

Forest J. Gahn

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RESEARCH INTERESTS

- Paleobiology, paleoecology, systematics, and taphonomy, emphasizing echinoderms
- Sequence and biostratigraphy, sedimentation, and depositional environments
- Evolutionary and ecological implications of predator-prey and parasite-host interactions
- Origin and early (environmental and morphological) radiation of echinoderms
- Evolutionary paleoecology of Paleozoic crinoids

EDUCATION

University of Michigan, Ann Arbor, Michigan 48109; Geology PhD (2004)

Dissertation title: Parasitism and predation on Paleozoic crinoids

Major advisors: Tomasz Baumiller and Daniel Fisher

University of Cincinnati, Cincinnati, Ohio 45221; (1997-1999)

Thesis title: Comparative paleoecology and taphonomy of Early Mississippian (Kinderhookian) crinoids from the Wassonville Cycle of Iowa

Major advisors: David Meyer, Arnold Miller, and Carlton Brett

Brigham Young University, Provo, Utah 84602; Geology BS (1997)

Brigham Young University-Idaho, Rexburg Idaho 83460; Geology AS (1995)

ACADEMIC POSITIONS

Geology Faculty - Brigham Young University-Idaho, Department of Geology, Rexburg, Idaho (2006-)

- Advised students in research and career decisions
- Taught the following courses and associated labs:
 - Geology 101 - *Introduction to Geology*
 - Geology 112 - *Historical Geology*
 - Geology 137 - *Oceanography and Meteorology*
 - Geology 380 - *Natural Science Field Expedition*
 - Geology 470 - *Stratigraphy and Sedimentology*
 - Geology 480 - *Paleontology*

Post-doctoral Fellow - Department of Paleobiology, Smithsonian Institution (2004-2006)

- Performed independent research on fossil echinoderms
- Digitized and databased the fossil crinoid type collection
- Trained in web development (Dreamweaver) and database (Access, EMu) software
- Served as Department of Paleobiology representative and selection committee member for the Undergraduate Research Training Program (2004-2005)
- Served as a committee member and exhibit designer for the forthcoming “Ocean Hall”
- Presented numerous lectures and led museum tours for various groups of visitors

Adjunct Faculty - Brigham Young University-Idaho, Dept. of Geology, Rexburg, Idaho (2003)

- Participated actively in weekly department meetings
- Led numerous field exercises in Arizona, Idaho, Montana, Wyoming, and Utah
- Taught the following courses and associated labs:
 - Geology 101 - *Introduction to Geology*
 - Geology 470 - *Stratigraphy and Sedimentology*

Affiliate Faculty - Department of Geosciences, Idaho State University, Pocatello, Idaho (2003)

- Consultant for the Idaho Museum of Natural History (IMNH)
- Engaged in IMNH initiative to generate field collections of Idaho's Paleozoic fossils

GRADUATE TEACHING EXPERIENCE

University of Michigan, Department of Geology, Ann Arbor, Michigan

- Geology 125 - *Evolution and Extinction* (1999-2002)
- Geology 117 - *Introduction to Geology* (2001)

University of Cincinnati, Department of Geology, Cincinnati, Ohio

- Geology 108 - *Geology of Cincinnati* (1999)
- Geology 106 - *Environmental Geology: Global Warming* (1999)
- Geology 105 - *Environmental Geology: Cities* (1998)
- Geology 104 - *Geology of the National Parks* (1998)
- Geology 102 - *Introduction to Geology* (1997)

FIELD RESEARCH

Early Ordovician echinoderm paleoecology and systematics (2004-)

- Discovered a previously unknown (Tremadocian-Arenigian) echinoderm fauna from Utah and Idaho (with J. Sprinkle, University of Texas, Austin)
- Documented fossil occurrences, logged stratigraphic sections, and noted close association of echinoderms with sponge-algal "reefs"

Middle Ordovician echinoderm paleoecology (2000-2003)

- Studied the paleontology and sedimentology of Middle Ordovician hardground communities and echinoderm associations from the Bobcaygeon and Verulam Formations, Ontario, Canada

