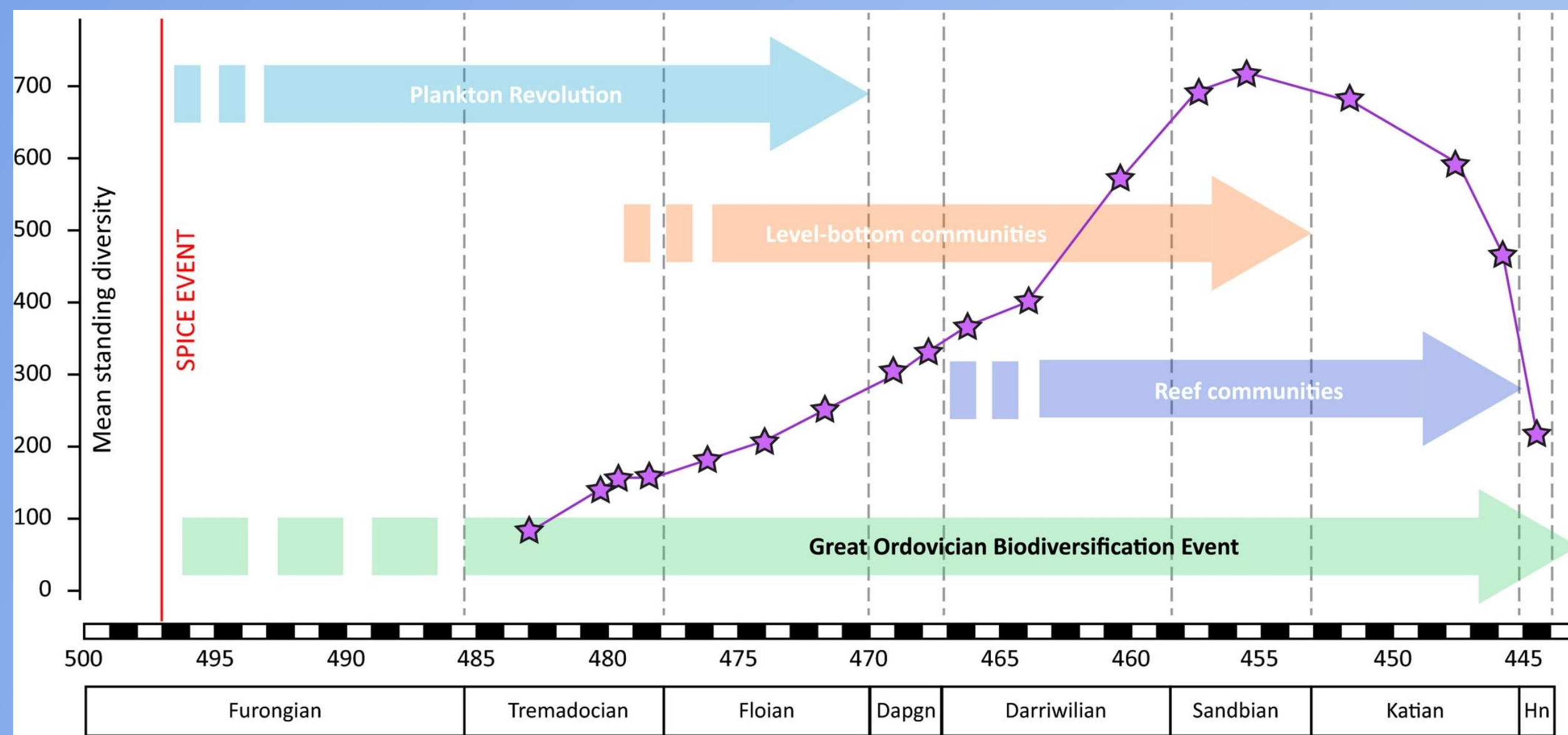


Great Ordovician Biodiversity Event

Massive increase in biodiversity occurring over the course of the Ordovician period

