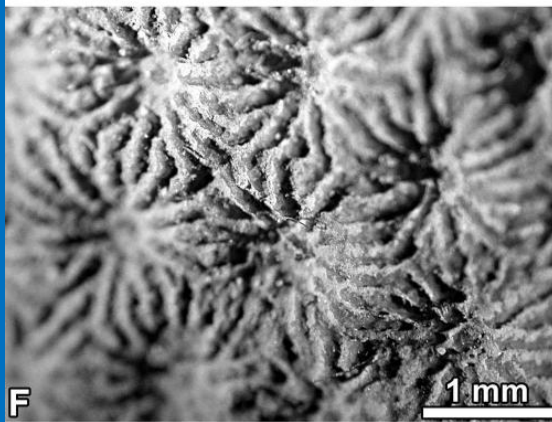
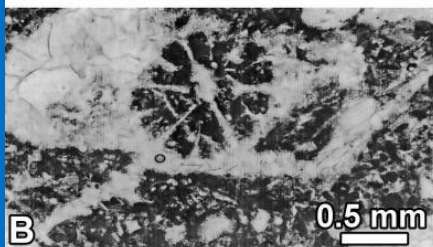
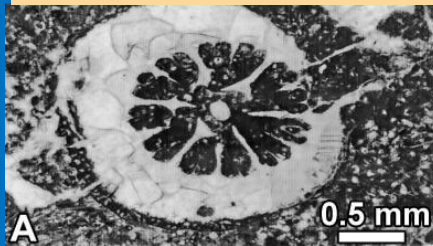
Faunes

- 1 Brouzet
- 2 Orgon
- 3 Rustrel

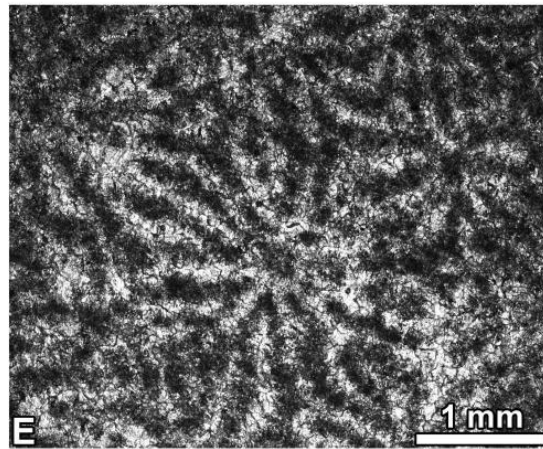
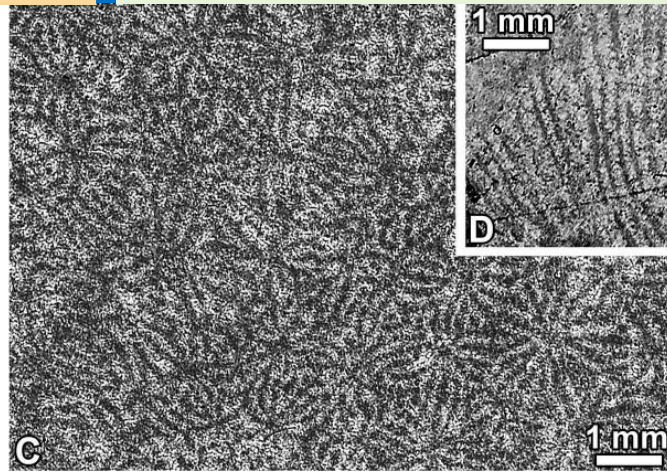


