Buatois, L.A., et al., 2022, Infaunalization and resource partitioning during the Mesozoic marine revolution: Geology, v. 50, https://doi.org/10.1130/G50088.1

Figure DR1. Middle Triassic localities and paleogeographic reconstruction (at 245 Ma). 1. Bravaisberget Formation (Svalbard). 2. Sunset Prairie Formation (Canada).

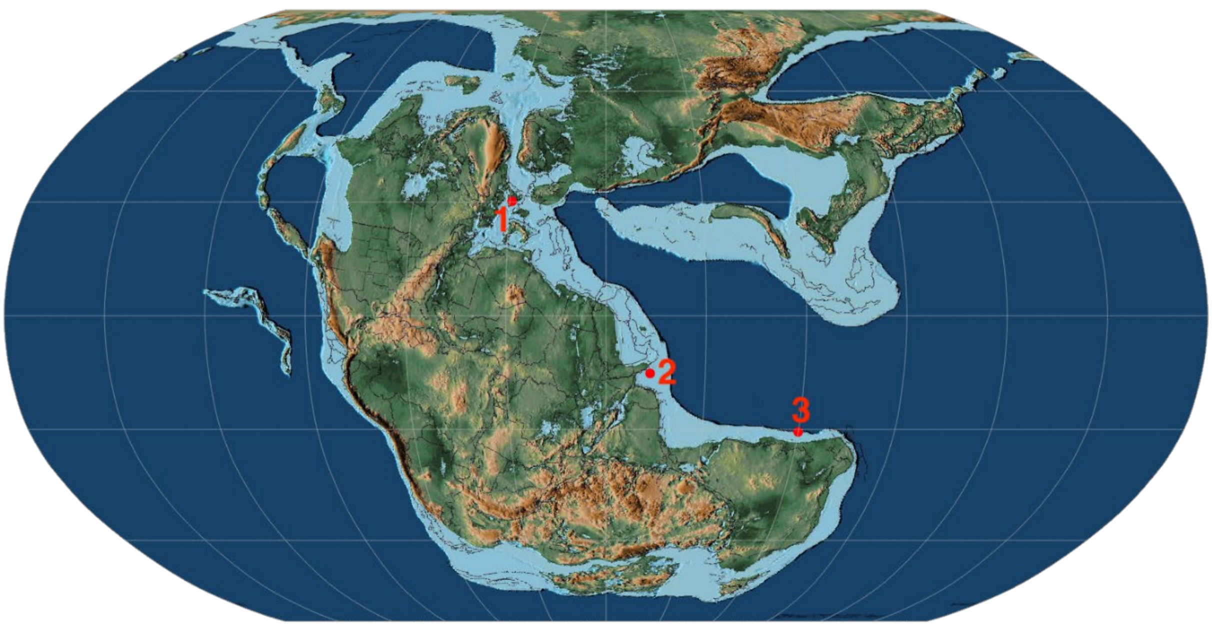

Figure DR2. Late Triassic localities and paleogeographic reconstruction (at 220 Ma). 1. Blue Lias Formation (England). 2. Nayband Formation (Iran). 3. Mungaroo Formation (Australia).

