IGCP 587 -- Identity, Facies and Time – The Ediacaran (Vendian) Puzzle
Report of Canadian Activities and Publications for 2010

Submitted by Guy Narbonne, Queen's University at Kingston, Canada

World-class deposits of Ediacaran sedimentary rocks and fossils occur in eastern Newfoundland and throughout the Canadian Cordillera in western Canada. Canadian activity and publications in 2010 spanned both of these regions.

Much of the recent activity took place in eastern Newfoundland. The long-standing research program by **Guy Narbonne (Queen's University)** and his students continued with paleontological and sedimentological studies in the Avalon and Bonavista peninsulas of Newfoundland. His student **Sara Mason** began an MSc thesis on the small fronds of the Avalon and Bonavista peninsulas and on the sedimentology of the Conception and St. John's groups on Bonavista Peninsula (in conjunction with Sean O'Brien, NL Geological Survey). **Marc Laflamme** (formerly Queen's University, currently at Yale University) is spearheading studies on Ediacaran preservation and possible Ediacaran sponges and several papers are submitted and in press on this subject. Ediacaran research by **Duncan McIlroy (Memorial University of Newfoundland)** and his collaborators at University of Oxford focused on rich Ediacaran biotas of the Avalon Peninsula and included a publication on putative burrows from the Mistaken Point Formation; other work is ongoing with additional papers in press.

Public outreach was a major focus of Avalon studies in 2010. Most important was the release of a major BBC-Discovery Channel-ABC documentary on **"First Life" narrated by Sir David Attenborough** that included major segments on Ediacaran fossils and glacial deposits of Mistaken Point and St. Mary's (Guy Narbonne, Queen's University) and the Cambrian fossils of the Burgess Shale (Jean-Bernard Caron, Royal Ontario Museum). A CBC documentary **"Mistaken Mystique"** explored how the fossils at Mistaken Point have influenced the international scientists, local community, and Newfoundland artists.

Other Canadian publications for 2010 included global overviews of Ediacaran oxygenation (Narbonne) and sponges (Laflamme), and Ca-isotope chemostratigraphy of Cryogenian and Ediacaran strata in the Mackenzie Mountains of NW Canada (Narbonne). Perhaps the most significant Canadian contribution was the publication of a posthumus paper by **Hans Hofmann (McGill University) describing** a major new Ediacaran biota in the Salient Mountain region of southern British Columbia. This assemblage includes a new taxon,

Miettia salientensis gen. et sp. nov., a segmented Ediacaran megafossil that may be related to the erniettomorphs.

Sadly, 2010 also marked the passing of two influential Canadian paleontologists whose discoveries have forever changed our views of Ediacaran life. **Michael Anderson (1923-2010)** was an author of the original paper reporting discovery of Ediacaran fossils at Mistaken Point (Anderson and Misra, *Nature*, 1968). He spent a lifetime finding new localities of these fossils, and was also instrumental in defining the basal Cambrian GSSP at Fortune Head in Newfoundland (Narbonne et al., *CJES*, 1987) and in obtaining status as an Ecological Reserve for both Mistaken Point and Fortune Head to protect these important fossil assemblages. **Hans Hofmann (1936-2010)** was an intellectual giant who received the Billings Medal of the Geological Association of Canada (1980), Miller Medal of the Royal Society of Canada (1995), and Walcott Medal of the U.S. Academy of Science (2002) for his outstanding contributions to Precambrian paleontology worldwide. He discovered the first Ediacaran megafossils in western North America (Hofmann, *Lethaia*, 1981), followed this up with important discoveries throughout the Canadian Cordillera, and won the 2008 Journal of Paleontology "Best Paper Award" for his description of new Ediacaran fossils in Bonavista Peninsula of Newfoundland. This report is dedicated to their memory.

Major events are planned for the Geological Association of Canada annual meeting in St. John's in May 2012. These include a pre-meeting fieldtrip to the basal Cambrian GSSP on the Burin Peninsula (P. Myrow and G.M. Narbonne), the Hans Hofmann Memorial Session on Precambrian Paleontology during the meeting (J.G. Gehling and G.M. Narbonne), and a post-meeting trip through the Ediacaran of the Avalon Peninsula (G.M. Narbonne, J.G. Gehling, M. Laflamme, and R. Thomas). Other sessions and trips relevant to Ediacaran paleontology are likely. These events will be a major focus of IGCP 587 in 2012.

Journal Publications - 2010

Hofmann, H.J. and Mountjoy, E.W., 2010, Ediacaran body and trace fossils in Miette Group (Windermere Supergroup) near Salient Mountain, British Columbia, Canada, *Canadian Journal of Earth Sciences* 47: 1305-1325.

Laflamme, M., 2010, Wringing out the oldest fossil sponges, *Nature Geoscience* 3: 597-598.

Liu, A.G., McIlroy, D., and Brasier, M.D. 2010. First evidence for locomotion in the Ediacara biota from the 565 Ma Mistaken Point Formation, Newfoundland, *Geology* 38:123-126.

Narbonne, G.M., 2010, Neoproterozoic oceans and early animals. *Science* 328: 53-54.

Silva-Tamayo, J.C., Nägler, T.F., Sial, A.N., Nogueira, A. Kyser, T.K., Riccomini, C., James, N.P., Narbonne, G.M., Villa, I.M., 2010, Global perturbation of the marine Ca isotopic composition in the aftermath of the Marinoan global glaciation. *Precambrian Research*, 182: 373-381.

Silva-Tamayo, J. C., Nägler, T. F., Villa, I. M., Kyser, T.K., Vieira, L. C., Sial, A. N., Narbonne, G. M., and James, N. P. 2010. Global Ca isotope variations in *c.* 0.7 Ga old post-glacial carbonate successions. *Terra Nova* 24: 188-192.