

Tenth International Congress on Rudist Bivalves Bellaterra, June 22-27



Pre-Congress Field Trip Upper Cretaceous rudists from the Berguedà

Field Trip leaders: E. Vicens, J.M. Pons, and O. Oms



Universitat Autònoma de Barcelona

Tenth International Congress on Rudist Bivalves Bellaterra, June 22-27



Pre-Congress Field Trip Upper Cretaceous rudists from the Berguedà

Field Trip leaders: E. Vicens, J.M. Pons, and O. Oms



Universitat Autònoma de Barcelona

PRE-CONGRESS FIELD TRIP

Field trip: Upper Cretaceous rudists from the Berguedà

Field trip leaders: **Enric Vicens, Jose Maria Pons, and Oriol Oms**

Sunday 22 of June

09.00 Fieldtrip starts from **Hotel Campus**

Ride Bellaterra – Gósol

Bellaterra – Sabadell – (C-58) – Terrassa – (C-16) – Berga – Cercs – Castell de Guardiola – (C-563) – Maçaners – Saldes – Gósol

Panoramic view of the Pedraforca from Maçaners

11.00 Coffee pause in Gósol

11.30 **STOP 1: L'Espà**

Upper Campanian with: *Hippurites radiosus* des Moulins, *Hippuritella lapeirousei* (Goldfuss), *Hippuritella* sp., *Plagioptychus* sp.

12.30 Lunch break

Lunch served at Hostal Restaurant Cal Franciscó, Gósol

14.00 Ride Gósol – Peguera

Gósol – (C-563) – Coll de la Trapa – (mountain road) – Coll de Pradell – Fumanya – Peguera

Panoramic view of the Fumanya Dinosaur Fossil Track Site

15.00 **STOP 2: Peguera**

Upper Campanian with: *Biradiolites royanus* d'Orbigny, *Radiolitella pulchellus* (Vidal).

15.30 Ride Peguera – Rasos de Peguera

16.00 **STOP 3: Rasos de Peguera**

Lower Campanian with: *Hippurites vidali* Matheron, *Hippuritella variabilis* (Douvillé), *Hippuritella* sp., *Vaccinites archiaci* (Munier-Chalmas), *Vaccinites robustus* Toucas, *Radiolites* sp., *Radiolites* aff. *squamosus* d'Orbigny, *Biradiolites leychertensis* Toucas, *B. siracensis* Toucas, *Lapeirousia* sp., *Praeradiolites fuxeensis* Astre, *P. subtoucasi* Toucas, *Rosellia xavieri* Pons, Caprotinidae indet., *Mitrocaprina* sp.

Middle Campanian with: *Hippurites lamarcki* Douvillé, *Hippuritella lapeirousei* (Goldfuss), *Hippuritella* sp., *Biradiolites lameracensis* Toucas, *B. siracensis* Toucas, *Lapeirousia* sp., *Praeradiolites subtoucasi* Toucas.

