

by the introduction of toxins, or by the mid-bay anoxia. The early summer bloom of dinoflagellates is dominated by *Prorocentrum*, which follow an annual cycle based on the estuarine gravitational circulation pattern; the late summer bloom is dominated by *Gyrodinium*, which germinate in situ from overwintering cysts. *Prorocentrum* progress up estuary in the deep waters during early spring from the bay mouth to the upper bay regions, bloom during the late spring and summer in the surface waters of the middle and upper bay, progress down estuary in the surface waters during fall and winter, and eventually collect in the deep waters along frontal surfaces near the bay mouth (33). Dinoflagellates are motile; when they encounter the anoxic water mass during their spring transport, they avoid it and continue moving up estuary along the surface of the anoxic waters near the halocline. Diatoms, on the other hand, are not motile; when they encounter the anoxic waters in a corresponding early spring transport, they sink to the bottom and are prevented from passing into the upper and middle bay (34). In addition, recent experiments demonstrate that exposure to low oxygen concentrations inhibits the germination of diatom spores (35).

Thus it appears that the ecological effects of the anoxic and hypoxic water are large. Many species that play fundamental roles in the food web and biology of Chesapeake Bay are in decline, as are several species of key economic importance to the region.

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review. For either partner to breach its responsibility carries serious risk to the solidarity of what has proved an extraordinarily effective partnership.

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