RECIFS CORALLIENS ACTUELS

Stylosmilia corallina
Mont-Puget

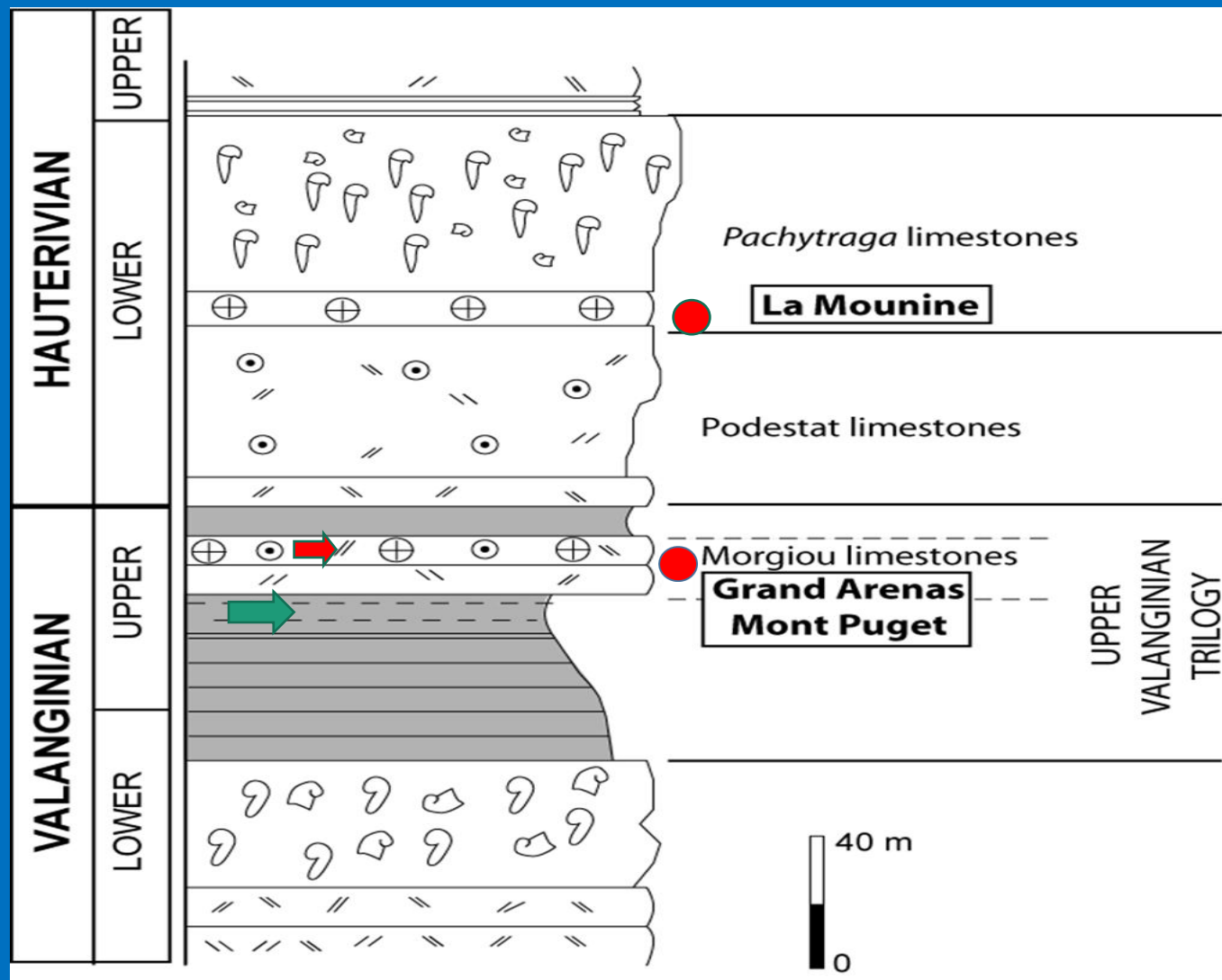


Mesomorpha ornata la
Mounine

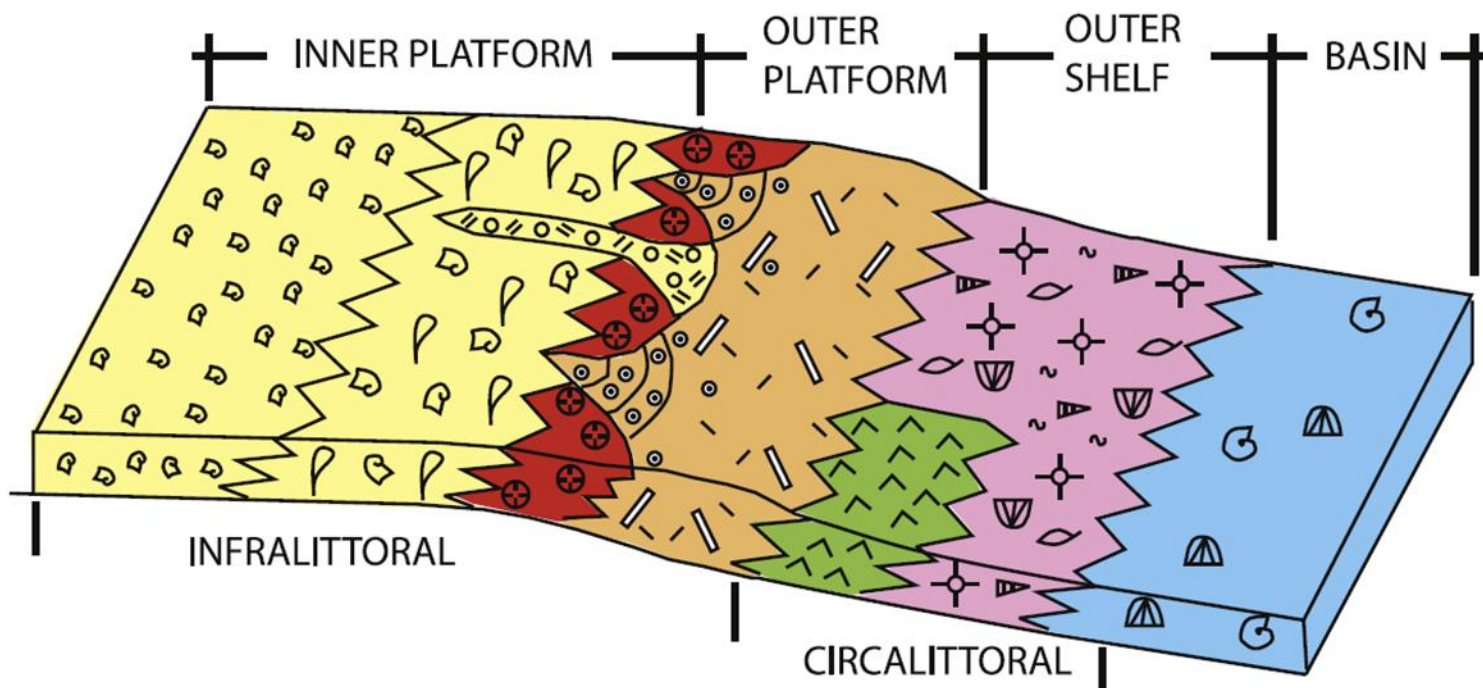