(489-443 Ma)¹

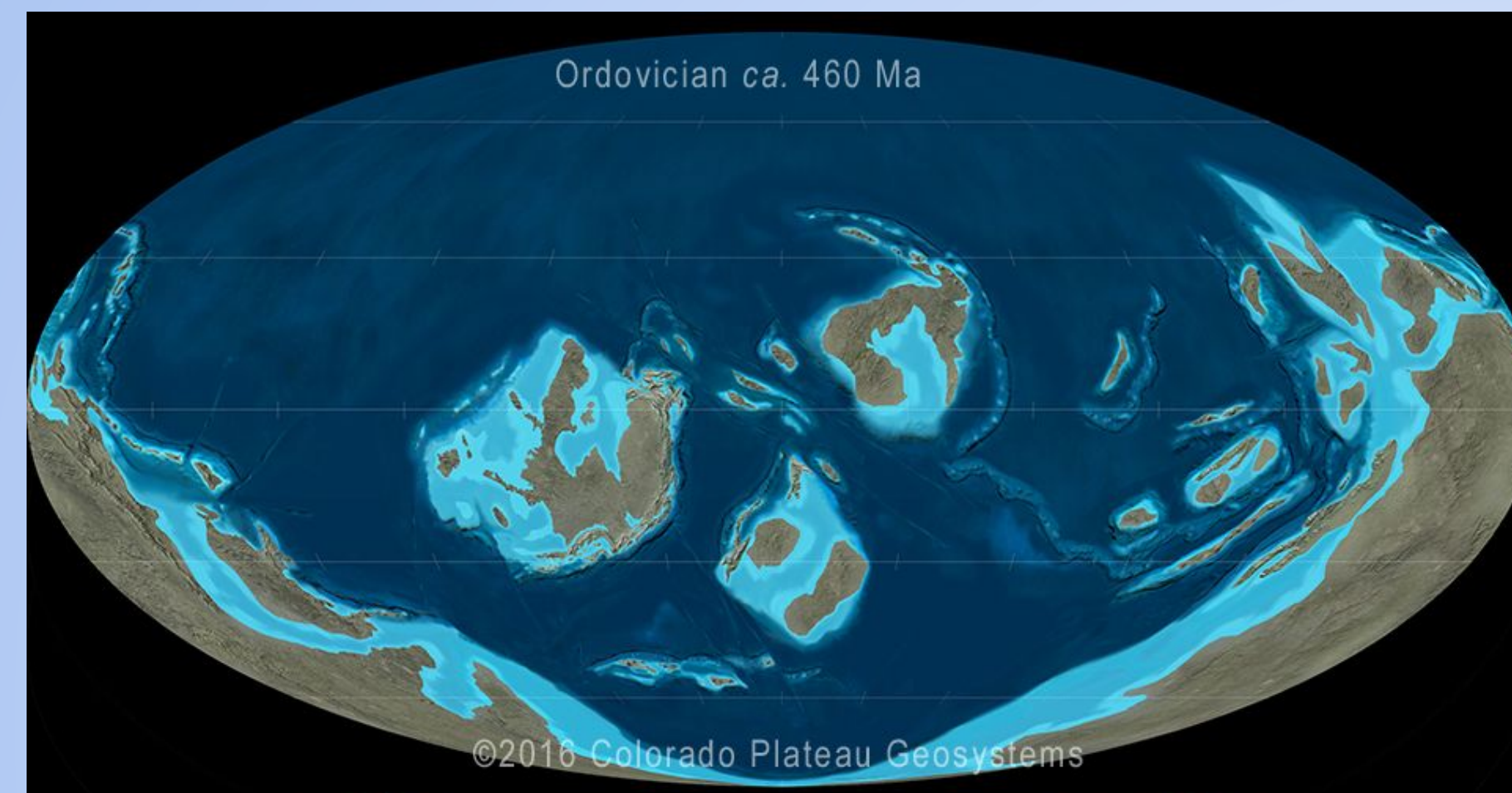
Fig. 1



What is the Great Ordovician Biodiversity Event (GOBE)?

The Ordovician Period is marked by a rapid and significant increase in marine biofaunal diversity². This increase in marine biodiversity comes as result of a great increase in phytoplankton, widening the primary productivity available in the marine realm. The increase in phytoplankton was caused by various factors, including high sea levels and continental separation, which allowed for more ecospace³(Fig.2).

Fig. 2



The causes of this 'Planktonic Revolution' are still being studied; however, research of isotopic cores has shown that flooding throughout the Ordovician may have brought nutrients into the oceans that could increase the productivity of planktonic fauna.⁶ This revolution had major impacts on the evolution of aquatic fauna.