Middle Devonian crinoid paleoecology (2000-2001)

- Studied the paleontology and stratigraphy of classic Middle Devonian crinoid occurrences from Ohio, Michigan, and Canada
- Determined the precise stratigraphic provenance of crinoid-bearing layers for paleoecologic and taphonomic analysis

Late Ordovician edrioasteroid paleoecology (1998-1999)

- Located the source of an unusual edrioasteroid-bearing layer
- Quarried hundreds of edrioasteroids for the Cincinnati Museum Center
- Aided C. Sumrall (University of Tennessee, Knoxville) in his research on the material

Pliocene-Miocene mammals, Baja, Mexico (1996)

- Assisted W.E. Miller (Brigham Young University) and O. Carranza (Universidad Nacional Autónoma de México) in their research on terrestrial mammal migrations across the Panamanian Isthmus
- Discovered numerous articulated cetaceans (whales)

Early Mississippian crinoid paleoecology (1991-)

- Studied (mostly) carbonate-dominated shelf faunas and associated strata throughout the (middle and northwestern) United States and Ireland
- Focused on crinoid association identification, taphonomy, and distribution
- Assisted G.D. Webster (Washington State University) with his research on Mississippian crinoids in the Bob Marshall Wilderness, Montana
- Discovered two previously unknown (late Kinderhookian) echinoderm associations, from the Wassonville Formation of Iowa

MUSEUM RESEARCH

Studied echinoderms and collected data from the following universities and museums:

- Beloit College, Beane Collection, Beloit, Wisconsin
- Brigham Young University Earth Science Museum, Provo, Utah
- Cincinnati Museum Center, Cincinnati, Ohio
- Harvard University, Museum of Comparative Zoology, Cambridge, Massachusetts
- MacQuarie University, Department of Earth and Planetary Sciences, Sydney, Australia
- Muschelkalkmuseum Ingelfingen, Ingelfingen, Germany
- Muséum National d'Historie Naturelle, Paris, France
- Naturmuseum Senckenberg, Frankfurt, Germany
- Smithsonian Institution, National Museum of Natural History, Washington, D.C.
- Staatliche Museen für Naturkunde, Stuttgart, Germany
- The Ohio State University Geology Museum, Columbus, Ohio
- The Field Museum, Chicago, Illinois
- Trinity College Geology Museum, Dublin, Ireland
- Universidad Nacional Autónoma de México, Mexico City, Mexico
- Universität Tübingen, Institut für Geologie und Paläontologie, Tübingen, Germany
- Université de Bourgogne, Biogéosciences, Dijon, France
- University of Iowa Paleontology Repository, Iowa City, Iowa
- University of Michigan Museum of Paleontology, Ann Arbor, Michigan
- University of Wisconsin-Madison Geology Museum, Madison, Wisconsin
- Urwelt-Museum Hauff, Holzmaden, Germany

PROFESSIONAL SERVICE

Rocky Mountain Section Chair, Paleontological Society (2006-)

- Attended semi-annual Paleontological Society counsel meetings as a representative of the Rocky Mountain Section
- Contacted Rocky Mountain Section members about section activities and membership renewal
- Organized the Paleontological Society booth for regional meetings of the Rocky Mountain Section of the Geological Society of America

Session Chair - Geological Society of America Annual Meeting

- Paleontology/Paleobotany I: Phylogeny and Evolutionary Patterns (2003)
- Paleontology/Paleobotany VII: Phylogeny, Systematics and Evolution (2006)

OTHER EXPERIENCE

Volunteer Coordinator - Museum of Idaho, Idaho Falls, Idaho (2003)

- Organized and directed a group of 15 undergraduate volunteers during the installation of The Field Museum's (Chicago) traveling exhibit, "A *T. Rex* Named Sue"

Museum Assistant - Museum of Paleontology, Univ. of Michigan, Ann Arbor, Michigan (2001)

- Curated fossil crinoids from type, systematic, and stratigraphic collections
- Managed a FoxPro database and made entries for museum holdings

Smithsonian Undergraduate Research Training Program Participant National Museum of Natural History, Washington, D.C. (1996)

