¿Hay fauna en todas las cuevas? El caso de las cuevas hipogénicas

Alberto Sendra Mocholí

Universidad de Alcalá

Sociedad Española De Espeleología y Ciencias del Karst

Organiza: ICEK Institut Català d'Espeleologia i Ciències del Karst


¡la vida se abre paso!
JURASSIC PARK

Características ambiente subterráneo:

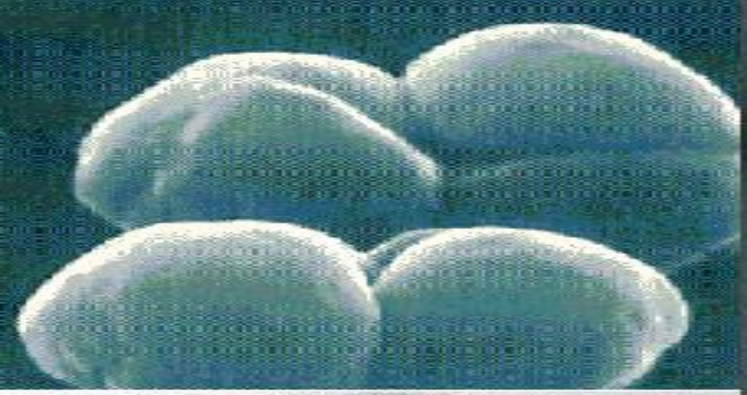
- Escasez de nutrientes

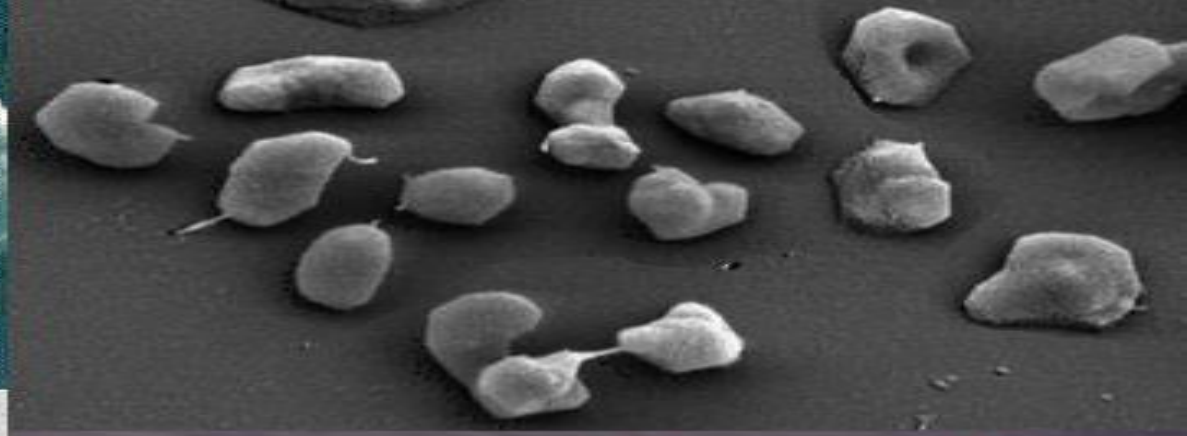
- **Ausencia de luz**

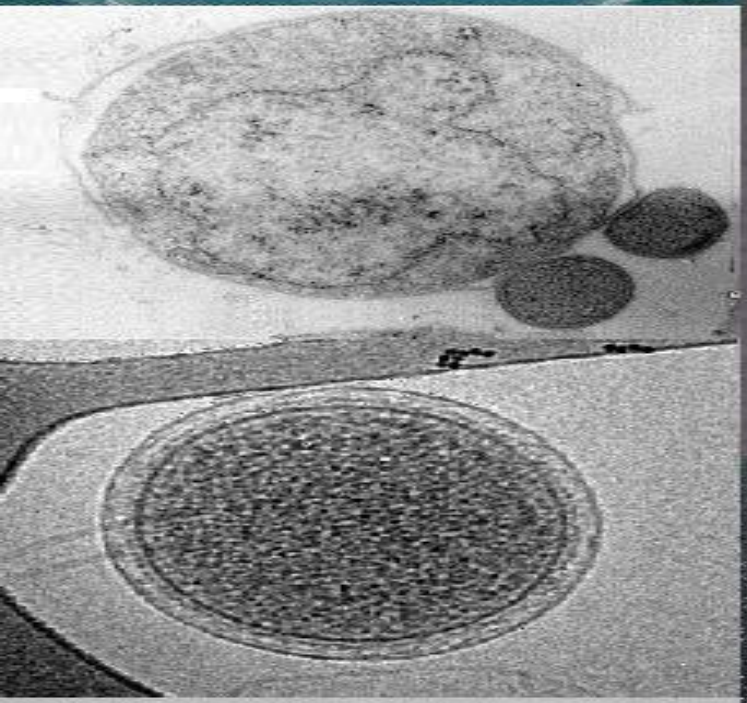
- Temperatura constante.

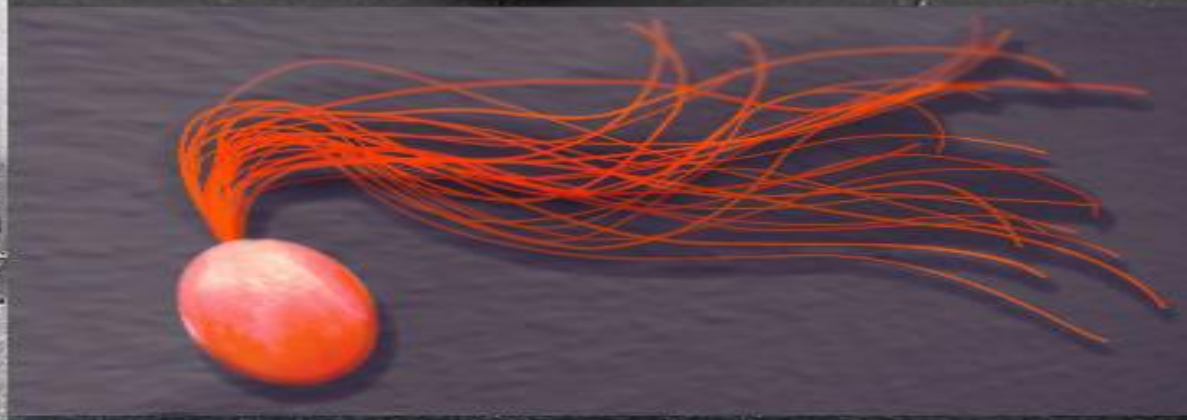
- Humedad elevada.

