MASS BURIALS OF LATE MIOCENE ECHINODERMS, CRABS AND FISH BY TURBIDITE FLOWS IN THE MT. MESSENGER FORMATION, NORTH TARANAKI, NEW ZEALAND

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The Late Miocene sea-level fall at approx. 10 million years ago probably triggered the reworking of shelf deposits etc. which lead to the rapid deposition, largely as turbidites, of the sandstones and siltstones of the Mt. Messenger Formation in North Taranaki, North Island, New Zealand. These turbidite flows buried a range of mobile organisms such as echinoderms, crabs and fish; killing them when their gills etc. became choked by the finer sediments.

Echinoderms (mainly Echinocardium sp.) were trapped as social groups and in life position. Some individuals made vain attempts to escape, but were unable to reach the surface of the turbidite flow. Crabs, predominately the large Tumidocarcinus giganteus Glaessner, were also overwhelmed by the Mt Messenger Formation turbidite flows. Specimens were preserved in an upright position; legs outstretched to prevent rolling and with both claws positioned to protect the mouth and eye region of the carapace. Males, females and sub-adults of T. giganteus were all trapped in these flows.

At least one turbidite flow was of sufficient velocity, density and size to bury a mixed school of bottom dwelling fish.Since some of the Mt. Messenger Formation turbidite flows cover many square kilometers, eventually some schools of fish would have had nowhere left to escape to. Three species of fish are known, so far, to be represented in this fossil fish assemblage. Crabs were also trapped with the fish in this turbidite event, indicating that an entire local ecosystem was wiped out.

There is no evidence, so far, that any of the Mt. Messenger Formation turbidite flows were of sufficient velocity and/or size to engulf larger and more mobile vertebrates such as sharks and marine mammals.