

## Supplementary Data S1

Nine biological assemblages were recognized (Fig. 2) and described by Vertino in Van Rooij et al. (2013). In this work, they are named BA1, BA2, BA3, BA4, BA5, BA6, BA7, BA8 and BA9 and 4 sub biological assemblages (BA1a, BA1b and BA2a, BA2b) are distinguished.

Biological assemblage BA1 (Boxcores: MD 13-3471 and MD 13-3465), contains fragments of dead scleractinians, except from a small broken colony (4 corallites) of *Dendrophyllia cornigera* and tiny *Desmophyllum dianthus*. Coral rubble consists mostly of slender black-coated fragments of *Madrepora oculata*, but large and robust *Lophelia pertusa* branches occur. Vagile epifauna: decapods, holoturian, ophiuroids, vagile polychaetes and tiny gastropods. Sessile epifauna settled on coral fragments: large and small crinoids, several species of sponges, hydrozoans, scyphozoans, tunicates, agglutinant polychaetes, actinians, dendroid, fenestrate and encrusting bryozoans, serpulids, brachiopods (mostly *T. retusa*), bivalves (*Asperarca nodulosa scabra*, *Spondylus gussoni*, pectinids) and foraminifera. Moreover, several corals branches bear live boring fauna (sponges and worms). This Biological assemblage is subdivided into sub-biological assemblage BA1a (Boxcore MD 13-3471) and sub-biological assemblage BA1b (Boxcore MD 13-3465) where corals are all dead, rare and bioeroded, and which is characterized by the absence of holoturian and polychaetes.

Biological assemblage BA2 (Boxcore MD 13-3471), is characterized by fossil coral assemblage dominated by *M. oculata* with exception at around 30 cm depth, which contains very large, thick-walled and well preserved fragments of *L. pertusa* associated with large muricid gastropods. *D. cornigera* is common in the lower part of the core. This Biological assemblage is subdivided into sub-biological assemblages BA2a and BA2b (Boxcore MD 13-

3471). BA2a is characterized by the dominance of *M. oculata*, however BA2a is characterized by a large fragments of *L. pertusa* associated with large gastropods Muricid and a frequent *D. cornigera* at the base.

Biological assemblage BA3 (Boxcore MD 13-3461), contains essentially a fresh or black coated fragments of *M. oculata*, and secondarily, large branches of *D. cornigera* and mm-sized shell debris and contains entire shells of gasteropods, brachiopods, pectinids. Rare live macrofauna, mostly colonising black-coated coral fragments and preminently consisting of crinoids, sponges and bryozoans.

Biological assemblage BA4 (Boxcore MD 13-3461), contains a coral association mostly composed by well preserved to black-coated and bioeroded fragments of *M. oculata* and *D. cornigera* colonised by serpulids, bryozoans and foraminifera; rare solitary corals (*D. dianthus*, *Caryophyllia calveri*, and *Javania cailleti*) and other macrofauna, mostly gastropods (e.g. *Danilia* sp.), pectinids, brachiopods (*T. retusa* and *Megerlia*) and large serpulids (e.g. *Vermiliopsis monodiscus*). The composition of the corals is constant along the entire section but below 15cm the percentage of *Dendrophyllia*, *Lophelia*, and the associated mollusc and brachiopod fauna seem to increase.

Biological assemblage BA5 (Boxcore MD 13-3456), consists almost exclusively of large *M. oculata* and *L. pertusa* fragments and mm-sized shell debris; several black-coated coral fragments, colonized by live fauna. Some dead coral fragments are black-coated, bioeroded and highly colonised by live sessile fauna, such as tiny *D. dianthus*, gorgonians (e.g. yellow *Acanthogorgiidae*), actinians, stoloniferans, scyphozoans, hydrozoans, tunicates, bivalves,

brachiopods, bryozoans, polychaetes and forams. Vagile fauna: decapods, and tiny gastropods (e.g. *Amphissa acutecostata*).

Biological assemblage BA6 (Boxcore MD 13-3456), consists of corals (mostly *L. pertusa* and *M. oculata*, secondarily, *D. dianthus*, *C. calveri*, *J. cailleti*, *Stenocyathus vermiformis*) present along the entire core section. In the upper 5 to 10 cm they show different states of preservation, from highly oxidised (Fe-Mn) and abraded/bioeroded to well preserved. Some pristine *Lophelia* fragments show perfectly rounded *Entobia* traces and typical small spirorbids. Below 15 cm depth, coral fragments are smaller, less abundant, and mostly well-preserved; large *Calliostoma* shells are common. From 30 cm depth downwards, corals are variable in size and generally well preserved showing a beige to greyish colour, below 60 cm depth the greyish colour dominates. The percentage of *M. oculata* increases downwards.

Biological assemblage BA7 (Boxcore MD 13-3465), consists of *L. pertusa*, *M. oculata*, *D. cornigera*, *C. calveri*, *J. cailleti* and rare *S. vermiformis*. The size and abundances of *L. Pertusa*, increases from 20 cm downwards. Colonial corals are well preserved and locally present a beige to gray colour and a "glassy" aspect.

Biological assemblage BA8 (Boxcore MD 13-3468), consists mostly of foraminifera, among which large Miliolids and *Orbulina* are visible to the naked eye. Sabellidae worms (both vertical, i.e. in life position, and horizontally oriented) are locally common. Rare ophiuroids.

Biological assemblage BA9 (Boxcore MD 13-3468), contains coral fragments (mostly *L. pertusa* and *M. oculata*).