



Figure 10. Graded bedding. A) Normal grading from well-sorted coarse to fine sand. B) Normal grading in less well-sorted sediment; a range of grain sizes are present throughout the bed, but there is an overall fining by loss of coarsest particles. C) Reverse grading, in which coarsening up is accomplished by the selective removal of finer grains.

Biostratification

Layering produced by organisms is called biostratification. One well-known example of this phenomenon are horizontal laminations produced by algae in sands of intertidal flats. When the upper flats are exposed at low tide, algae multiply over the sediment surface as minute, photosynthesizing filaments. Fine grained sediment delivered to the flat during the next high tide settles onto and sticks to the algal layer, creating a single very thin layer of organic-rich mud and sand. Thick sequences of these laminated sand and organic mud sediments, called algal mats, are built up over successive seasons and years of tidal sedimentation. They are typical in ancient rocks formed in intertidal settings. Beds composed of small resedimented fragments of algal mats (called rip-ups) also characterize this environment.

Sediment binding by algae in the Precambrian proceeded throughout the intertidal zone and into the shallow subtidal zone. Algal mats in these rocks have mound and columnal shapes and are called stromatolites (Figure 11). Modern examples are found in the shallow waters and intertidal areas of Shark Bay in Western Australia.