**CORAUX DU
VALANGINIEN ET
DE
L'HAUTERIVIEN**

Dimorpharaea catalaunica
La Mounine



Massif des Calanques

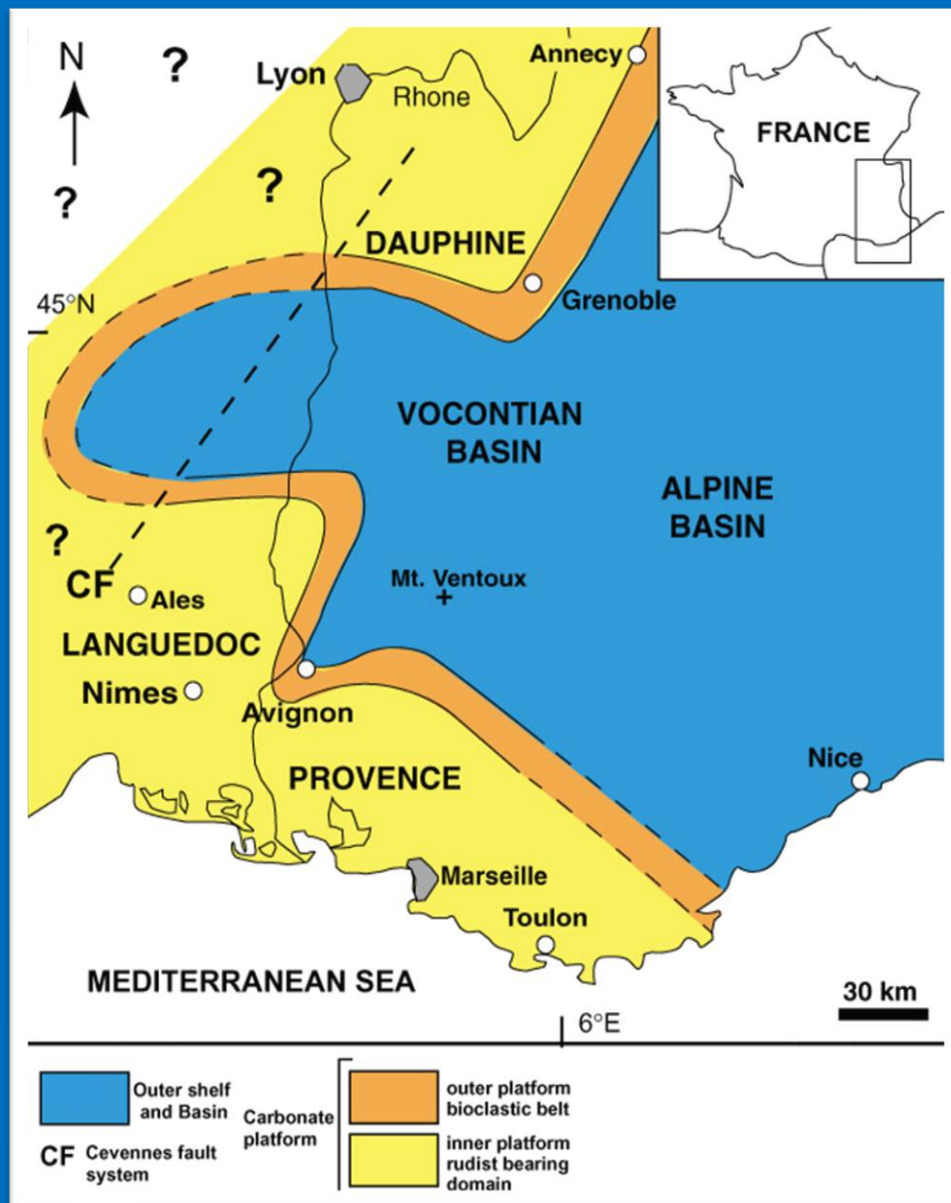


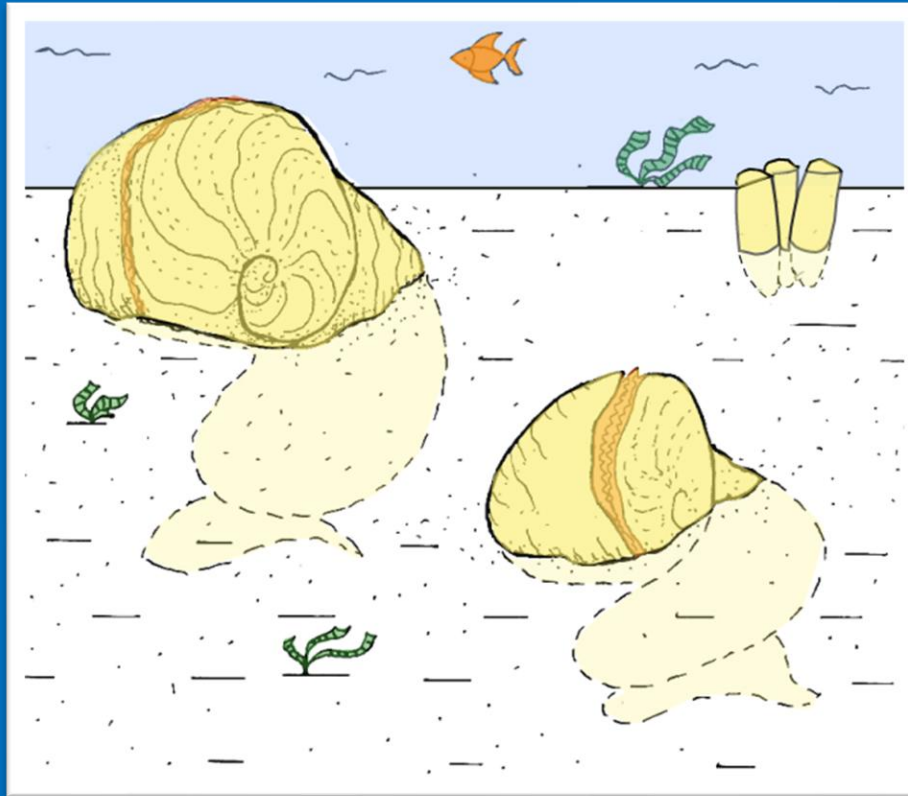
BIOLOGICAL SYMBOLS

small requieniids	corals	brachiopods	gastropods	infaunal echinoids
large requieniids	dasycladales	sponges	serpulids	
caprinids	orbitolinids	echinoderms	ammonites	

