Re: Fossil Records Show Biodiversity Comes and Goes

Source: http://sci.tech−archive.net/Archive/sci.geo.geology/2005−03/1842.html

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From: George (*george_at_wtfiswrongwithyou.com*)
Date: 03/16/05

Date: Wed, 16 Mar 2005 22:57:16 GMT

"John Harshman" <jharshman.diespamdie@pacbell.net> wrote in message
news:Ay2_d.11205$C47.10443@newssvr14.news.prodigy.com...
> George wrote:
>
>> "John Harshman" <jharshman.diespamdie@pacbell.net> wrote in message
>> news:Xx1_d.23761$OU1.21146@newssvr21.news.prodigy.com...
>>
>>>George wrote:
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>>>
>>>>"John Harshman" <jharshman.diespamdie@pacbell.net> wrote in message
>>>>news:5G_Zd.23705$OU1.18044@newssvr21.news.prodigy.com...
>>>>
>>>>
>>>>>maison.mousse wrote:
>>>>>
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>>>>>
>>>>>>Richard Forrest a écrit dans le message
>>>>>><1110994405.384303.35090@g14g2000cwa.googlegroups.com>...
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>>>>>>>maison.mousse wrote:
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>>>>>>>>Richard Forrest a écrit dans le message
>>>>>>>><1110979481.439372.106740@o13g2000cwo.googlegroups.com>...
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>>>>>>>>>r norman wrote:
>>>>>>>>>
>>>>>>>>>

>>>>>>>>>
>>>>>>>>>>On 16 Mar 2005 00:40:45 −0800, "Richard Forrest"
>>>>>>>>>><richard@plesiosaur.com> wrote:
>>>>>>>>>>
>>>>>>>>>
>>>>>>>>>snip>> think that any one can be any kind of paleontologist with out a
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>>>>>>back
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>>>>>>
>>>>>>ground
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>>>>>>>
>>>>>>>in geology.
>>>>>>>
>>>>>>>JOL
>>>>>>>
>>>>>>>Well, I'm a palaeontologist and don't have background in geology. The
>>>>>>>two palaeontologists I work most closely with have first degrees in
>>>>>>>zoology, not palaeontology. I know of at least two other vertebrate
>>>>>>>palaeontologists, one of whom is Professor of Vertebrate Palaeontology
>>>>>>>at a major University whose background is that of a zoologist, not a
>>>>>>>geologist − she freely admits that she doesn't know much about
>>>>>>>geology. It's not a subject which comes up much in discussion. Very
>>>>>>>often the geological background is informative but not necessarily
>>>>>>>relevant, and certainly not relevant to the discipline of taxonomy
>>>>>>>(which is where this whole line started). For taxonomists, a knowledge
>>>>>>>of zoology is more important than a knowledge of geology/
>>>>>>>
>>>>>>>That geology is a first degree for many palaeontologists is a
>>>>>>>historical accident rather than a reflection of the nature of the
>>>>>>>subject. This does not make palaeontology a subset of geology. It
>>>>>>>isn't. I don't know of any vertebrate palaeontologist (and I say this
>>>>>>>because those are the people I know) would claim that it is. Yes,
>>>>>>>palaeontology is a module in geology degrees, but generally it is not
>>>>>>>taught in any depth. There are also modules in statistics, but nobody
>>>>>>>would claim that a geologist is a statistician.
>>>>>>
>>>>>>
>>>>>>Paleontology is more than just description. Unless one knows something
>>>>>>about
>>>>>>the environment that the fossil was preserved in and someone about the
>>>>>>relative age of the rock, type of rock and relationship to other rocks and
>>>>>>other fossils, if present , the fossil is just more or less a meaningless
>>>>>>curiosity.
>>>>>>What credited university is Paleo not part of the Geology
>>>>>>department?
>>>>>
>>>>>Quite a few of them, including the U. of Chicago. Vertebrate paleo tends