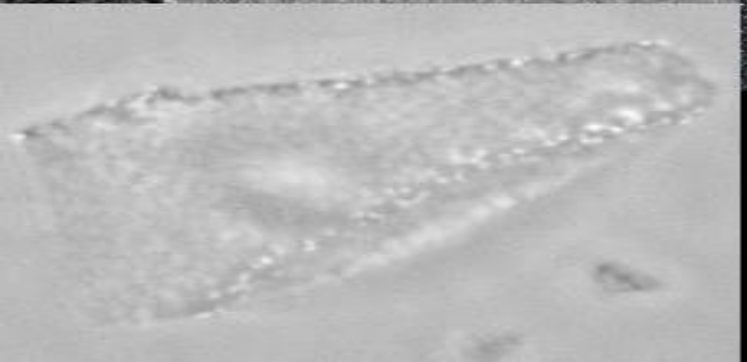
- Elevado nivel de $C0_2$



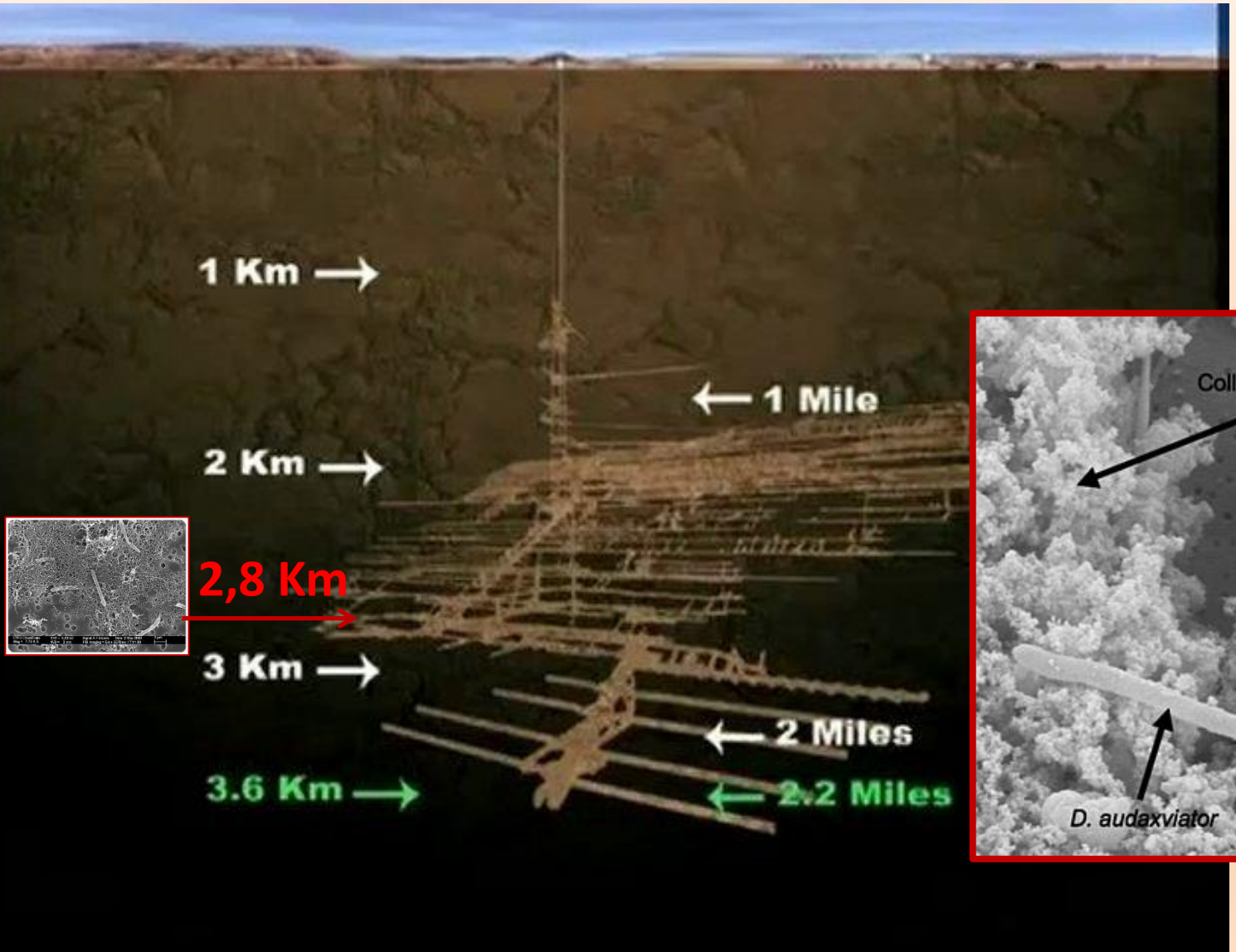


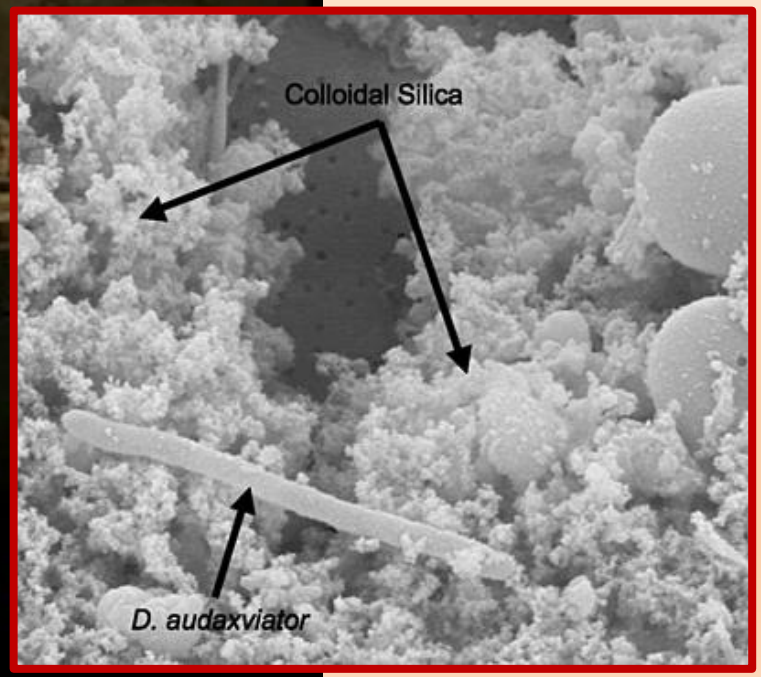




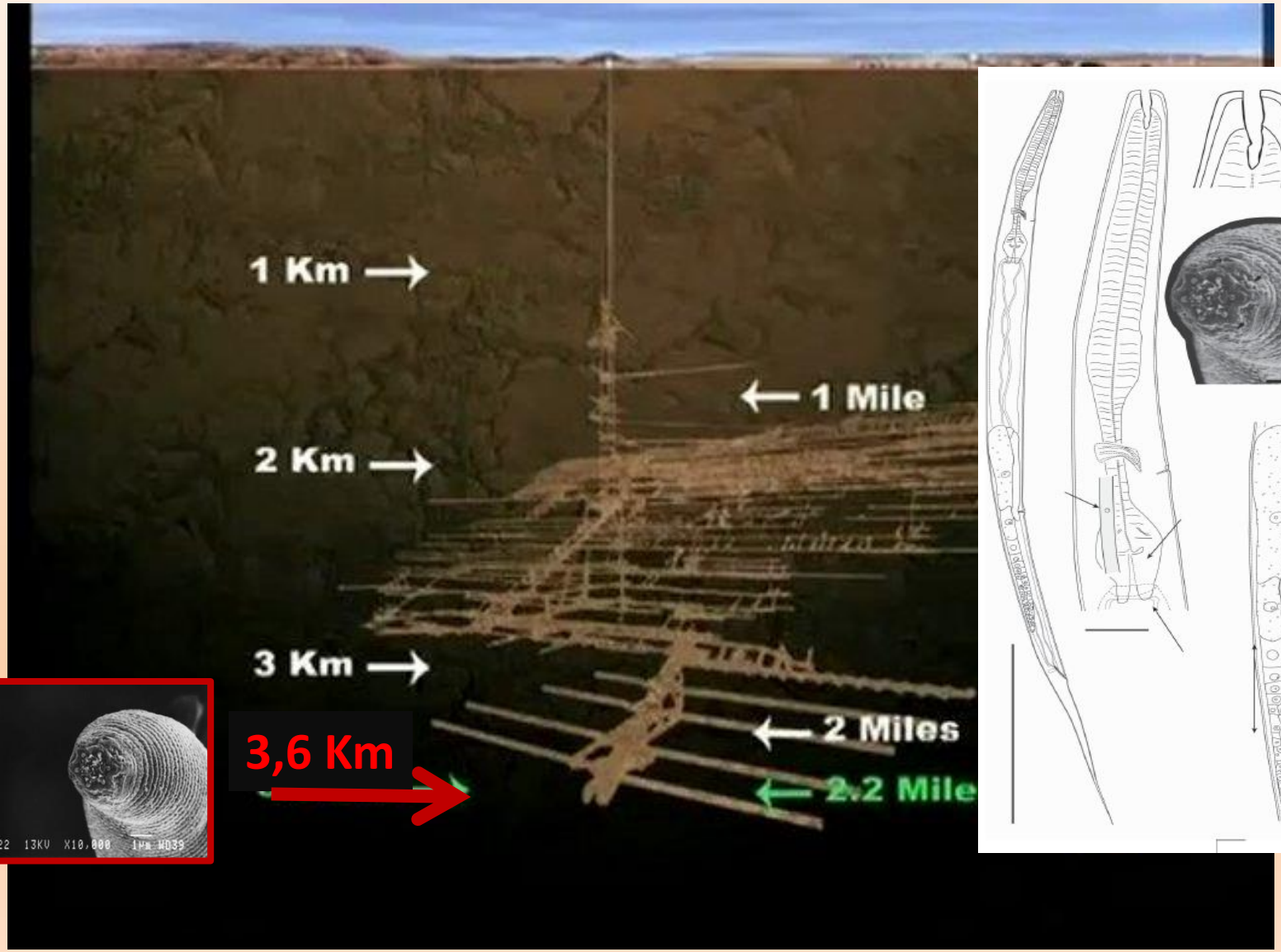


2008. Minas de oro de Sudáfrica: *Desulforudis audaxviator*
Mponeng mine: 60ºC / pH 9,3;



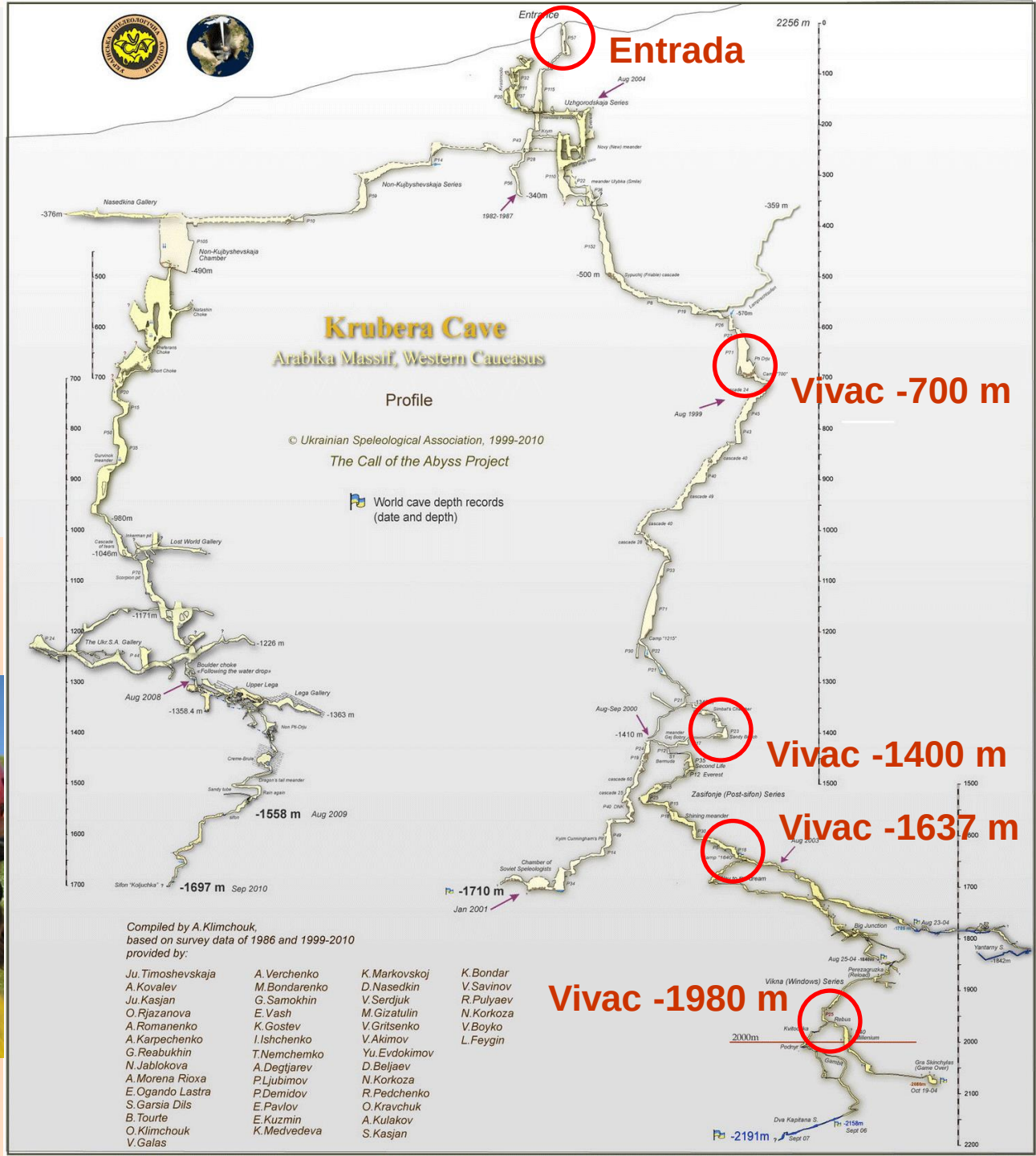


2011. Minas de oro de Sudáfrica: *Halicephalus mephisto*
Tau Tone mine: 48ºC nemátodo



Datos espeleométricos de la sima Kruera-Voronya

- **Cota de la entrada: 2.256 m s.n.m.**
- **Profundidad vía principal: -2.191 m**
- **Profundidad vía secundaria: -1.697 m**
- **Desarrollo: 16.058 m**



Sima Krúbera-Voronya. Estudios bioespeleológicos

Krubera-Voronya -2.191 m. Récord del Mundo de profundidad

CAMPAMENTO BASE. Valle glaciar de Orto-Balagán

Krubera-Voronya -2.191 m. Récord del Mundo de profundidad

Entrance
(1)
0,5 - 2°C
3°C
4°C
5-6°C
Neobisium
Nemaspela
Plutomurus
Anurida
Catops
Diplopoda
Zenkevitchia
Troglocaris
Anurida
Deuteraphorura
Nemaspela
Duvalius
Troglohyphantes
Catops
Neobisium
Schaeffena
Plutomurus
Diplopoda
Limoniidae
Acarina
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
(1) Non-Kujbysherskaja branch

Amblyopsis hosieri

Proteus anguinus

Gollumjapyx smeagol

Ildobates nebotil

Paratachycampa hispanica

Speleoharpactea levantina

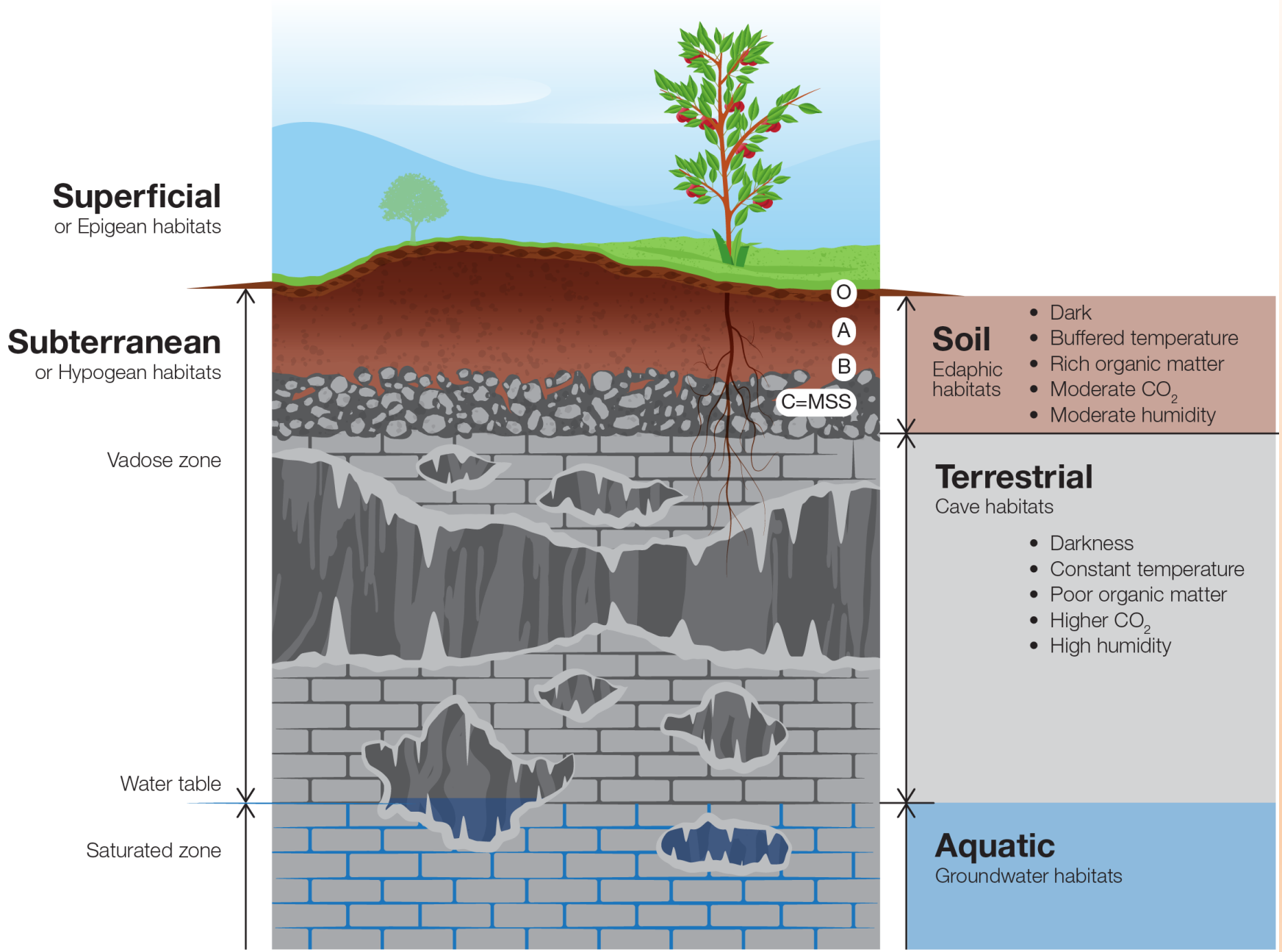
REMIPEDIA

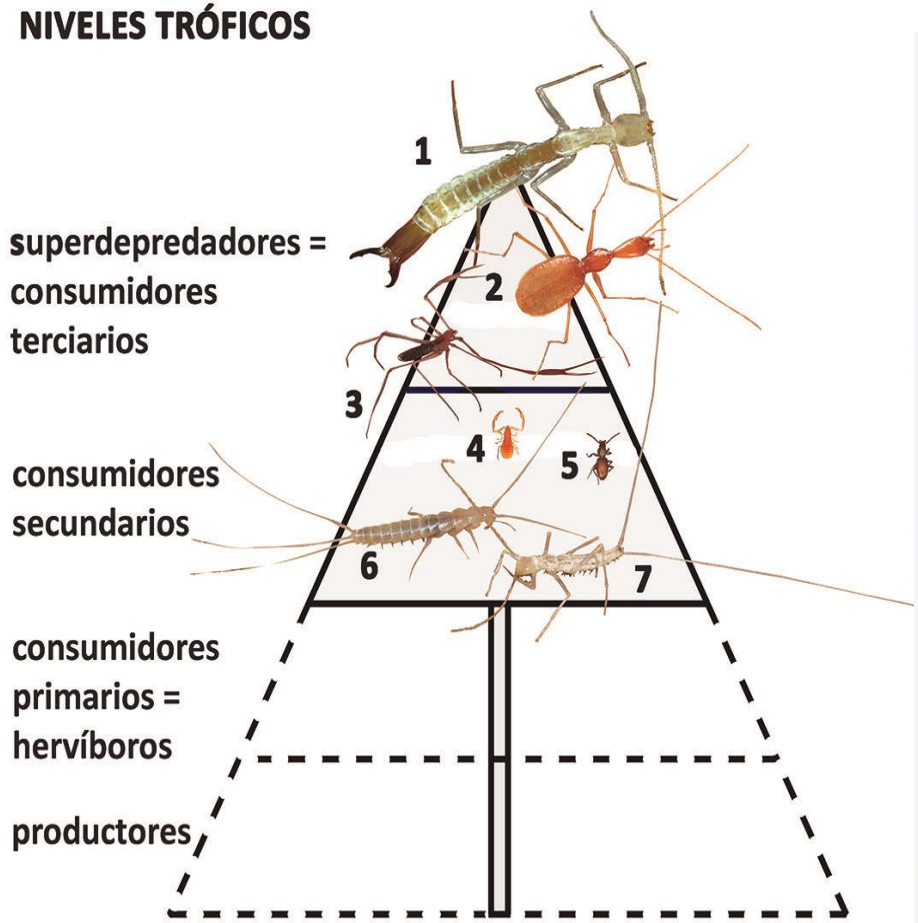
Typhlatya miravetiensis

Typhlocirolana troglobia

Spelaeonethes sp.