SEDIMENTOLOGICAL SYMBOLS

rudstones	ooids	bioclastics	deep muddy sediments
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Mode de vie de Requienia ammonia

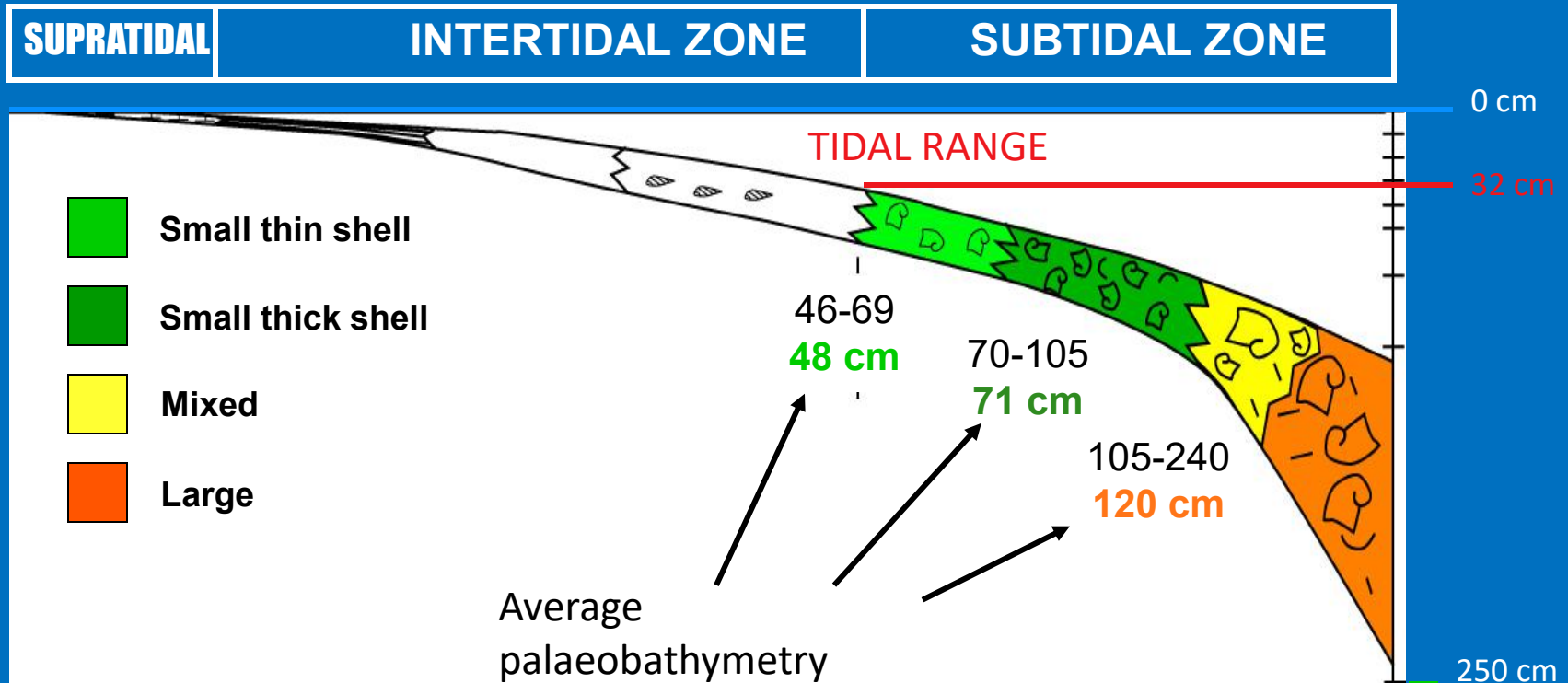


Agriopleura



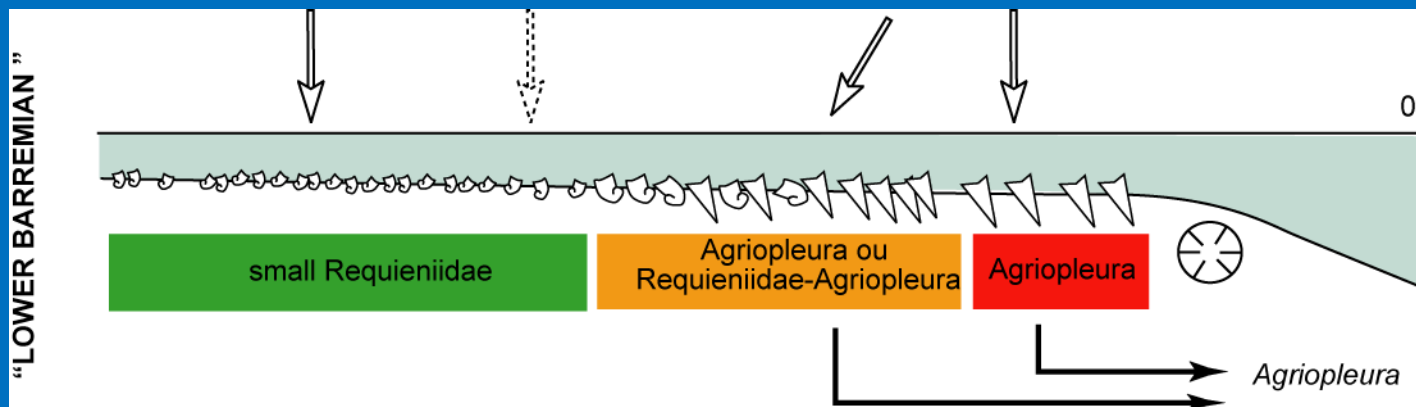
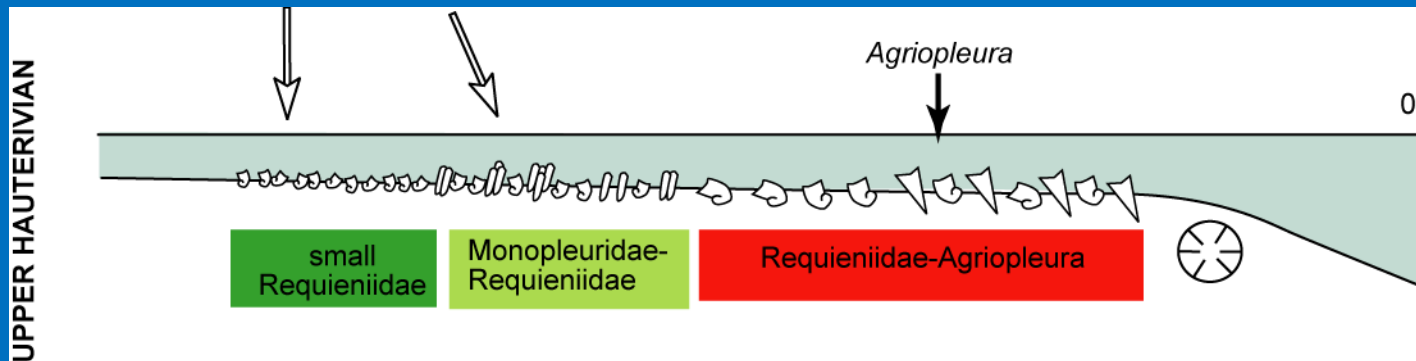
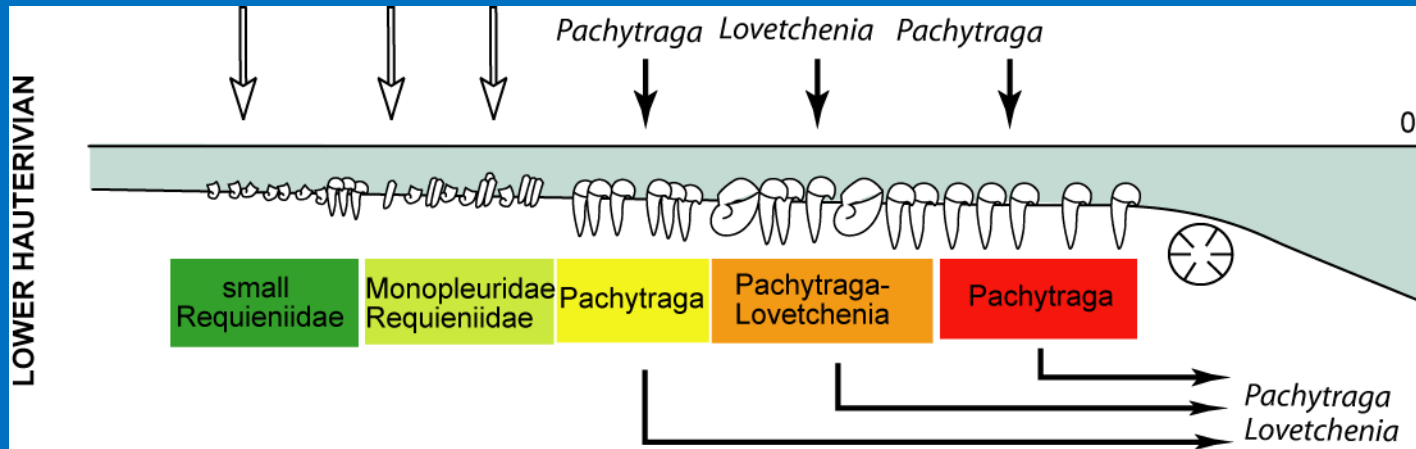
Debrunia