17.00 Ride Rasos de Peguera – Vilaforriu

Rasos de Peguera – (BV-4243) – Espinalbet – Vilaforriu

17.30 **STOP 4: Vilaforriu**

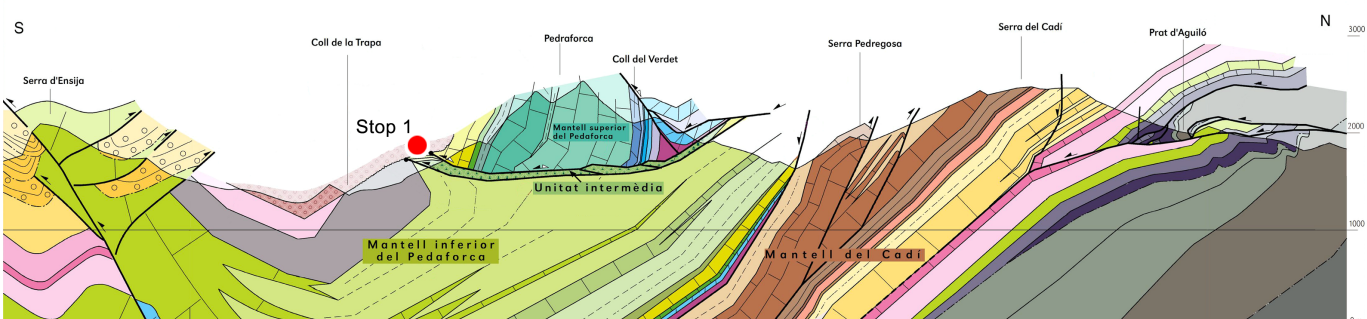
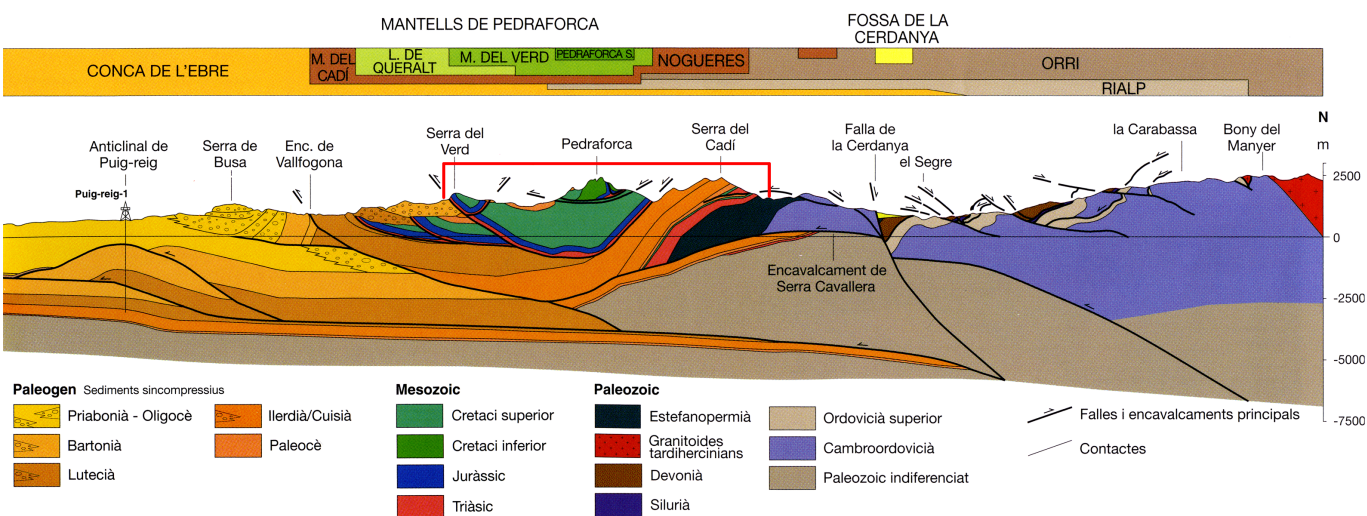
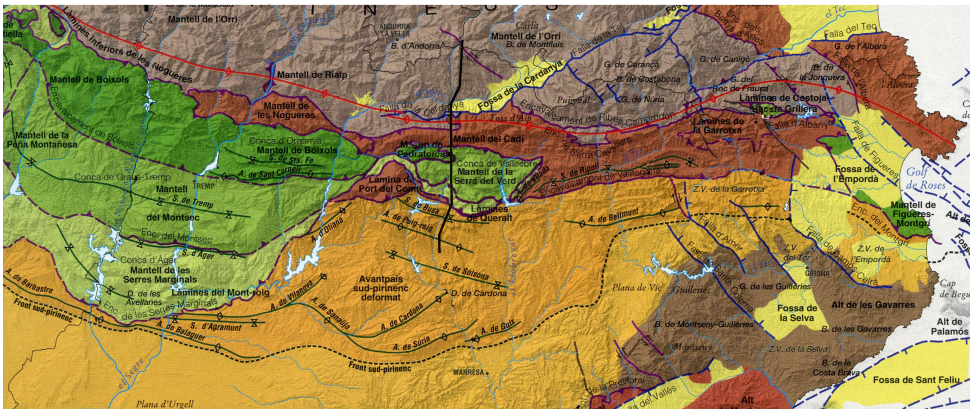
Upper Campanian with: *Hippurites radiosus* des Moulins, *Hippuritella lapeirousei* (Goldfuss), *Hippuritella* sp., *Biradiolites chaperi* Toucas, *Biradiolites royanus* (d'Orbigny), *Praeradiolites boucheroni* Toucas, *Radiolitella pulchellus* (Vidal), *Mitrocaprina* sp.