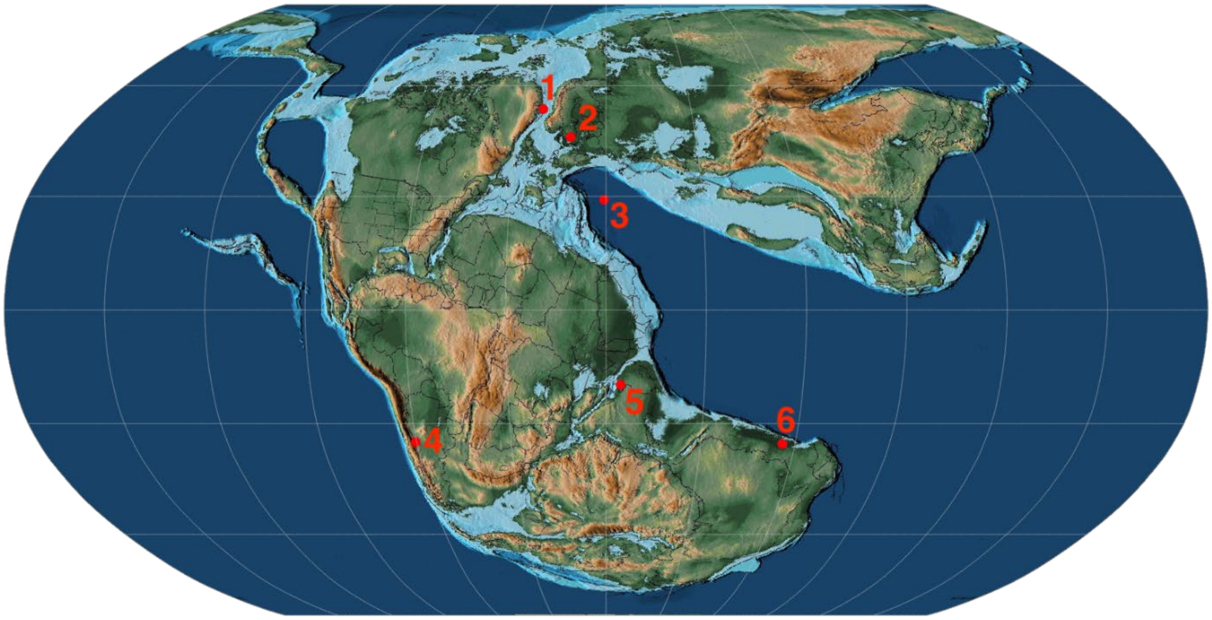

Figure DR3. Early Jurassic localities and paleogeographic reconstruction (at 186 Ma). 1. Neill Klinter Formation (Greenland). 2. Hoganäs Formation (Sweden). 3. Kopieniec Formation (Poland). 4. Bardas Blancas Formation (Argentina). 5. Kaladongar Formation (India). 6. Plover Formation (Australia).

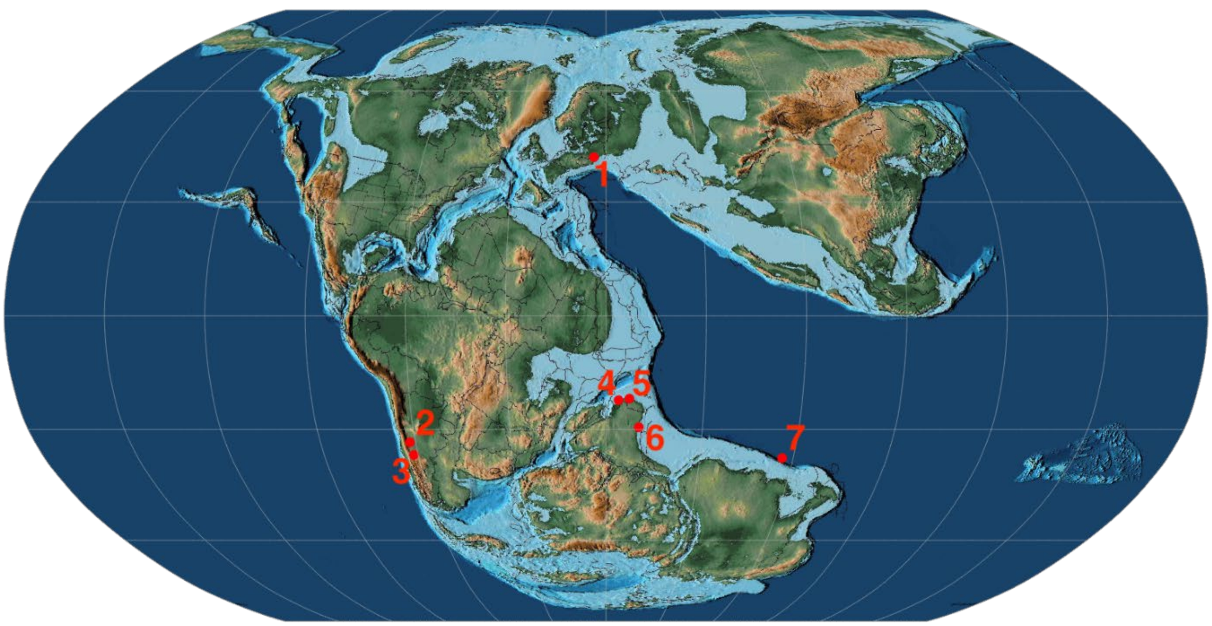

Figure DR4. Middle Jurassic localities and paleogeographic reconstruction (at 167 Ma). 1. Czéstochowa Clay Formation and "Gnaszyn" Clay Pit (Poland). 2. Bardas Blancas Formation (Argentina). 3. Lajas Formation (Argentina). 4. Kaladongar Sandstone Member, Babia Cliff Member, Fort Member, Hadibhadang Sandstone Member, Nara Member, Members I, II, and III of the Jumara Formation, and Gangta Member (India). 5. Badabag and Kuldhar members (India). 6. Joyan Member (India). 7. Plover Formation (Australia).

