

## Silurian Algal Reef Crest in Gotland

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In the Wenlock (middle Silurian) of the north-west coast of Gotland (Fig. 1) reefs occur in the Höglint Beds near the top of a shallowing-up marine sequence [1] and show internal upward zonation from relatively weak tabulate-dominated bioherms to stronger stromatoporoid-frame bioherms [2]. The algal zone caps this 50 m+ sequence and forms a thin (generally 0.3–0.6 m, max. 3 m) band in the upper Höglint traceable for several hundred metres at localities in and around Visby.

At Korpklint and Gutevågen it is a thin, discontinuous biostromal unit capping the stromatoporoid-dominated reef sub-facies. Gålberget, an intermediate location immediately north of Visby shows current-active, well-sorted, coarse bioclastic grainstones probably laterally equivalent to the algal zone. The algal zone immediately underlies a disconformity which truncates the reef sequence as a whole and juxtaposes the lagoonal Tofta Beds (Fig. 2).

Dense in-place growths of *Solenopora* and *Hedstroemia* constitute 30–65% of the rock volume. *Solenopora* (an extinct relative of the crustose coralline red algae which dominate Recent algal ridges) ranges in form from small stubby digitate clusters to encrusting masses 0.45 m high and 1.75 m across. A thin arcuate form, unusual for *Solenopora*, also occurs as leaflike sheets,

4 mm thick and 5 cm across, but is only present in minor amounts. *Parachartetes*, another solenoporacean, forms a small proportion of the rock volume. *Hedstroemia* resembles the Recent cyanophyte *Rivularia*. It occurs as small rounded growths amalgamated into crusts up to 30 cm thick.

These two principal algal components overgrew one another to form an interlocking rigid framework which was strengthened and enlarged by additional attached organisms, mainly bryozoans and crusts of *Rostkjerella* (problematicum) and *Wetheredella* (? foraminifer). These usually occur on the tops and sides of the main builders. Small gastropods and serpulids are minor additional components, together with attached crinoid stems. The stromatoporoids and tabulate and rugose corals which dominate the lower reef zones are relatively uncommon in the algal zone.

This association of mutually attached bryozoans, ? foraminifers, gastropods and serpulids within an algal framework closely resembles that of modern algal ridges and reefs [3, 4] and the proportion of in-place skeletons to matrix and pores (3:2 in Gotland) is also similar. The digitate and rounded forms of the main components in Gotland differ from the essentially

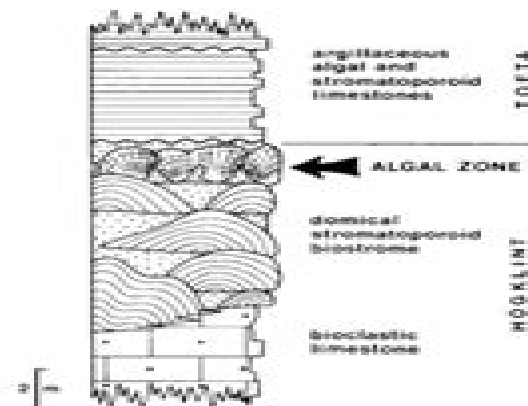


Fig. 2. Upper Höglint and lower Tofta sequence at Gutevågen, Visby. Wavy lines mark erosional breaks

laminar forms of crustose corallines and *Millepora* in Bermudan cup reefs [3] but the tightness of the resulting framework is similar, and Caribbean algal ridges have both sheet-like and stubby-branched crustose corallines [4, 5].

The interskeletal areas in the Höglint reef crest show crudely graded fills with grain size directly related to pore size, reflecting the progressive reduction and eventual plugging of cavities. As in Bermudan cup reefs [3] micritic sediment was pumped into the algal frame and remained trapped in the network of small cavities despite high-energy conditions outside.

Early micritic cement is an important interstitial component and would have added considerably to the strength of the skeletal framework. Even so, occasional displaced blocks, in which several generations of submarine and freshwater sediment and cement infills allow the relative time of fracturing and movement to be determined, show that water movement was sufficiently powerful to break the frame locally after early cementation, as also happens in the surf zones of Recent reefs.

Exposure of this shallow algal reef crest soon after deposition is reflected by extensive relatively early vadose dissolution and cementation effects within it, and by the

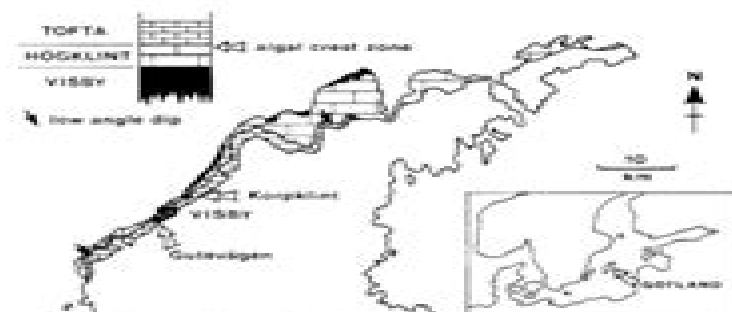


Fig. 1. Localities and horizon of the algal crest zone in the Höglint Beds of north-west Gotland.

# Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland

**Katrin Zwirgmaier**



## **Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland:**

**Lower Wenlock Faunal and Floral Dynamics** Valdar Jaanusson,1979      **Lower Wenlock Faunal and Floral Dynamics** Valdar Jaanusson,1979      **Proceedings of the Estonian Academy of Sciences, Geology** ,2006-06

*Proceedings of the Estonian Academy of Sciences, Geology* ,1993      **Early Palaeozoic Biogeography and Palaeogeography** D.A.T. Harper,T. Servais ,2014-01-27 The Early Palaeozoic was a critical interval in the evolution of marine life on our planet Through a window of some 120 million years the Cambrian Explosion Great Ordovician Biodiversification Event End Ordovician Extinction and the subsequent Silurian Recovery established a steep trajectory of increasing marine biodiversity that started in the Late Proterozoic and continued into the Devonian Biogeography is a key property of virtually all organisms their distributional ranges mapped out on a mosaic of changing palaeogeography have played important roles in modulating the diversity and evolution of marine life This Memoir first introduces the content some of the concepts involved in describing and interpreting palaeobiogeography and the changing Early Palaeozoic geography is illustrated through a series of time slices The subsequent 26 chapters compiled by some 130 authors from over 20 countries describe and analyse distributional and in many cases diversity data for all the major biotic groups plotted on current palaeogeographic maps Nearly a quarter of a century after the publication of the Green Book Geological Society London Memoir12 edited by McKerrow and Scotese improved stratigraphic and taxonomic data together with more accurate digitized palaeogeographic maps have confirmed the central role of palaeobiogeography in understanding the evolution of Early Palaeozoic ecosystems and their biotas      Palaeozoic Reefs and Bioaccumulations J. Javier Álvaro,2007 The geological record contains a fascinating diversity of reefs and shell accumulations As with many other biosedimentary structures their facies characterization requires careful observation at outcrop and sample scale and in thin section to provide information about the global geometries fabrics and textures respectively This collection of papers encompasses the breadth of sedimentary geometries and facies displayed by Palaeozoic reefs shell accumulations and transitional composite deposits The definition of reefs and shell concentrations has given rise to variations in nomenclature The papers in this volume cover specific problems regarding the nomenclature and facies characterization of reefs shell accumulations and transitional composite deposits However rather than attempt a complete revision of terms the authors have touched on some of the important issues at this stage of development in the field the main climatic environmental and evolutionary factors that controlled the Palaeozoic development of shell accumulations and reefs      Proceedings of the Estonian Academy of Sciences, Geology ,1997      *A New Silurian (Llandovery, Telychian) Sponge Assemblage from Gotland, Sweden* Freek Rhebergen,Joseph Botting,2014-02-20 A newly discovered diverse sponge fauna of early Silurian age is described from Gotland Sweden This is the first Silurian sponge assemblage known from Baltica and the only diverse Llandoveryan assemblage known worldwide The fauna includes 20 genera and 29 species of which three genera and six species are new

Eighteen species are new to Baltica The fauna shows strong similarities to later Silurian assemblages in Arctic Canada but one endemic species comprises ca 50% of the fauna The fauna shows that lithistid sponges recovered well from the late Ordovician extinction in some areas and became widely spread in the early Silurian In contrast non lithistid sponges like such as hexactinellids appear to have evolved rapidly during the Late Ordovician early Silurian interval and some modern groups probably originated in inshore habitats *Paleontological Events* Carlton Elliot Brett, Gordon C. Baird, 1997 A recent renaissance in the field of event stratigraphy has promoted a much more thorough examination of the geologic record of particular fossil bearing strata This reference work compiles the findings of leading researchers on fossil beds epiboles and global bioevents mapping out a definitive temporal and regional classification of event horizons Based primarily on research with Lower and Middle Paleozoic rocks of eastern North America this volume significantly links these events to relatively short term phenomena including storms and climate forcing cycles An invaluable resource for specialists and students in the fields of paleontology paleoecology stratigraphy and sedimentology *Paleontological Events* helps to clarify the biological and taphonomic significance of these horizons **Proceedings of the Estonian Academy of Sciences, Geology**, 2006-06

*GFF*, 1981 **Förhandlingar** Geologiska föreningen (Sweden), 1991 *Echinoderms: Munchen* Thomas

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## **Table of Contents Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland**

1. Understanding the eBook Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland
  - The Rise of Digital Reading Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland
  - Advantages of eBooks Over Traditional Books
2. Identifying Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland
  - Exploring Different Genres
  - Considering Fiction vs. Non-Fiction
  - Determining Your Reading Goals
3. Choosing the Right eBook Platform
  - Popular eBook Platforms
  - Features to Look for in an Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland
  - User-Friendly Interface
4. Exploring eBook Recommendations from Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland
  - Personalized Recommendations
  - Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland User Reviews and Ratings
  - Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland and Bestseller Lists
5. Accessing Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland Free and Paid eBooks

- Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland Public Domain eBooks
- Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland eBook Subscription Services
- Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland Budget-Friendly Options
- 6. Navigating Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland eBook Formats
  - ePub, PDF, MOBI, and More
  - Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland Compatibility with Devices
  - Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland Enhanced eBook Features
- 7. Enhancing Your Reading Experience
  - Adjustable Fonts and Text Sizes of Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland
  - Highlighting and Note-Taking Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland
  - Interactive Elements Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland
- 8. Staying Engaged with Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland
  - Joining Online Reading Communities
  - Participating in Virtual Book Clubs
  - Following Authors and Publishers Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland
- 9. Balancing eBooks and Physical Books Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland
  - Benefits of a Digital Library
  - Creating a Diverse Reading Collection Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland
- 10. Overcoming Reading Challenges
  - Dealing with Digital Eye Strain
  - Minimizing Distractions
  - Managing Screen Time
- 11. Cultivating a Reading Routine Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland
  - Setting Reading Goals Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland
  - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland
  - Fact-Checking eBook Content of Lower Wenlock Faunal And Floral Dynamics Vattenfallet Section Gotland
  - Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
  - Utilizing eBooks for Skill Development

- Exploring Educational eBooks

#### 14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

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name who got her first degree today and hence celebrate with a nice dinner together

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