J.M. ROS


Superficial
or Epigean habitats
Subterranean
or Hypogean habitats
Vadose zone
Water table
Saturated zone
O
A
B
C=MSS
Soil
Edaphic habitats
Dark
Buffered temperature
Rich organic matter
Moderate CO_2
Moderate humidity
Terrestrial
Cave habitats
Darkness
Constant temperature
Poor organic matter
Higher CO_2
High humidity
Aquatic
Groundwater habitats


NIVELES TRÓFICOS
superdepredadores = consumidores terciarios
consumidores secundarios
consumidores primarios = hervíboros
productores
1
2
3
4
5
6
7

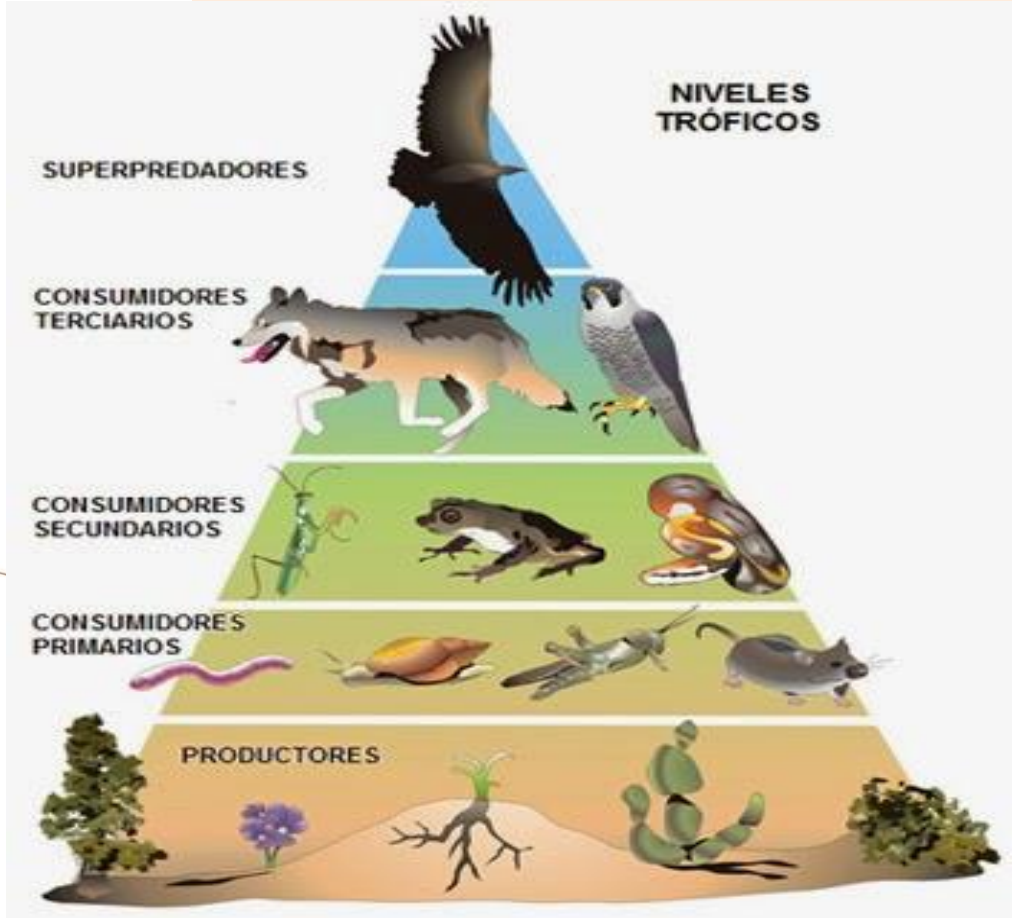
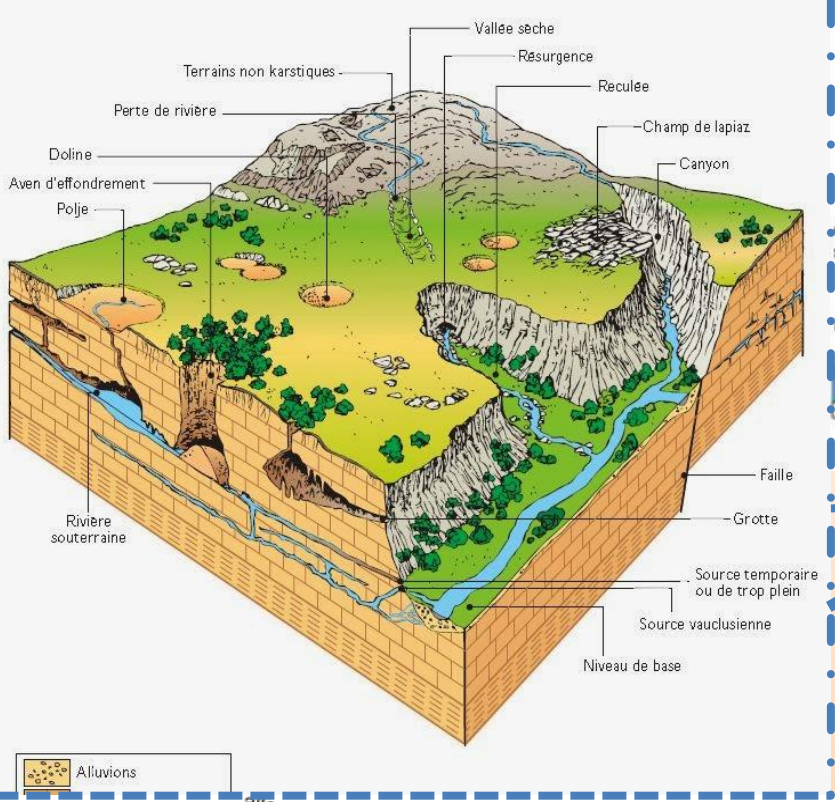
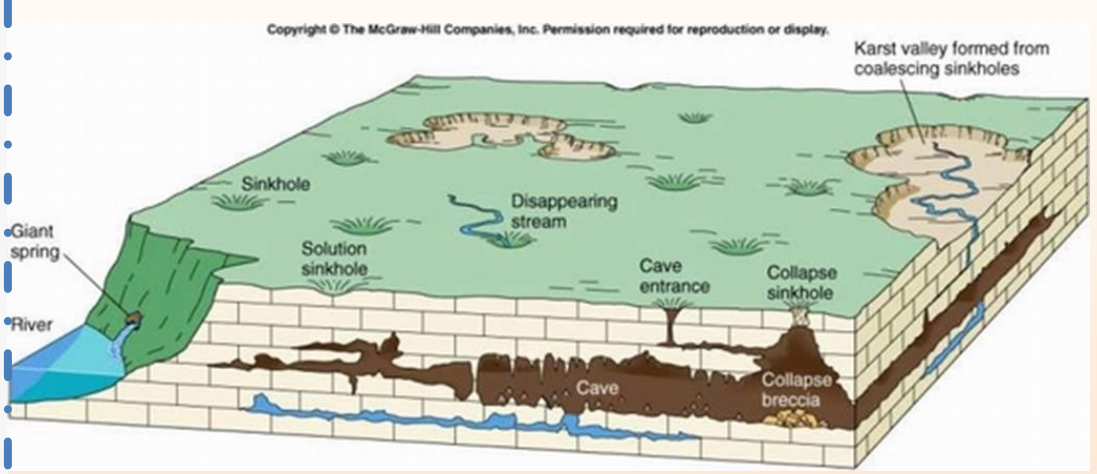
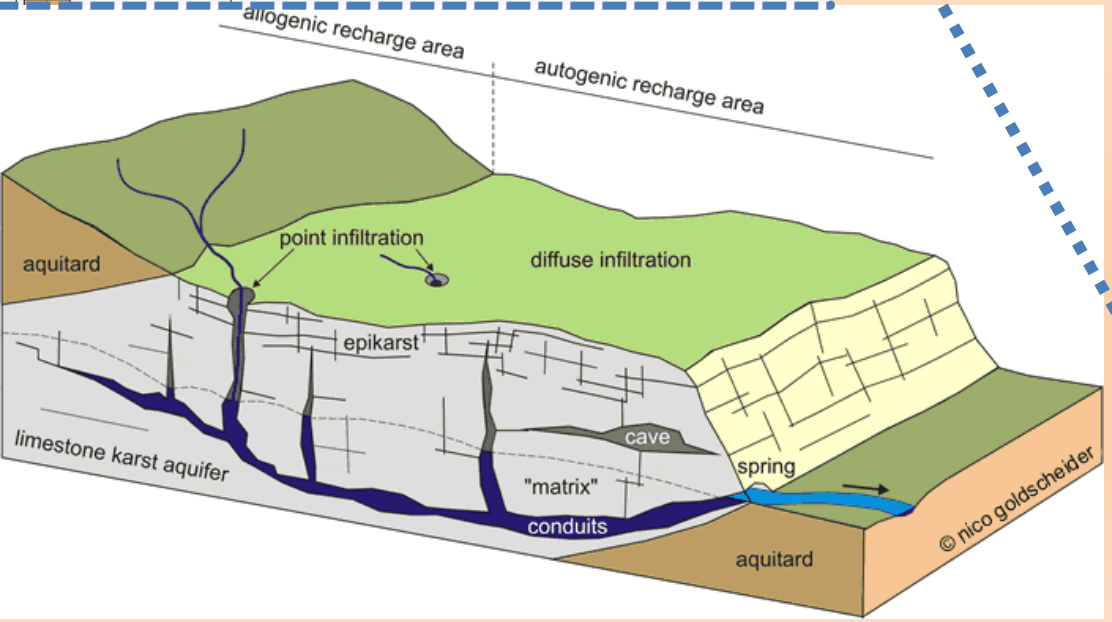
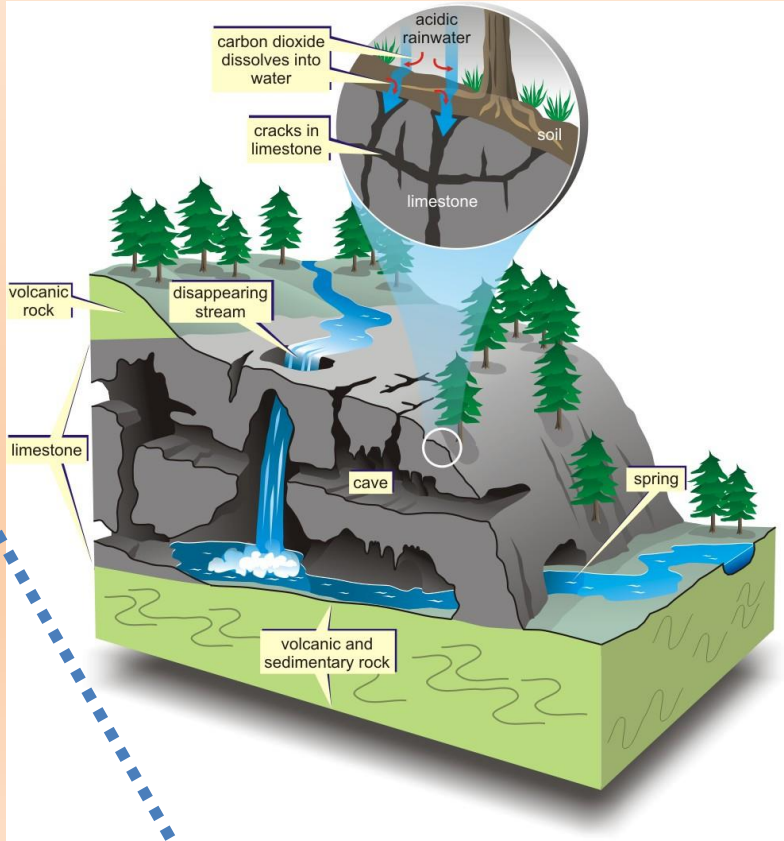

NIVELES TRÓFICOS
SUPERPREDADORES
CONSUMIDORES TERCIARIOS
CONSUMIDORES SECUNDARIOS
CONSUMIDORES PRIMARIOS
PRODUCTORES

Diagrama del karst









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International Journal of Speleology