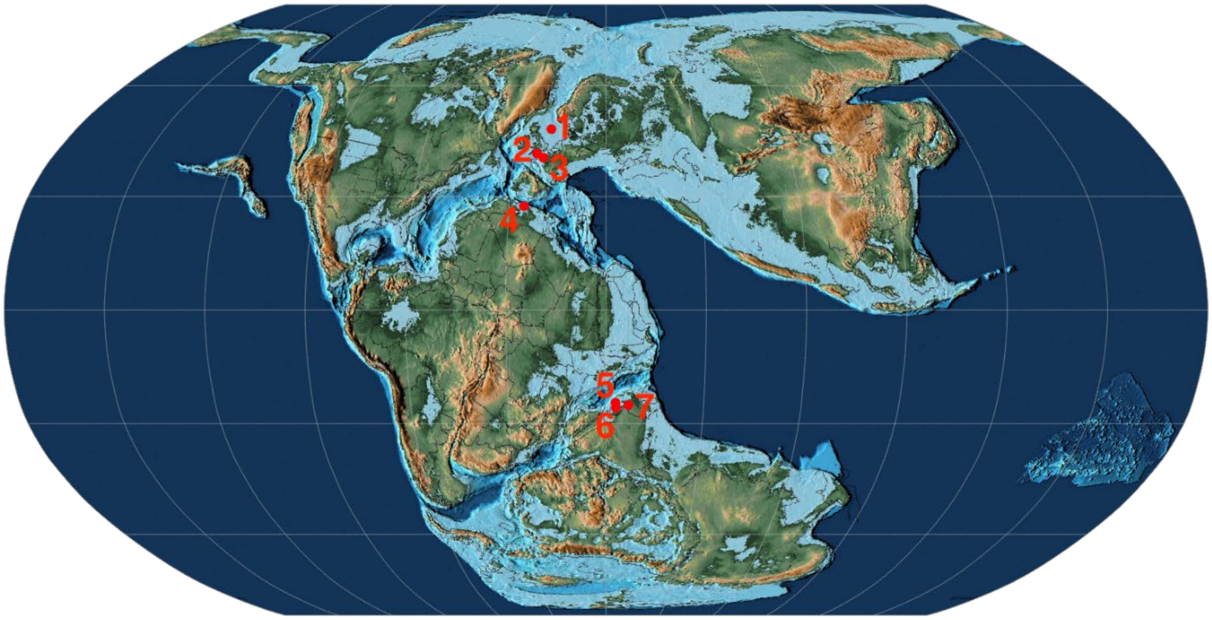

Figure DR5. Late Jurassic localities and paleogeographic reconstruction (at 157 Ma). 1. Ula Formation (Norway). 2. Corallian (England). 3. Corallian (France). 4. “Argiles de Saïda” Formation, Bel Aoura Member, Boudouda Member, Faidja Member, and Kheneg Formation (Algeria). 5. Jhuran Formation and Dhosa Oolite Member (India). 6. Gangta and Kanthkote members (India). 7. Baisakhi Formation, Jajiya Member, Kolar Dongar Member and Kuldhar Member (India).

