

## Eurypterids and More – The Eramosa and Bertie Lagerstätten (Silurian), Southern Ontario

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The renowned eurypterid-bearing Eramosa and Bertie Lagerstätten of southern Ontario provide exceptional taphonomic windows on a narrow range of shallow marginal marine environments in Silurian subtropical Laurentia. Despite their temporal separation (by approximately 10 million years) and disjunct distributions, the Eramosa and Bertie occurrences share a number of interesting similarities. Both are hosted in finely crystalline dolostone-dominated facies with intervals of microbial laminae, and in both the largest and most conspicuous non-biomineralized faunal components are chelicerate and mandibulate arthropods.

The older (Early Wenlock, Sheinwoodian) and biotically more diverse Eramosa Lagerstätte features a broad array of preservational modes, reflecting, in part, local paleoenvironmental differentiation. Sediments of the primary fossil-bearing Interbedded Unit of the Eramosa Formation were deposited in restricted offshore marine to sabkha-like settings near the paleonorthern fringe of the intracratonic Michigan Basin, and patchy exposures containing exceptionally preserved fossils are so far known from only a few areas on the southern Bruce Peninsula. Although research is still in an early phase, the Lagerstätte has already produced an extraordinarily rich assortment of arthropods and other groups. In addition to intact individuals representing species of at least five eurypterid genera (*Eurypterus*, *Kokomopterus*, *Carcinosoma*, cf. *Hughmilleria*, and *Erettopterus*), various intervals within the Interbedded Unit have yielded a “synziphosurine” chelicerate (cf. *Venustus* sp.), complete well-preserved moults of a new scorpion, two species of the phyllocarid crustacean genus *Ceratiocaris*, lobopodans, annelids, possible medusans, and articulated skeletons of conodonts and tolypelepid heterostracans. Significantly, soft-bodied and non-biomineralized taxa co-occur at some levels with ichnofossils, chaetocladid algae, conulariids, and apparently autochthonous decalcified remains of brachiopods, trilobites, echinoderms and molluscs.

Sediments of the mid-Pridoli Bertie Formation were deposited on the paleosouthern side of the subsiding Algonquin Arch, flanking the northern rim of the Appalachian Foreland Basin. In contrast to the localized distribution of the Eramosa Lagerstätte, the Fiddlers Green and Williamsville members of the Bertie Formation in the Ridgemount area of Ontario represent the northwestern edge of a much broader outcrop belt of long-famous “waterlime” deposits that extends into east-central New York State. These massive cement-like to argillaceous dolostones originated in subtidal to intertidal lagoonal settings, under alternating hypersaline and brackish estuarine conditions. Eurypterids, including species of *Eurypterus*, *Dolichopterus* and *Acutiramus*, are the best known and most spectacular non-biomineralized faunal elements of the Bertie Lagerstätte, and although most specimens appear to represent moults, they are often exquisitely preserved as thin organic films. Other arthropods include *Bunaia* (a “synziphosurine”), the phyllocarid *Ceratiocaris acuminata*, and an exceptionally rare naraoiid. Both fertile (*Cooksonia* sp.) and sterile (*Hostinella* sp.) axes of early land plants are occasionally found, along with presumed non-calcified algae (*Inocaulis* sp.). Lingulide brachiopods, nautiloids, and ostracods comprise the most common shelly components of the biota.