- Learned fundamentals of museum research and collections management
- Performed independent research on echinoderms from the Springer Collection
- Performed directed research on Miocene-Recent coral (*Notophyllia*) phylogeny

Fossil Preparator - Brigham Young Univ. Earth Science Museum, Provo, Utah (1995-1997)

- Prepared fossil dinosaur, fish, and invertebrate remains for research
- Assisted in museum display preparation and public education

PUBLICATIONS

- Baumiller, T.K., F.J. Gahn, H. Hess, and C.G. Messing. (in press). Taphonomy as an indicator of behavior among fossil crinoids. In Ausich, W.I. and G.D. Webster, *Echinoderm Paleobiology*, Indiana University Press
- Baumiller, T.K., F.J. Gahn, and J. Savill. 2005. New data and interpretations of the crinoid-platyceratid relationship. Pp. 393-398, In Heinzeller, T. and Nebelsick, J. H. (eds), *Echinoderms: Munchen*. Taylor and Francis, London
- Baumiller, T.K. and F.J. Gahn. 2004. Testing predator-driven evolution with Paleozoic crinoid arm regeneration. *Science*, 305:1453-1455
- Baumiller, T.K. and F.J. Gahn. 2003. Predation on crinoids. Pp. 263-278, In P.H. Kelley, M. Kowalewski, and T. Hansen (eds.), *Predator-Prey Interactions in the Fossil Record*, Plenum Publishers, New York
- Baumiller, T.K. and F.J. Gahn. 2002. Fossil record of parasitism on marine invertebrates with special emphasis on the platyceratid-crinoid interaction. *The Paleontological Society Papers*, 8:195-209
- Gahn, F.J. 2005. Analysis of C.D. Walcott's contributions to crinoid paleontology Pp. 185-186, In Lindemann, R.H., and E.L. Yochelson, C.D. Walcott and the Hoyt Limestone: An historic encounter at Saratoga Springs, New York. *Northeastern Geology and Environmental Sciences*, 27:177-186
- Gahn, F.J. 2002. Crinoid and blastoid biozonation and biodiversity in the Early Mississippian (Osagean) Burlington Limestone. Pp. 53-74, In B.J. Witzke, B.J. Bunker, and R. Anderson (eds.) Pleistocene, Devonian, and Mississippian Stratigraphy of the Burlington, Iowa Area. Iowa Department of Natural Resources, Geological Survey Bureau, *Guidebook Series*, no. 23.

- Gahn, F.J. and T.K. Baumiller. 2006. Using platyceratid gastropod behaviour to test functional morphology among camerate crinoids. *Historical Biology*: 1-8
- Gahn, F.J. and T.K. Baumiller. 2005. Arm regeneration in Mississippian crinoids: Evidence of intense predation pressure in the Paleozoic? *Paleobiology* 31:151-164.
- Gahn, F.J. and T.K. Baumiller. 2004. A bootstrap analysis for comparative taphonomy of Early Mississippian (Kinderhookian) crinoids from the Wassonville Cycle of Iowa. *Palaios*, 19:17-38.
- Gahn, F.J., and T.K. Baumiller. 2003. Infestation of Middle Devonian (Givetian) camerate crinoids by platyceratid gastropods and its implications for the nature of their biotic interaction. *Lethaia*, 36:71-82.
- Gahn, F.J., A. Fabian, A., and T.K. Baumiller. 2003. Additional evidence for the drilling behavior of Paleozoic gastropods. *Acta Palaeontologica Polonica*, 48:156.
- Gahn, F.J., and T.W. Kammer. 2002. The cladid crinoid *Barycrinus* from the Burlington Limestone (early Osagean) and the phylogenetics of Mississippian botryocrinids. *Journal of Paleontology*, 76:123-133.
- Kammer, T.W., and F.J. Gahn. 2003. Primitive cladid crinoids from the Early Osagean Burlington Limestone and the phylogenetics of Mississippian species of *Cyathocrinites*. *Journal of Paleontology*, 77:121-138.
- Sprinkle, J., T. Guensburg, and F.J. Gahn. (in press) Overview of Early Ordovician crinoid diversity from the Western United States. In Ausich, W.I. and G.D. Webster, *Echinoderm Paleobiology*, Indiana University Press
- Sumrall, C.D. and F.J. Gahn. 2006. Morphological and systematic reinterpretation of two enigmatic edrioasteroids (Echinodermata) from Canada. *Canadian Journal of Earth Sciences* 43:1-11