PALAEOBATHYMETRIC ZONATION OF RUDIST COMMUNITIES



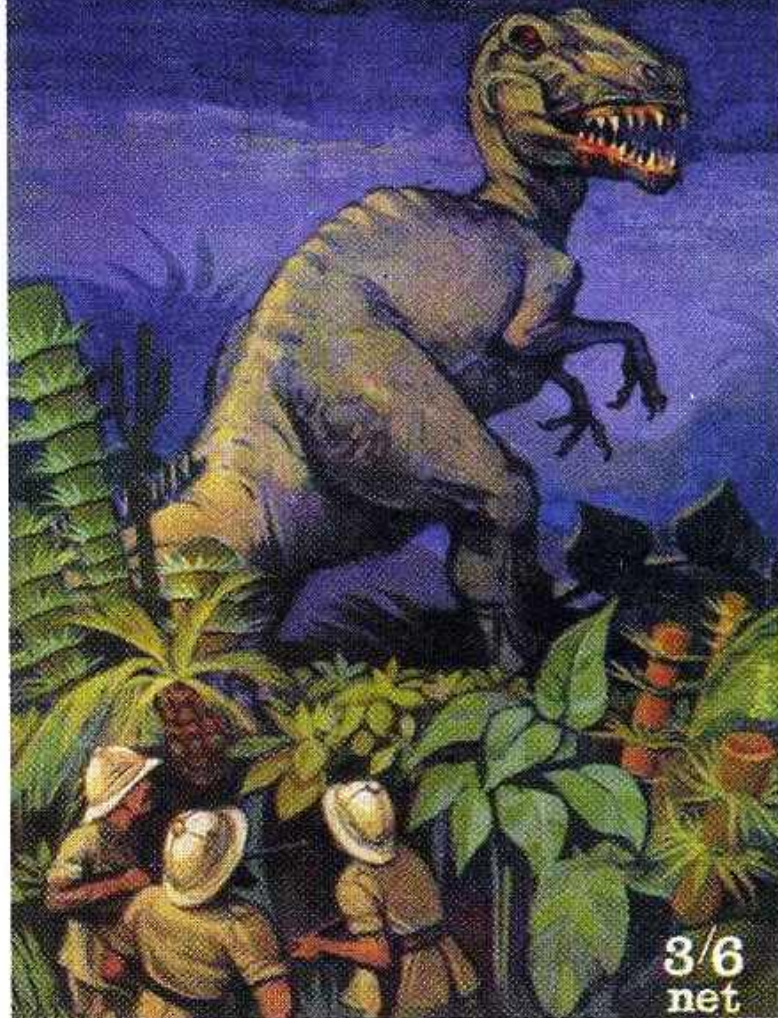
Several tens of kilometers

PHASE DE L'HAUTERIVIAN A L'APTIEN INFERIEUR



THE LOST WORLD

Sir Arthur Conan Doyle



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net

MERCI POUR VOTRE ATTENTION