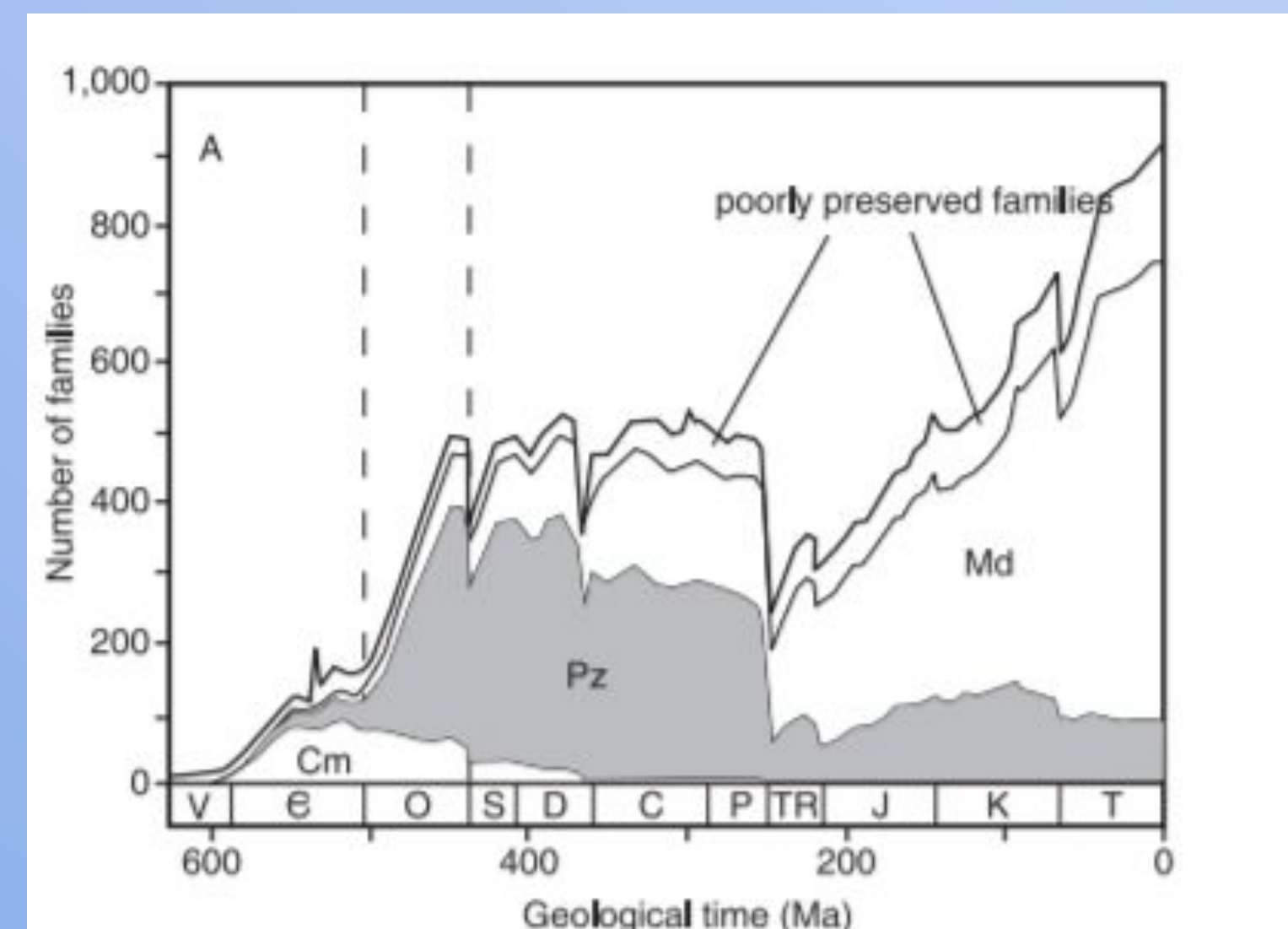


Fig. 4

Increased Diversity of Aquatic Fauna

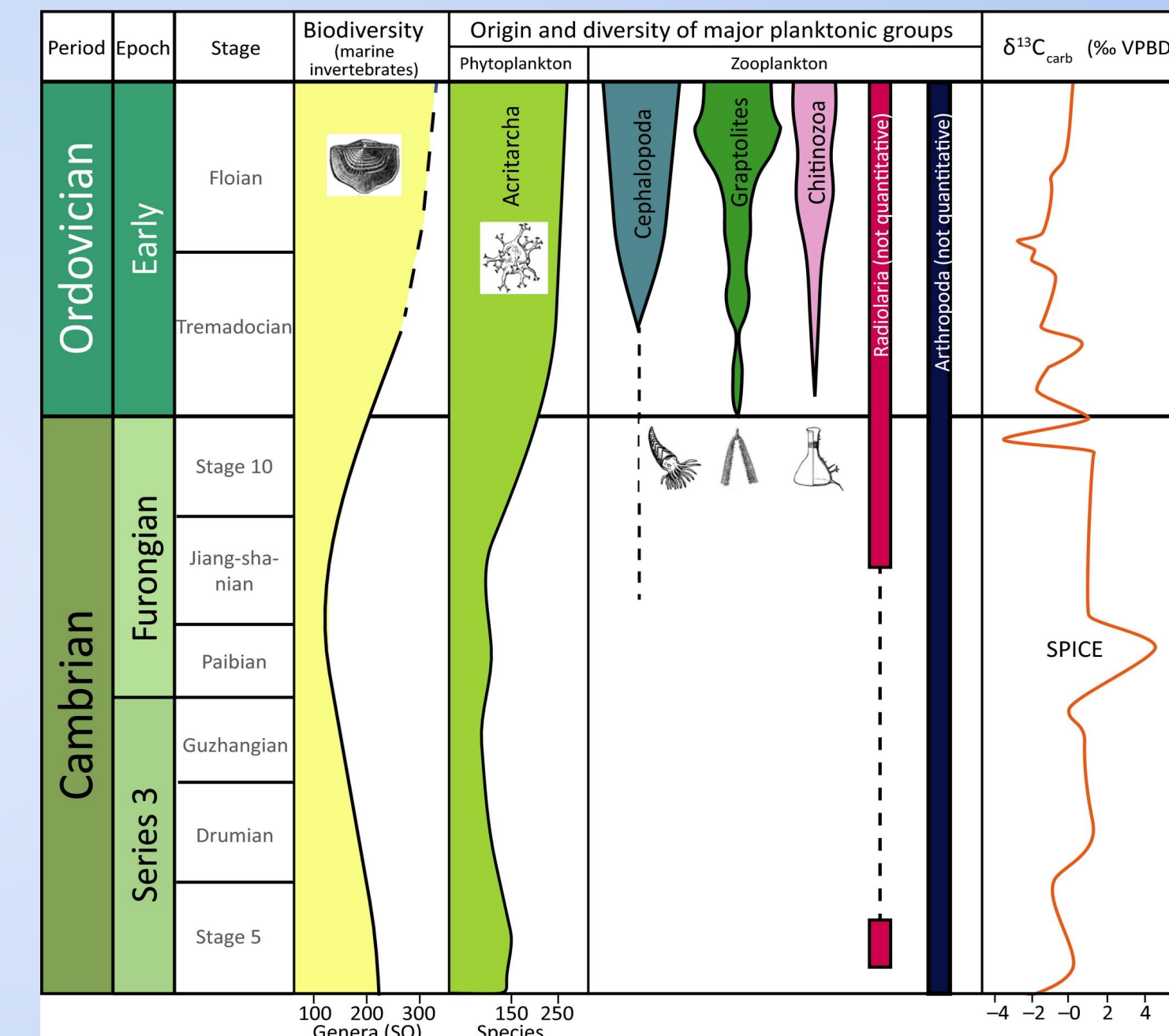


Fig. 5

The mass increase in phytoplankton created a food source for zooplankton, which effectively created food for larger organisms. Fish and other large marine mammals depend on short food chains that are centered around phytoplankton.⁴ This increase of food source allowed aquatic fauna to become more productive, resulting in diversified aquatic fauna; therefore mirrors the diversity curves of acritarchs (Fig. 4).