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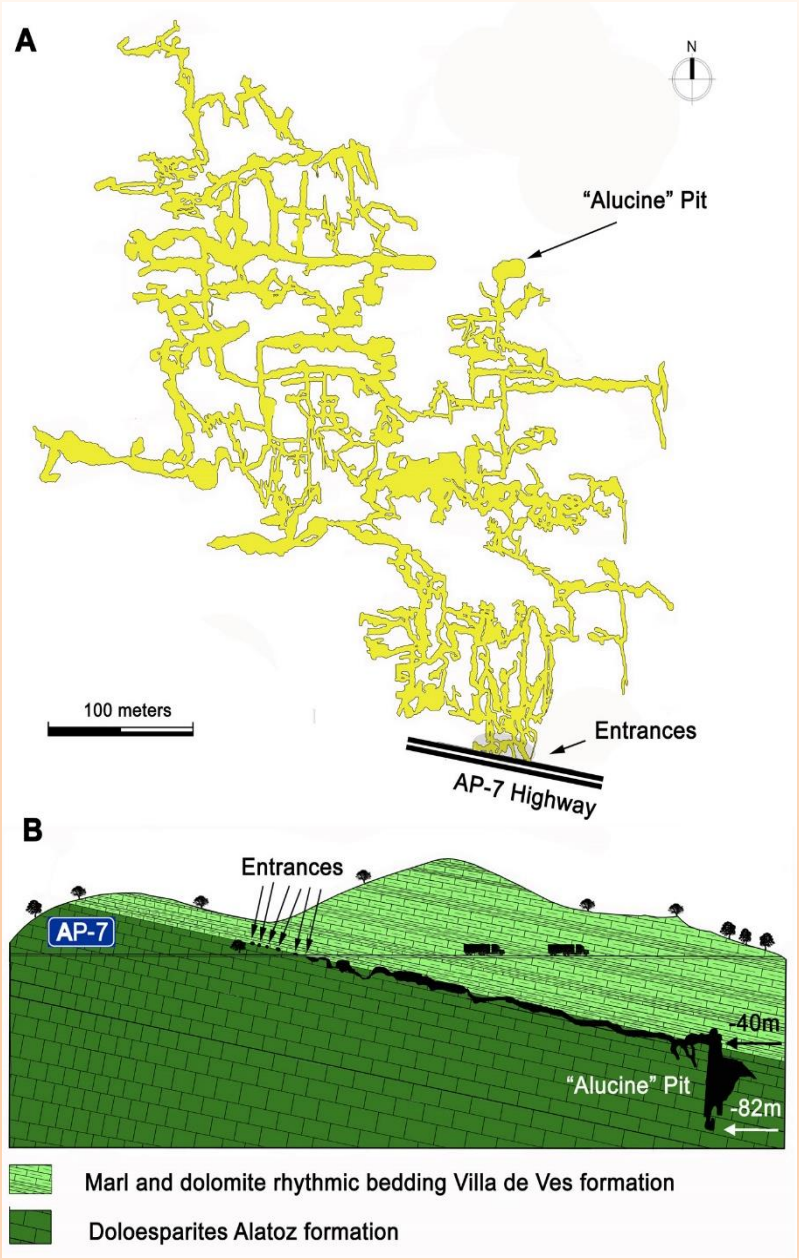
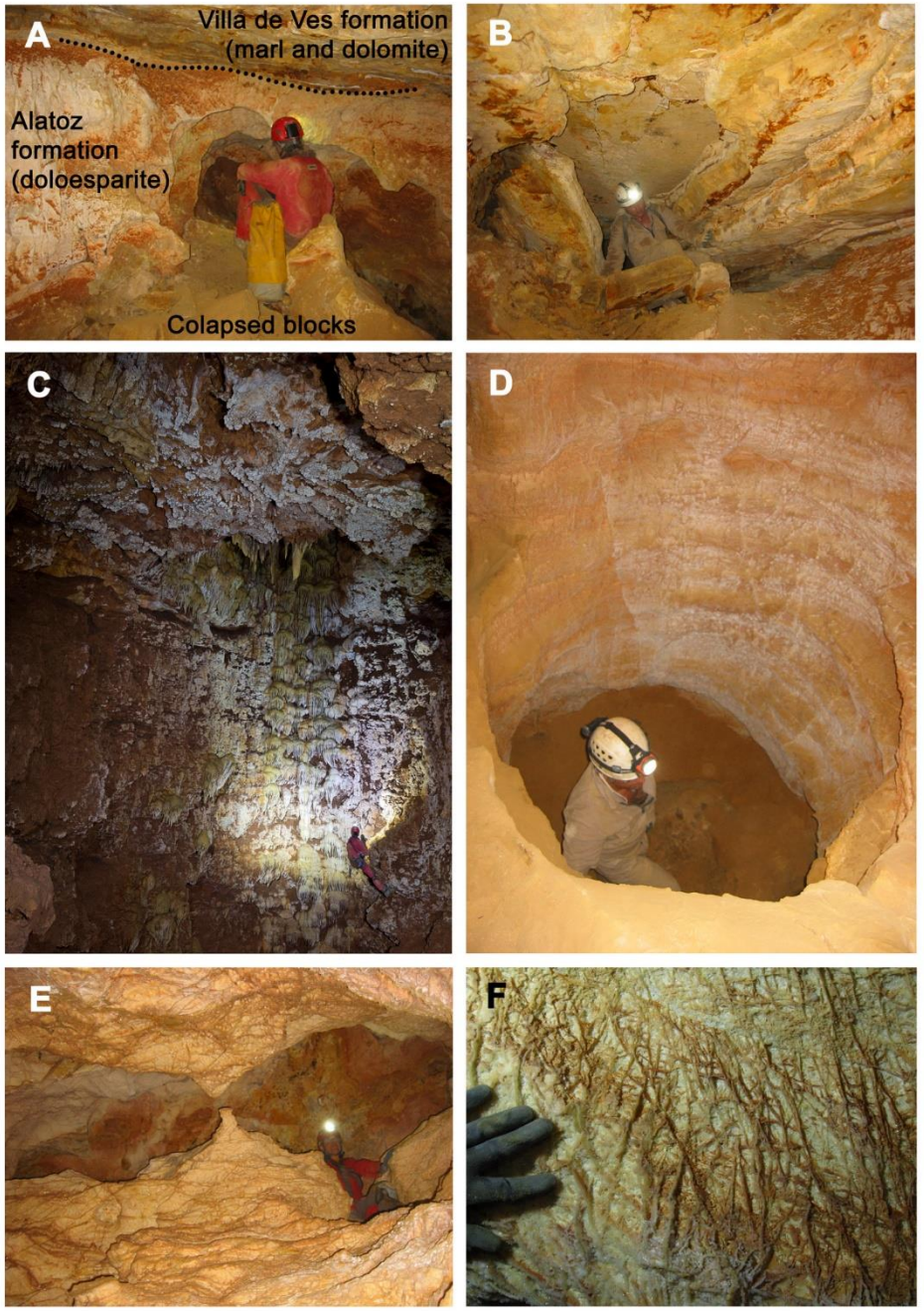
Hypogenic *versus* epigenic subterranean ecosystem: lessons from eastern Iberian Peninsula

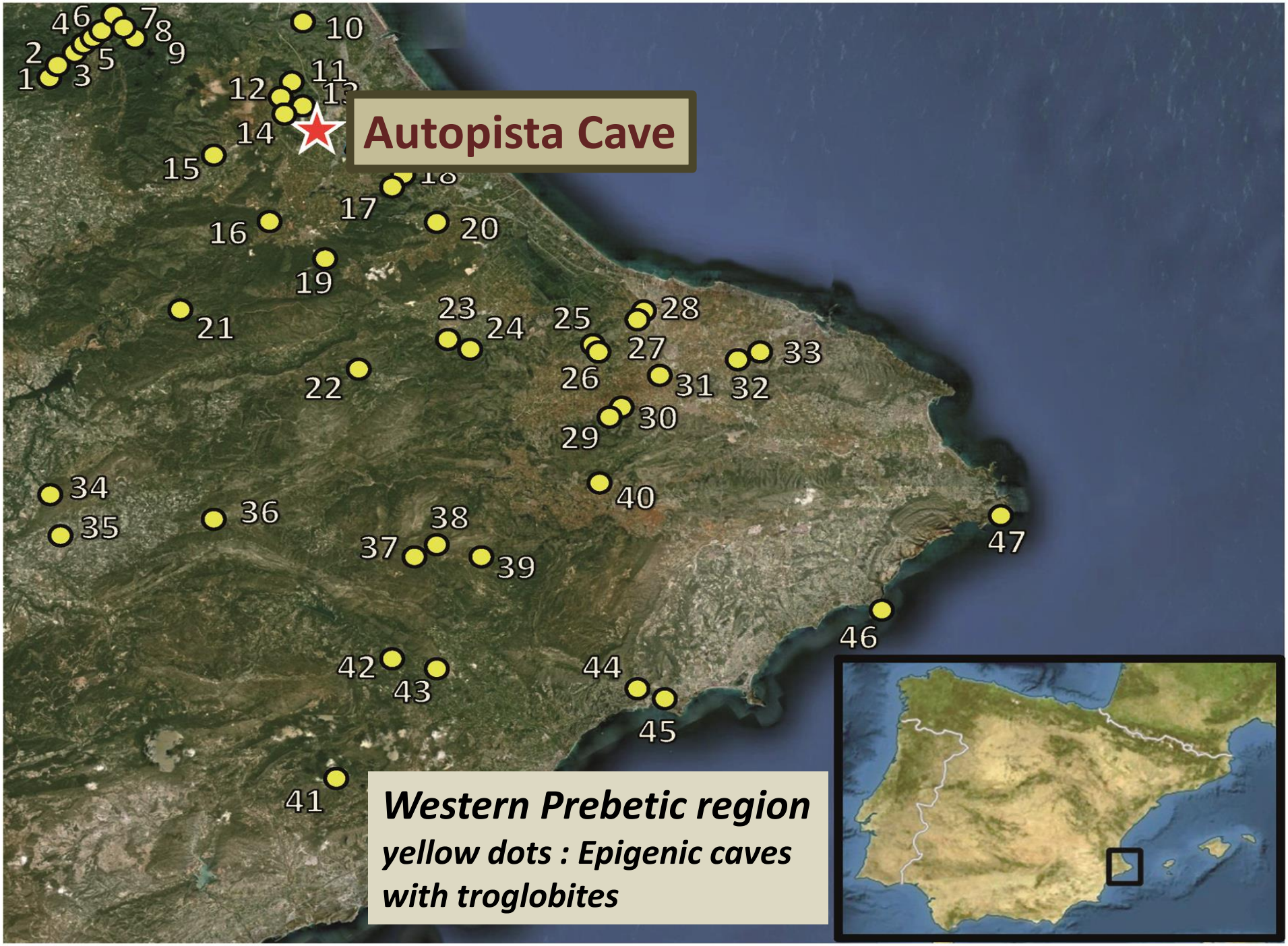
Alberto Sendra[1,2]*, Policarp Garay[3], Vicente M. Ortuño[1], José D. Gilgado[1], Santiago Teruel[2], and Ana Sofia P.S. Reboleira[4,5]

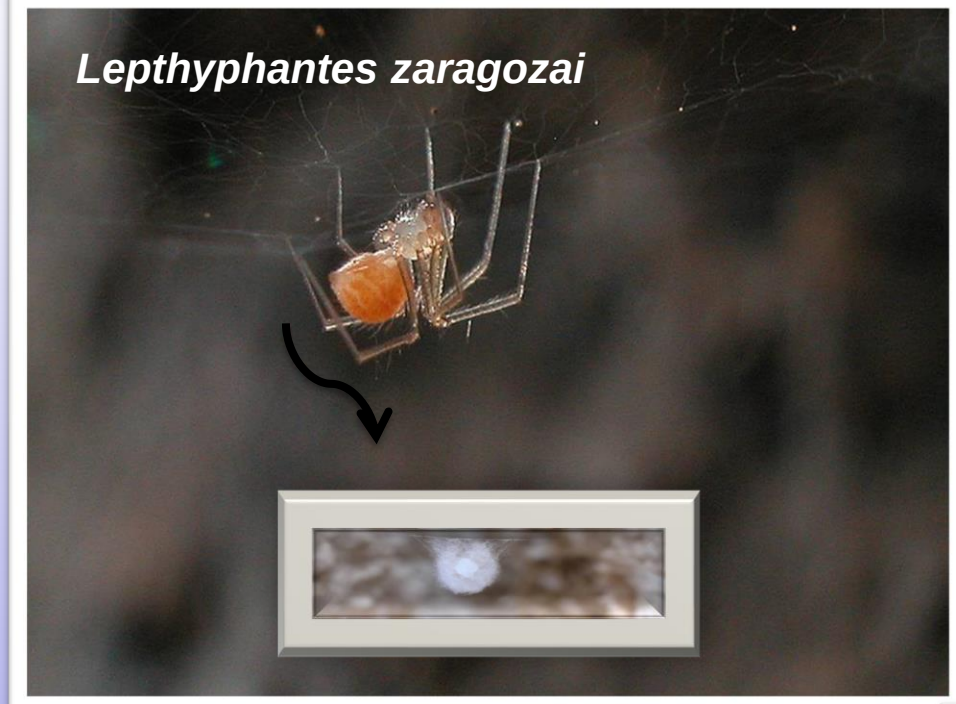
Autopista (= Highway) Cave.

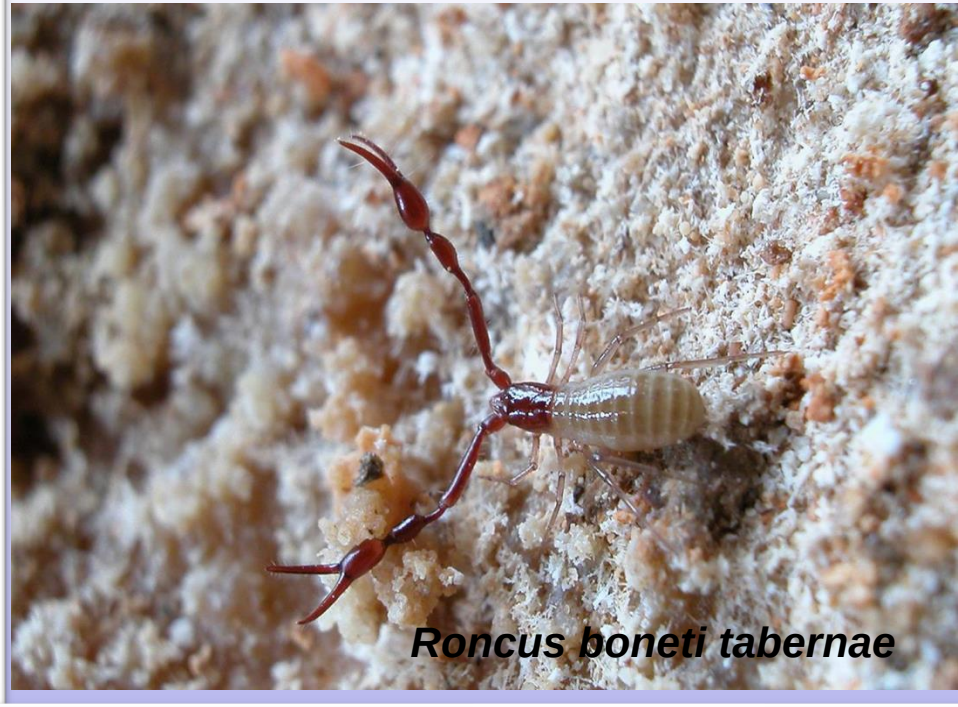
Entrances opened in 1983 during the construction of the highway València-Alacant.