PUBLISHED ABSTRACTS

- Baumiller, T.K., F.J. Gahn, C.G. Messing, and R. Mooi. 2006. Crinoids and their enemies. Abstracts of the 2nd International Palaeontological Congress (Beijing, China): 97
- Baumiller, T.K., F.J. Gahn, and H. Hess. 2004. Taphonomy as a guide to the biology of crinoids. Pp. 568-569, In Heinzeller, T. and J.H. Nebelsick, (eds), *Echinoderms: Munchen*. Taylor and Francis, London
- Baumiller, T.K., D.J. Miller, and F.J. Gahn. 2004. New evidence for platyceratid drilling abilities from crinoids, brachiopods, and gastropods of the Lake Valley Formation (Mississippian, USA). Geological Society of America *Abstracts with Programs*, 36:478
- Brett, C.E., F.J. Gahn, and T.K. Baumiller. 2004. Platyceratid gastropods as parasites, predators, and prey and their possible effects on echinoderm hosts: collateral damage and targeting. Geological Society of America *Abstracts with Programs*, 36:478
- Gahn, F.J. 2007. Morphology of tubular appendages and revision of Gilbertsocrininae. Geological Society of America *Abstracts with Programs* 39:501
- Gahn, F.J. 2006. From dicycly to monoclycy: Revision of *Belemnocrinus* and implications for crinoid phylogeny. In LeFebvre, B., B. David, E. Nardin, and E. Poty, *Journees Georges Ubahs, Programme & Abstracts*, p. 18
- Gahn, F.J. 2005. Evolutionary paleoecology of the mid Paleozoic crinoid transition. Geological Society of America *Abstracts with Programs* 37:61
- Gahn, F.J. 2003. A stratocladistic approach for evaluating hypothesis of cladogenesis, anagenesis, and budding applied to the Mississippian crinoid *Barycrinus*. Geological Society of America *Abstracts with Programs*, 35:166

- Gahn, F.J., 1998. Evolutionary paleoecology of Early Mississippian (late Kinderhookian) crinoids from the Wassonville Formation of southeast Iowa, Geological Society of America *Abstracts with Programs*, 30:40
- Gahn, F.J., and T.K. Baumiller. 2004. A call to arms: testing ecological and evolutionary hypotheses of predation using crinoid arm regeneration frequency. Geological Society of America *Abstracts with Programs*, 36:380
- Gahn, F.J., and T.K. Baumiller. 2002a. A review and reassessment of predation-driven evolutionary trends in fossil crinoids in light of new data on Paleozoic predation intensities. Geological Society of America *Abstracts with Programs*, 34:14-15
- Gahn, F.J., and T.K. Baumiller. 2002b. Taphonomic and paleoecologic significance of the "Le Grand Beds," a crinoid-rich obrution deposit from the Lower Carboniferous (Tournasian) of Iowa, USA. Geological Society of Australia, *Abstracts*, 68:60
- Gahn, F.J., and T.K. Baumiller. 2001. Testing evolutionary escalation between crinoids and platyceratid gastropods and phylogenetic analysis of the Compsocrinina (Crinoidea: Monobathrida). Geological Society of America *Abstracts with Programs*, 33(6):247
- Gahn, F.J. and T.K. Baumiller. 2000. A quantitative approach for assessing taphonomic gradients: An example from Mississippian Crinoids of Iowa. Geological Society of America *Abstracts with Programs*, 32:97
- Gahn, F.J., J. Sprinkle, and T.E. Guensburg. 2006. Garden City of echinoderms: A new Early Ordovician Lagerstätte from Idaho and Utah. Geological Society of America *Abstracts with Programs*, 38:383
- Gahn, F.J., C.D. Sumrall, and C.E. Brett. 2000. Morphological variation and paleoecology of *Glyptocrinus decadactylus*: Evidence from a death assemblage from the Late Ordovician (Maysvillian) of Kentucky. Geological Society of America *Abstracts with Programs*, 32:14.
- Kammer, T.W., and F.J. Gahn. 2000. Species-level phylogenetics of Lower Mississippian primitive cladid crinoids from the east-central United States. Geological Society of America *Abstracts with Programs*, 32:447.
- Sprinkle, J., and Gahn F.J. 2007. New eocrinoids from the Lower Ordovician Garden City Formation, northeastern Utah and southeastern Idaho. Geological Society of America *Abstracts with Programs*, 39
- Sumrall, C.D. and F.J. Gahn. 2003. The phylogenetic position and morphological reinterpretation of two enigmatic edrioasteroids from Canada. Geological Society of America *Abstracts with Programs*, 35:165.