The Planktonic Revolution

Early within the Paleozoic, the primary marine organisms were different species of phytoplankton that were recorded within the fossil record through evidence of acritarchs ranging in various sizes.⁴ As time progressed between the Cambrian and Ordovician, the number of species of acritarchs increased significantly (Fig.3).⁵ Scientists called this increase and diversity of planktonic fauna 'The Planktonic Revolution'.⁴

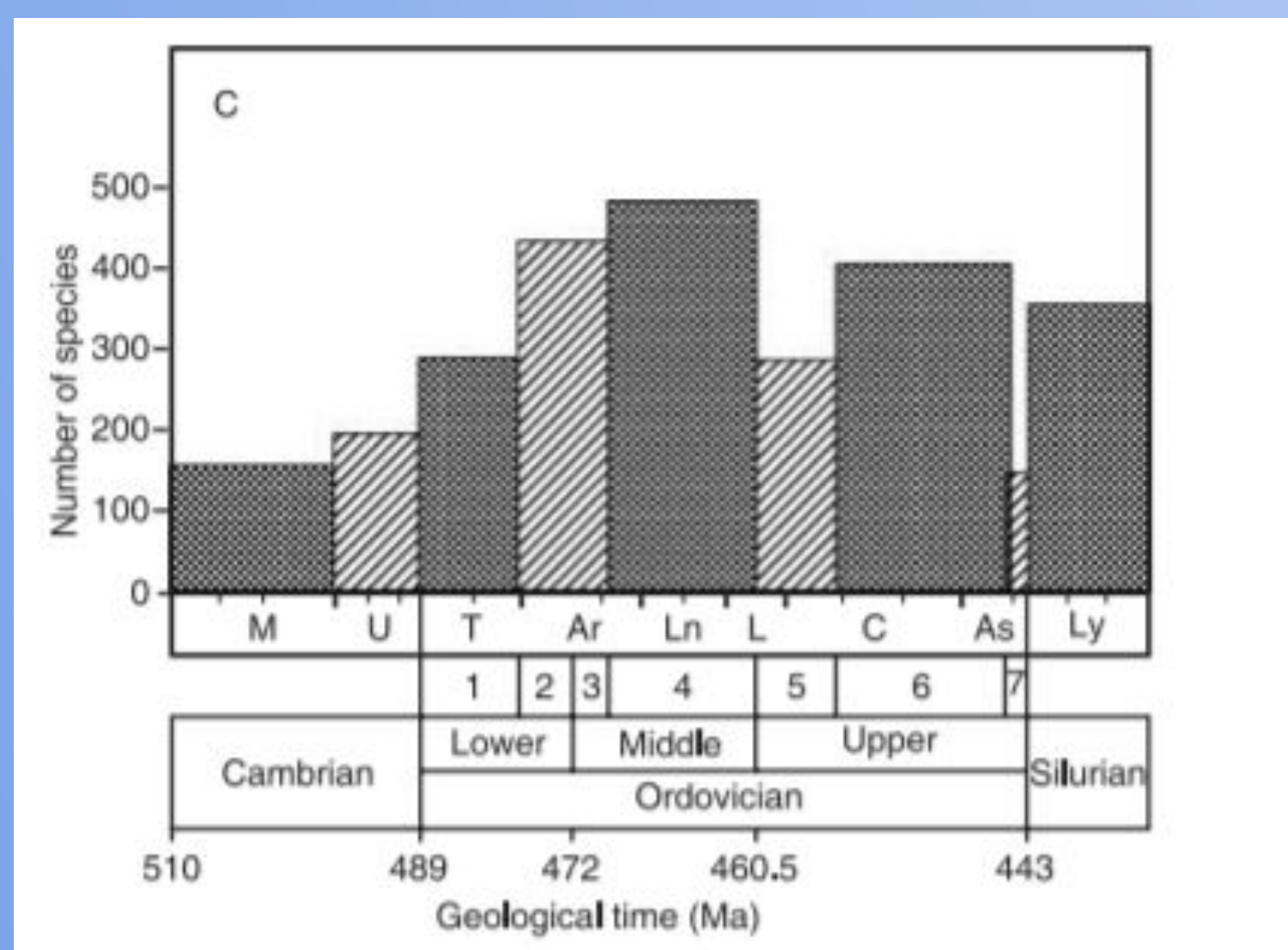


Fig. 3

The Start of Reef Communities

In addition to the increase of planktonic and benthic organisms, reef communities started to form during the Ordovician. Figure 6 shows that the increase in the organisms that were key parts of forming reefs, especially the bryozoans. The rapid increase in coral comes in the late Ordovician along with sponges and stromatoporoids (Fig. 6).