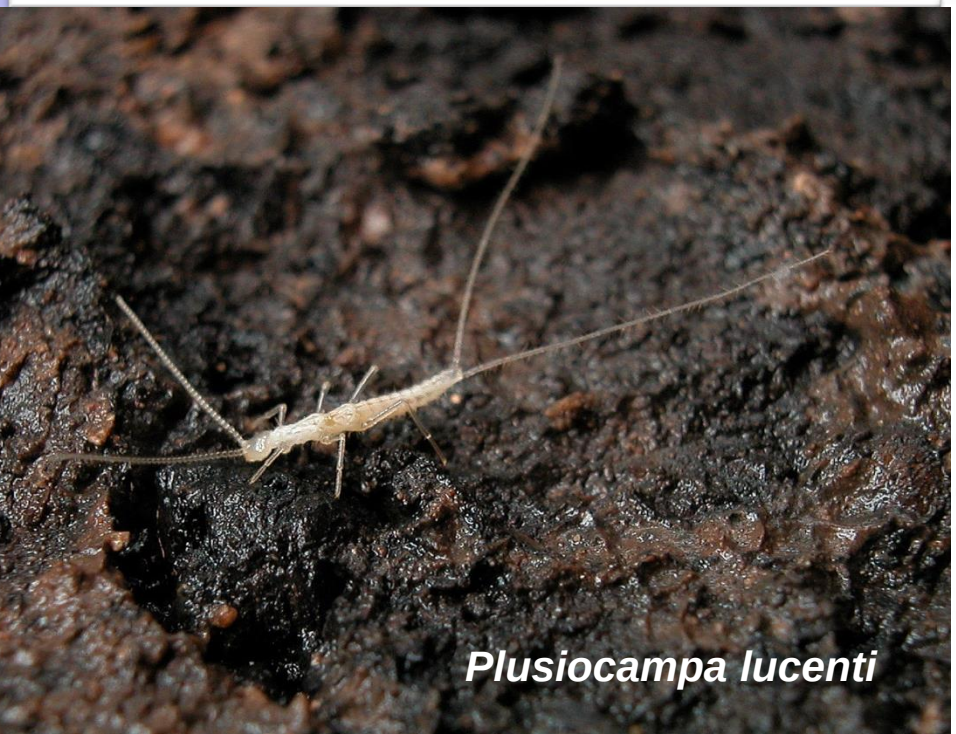

A
N
"Alucine" Pit
100 meters
Entrances
AP-7 Highway
B
Entrances
AP-7
-40m
"Alucine" Pit
-82m
Marl and dolomite rhythmic bedding Villa de Ves formation
Doloesparites Alatoz formation


A
Villa de Ves formation
(marl and dolomite)
Alatoz
formation
(doloesparite)
Colapsed blocks
B
C
D
E
F

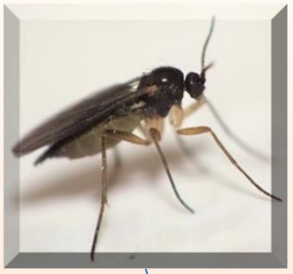

Autopista Cave
Western Prebetic region
yellow dots : Epigenic caves
with troglobites

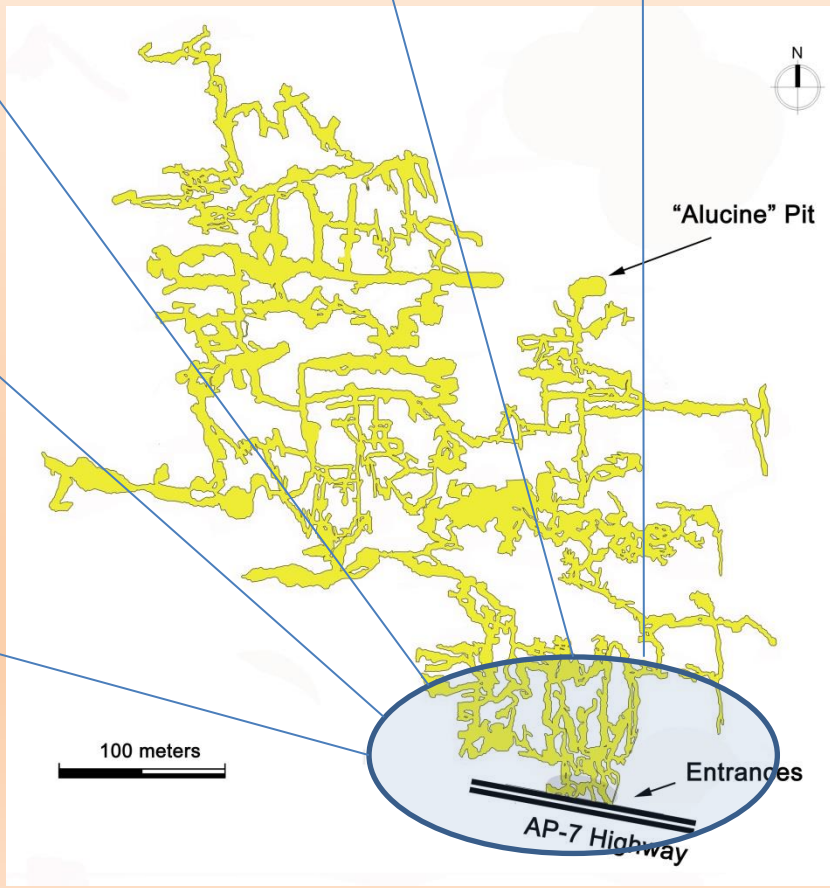

Lepthyphantes zaragozai

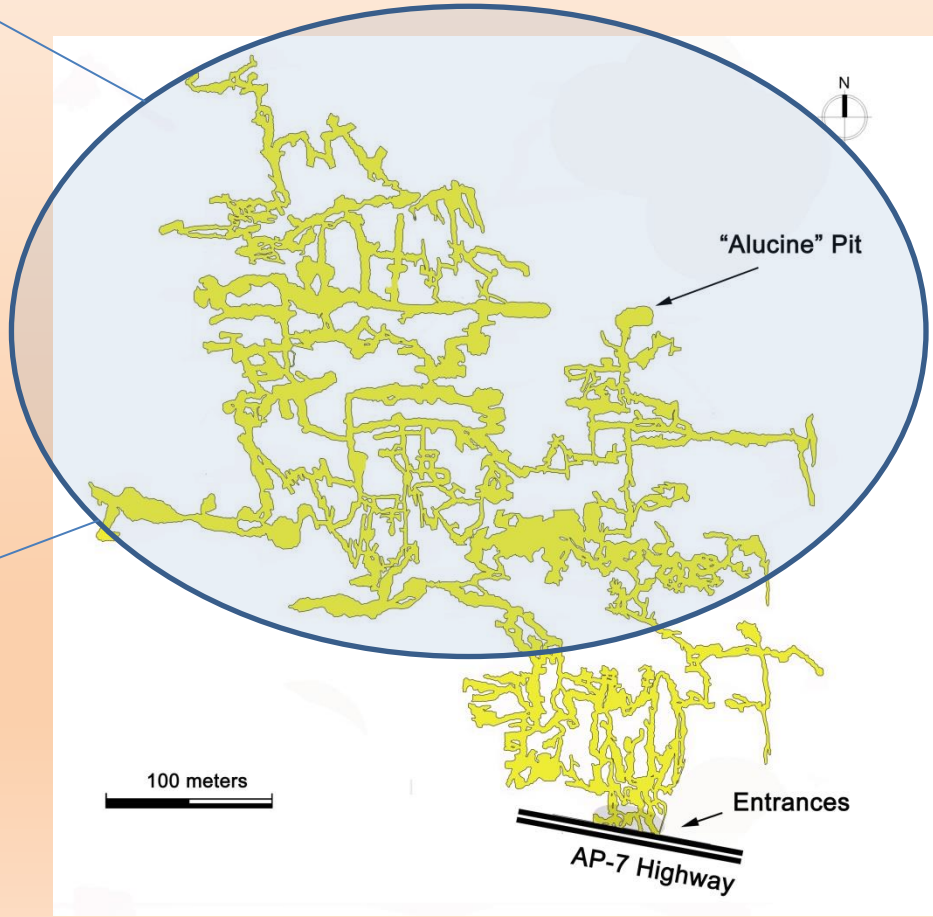

Roncus boneti tabernae


Plusiocampa lucenti


Spelaeochlamys ehlersi




N
"Alucine" Pit
100 meters
Entrances
AP-7 Highway


N
"Alucine" Pit
100 meters
Entrances
AP-7 Highway


Autopista Cave
FAR CAVE
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
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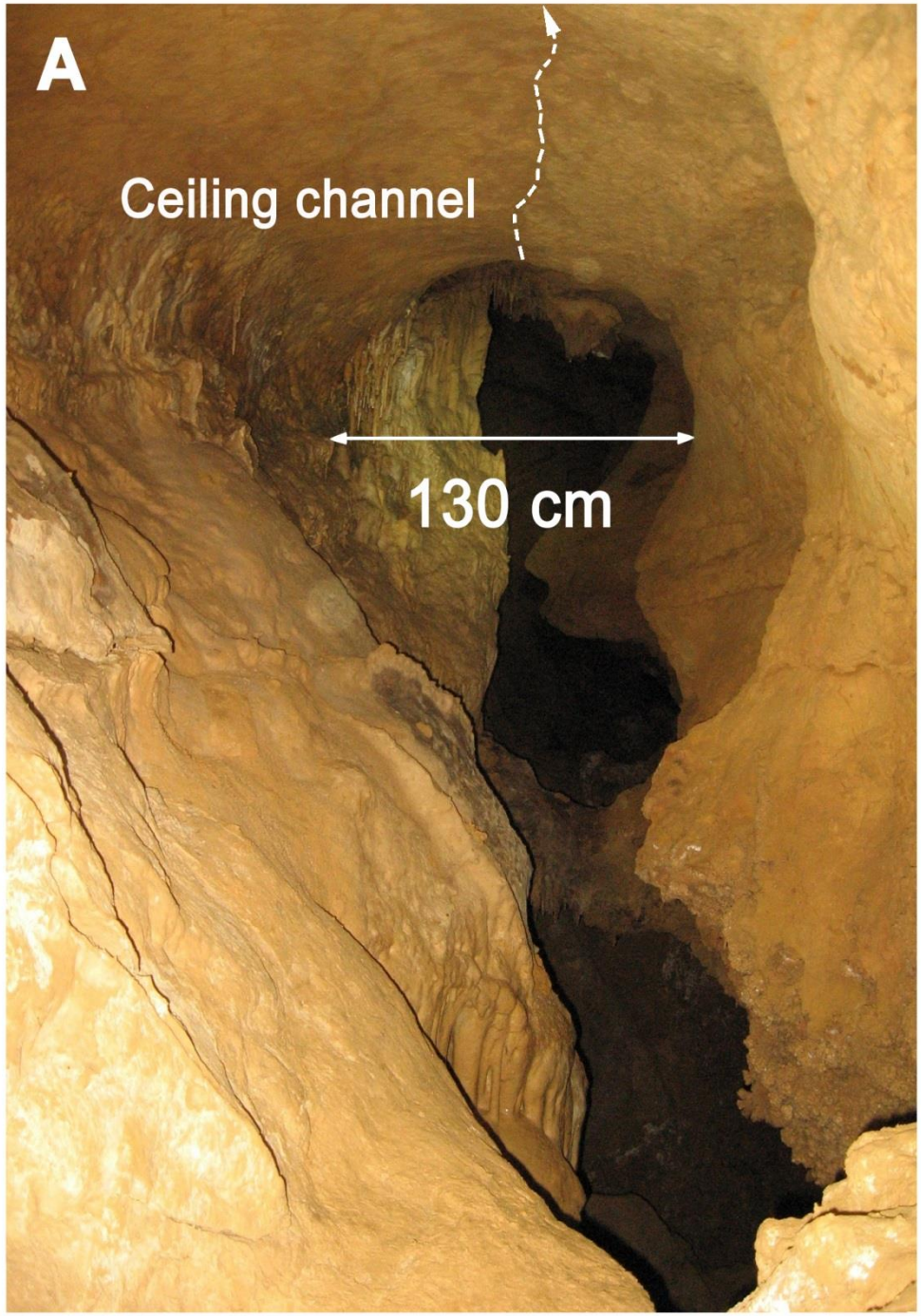
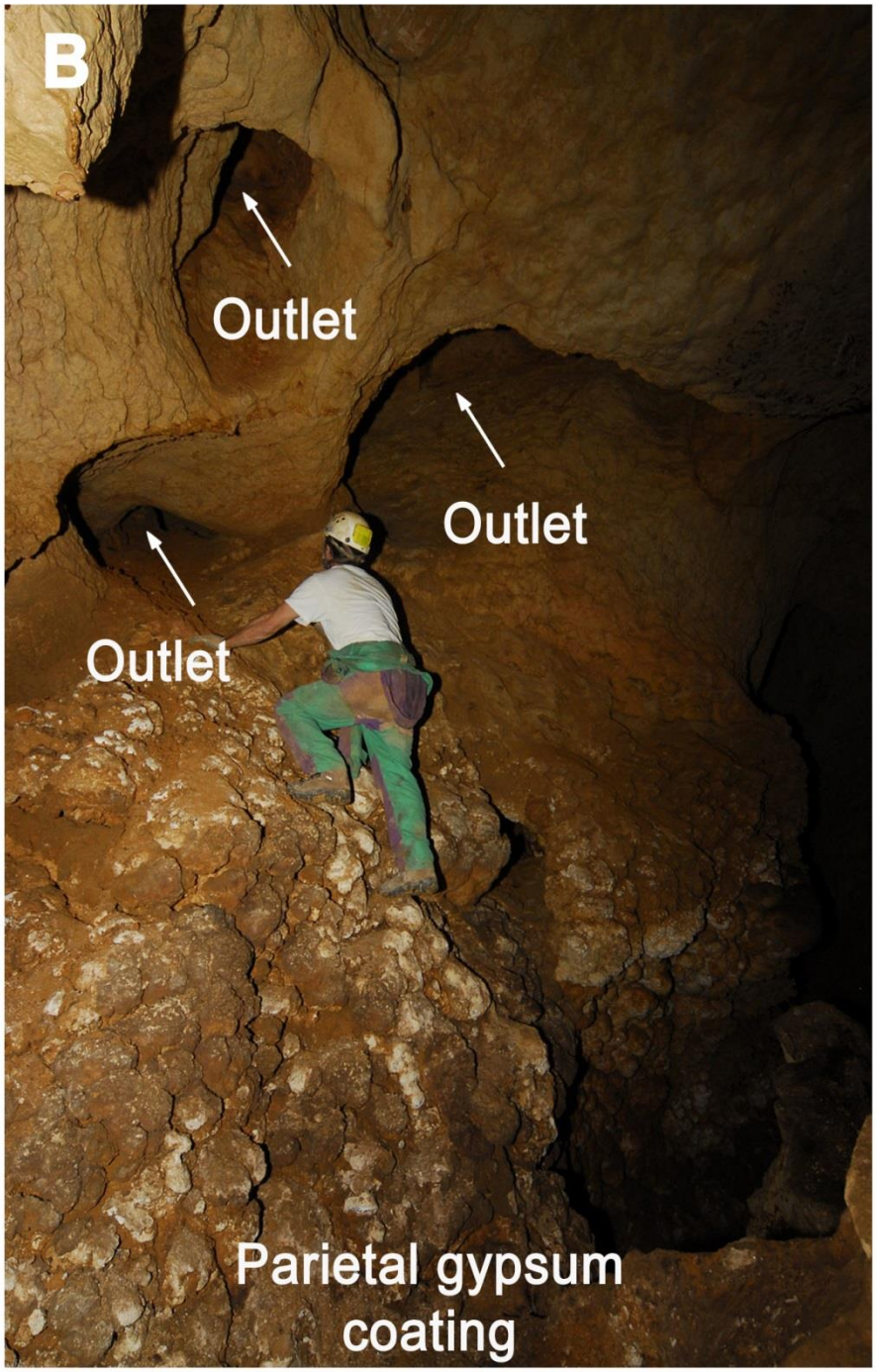
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47