>>>>>to be in biology departments, invert paleo in geology. And you can
>>>>>indeed do a lot with fossils in near total ignorance of geology. They
>>>>>are, after all, the remains of organisms, and biology is of some use in
>>>>>dealing with organisms.
>>>>
>>>>This certainly explains the large numbers of papers that are rejected by the
>>>>Journal of Paleontolgy ever year.
>>>
>>>I doubt it.
>>>
>>>
>>>>Perhaps if you guys knew something about
>>>>geology, you wouldn't have such a hard time figuring out why certain fossils
>>>>are
>>>>found where they are found, and what paleoenvironment in which they lived.
>>>>Geologists don't have a problem with this because they have the training it
>>>>takes to understand the rock record, and what it is telling us about past
>>>>life
>>>>on earth.
>>>
>>>Paleonvironments, though important, are only one aspect of what can be
>>>learned from or about extinct species. Most vertebrate paleontologists
>>>are largely systematists. Is there something wrong with being a
>>>systematist?
>>
>> Systematics is important. But it can't tell you about the ecology in which
>> any
>> life form lived.
>
> Ecology is important. But it can't tell you about the phylogeny in which
> any life form is embedded.

Of course not. That is what taxonomic studies do. But as I've said,
Paleontology today is about much more that taxonomy.

>> It can, at best, give you some indication of what to expect.
>> It can't tell you whether cladistid crinoids ever lived in high energy
>> environments or low energy environments. Nor can it tell you about a ancient
>> crinoid's relationships with other life forms in that ecosystem. If you
>> don't
>> have a holistic approach to paleontology, you are just another taxonomist
>> trying
>> to pidgeon hole species about which you know very little other than their
>> gross
>> anatomy.
>
> I could go into a similar harangue substituting words about ecologists
> who don't know anything about phylogeny if you wanted me to. Different
> questions, different methods, different data.
>
>> As an example, consider the following papers/books:

>>
>> Hess, H., W.I. Ausich, C.E. Brett, and M.J. Simms. 2002. Fossil Crinoids.
>> Cambridge University Press, 275 p. [paperback edition of 1999 book]
>>
>> Schneider, K.A., and W.I. Ausich. 2002. Paleoecology of framebuilders in
>> Early
>> Silurian reefs (Brassfield Formation, southwestern Ohio). Palaios,
>> 19:237−248.
>>
>> The former is by and large taxonomy and anatomy. Yes, you could probably do
>> this
>> work with little formal geology training, though I personally doubt it.
>
> Don't. Organisms are organisms, whether dead or alive. (Or, given the
> way systematists work, I should say whether dead a short or long time.)
> You don't need to know geology to work with extant species. Why would
> you to do the same thing with extinct ones?

Because extinct organisms are not always the same as extant ones. Take corals as an example. Hexacorals no longer exist. All corals today are octacorals. To understand why hexacorals and octacorals are so completely different, it is not enough to understand their gross anatomies. You have to understand the ecology in which these animals lived.

>> However, the latter paper, which describes, or very nearly describes an
>> entire
>> ecosystem, could not have been completed without a broad background in the
>> geosciences, biology, chemistry, and physics. While the former is important
>> work and a great general reference if you want to identify species, it tells
>> very little about how crinoids lived and evolved in the environment in which
>> they existed. The latter puts those life forms into their natural habitat,
>> and
>> gives a very broad perspective of the life forms that contructed such reefs.
>> It
>> gives a snapshot, if you will, of what ecosystems looked like 380 million
>> years
>> ago, and how they evolved as a system over time.
>
> Very nice, but that's by no means all paleontology involves. You like
> paleoecology. Other people like other things.
>
>> Paleontology today is about
>> much more than simply describing and pidgeonholing species.
>
> And so is systematics today. You seem to have the idea that what you do
> is the very center of all science, and all else is unimportant or mere
> stamp collecting. OK, I have that view too, but at least I understand
> how irrational it is and never make that assertion in public.

Oh, gee, now you are being defensive. I haven't attacked anyone here. I'm simply pointing out that most researchers today understand that a broad,

multidisciplinary approach to paleontology is what is needed to answer the questions being asked about past life on earth. Simply relying on classification databases will not give the answers to these questions. Having said that, in response to your stamp collecting remark, I have a large mineral and fossil collection, so I don't consider myself above anyone else in that regard. The difference is that while certain paleontologists may study conodonts and tend to concentrate only on those tiny critters when they collect, I'm more interested in the entire floral/faunal assemblage at a site, and what it can tell me about life at that particular time in earth's past. I don't just want to know how many clades there are. I want to know about the predators and prey were at the site. I want to know whether there were paracites that were affecting a certain population. I want to know how these critters lived together, interacted, and how they died. Etc, etc, etc.