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Origination and Extinction of the Silurian – Devonian Blastoidea (Echinodermata)

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The oldest blastoid genus, *Macurdablastus*, was described by BROADHEAD (1984) from the Benbolt Formation (Caradoc; Upper Ordovician) in Tennessee. Prior to this occurrence, blastoids were the only class of blastozoan echinoderms not reported from the Ordovician. The specimens are not well preserved and cannot be classified to order or family. Blastoids are noticeably absent from other diverse Ordovician echinoderm communities on a worldwide basis.

Two genera of blastoids (*Decaschisma*, a phaenoschismatid, and *Troosticrinus*, a troosticrinid) are known from the Wenlockian. The only documented Ludlovian blastoid is *Polydeltoideus*, a phaenoschismatid, which is known from Oklahoma. *Polydeltoideus* is also known from the Pridolian of Czechoslovakia and is the only Silurian blastoid reported from Europe. It is the oldest blastoid to have a transcontinental distribution and range spanning more than one stage.

The eastward migration is repeated in the Gedinnian as *Leptoschisma*, another phaenoschismatid from eastern North America, is found in the Emsian of Czechoslovakia. Siegenian blastoids are known only from France (*Belocrinus*, a troosticrinid) and South America (*Anguloblastus*, a phaenoschismatid). Emsian blastoids are well known from a variety of and generally yield faunas with several co-existing genera for the first time in the evolutionary history of blastoids. Spanish Lower Devonian blastoids represent the best Emsian fauna known. Summarized by BREIMER & DOP (1974), this fauna consists of species of *Cryptoschisma*, *Pentremitidea*, *Pleuroschisma*, *Caryoblastus* (all phaenoschismatids), *Hyperoblastus* (a hyperoblastid) and *Conuloblastus* (a hyperoblastid with features intermediate between the two orders). *Brachyschisma*, the oldest orophocrinid, is also known from South Africa. *Anguloblastus* ranges into the Emsian in Bolivia. *Pachyblastus*, the oldest nymphaeoblastid, is known from conspecific occurrences in Emsian rocks from Bolivia and South Africa, a rare case in the blastoids. The South African occurrences are noteworthy because the Emsian continental reconstruction place them near the Devonian south pole.

The Givetian in the northeastern United States and southern Ontario has yielded an abundant fauna of *Brachyschisma*, *Heteroschisma*, *Pleuroschisma*, *Nucleocrinus* (a nucleocrinid), *Hyperoblastus*, *Devonoblastus* and *Eleutherocrinus* (all hyperoblastids). Most elements of this fauna probably migrated into North America from the Emsian of Spain and South America following a southerly route around the emerging Appalachian highlands in eastern North America. *Eleutherocrinus* is first known from the Eifelian of Bolivia and also migrated into this fauna from South America. These occurrences of *Eleutherocrinus* are conspecific. Among the Givetian blastoids, only *Nucleocrinus* (Eifelian–Givetian) and *Devonoblastus* originated in North America most Givetian blastoids did not survive into the Frasnian and only *Hyperoblastus* survived into the Famennian. The Late Devonian extinction event in the blastoids apparently occurred at the Givetian–Frasnian boundary rather than the Frasnian–Famennian as is the case in many marine invertebrates. Famennian blastoids undergo a diversification and geographic expansion with abundant diverse faunas known on a world wide basis.

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