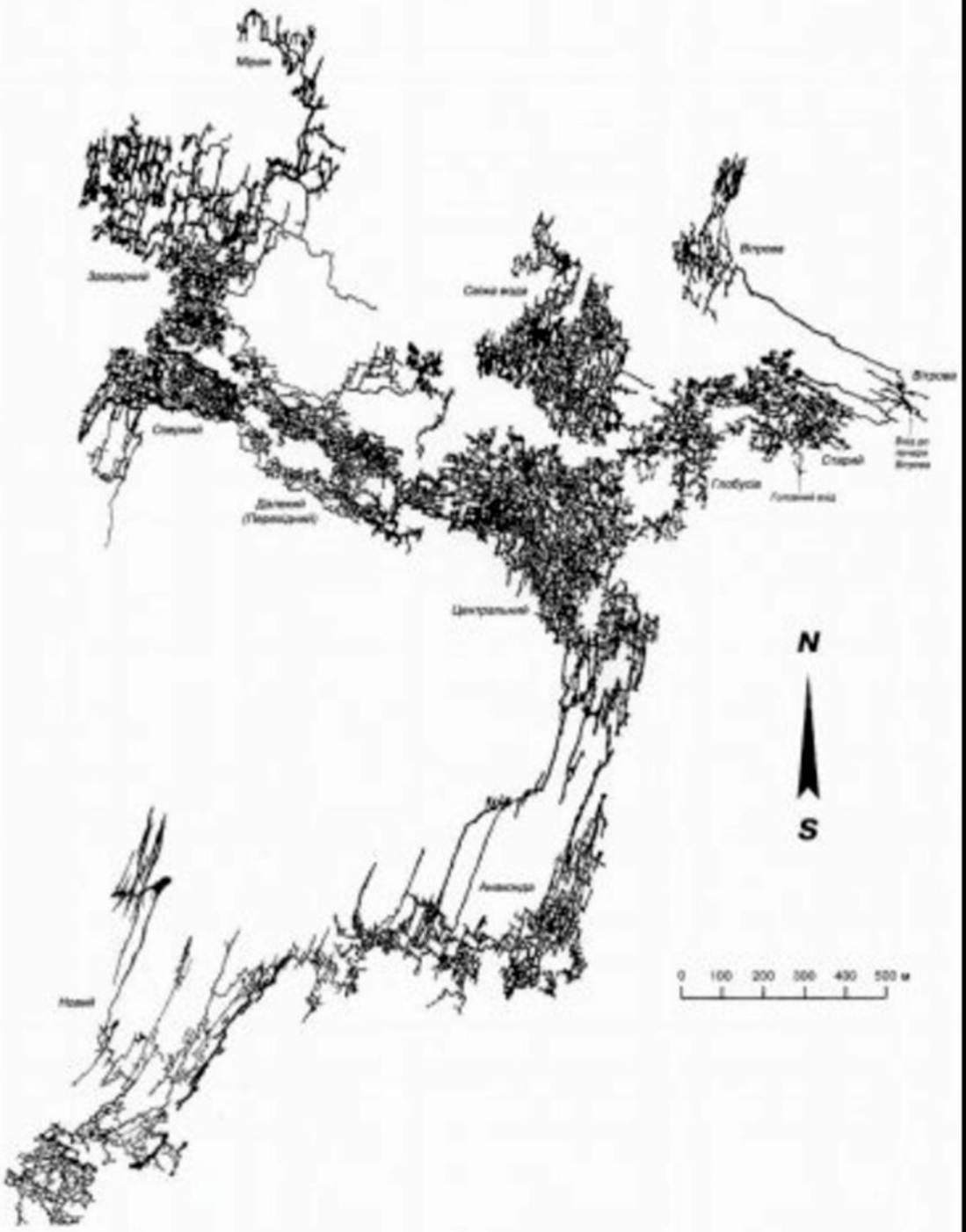

Mediterranean sea
Lloret chamber
entrance
100 m


C3
C2
C1
ENTRANCE

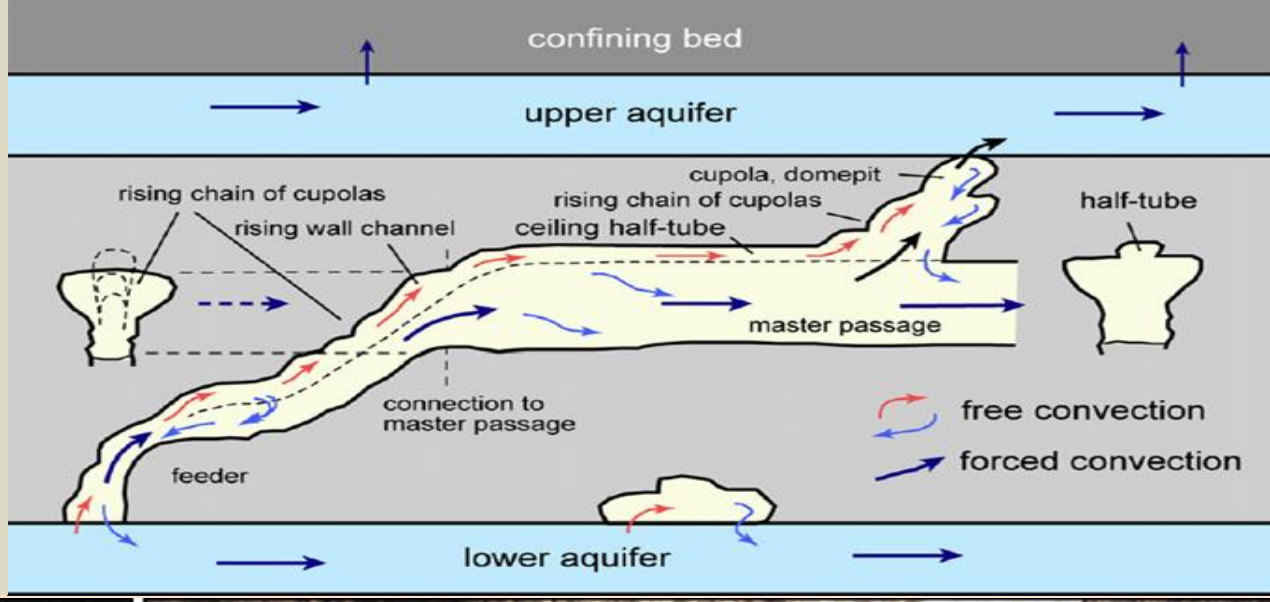

A
Ceiling channel
130 cm

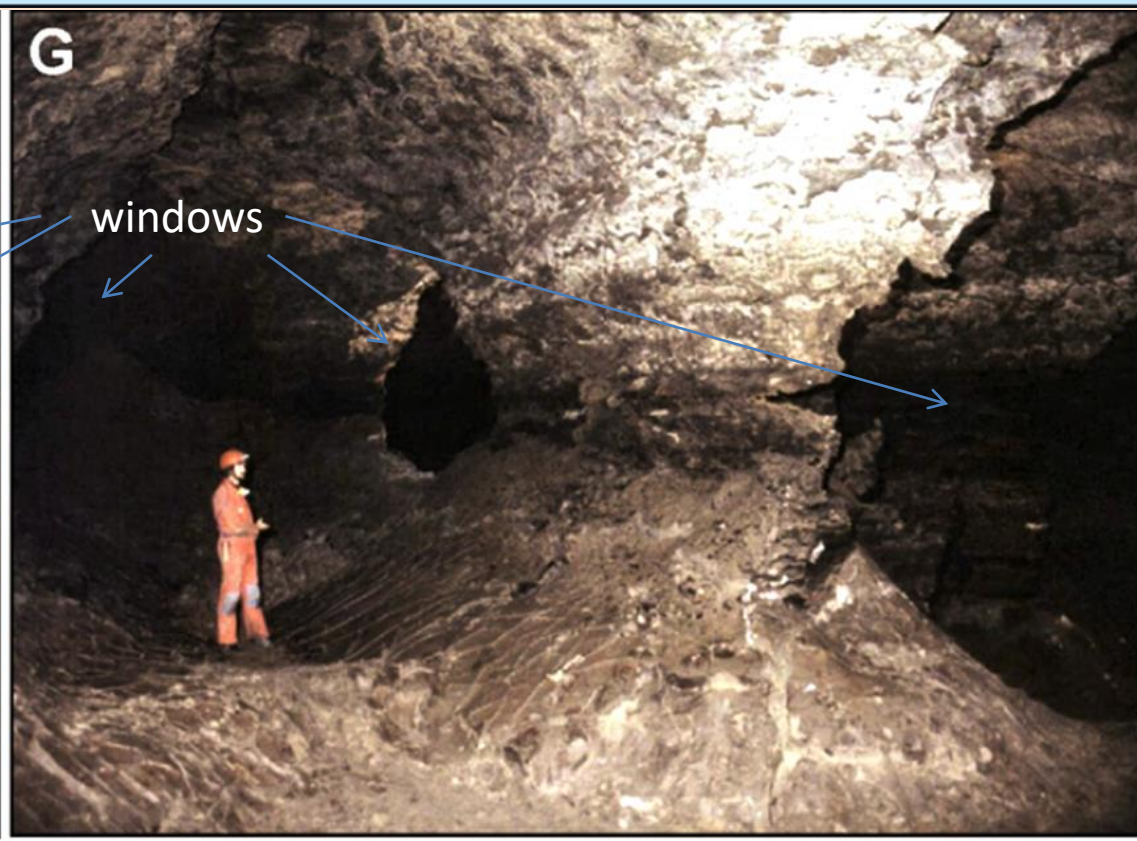

B
Outlet
Outlet
Outlet
Parietal gypsum coating

Optymistychna Cave,
Western Ukrania
230 km length, 4th longest cave in the world

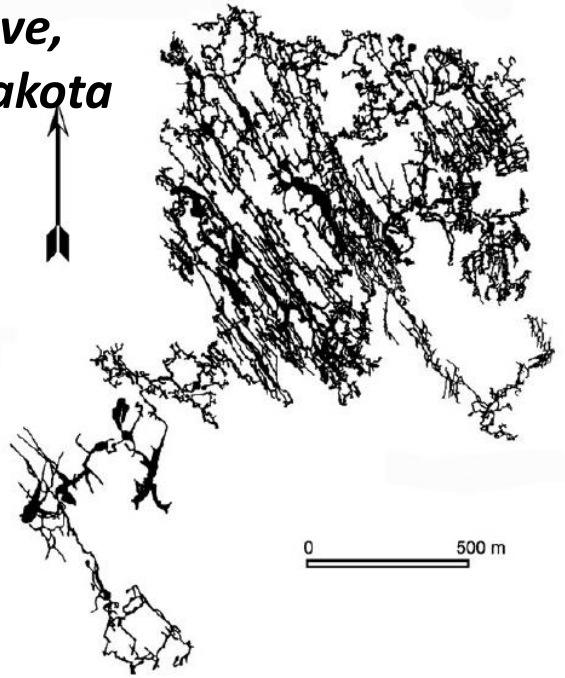


Anostomotic galleries with windows, and galleries formation at Optymistychna Cave