18.30 Ride back to Bellaterra

Vilaforriu – Berga – (C-16) – Terrassa – (C-58) – Sabadell – Bellaterra

20.00 End of the fieldtrip at **Hotel Campus**

The south-eastern Pyrenees structure, in the area of Berguedà, presents significant differences from that of the south-central Pyrenees. The upper overthrusting sheets, namely: **Queralt**, **Serra del Verd** (=Lower Pedraforca), and **Upper Pedraforca**, are exclusively formed by Mesozoic materials, occupy a very narrow belt, and are stacked one after another, forming a large structural unit known as the **Pedraforca overthrusting sheets assemblage**. The lower overthrusting sheets are **Cadí**, **Orri**, and **Rialp**.



- Geological map of central-eastern South Pyrenees, with indication of the main overthrusting sheets and location of the cross section. Cross section through the Berguedà and Cerdanya areas. Detailed cross section centered on Pedraforça area.

Geological map and cross section after 'Roca, A., Miranda, J. (eds). 2010. *Atles geològic de Catalunya. Institut Geològic de Catalunya. Institut Cartogràfic de Catalunya. Generalitat de Catalunya. Barcelona. 463 pp*'.

Detailed cross section after **'Martínez, A. 2002. La geología del Pedraforca. Departament de Medi Ambient, Generalitat de Catalunya'**.

Restitution of the Upper Cretaceous sediments to their original location, depicts a basin deepening northwards and also clearly westwards. Consequently, Cretaceous sediments thickness decreases southwards and also eastwards. The Lower Cretaceous is represented only in the northernmost unit, Upper Pedraforca, and the Cretaceous of the lower units, originally located southwards, is progressively thinner and its base younger southwards and also eastwards. The Cretaceous of the Cadí overthrusting sheet, corresponds originally to the southernmost part of the basin, although its outcrops are now located northwards; accordingly, it is very thin and only the upper Campanian is present. At the end of the Cretaceous the “Garumnian” facies are well developed on all units, except the Upper Pedraforca one.

