



FORAMS 2006

Paralic foraminifera through time - How they have been used

David B. Scott & F. S. Medioli

*Centre for Environmental and Marine Geology, Dalhousie University,
Halifax, Nova Scotia B3H3J5, Canada
David.Scott@dal.ca*

The geologic record of paralic foraminifera, especially marsh “type” foraminifera, extends into the Cambrian as the earliest multichambered foraminifera. From these early beginnings it is difficult to say if they occupied the same intertidal niche however later occurrences in the Carboniferous and Mesozoic helped to prove, with sedimentologic evidence, that many previously described freshwater environments were actually paralic, marine based systems. It is probable that their vertical ranges were similar in the late Paleozoic through to the present were similar, making them the best available sea-level indicator in the geologic record. Because they are so useful to relocate former sea levels they are also useful to delimit other natural phenomena that require sea-level determinations for verification-such as earthquake displacements, hurricane traces, inlet morphological changes and many others.

And because so many pollution accidents occur in paralic environments the response of certain marsh foraminifera means that we can track remediation both in real time and from previous events. In one case the foraminifera showed a massive increase in deformities within three days of a spill and this was duplicated in a lab experiment.

It is also possible to use marsh/estuarine species to reconstruct pollution histories and former non-polluted environments in the absence of baseline data. Foraminifera are the only reliably present microfossils in these environments since ostracods are seldom there in abundance and their shells often dissolve.

In the older records, some of which will be in other presentations, we see that marsh zones delineated using foraminifera, are often petroleum source rocks.