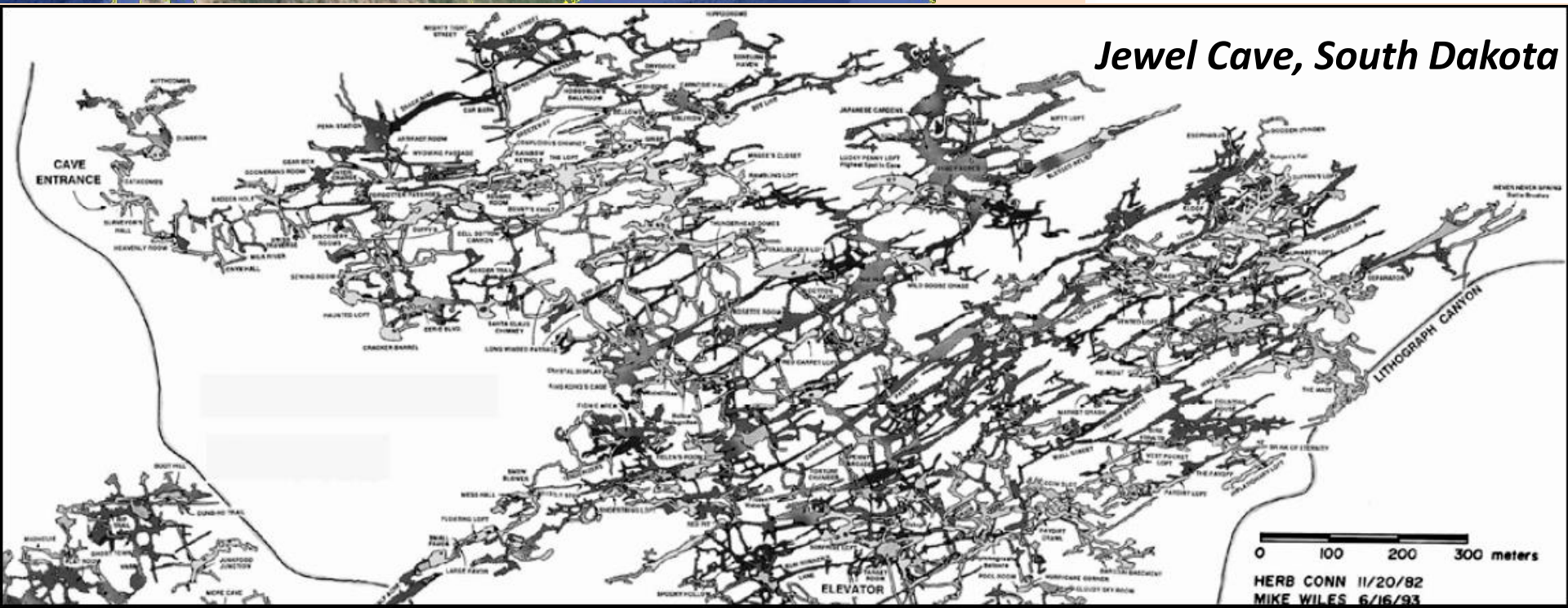




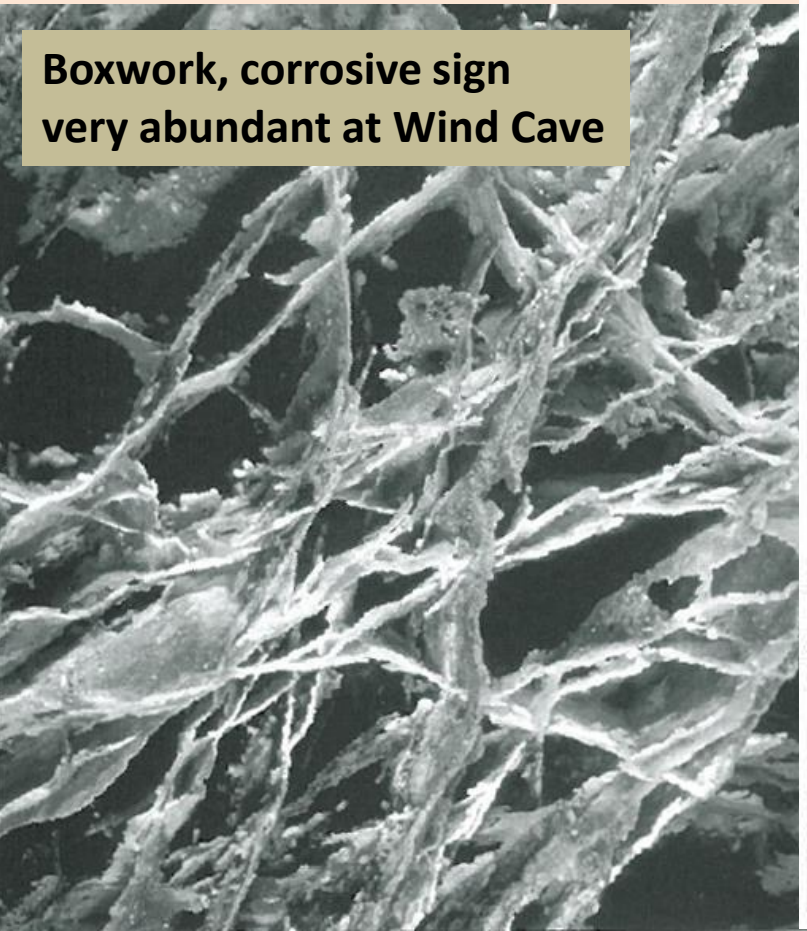
Wind Cave, South Dakota



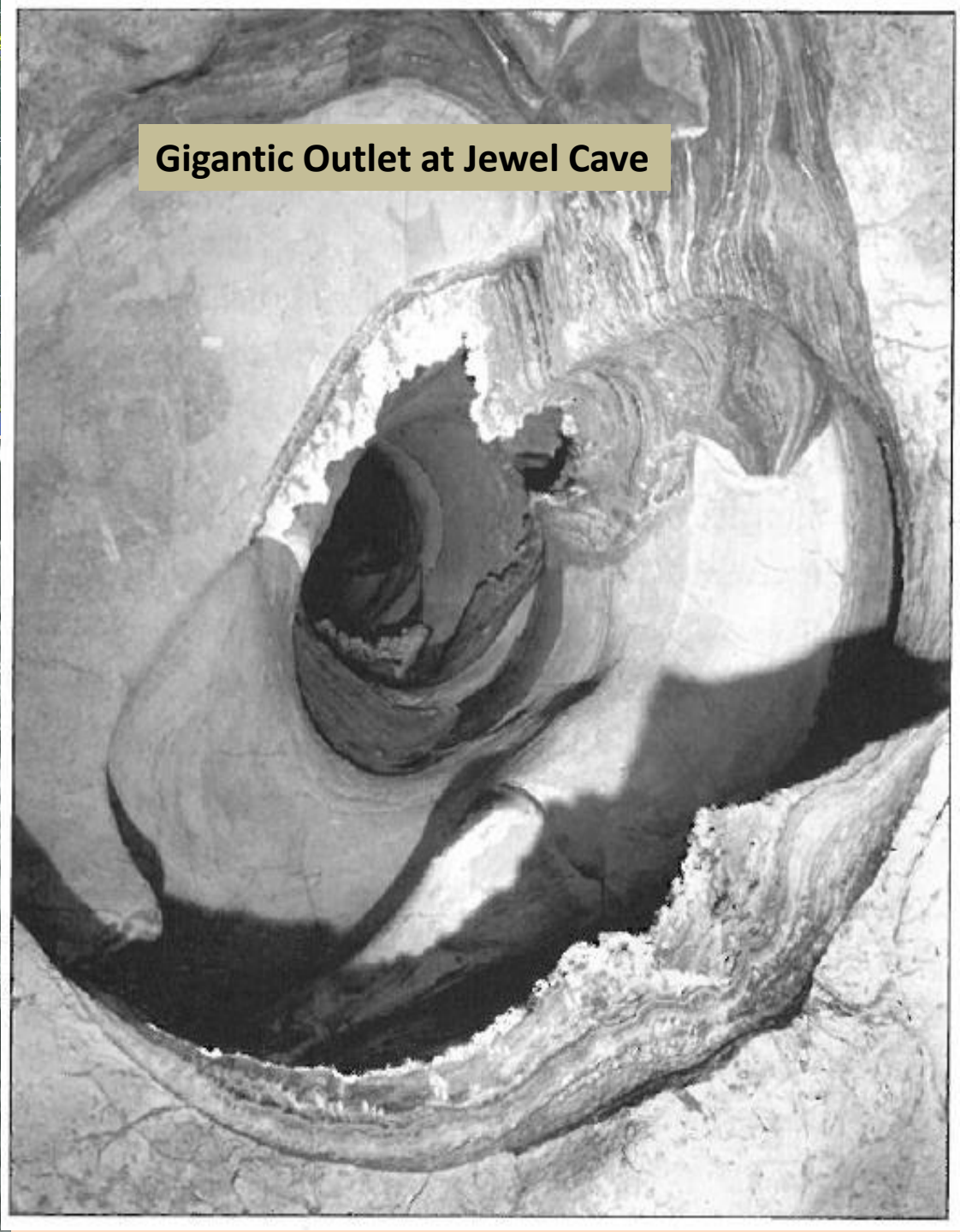
Jewel Cave, South Dakota



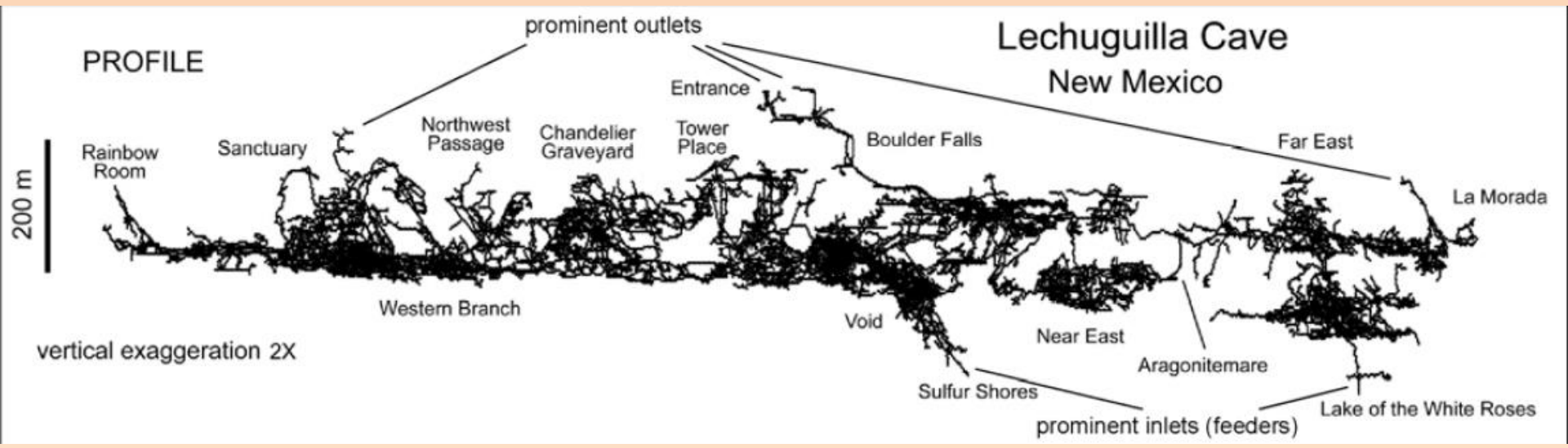
Boxwork, corrosive sign very abundant at Wind Cave



Gigantic Outlet at Jewel Cave




Jewel & Wind Caves
Parque Nacional Wind Cave
Estados Unidos
Lechuguilla Cave


PROFILE
prominent outlets
Lechuguilla Cave
New Mexico
Entrance
Rainbow Room
Sanctuary
Northwest Passage
Chandelier Graveyard
Tower Place
Boulder Falls
Far East
La Morada
200 m
Western Branch
Void
Near East
Aragonitemare
Sulfur Shores
Lake of the White Roses
vertical exaggeration 2X
prominent inlets (feeders)

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ORIGINAL RESEARCH

WILEY Ecology and Evolution Open Access

Energy and speleogenesis: Key determinants of terrestrial species richness in caves

Alberto Jiménez-Valverde[1] | Alberto Sendra[1,2] | Policarp Garay[3] | Ana Sofia P. S. Reboleira[4,5]