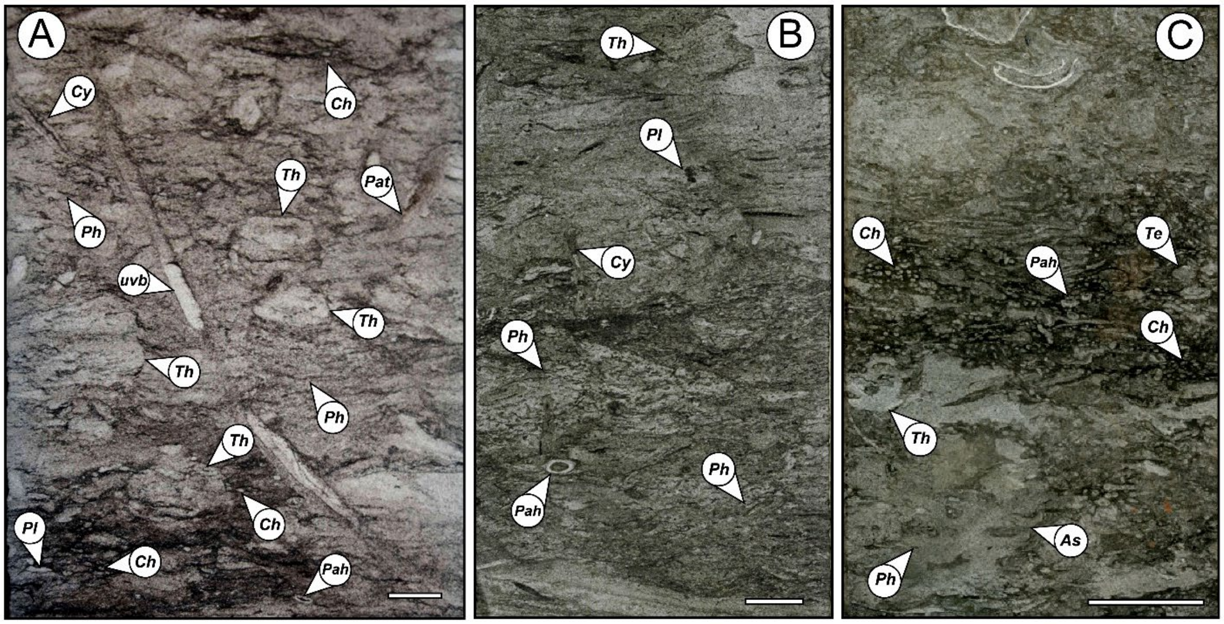

Figure DR6. Ichnofabrics from upper offshore deposits of the Sinemurian-Aalenian Plover Formation of Australia. These deposits are pervasively bioturbated showing well-developed tiering indicative of a finely tuned occupation of the infaunal ecospace. A: Shallow–tier *Planolites montanus* (*Pl*); mid-tier *Cylindrichnus concentricus* (*Cy*), *Palaeophycus tubularis* (*Pat*), and laminated-fill *Thalassinoides* isp. (*Th*); and deep-tier *Chondrites* isp. (*Ch*), *Phycosiphon incertum* (*Ph*), and undetermined vertical burrow (uvb). B**:** Mid-tier *Palaeophycus heberti* (*Pah*) and *Cylindrichnus concentricus* (*Cy*); and deep-tier *Chondrites* isp. (*Ch*) and *Phycosiphon incertum* (*Ph*). C: Shallow-tier *Asterosoma* isp. (*As*); mid-tier *Palaeophycus heberti* (*Pah*), *Teichichnus rectus,* and massive-fill *Thalassinoides* isp.; and deep-tier *Chondrites* isp. (*Ch*). All scale bars are 1 cm wide.

Randomization and Probability testing

The data compiled from Table DR1 and the Age vs Maximum number of Ichnotaxa for each case were compiled (Column A-Age, and B-Maximum number of ichnotaxa of Excel sheet, Table DR2). A random sample was generated from the original data, and a standard deviation, mean and cumulative sum was calculated for random and original data. This statistical analysis was then used for calculating normal distribution/probability. Thus, three calculations were done: one for the probability of original data and two case studies based on the random data. The original data suggest that the probability of getting a maximum number of 10 ichnotaxa during the Middle Triassic is 0.60 (0.597), while that for Late Triassic, the probability of getting a maximum of 18 number ichnotaxa is 0.83. Thus, The Triassic data suggested a higher probability of getting more ichnotaxa in the middle and late Triassic than the original data. However, for the early, middle and late Jurassic, the probability of getting the maximum number of ichnotaxa was above 0.9. The randomization data and its analysis suggested higher probabilities (>0.9) of getting up to 25 ichnotaxa for the middle Triassic and 24 for the Late Triassic. The likelihood for the Early, Middle and Late Jurassic remained the same. The randomization and probability studies show a similar trend to the original data, with a minor increase in Middle Triassic and Late Triassic. However, overall the randomization data mimics the original data, and therefore we think that the observed changes in diversity could not be produced by chance.