

Kelp could have produced abundant dropstones during the Flood

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Dropstones are defined as rocks with a diameter greater than the thickness of rhythmic beds within which they are deposited. They have been commonly interpreted as rocks that have been dropped from floating ice into lakes or into the ocean. Dropstones in thin-layered sedimentary rocks have been advanced as evidence for ancient ice ages 300 Ma to over 2 Ga ago in the uniformitarian timescale.¹ Harland *et al.* stated: “Numerous large boulders which have penetrated and deformed a series of strata can be used alone for the determination of glaciation.”² Actually, most investigators simply assume an ancient glaciation if they find only a few rocks in fine-layered sedimentary rocks. But are dropstones really diagnostic of ancient ice ages?

Dropstones caused by many mechanisms

There are lots of problems with the glacial interpretation of dropstones.^{1,3} These rocks can be deposited by many mechanisms other than floating ice, including bottom-hugging debris flows or turbidity currents, floating kelp, swimming animals, volcanic eruptions, meteorite impacts,⁴⁻⁶ and from floating tree stumps. Uprooted trees commonly contain soil and rock in the root ball (figure 1). The latter presumably explains boulders sometimes found in coal.⁷

Kelp a significant mechanism for rock transport

It has been known for a long time that kelp loosened from the ocean



Figure 1. Rocks in tree roots, Black Hills, South Dakota.

bottom near the shoreline can transport rocks that can fall into fine-grained or rhythmic sediments. But in a recent new study, the process has been quantified for the southeast coast of New Zealand.⁸ Kelp torn loose and deposited on the beaches was surveyed for 30 weeks, and the weight and nature of attached sediment or rocks was recorded. 8,489 kelp plants were examined and rocks were found to be attached to 27% of kelp holdfasts, the part of the kelp that is anchored to the bottom. The weight per kelp holdfast ranges from 0.1 g to 83 kg with an unusual rock outlier weighing approximately 365 kg! Most kelp holdfasts transported less than 100 g of sediment and rock.

Dropstones from the Flood

During the Flood, all of the mechanisms mentioned above, other than from ice, could have been in operation. The presence of dropstones in fine-grained sediments does not rule out the possibility that they were derived from kelp holdfasts and/or floating tree roots. For instance, countless numbers of floating trees would be expected to end up floating on the floodwater. Rocks entangled within the roots could have been dislodged due to turbulence or the collision of the trees against each other in the Flood log mats. From these quantitative studies of kelp holdfasts,

we can now add the transport of rocks of varying sizes by the disruption of kelp beds during the early stages of the Flood, noting that kelp holdfasts have the potential to transport boulders weighing over 100 kg. Such dropstones could have been deposited into fine-grained sediments and their modern interpretation would have nothing to do with ancient glaciations.

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