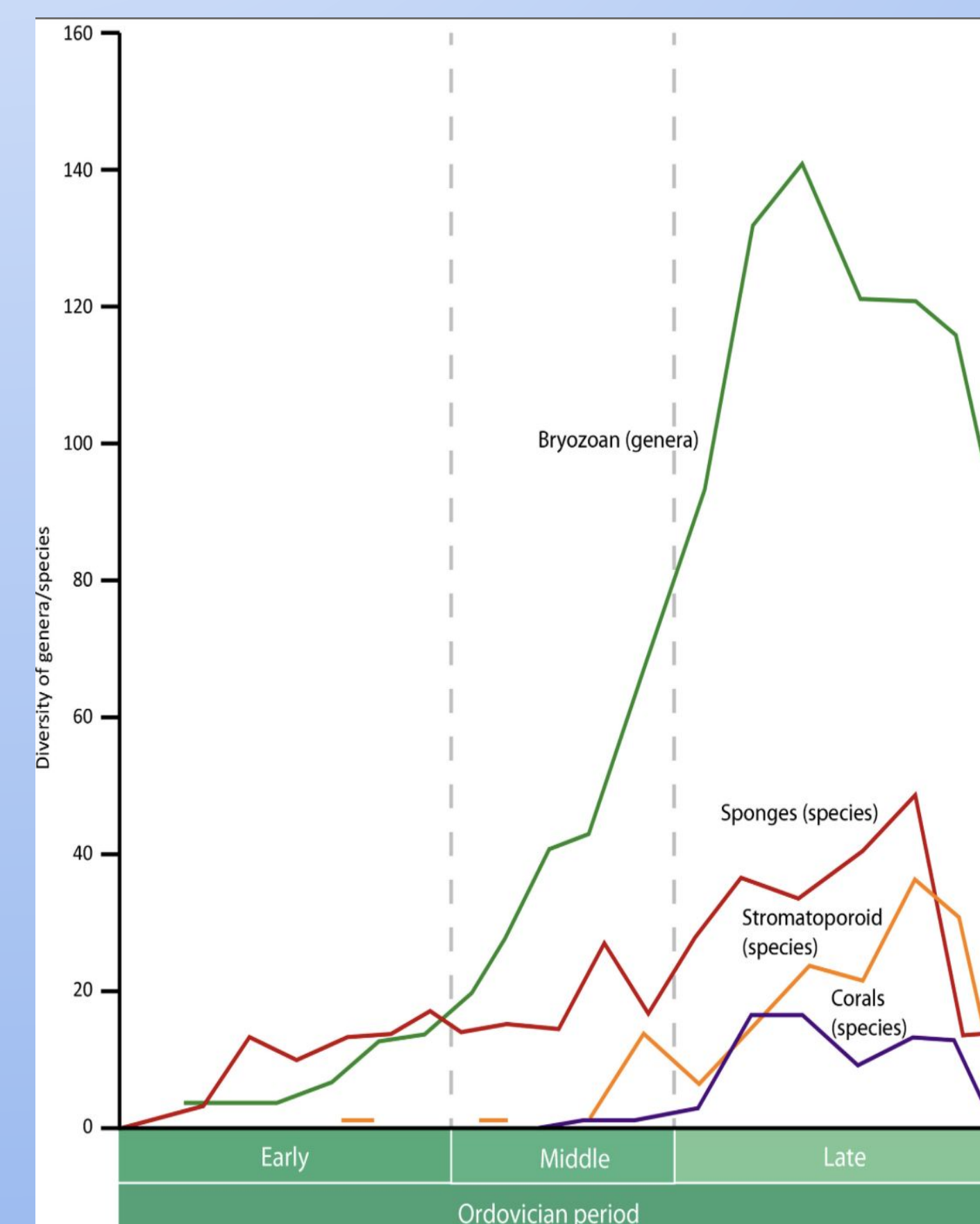


Fig. 6

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