RIDE BELLATERRA – GÓSOL

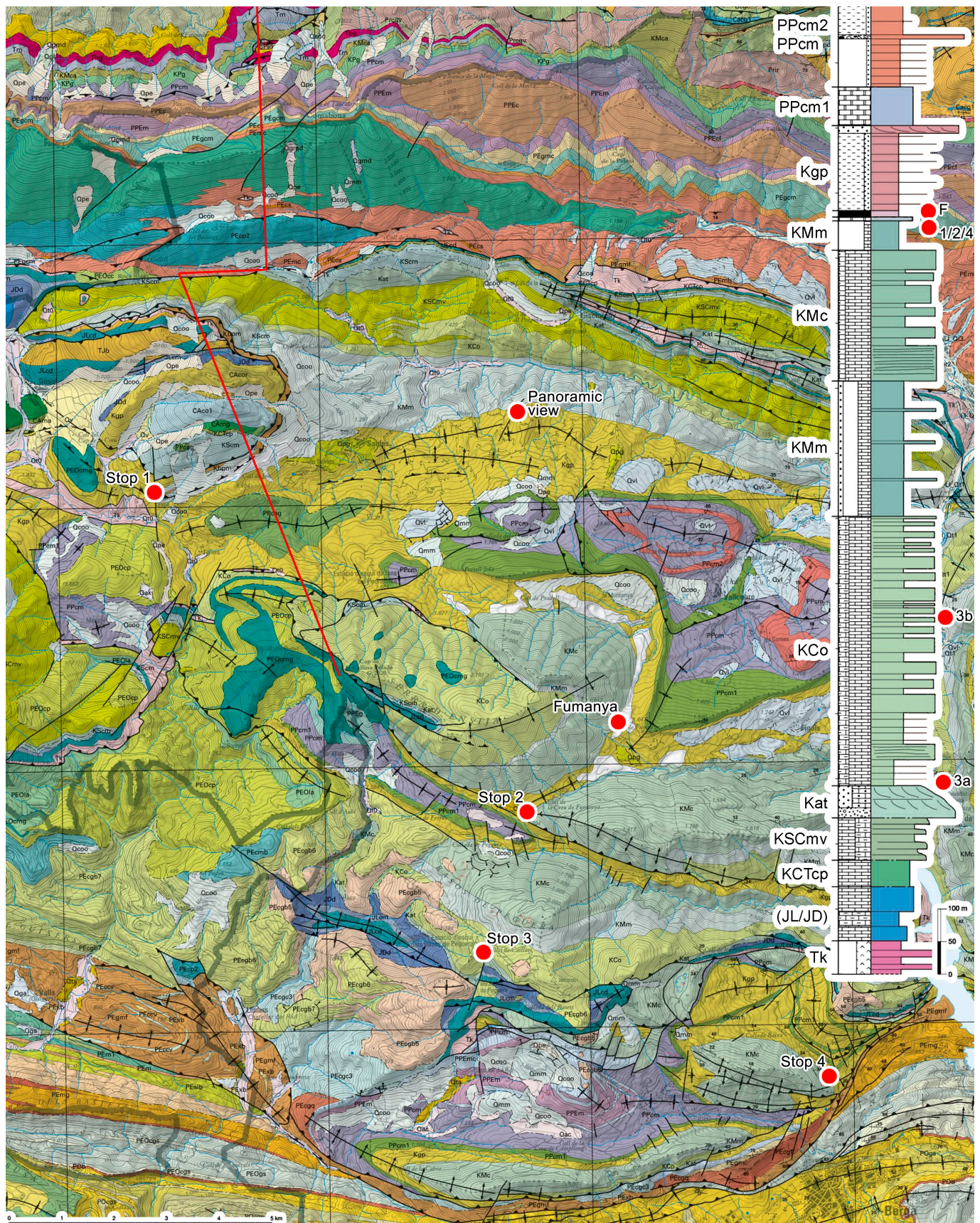
Our fieldtrip starts in Bellaterra, near **Sabadell**, follows NNW the motorway C-58 to **Manresa** and continues northwards, C-16, parallel to the Llobregat River, until **Berga**. The road continues to Cercs and Castell de Guardiola, from where road B-400 runs to **Maçaners**, **Saldes**, and **Gósol**.

From the continental Miocene deposits of the Vallès Depression we will cross the Vallès fault, the metamorphic Palaeozoic, the folded marine Triassic, and the overthrust of the last two on the continental Palaeocene that conforms, with the Eocene and the Oligocene, the **Ebre Basin**. North of **Berga** we enter the Pyrenees, in the **Pedraforca overthrusting sheets assemblage** area. Close to **Maçaners** (500 m W), a panoramic view is well suited for an introduction to the geology of the area.

-
- Stratigraphic column and geological map, with indication of STOPS 1 to 4, points of the Pedraforca panoramic view, and of the Fumanya Dinosaur Fossil Track Site.

Stratigraphic column from '*Mapa Geològic 1:25000. La Pobla de Lillet 251-1-2 (71-22). 2013*'.

Field Trip: Upper Cretaceous rudists from the Berguedà



Geological map from *'Mapa geològic comarcal de Catalunya 1:50000. 14 Berguedà. 2006'*. Both maps edited by *'Institut Geològic de Catalunya, Institut Cartogràfic de Catalunya, Generalitat de Catalunya, Barcelona'*. All the published geological maps of Catalonia may be consulted or downloaded through the web page <<http://www.icgc.cat>>

STOP 1.- L'ESPÀ

The **L'Espà** outcrop is a road cut of the B-400 road, 650 m W of L'Espà village. Its location corresponds to the **Middle Pedraforca** overthrusting sheet. It is a relatively large exposure of a hippuritid reef (about 20 m thick and nearly 500 m long outcrop), where faunal composition, structure, and zoning are clearly observable, details become evident, and most observations can be quantified. The main builder is *Hippurites radiosus* but other rudists, as well as branching and massive colonial corals, are also present.

