Algal biomass displayed non-linear responses to ocean acidification. There was an increasing trend in epiphyte loading below pHT 7.75, despite epiphyte biomass remaining relatively low across all treatments (mean = 0.30 ± 0.09 SD mg DW per cm shoot) (Supplementary Table S2a; Fig. 3a). Macroalgal biomass (primarily U. instestinalis) was high across the treatments (mean = 18.6 ± 15.7 SD g DW per mesocosm) and also increased at pH levels below 7.75 (Supplementary Table 2b; Fig. 3b). The shape of the modeled responses differed slightly; algal epiphyte responses were explained by both the linear (XX%) and quadratic (XX%) terms, whereas the macroalgal responses were primarily explained by the quadratic term (XX%, Fig. 3c). There was very low probability of nutrient effects on responses of epiphyte loading (XX%) nor macroalgal biomass (XX%).

The probability of declines in epiphyte loading, macroalgal mass, and *Ulva* recruitment with increases in pH was 0.94, 0.99, and 1.00, respectively (Fig. 3A, 3B, 3D). For example, there was a X.X-fold (X.X–X.X 95% CI) decrease in macroalgal mass with a pH increase from 7.0 to 7.5 (Fig. 3B). Diatom recruitment showed a positive (U-shaped) quadratic relationship with pH with probability 0.92 (Fig. 3C). Without added nutrients, no *Ulva* were recruited (Fig. 3D) and there was a 0.91 probability of higher diatom recruitment when nutrients were added (Fig. 3C).