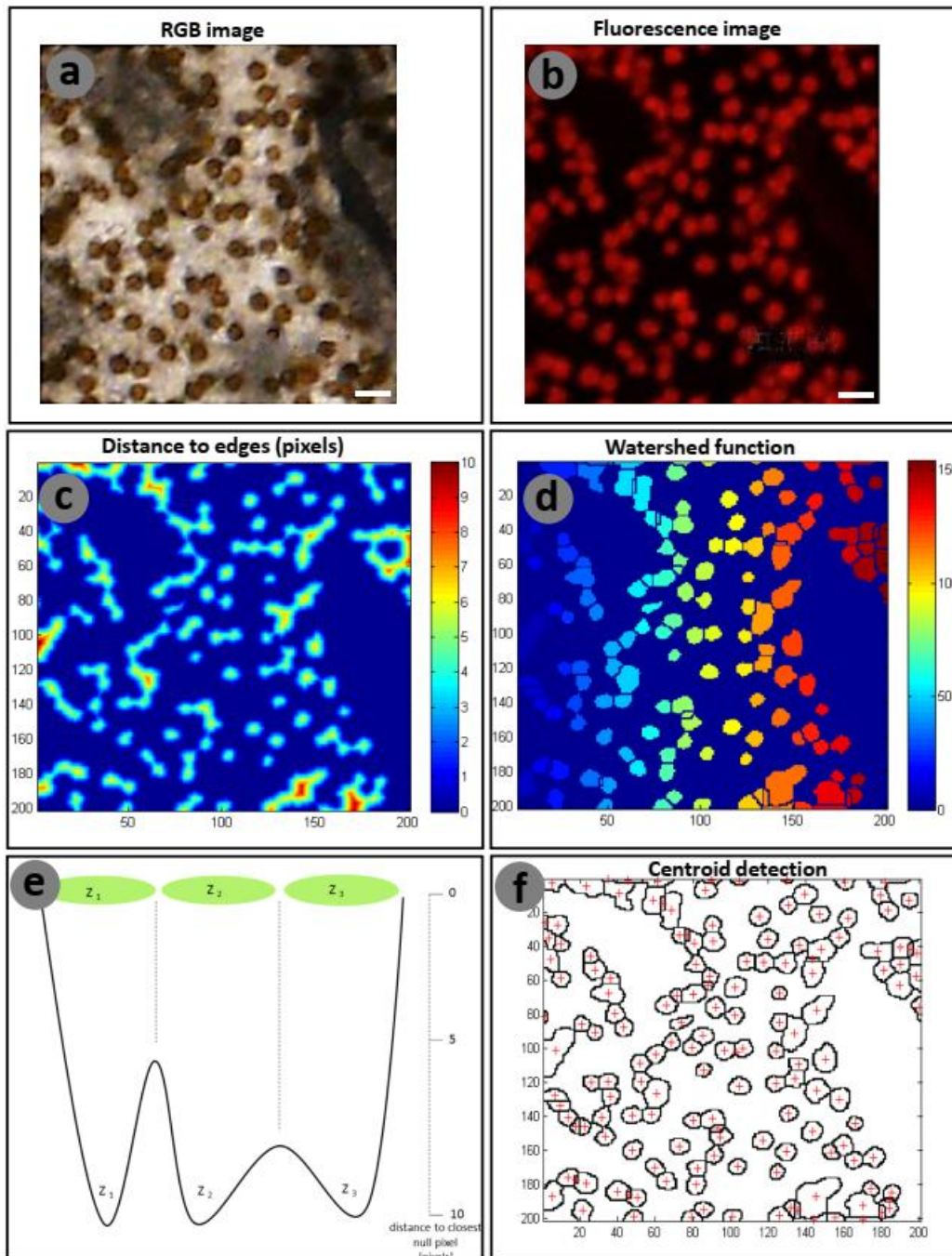**Supplementary**

Figure S1. Steps for the endosymbiotic dinoflagellates automatic counting methodology; a–f were performed on the same image. The algorithm first transformed the image from the standard Red Green Blue (RGB) colors (**a**) with endosymbiotic dinoflagellates (white arrow; ×40) and fluorescent image and (**b**) with zooxanthellae (white arrow, × 40) to a grayscale image, hence assigning a single value to each pixel of the image. The image was then processed into a binary image through a filter, setting a value of "zero" for all the pixels with values below a specific threshold (empirically set to 0.075 in order to count every symbiotic cell, even those located near the calicoblastic layer) and a value of "one" for all the other pixels. The binary image was then inverted, assigning a value of zero to each endosymbiotic dinoflagellate pixel. Then, the Euclidean distance to the nearest non-zero pixel was calculated for each null pixel of the image, making it the pixel's value (**c**) distances to nearest edge/black pixel [pixels], from the small distance in blue to the large distance in red. In the next step,

every pixel in the image was multiplied by –1, setting the non-zooxanthellae pixel values to -Inf. The watershed function was then applied to the image, attributing a different number, greater or equal to one, to all pixels included in the same "watershed", and a value of zero to pixels not included in a single watershed (**d**) zooxanthellae, depicted as green circles (each local maximum of distance (Y axis) is associated with a new cell (z)). These pixels represent the edge of the watersheds, where every single watershed represents one symbiotic cell. The image was then reprocessed as a binary matrix, with a value of one for every pixel greater than or equal to 1, and a value of zero to all other pixels (**e**, watershed function rational). The total number of zooxanthellae in the image was finally counted, and their centroids and areas were derived from the algorithm (**f**, each centroid is marked with a red cross). Scale bars –20 µm.