Identified rudist species correspond to the upper Campanian: *Hippurites radiosus* des Moulins, *Hippuritella lapeirousei* (Goldfuss), *Hippuritella* sp., and *Plagioptychus* sp.

RIDE GÓSOL – PEGUERA

The ride from Gósol to the ruins of the abandoned Peguera village, by small mountain roads, crosses, near Fumanya, an old open-air coal exploitation, corresponding to the basal horizons of the continental “Garumnian” facies of the Tremp Formation. All this journey develops on the **Serra del Verd** overthrusting sheet.

A panoramic view of the Fumanya Dinosaur Fossil Track Site is unavoidable, but a more detailed visit of the site depends on time availability.

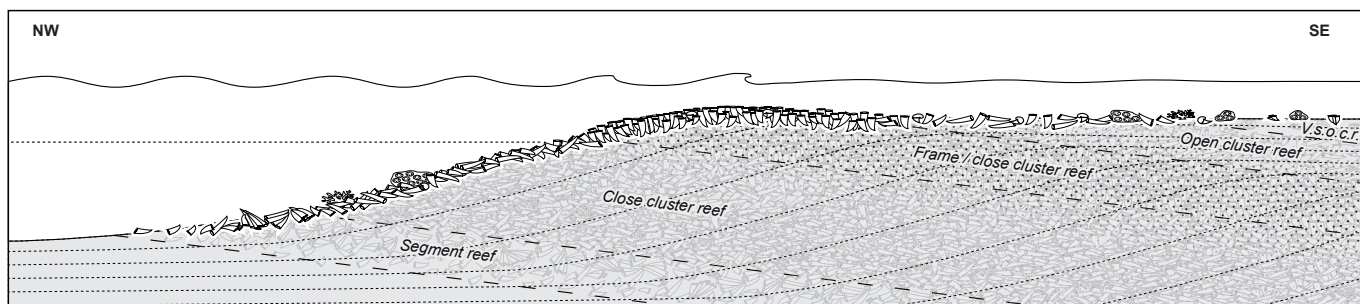
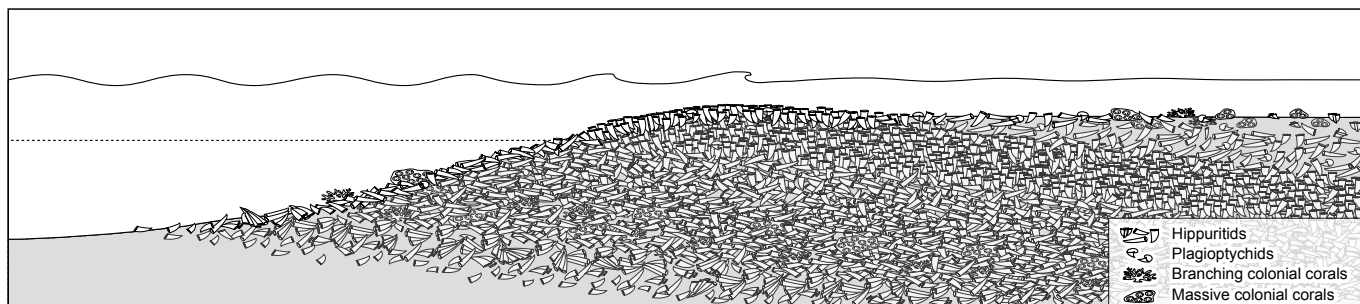
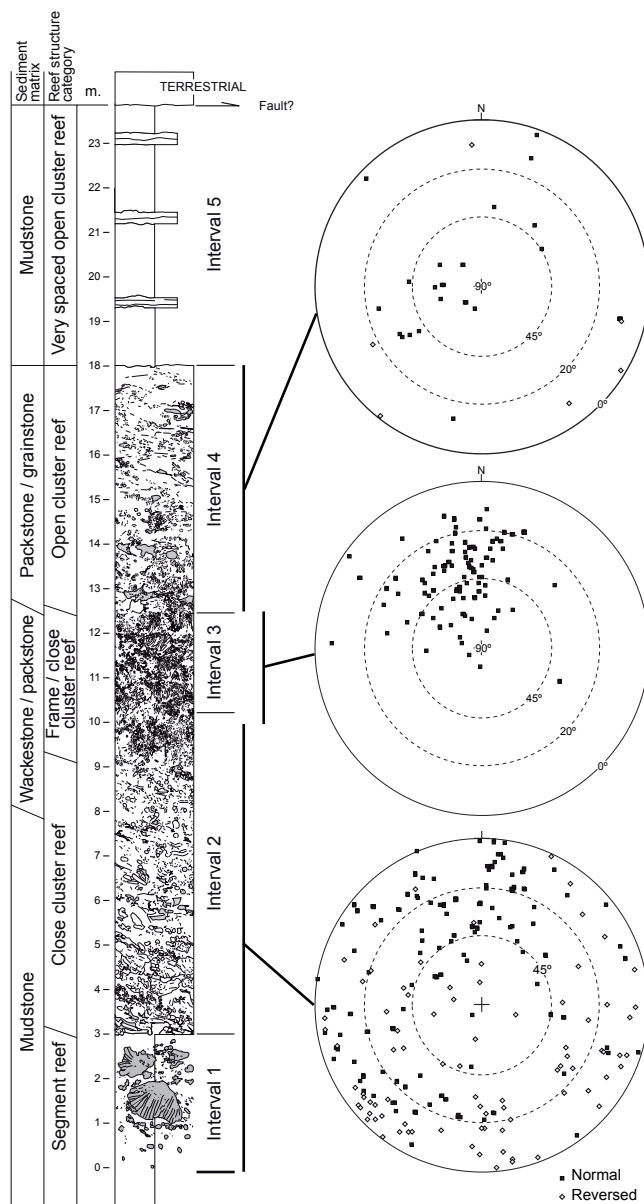
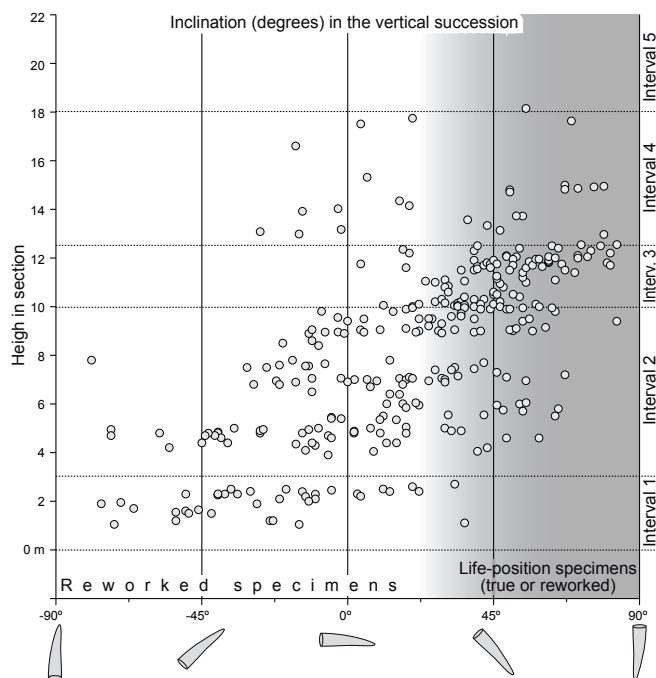
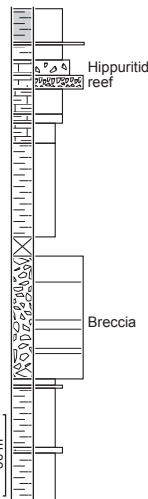
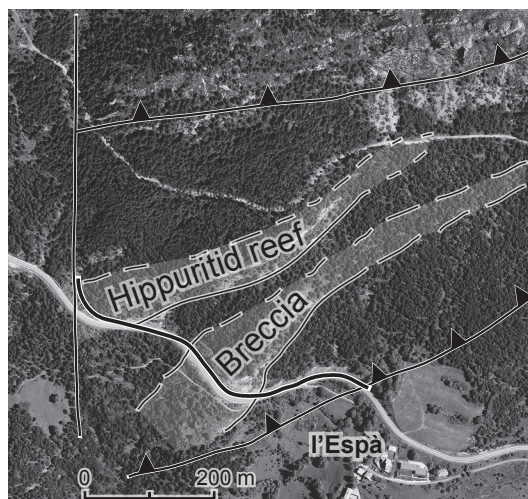
STOP 2.- PEGUERA

