The paper submitted by Gori et al. focuses on cold-water coral (CWC) populations along the flanks of two canyons of the western Mediterranean. The title clearly reflects the contents of the paper and the abstract provides a concise and complete summary. Overall this contribution is well written and presents novel results on important ecosystems of the deep sea, stimulating interest in further exploration of the still little known Mediterranean bathyal environment. In particular, this paper presents new data about bathymetric distribution, size and orientation of CWC colonies and, interestingly, provides a tool to compare coral distribution and population structure in two distinct canyons. The methodology proposed by Gori et al., with some improvements, could be applied to compare CWC populations from several other areas of the Mediterranean (and not only).

I do recommend this paper for publication after minor revisions as outlined below. Some of my comments can be useful to improve parts of the manuscript, others can be taken into consideration for planning future investigations.

Material and Methods

Pg 19059 L14: "*M. oculata* … form colonies of 30-50 cm height". It is not very clear to me if this information is meant as a citation by Zibrowius (1980). Most probably not because in Zibrowius (1980) there is no indication about the size of the colonies of *Madrepora oculata*. However, in the Mediterranean (and I guess in the Atlantic as well) colonies of this species can exceed 50 cm in height. Colonies of ca. 80 cm in height are documented for instance in Sanfilippo et al. (2012). Facies, DOI 10.1007/s10347-012-0356-7

Pg 19059 L 15-16: "*L. pertusa* polyps measure approximately 10 mm in diameter and forms colonies of more than 130 cm height…" These sentences need English editing, the subject of the verb "forms" is "*L. pertusa* polyps", but it should be "*L. pertusa*". Moreover, the word "height" should be replaced with "high" or "in height".

Pg 19059 L20: *Dendrophyllia cornigera* colonies in the Mediterranean can be much higher than 20 cm. I assert this on the basis of personal observations of samples from the Adriatic and the Ionian Sea, but please check literature about it.

2.2 Video Survey and analyses: I agree with the authors that both number and size of coral colonies can be important indicators of health and stability of coral communities and that their assessment represents a basic tool for effective monitoring and protection programs. However, the authors apply to frame-building corals (*Madrepora oculata* and *Lophelia pertusa*) a methodology previously used for octocoral colonies which typically do not form frameworks and that can be easily distinguished as isolated colonies in ROV videos. *M. oculata* and *L. pertusa* do normally form frameworks. Counting single colonies does not really represent the best method to quantify their presence on the seafloor and to compare populations from different locations in the Mediterranean. This method forced the authors to exclude the extremely important *Lophelia* framework found in the LDC (pg 19062, L18-24) from the quantitative analysis. I would suggest to apply a methodology which allows to quantify both single coral colonies and coral frameworks. For instance, in future analyses, further size categories could be added: e.g. "loose coral framework" (1-5 m), "dense coral framework" (5-10 m), "very dense coral frameworks" (>10 m). This is just a suggestion, I am sure a more appropriate terminology can be found, but please take this observation into consideration in further work.

Pg19060 L5: "All colonies of the studied coral species … have been counted". I guess that only live colonies were counted, but this is not specified in the material and methods paragraph. Wouldn't be interesting to quantify also dead colonies and the ratio live/dead coral colonies?

Pg19060 L13-15: About the orientation of coral colonies, I fully agree with Veerle Huvenne that in the paper it is not indicated the angle of the colony growing axis (or colony height) versus the substratum, but versus the vertical. However, I am not sure that the suggestion by Veerle to introduce the terminology "vertical orientation" helps in clarifying this issue, because an object which has a "vertical orientation" is supposed to be vertical... Andrea, why don't you simply use the word "orientation" and add a figure similar to Fig.2a by Rossi et al. 2008? If you include (as you suggested in your last posted comment, 15th of February) also information about the colony substrate/location, you could write something like "The colonies were classified into four categories according to their location (or substrate) and orientation, in particular: on top of rocky boulders, facing straight up (0°), perpendicular to (sub)vertical rocky walls (90°), on the edge of rocky outcrops, facing downwards (135°), and below subhorizontal rocky outcrops, facing downwards (180°), see Fig. X. for details".

Results

Pg 19061 L19 and 25: As also exposed in Tab. 1, corals are absent in some video transects (CCC: T8, T9, T10 and LDC: T17, T18). This information is provided in the results section but it is not discussed afterwards. Why didn't you find any corals in those transects?

1

Pg 19061 L23: "with a dense patch located..." Could you please better explain what you mean for "dense patch" of *Dendrophyllia cornigera*? How dense? Which is the average distance between colonies or the colony number per square metre?

Pg 19063 L4-9: Here you describe the results of the correspondence analysis shown in Fig. 7 (relationship between colony size, depth and orientation), highlighting some differences between the two canyons, at least about depth/colony size relationship. However these results are not commented in the discussion section. Please note that at Pg 19066 L6 you assert that "no clear differences were observed in the CWC populations of the two canyons", it sounds slightly contradictory. Moreover, in Fig. 7 you use the abbreviations D1, D2, D3, D4. From the text I deduce that the depth increases from D1 to D4, but it would be useful to add this information in the figure caption.

Discussion

Pg 19064 L7-8: Observing Fig. 3, the bathymetrical distribution of *M. oculata* doesn't seem to be too "homogenous" in the two canyons. In the LDC this species seems to occur preferentially in two depth ranges, ca. 250-280 m and 330-360 m, and to be absent above 220 m depth whereas in the CCC it appears already at 190 m depth and it is more uniformly distributed (and rather abundant) till 320 m depth. Actually, also *L. pertusa* and *D. cornigera* occur above 220 m water depth in the CCC but not in the LDC, however this datum is not commented in the discussion section.

Pg 19063 L25 - 19064 L3: For your information, coral frameworks mostly composed of very large colonies of *L. pertusa* can be found also in some locations of the SML province, in the Ionian Sea (unpublished data) but, as far as I know, they don't exceed 5 m in lateral extension.

Pg 19065 L15 - 17: "The preferential orientations with respect to the substrate (90° and 135°) of *M. oculata* and *L. pertusa* colonies in both canyons are probably related to the main currents as well as to the sediment transported by them." Yes, but can't the % of colony orientation shown in Fig. 6 be biased by the % of vertical wall or overhang observed in each transect? I try to explain better what I mean: if in a video transect which explores 400 linear m of sea bottom, 380 linear m are along a vertical wall, I expect a very high % of corals with a 90° orientation. If the video transect explores 50% of subhorizontal surfaces and 50% of vertical ones, and I find 90% of corals oriented 90°, I can assert the corals prefer vertical wall than subhorizontal surfaces. As also suggested by Andrew Davies, I think that your results about coral distribution and orientation should be related to the topography of the seafloor explored in each transect. Probably in the text you could refer to some of the results from Lo Iacono et al. (in prep.) (see your comment, 15 January 2013) to provide information about the seafloor slope.

Pg 19066 L2-5. "The frequent 90° orientation of coral colonies... might explain the observed low frequency of very large colonies since whenever a certain large size is exceeded, strong currents and the own weight of the corals may detach or break down from the substrate these larger colonies". Yes, it can be that colonies settled on vertical wall, when too large, detach due to their own weight, bioerosion, strong currents, etc. On the other hand, on the LCD vertical walls, you found the largest colonies of *Lophelia pertusa* which form very robust frameworks (Fig. 5). How do you explain this? (Please check the caption of Fig. 5, maybe in the first line the word "with" needs to be replaced with "which"...?

2