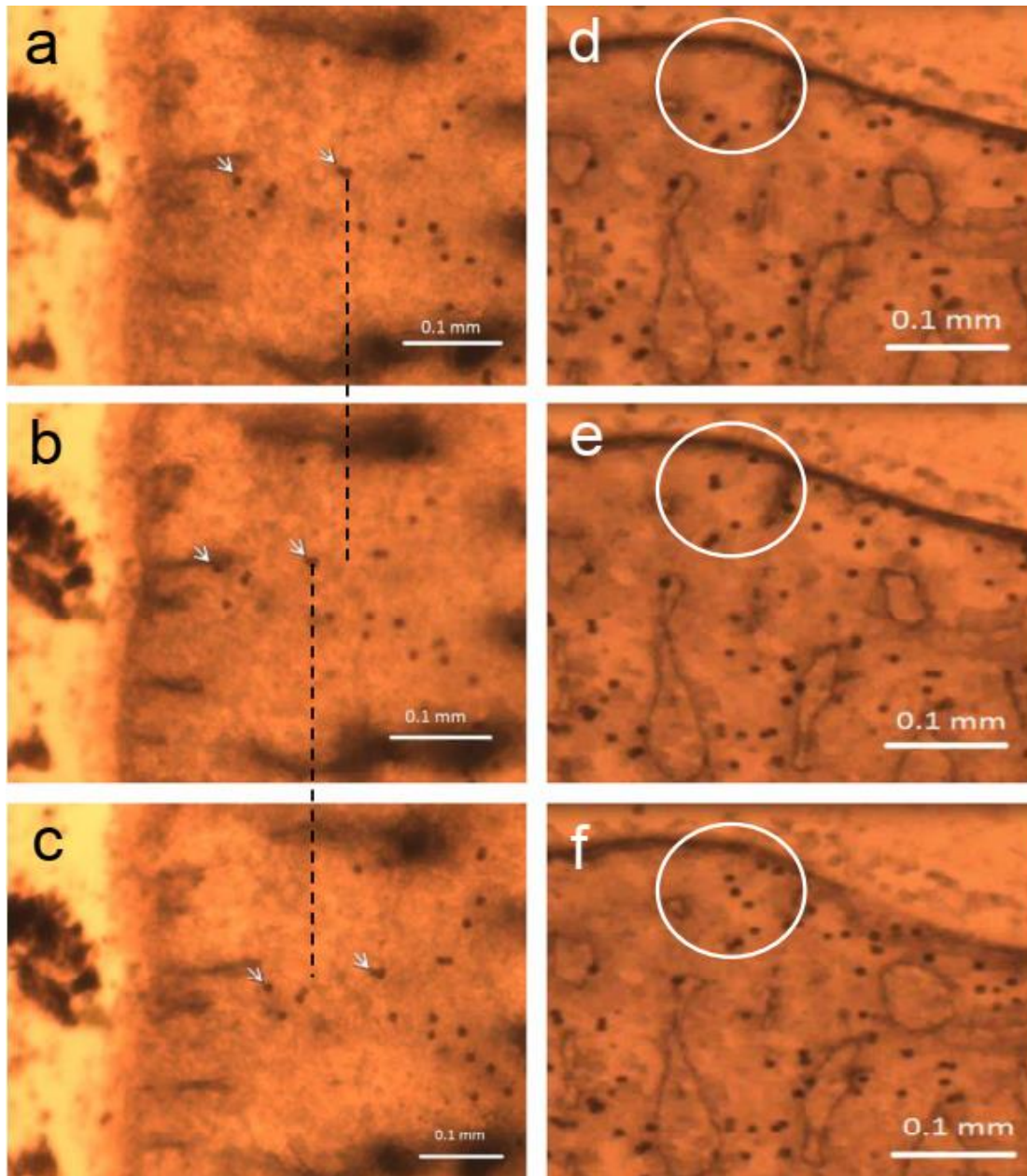
Figure S2. Tissue and algal movements. Expansion–retraction tissue movements in *P. damicornis'* spreading tissue after (**a**) 0 min, (**b**) 5 min, and (**c**) 10 min (white arrows = zooxanthellae). Endosymbiotic dinoflagellates relocation (within a white circle) inside the *S. pistillata* spreading tissue, after (**d**) 0 min (6 algal cells), (**e**) 5 min (8 algal cells), and (**f**) 10 min (10 algal cells).