NATIONAL MEDIA COVERAGE

- "Caught in the act! Ancient sea life evolves," E. Stokstad, 2005, Smithsonian, 35:35-36.
- "Evolutionary arms race documented," Associated Press, 2004, (<http://msnbc.msn.com/id/5898644/>)
- "400-million-year-old wounds reveal a time when predators romped," E. Stokstad, Science, 305:1386.

AWARDS AND SCHOLARSHIPS

- Ermine Cowles Case Award for best research paper in paleontology, University of Michigan (2004 and 2003)
- Outstanding Student Research Award, Geological Society of America, recognized among top 5% of grant proposals for "exceptionally high merit in concept and presentation" (1998)

- Two-year Graduate Scholarship, American Federation of Mineralogical Societies (1998 and 1997)
- Best Presentation Award, Brigham Young University Spring Research Conference (1997 and 1996)
- Brigham Young University Junior College Transfer Scholarship (1995)
- Biddulf Scholarship, Ricks College (now Brigham Young University - Idaho) (1994)

GRANTS

- Petroleum Research Fund Grant (with T.K Baumiller), crinoid-gastropod interaction (2002)
- Graduate Research Grant-In-Aid, Sigma Xi, Mississippian echinoderms (1998)
- Graduate Student Research Grant, Geological Society of America, Mississippian echinoderms (1998)
- Theodore Roosevelt Memorial Grant, American Museum of Natural History, Mississippian echinoderms (1998)

SOCIETY AFFILIATIONS

- Dry Dredgers (Cincinnati amateur paleontological organization)
- Friends of the University of Michigan Museum of Paleontology
- Geological Society of America
- Mid-America Paleontology Society
- National Geographic Society
- Paleontological Society
- Utah Friends of Paleontology

MISCELLANEOUS

- Participated in the NSF sponsored “Early Career Geoscience Workshop,” at William and Mary College (2006)
- Reviewed the book “The Application of Ichnology to Palaeoenvironmental and Stratigraphic Analysis” for Palaeontologica Electronica, http://palaeo-electronica.org/toc9_1.htm (2006)
- Reviewed manuscripts for the following journals: *Ameghiniana*, *Journal of Paleontology*, *New Mexico Geology*, *Palaios*, *Paleobiology*, and *The American Naturalist* (2003-)
- Keynote speaker for the 64th Annual TriState (Iowa, Illinois, and Wisconsin) Field Conference (2002)
- Participated in a college teaching course, University of Michigan (1999)
- Certified in SCUBA with diving experience in Australia, the Bahamas (research stations on Andros Island and San Salvador), Hawaii, and the US Virgin Islands (1996-)
- Participated in three field courses on carbonate sedimentation and marine ecology in the Bahamas and Florida Keys: 1) University of Iowa (1995); 2) Brigham Young University (1997); 3) Miami University (1998)
- Volunteered as a tutor in geological sciences, Brigham Young University (1996-1997)
- Served as a missionary for the LDS church, Mexico City, Mexico, and as a result, gained a strong command of the Spanish language (1992-1994)
- Created a display on the “Geology of Starrs Cave Park and Preserve” for my Eagle Scout Project, Starr’s Cave Nature Center, Burlington, Iowa (1991)