

**PRELIMINARY RESULTS OF THE GROWTH RATES OF DEEP
"CORALLIGENE" ALGAL BANKS IN THE BAY OF
MARSEILLES (RIOU ISLAND) AND IN CORSICA (SCANDOLA
RESERVE), WITH THE RADIOCARBON DATING METHOD**

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Since the end of the nineteenth century (MARION, 1883), coralligenous formations in the Mediterranean have been the subject of an important series of biological and geological descriptions, especially along the French and Italian coasts (PÈRES and PICARD, 1952; LABOREL, 1961; LAUBIER, 1966; SARÀ, 1969; FROGET, 1974; HONG, 1980). Despite the importance of their distribution in the Mediterranean sea (LABOREL, 1987), the study of growth and erosion rates of these bioconstructions has never been initiated. Our work was carried out in the Bay of Marseilles (Grand Congloue-Riou Island) and in the Reserve of Scandola (Corsica). These sites present structures which are notable for their size and their beauty. We have tried to date the beginning of their development and to determine their mean growth rate. The southern point of Grand Congloue Island shows concretions between the depths of 35 m and 68 m. Coralline Algae predominating as primary frame builder, construct horizontal banks 1 m high at a depth of - 40 and - 60 m, and rims (1 to 2,50 m long) in coves of cliffs between - 45 and - 58 m. The site of "les Orgues" (Scandola) presents coralligenous rims and lips between - 40 and - 60 m. Although they are not as large as Marseilles' structures, in some places they are 2 m long.

In these stations, we have removed segments of sections terminal parts of 5 algal lips (30 to 40 cm long from apex) with hammer and burin by scuba diving : 3 in Grand Congloue and 2 in the Reserve of Scandola. These blocks have been measured and longitudinally cut with a circular saw. We have extracted 2 or 3 samples per bloc at different distances from apex. The algal framework has been cleared from recently formed calcareous (Serpulid worms, Bryozoans, etc.). Samples weighing about 40 grams cooked for 12 hours in an oven at 300°C for destruction of organic matter, attacked by orthophosphoric acid and dated by the method of liquid scintillation on benzene (ÉVIN, 1992) in the Laboratory of Geochronology of Quaternaries (L.G.Q. Luminy, Marseilles). We have calculated the net accretion rate in coralligenous rims between two consecutive dated samples.

Datings showed in table 1 have not been corrected, because in the Mediterranean sea there are no references in literature allowing the correction of the errors due to contamination by the large-scale testing of thermonuclear weapons and by the apparent age of the surface of water (BARD, 1988). Nevertheless, our results show that deep "coralligene" algal banks in the Bay of Marseilles and in Corsica are old (dated between 3830 and 7140 years B.P. in our study.). Net accretion rates are low (< 1 mm.year⁻¹) and are comparable to those of infralittoral bioconstructions of *Mesophyllum lichenoides* (SARTORETTO, 1994). However, as for the *Rhodolithes* studied by LITTLER *et al.* (1991), they decrease in time. In the Bay of Marseilles and in Corsica, banks have stopped growing and have recently started their development again. Thus, the taking zone of the sample S2B (table. 1) is separated, by a thick layer of iron oxide, from a 15 mm thick layer of current Coralline algae (Sample : L.G.Q. 987) located in the upper side of the apex of the algal lip.

As we have dated the terminal part of massive rims, our results lead to suppose that these bioconstructions must have developed on the littoral coasts during the Holocene transgression, which confirms the hypothesis of LAUBIER (1966) about "coralligene" algal banks of Banyuls (France). These first results also confirm the stop of the growth observed by LABOREL (1961) in the Bay of Marseilles. Despite the absence of references concerning the bioerosion rates, it allows to suppose that this stop took places over a long time in which eroding agents have left bare the old parts of structures on which recently new thalli of Coralline algae settled. Considering our data as new and preliminary, complementary measures are essential along the Mediterranean coast. Therefore the using of under-water drilling techniques in scuba diving will be necessary in great depth.

Station	Depth	Sample	H : Samp/apex (mm)	Age (years B.P.)	Growth rate (mm.y ⁻¹)
Riou	55 m	L.G.Q. 964 R1B	350	6840 ± 160	0,78
	55 m	L.G.Q. 963 R1A	195	6640 ± 150	
Riou	55 m	L.G.Q. 963 R1A	195	6640 ± 150	0,34
	55 m	L.G.Q. 965 R1C	60	6240 ± 140	
Riou	55 m	L.G.Q. 990 R2A	300	6480 ± 150	0,65
	55 m	L.G.Q. 1088 R2B	150	6250 ± 160	
Riou	55 m	L.G.Q. 989 R3A	300	7140 ± 190	0,26
	55 m	L.G.Q. 1040 R55A	100	6360 ± 220	
Riou	40 m	L.G.Q. 1047 R40A	700	3830 ± 180	0,18
Scandola	50 m	L.G.Q. 992 S2A	620	6260 ± 180	0,63
Scandola	50 m	L.G.Q. 986 S2C	400	5910 ± 150	
Scandola	50 m	L.G.Q. 986 S2C	400	5910 ± 150	0,16
Scandola	50 m	L.G.Q. 1045 S2B	210	4740 ± 190	

Ages and growth rates of "coralligene" algal banks in Riou Island and in the Reserve of Scandola. H : , distance between the sample and the apex, for a same algal lip.

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