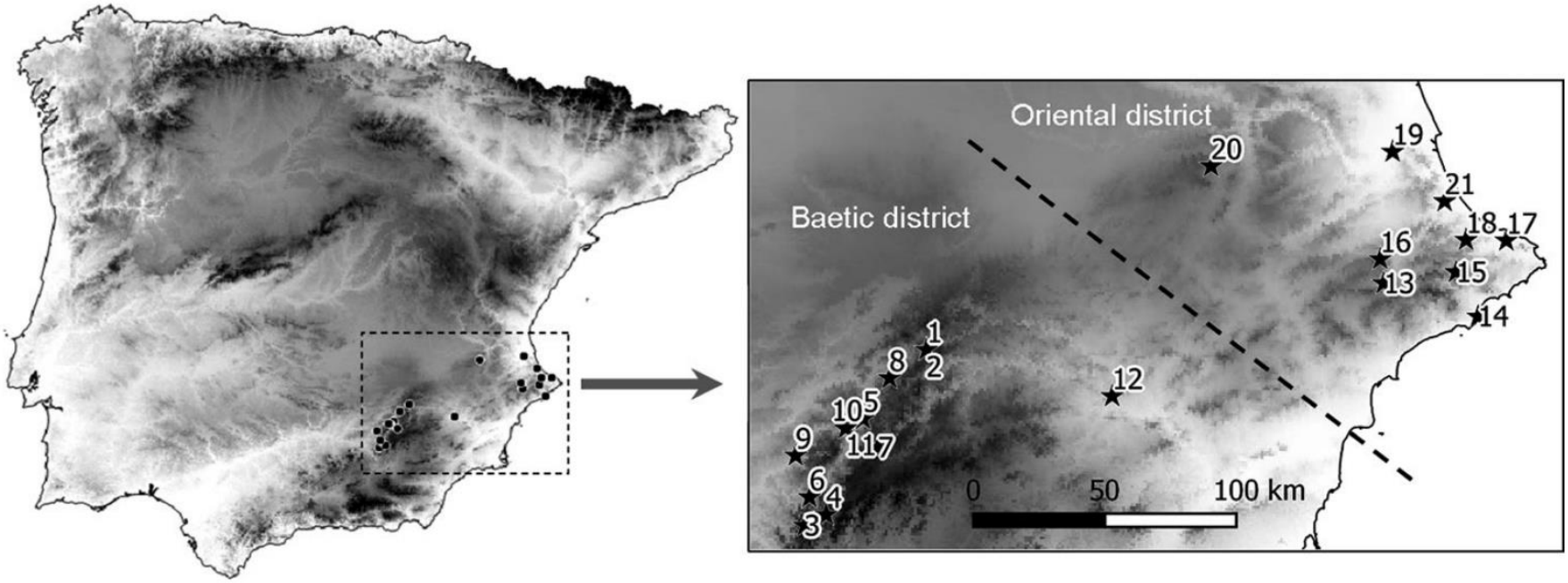
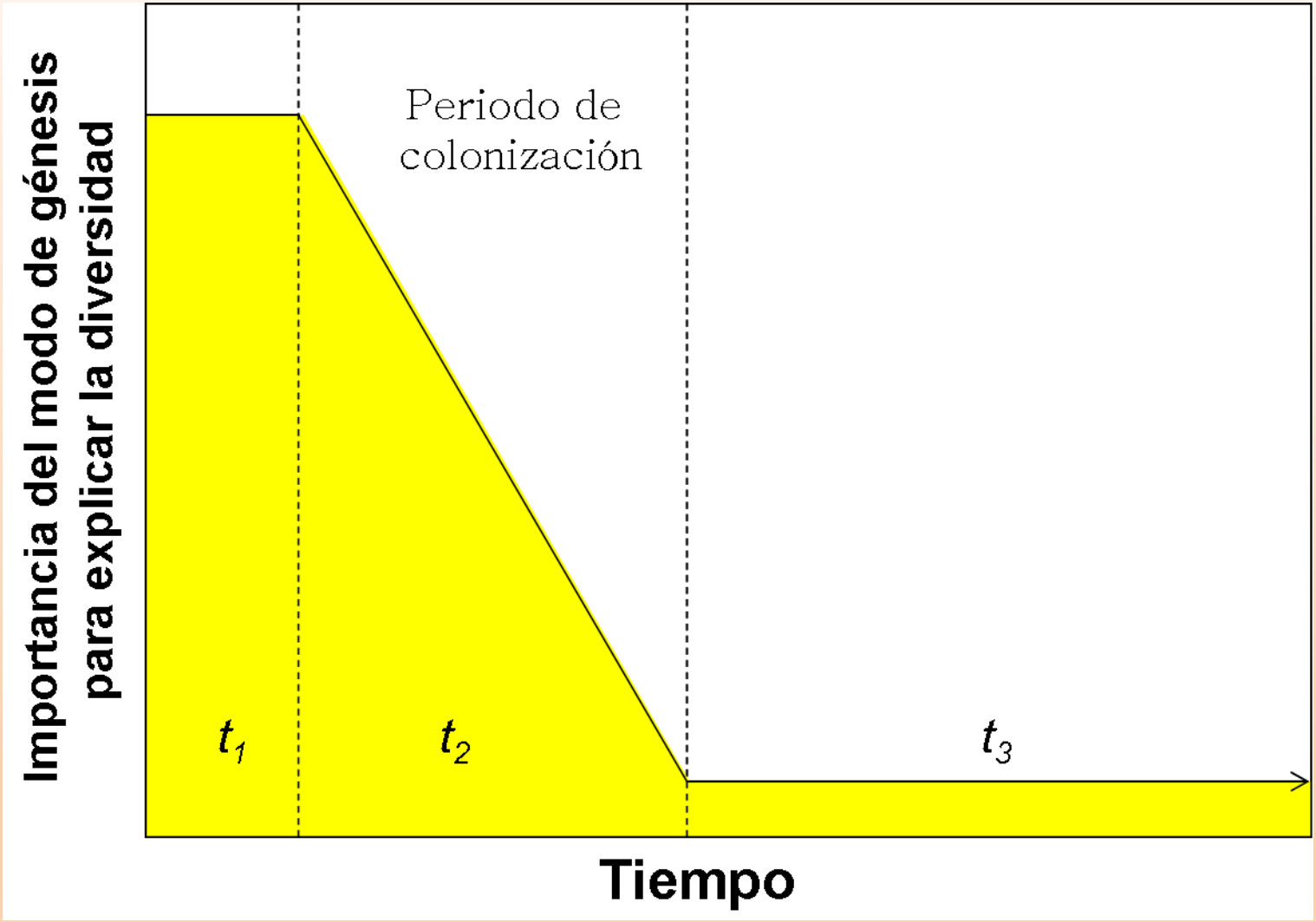


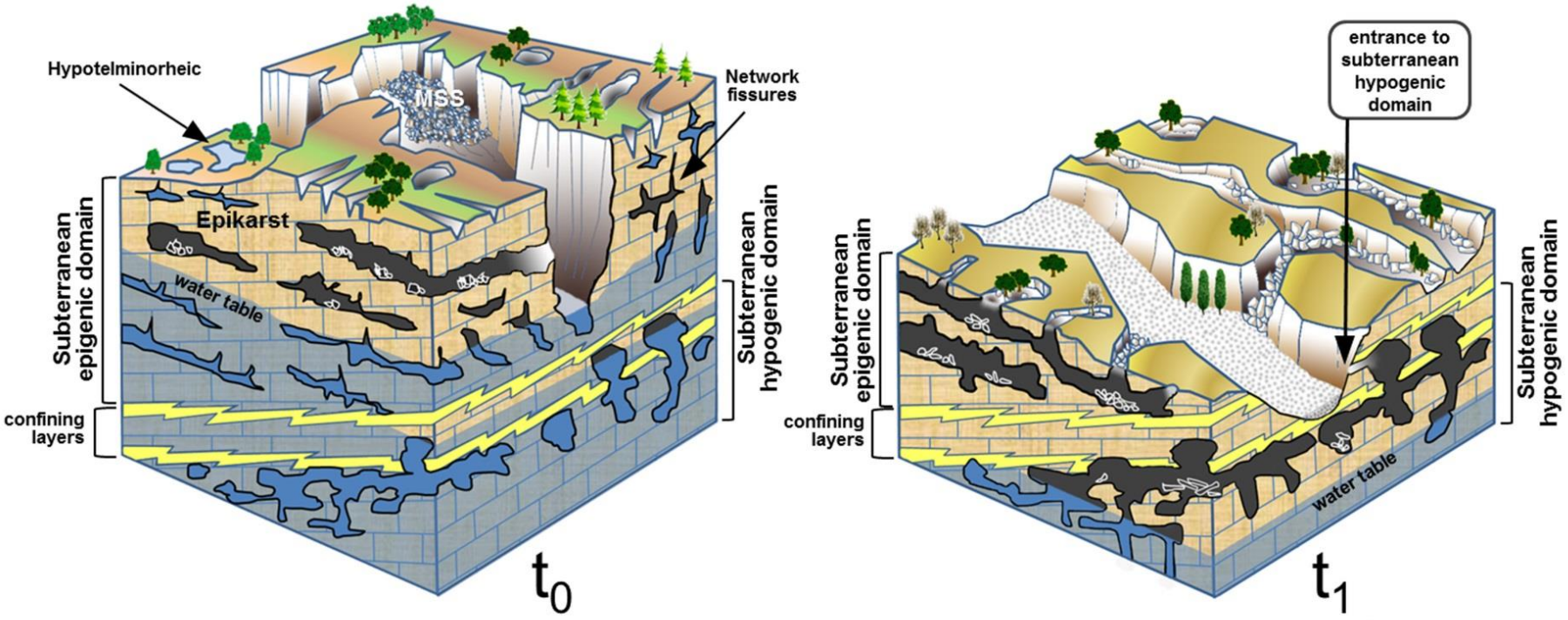
FIGURE 1 Region and caves considered in this study. The background represents elevation; the darker the color, the higher the altitude. Numbers correspond with caves as shown in Table 1 and Figure 3. Note that caves #10 and #11, as well as #1 and #2, are very close to one another, and they appear as just two points instead of four in the figure. A dashed line in the right panel separates the Baetic and Oriental biogeographical regions (Bellés, 1987)

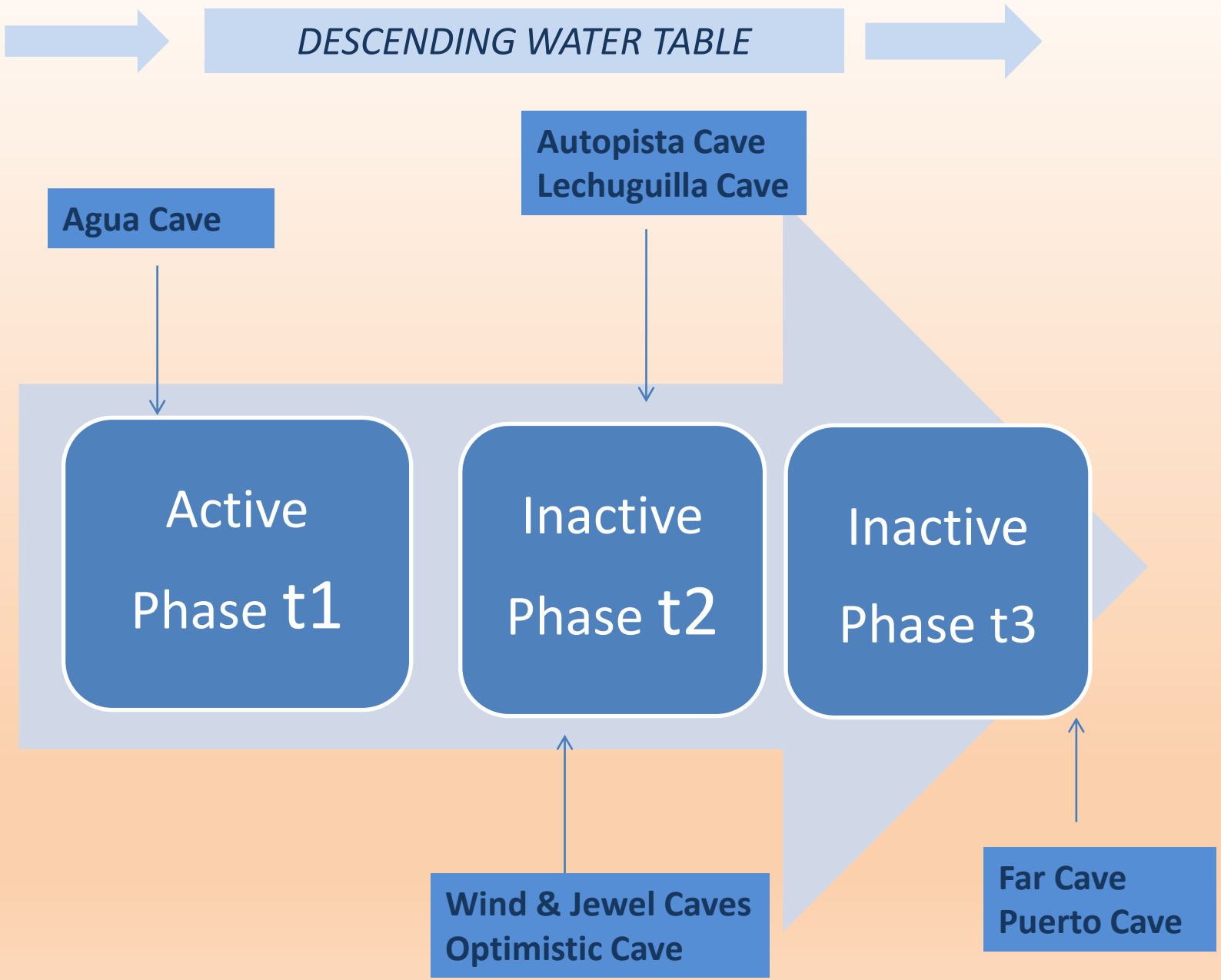

Importancia del modo de génesis para explicar la diversidad
Periodo de colonización
t_1
t_2
t_3
Tiempo

The confining layer Vanishes and the Colonization by fauna is possible

Active Phase t1 → **Inactive Phase t2**

With or without drop water table




DESCENDING WATER TABLE
Agua Cave
Autopista Cave
Lechuguilla Cave
Active
Phase t1
Inactive
Phase t2
Inactive
Phase t3
Wind & Jewel Caves
Optimistic Cave
Far Cave
Puerto Cave

GRACIAS por la atención

AGRAÏT per la vostra atenció