

Specific Comments and suggestions:

11218, line 3: check spelling: scyphozoan

11219, line 26: "i.e., every zooxanthellae added beyond this optimum conspires to reduce the autotrophic energy (ATP) transferred to the coral host."

Two issues: First agreement- "zooxanthellae" is a plural noun, "conspires" is a singular verb. Second, author is anthropomorphizing - I clearly doubt that zooxanthellae are capable of "conspiring" How about simply "...every zooxanthella added beyond this optimum reduces the autotrophic energy..."

11219, last line and 11220, first line: "i.e., every zooxanthellae added beyond the optimum conspires to reduce the efficiency of the host CCMs."

See comment above - anthropomorphizing zooxanthellae and the same agreement problems

11220, line 9. "(ii) the addition of "excess" zooxanthellae beyond the host sanctioning"

Here the host is "sanctioning" (the correct construction is probably "sanctioned") - are such anthropomorphisms really appropriate in scientific writing? How about simply using "beyond the optimum determined by the transport rate and capacity of the host CCMs..."

11220, line 25: "outside the strict host sanctioning implicit..."

Again, this can be restated more technically and less anthropomorphically.

11227, lines 1-3: "Namely, disruption to the energy dependent enzyme Ca^{2+} -ATPase, and its linked impact on host calcification and intracellular CO_2 supply (Fig. 3)."

Is this a grammatically complete sentence?

11227, line 14: "2005). Finally, for nutrient-replete experimental conditions that permit in an increase in"

Delete first "in"

11228, lines 3-4: "zooxanthellae are not growth-limited, an increased permitted reliance on "free" (passive) $\text{CO}_2(\text{aq})$ opens the opportunity for "parasitic" zooxanthellae to photosynthesize.."

First, delete "permitted". Second, how can "captive" zooxanthellae be "parasitic" - please rethink this phrasing or explain parasitic ooxanthellae (any pertinent references??).

11230, lines 9-12: "Evidence from the Mediterranean indicates that Miocene reef recovery proceeded through amesotrophic→euphotic bathymetric zonation as seawater $p\text{CO}_2$ fell below 260 ppmv (Pomar and Hallock, 2007)."

Change to: "Evidence from the Mediterranean indicates that Miocene reef recovery proceeded through a mesophotic→euphotic bathymetric zonation (Pomar and Hallock, 2007) as seawater $p\text{CO}_2$ fell below 260 ppmv."

That is, the author used mesotrophic rather than mesophotic, and I think the Pomar and Hallock reference would fit better before the 260 ppmv because they did not specifically propose a CO₂ concentration.

11231, line 4: "of its exclusive role in halting reef growth (see e.g., Bard et al., 2010)."

Was reef growth really halted or was sea level rise so fast that backstepping was induced where possible?

11231, line 10-11: "and/or (ii) the release of lowstand-stored terrestrial nutrients as the sea level crept over the continental margin and onto the shelf (Hallock and Schlanger, 1986)."

Sealevel rise rates at Catastrophic Rise Event 2 were about 4.5 cm/yr - not exactly "creeping"

"Schlager", not "Schanger"

11232, lines 13-17: "an abrupt rise in sea level ~11.5 kyr BP is inferred by the rapid change in the shallow-water community composition from a branching *Acropora*-dominated assemblage, to (an assumed deeper) massive *Porites*-dominated assemblage."

Comment: Stage 5e reefs in the Caribbean, which were subjected to apparently higher insolation and presumably higher CO₂, are characterized by some spectacular branching morphologies.

11234, lines 13-14: "Moreover, the effectiveness of host sanctioning mechanisms to rescind the rapid proliferation potential of its algal partner appears"

Anthropomorphic – please consider wording like: "host mechanisms to limit" (or reverse)"

11245,11247. Figure captions 1 and 3 state that present oceanic pH is 8.2, but most current references state 8.1 or lower.