At Peguera, a horizon equivalent to the one seen at STOP 1 crops out, although the rudist fauna here is scarce and only represented by small radiolitids. Immediately above, the same horizons as seen at Fumanya outcrop appear.

The rudist species found indicate the upper Campanian: *Biradiolites royanus* d'Orbigny and *Radiolitella pulchellus* (Vidal).

-
- Photomap of l'Espà area, with indication of the measured stratigraphical section and relevant horizons location. Stratigraphical section. Detail of the intervals distinguished within the hippuritid reef, with orientation of rudist shells (mainly *H. radiosus*) plotted in stereographic and Cartesian projections. Interpretation of the l'Espà reef succession with indication of rudist and coral occurrences.

Field Trip: Upper Cretaceous rudists from the Berguedà



STOP 3.- RASOS DE PEGUERA

At Rasos de Peguera, the access road and parking area of the currently non active sky station offer the opportunity to observe the upper Cretaceous succession of the **Serra del Verd** overthrusting sheet. Lower rudist horizons appear above some metres of conglomerates and sandstones, developed on the Jurassic, and correspond to the lower Campanian. Upper rudist horizons cropping out here (parking area) correspond to the middle Campanian. The visited upper Campanian outcrops of Peguera and Fumanya are located far up in the section.

Lower Campanian identified rudist species: *Hippurites vidali* Matheron, *Hippuritella variabilis* (Douvillé), *Hippuritella* sp., *Vaccinites archiaci* (Munier-Chalmas), *Vaccinites robustus* Toucas, *Radiolites* sp., *Radiolites* aff. *squamosus* d'Orbigny, *Biradiolites leychertensis* Toucas, *B. siracensis* Toucas, *Lapeirousia* sp., *Praeradiolites fuxeensis* Astre, *P. subtoucasi* Toucas, *Rosellia xavieri* Pons, Caprotinidae indet., and *Mitrocaprina* sp.

Middle Campanian identified rudist species: *Hippurites lamarcki* Douvillé, *Hippuritella lapeirousei* (Goldfuss), *Hippuritella* sp., *Biradiolites lameracensis* Toucas, *B. siracensis* Toucas, *Lapeirousia* sp., and *Praeradiolites subtoucasi* Toucas.

STOP 4.- VILAFORNIU

The upper Campanian crops out at the local road to Vilaforniu, close to Berga, and is particularly well exposed on a down-slope below the road. The “Garumnian” facies are developed immediately up section. It is stratigraphically equivalent to the same horizon as STOPS 1 and 2. The outcrop corresponds to the **Queralt** overthrusting sheet; thus, only the upper part of the Cretaceous is present here.

Rudist species identified correspond to the Upper Campanian: *Hippurites radiosus* des Moulins, *Hippuritella lapeirousei* (Goldfuss), *Hippuritella* sp., *Biradiolites chaperi* Toucas, *Biradiolites royanus* (d'Orbigny), *Praeradiolites boucheroni* Toucas, *Radiolites pulchellus* (Vidal), and *Mitrocaprina* sp.



- Photomap of Rasos de Peguera (non active sky station) access road and parking area.

