The puzzle of disharmonious associations during the Ice Age

Michael J. Oard

Disharmonious or nonanalog associations refer to the strange mix of animals and plants from widely different climates or environments in the same sediment.[1] Such associations occurred during the Ice Age in both the northern and southern hemispheres and are the *rule* and not the exception.[2–4] Animals that loved the warmth were found at high latitude while animals that loved the cold were found at much lower latitudes. Disharmonious associations apply not only to large mammals, but to other flora as well as to fauna:

> "Late Pleistocene communities were characterized by the co-existence of species that today are allopatric [not climatically associated] and presumably ecologically incompatible … . Disharmonious associations have been documented for late Pleistocene floras … terrestrial invertebrates … lower vertebrates, birds, and mammals."[5]

Stafford *et al.* reinforce this conclusion:

> "Late Pleistocene terrestrial mammal faunas are characterized by the stratigraphic association of extant species that do not currently live together … . Nonanalog Pleistocene fossil mammal faunas are recorded worldwide, … . Although nonanalog associations are most commonly cited in the mammal literature, they are also reported for fossil birds … reptiles and amphibians, pollen, plant macrofossils, insects, and molluscs."[6]

Carbon-14 has been used to verify that these disharmonious associations are *taphonomically associated* and not due to glacial/interglacial oscillations, as if this or some other factor that brought such disparate organisms into the same sediment would help explain the situation.

Probably the most outrageous example of a disharmonious association is the existence of hippopotami associated with reindeer, musk oxen, and woolly mammoths in England, France, and Germany during the Ice Age.[7,8] There are about 100 of these associations in England and Wales.[9]

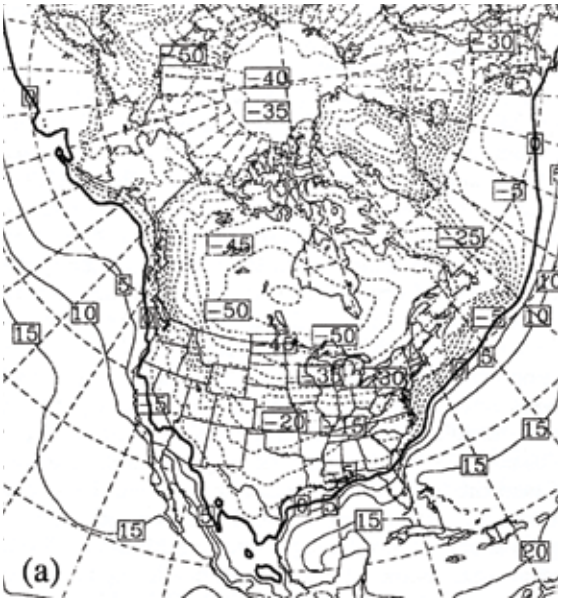

Figure 1. Simulated January temperatures (degrees Celsius) over North America at the uniformitarian last glacial maximum (from Bromwich *et al.*[11]). Note that the 0°C line covers practically all the United States.

Uniformitarian ice ages are very cold

The uniformitarian puzzle exists because their ice ages are very cold. In one climate simulation at their last glacial maximum, John Mitchell states:

> "These [ice age] changes lead to a simulated *global mean cooling* which, in general, is greater over land than the neighbouring ocean. This produces higher surface pressure over much of the northern extratropical continents, and reduces precipitation [emphasis added]."[10]

Bromwich and colleagues simulate the winter temperatures at the last glacial maximum and summarize:

> "The climate forcing mechanisms at the LGM [Last Glacial Maximum], including reduced trace gas concentrations, cooler ocean temperatures, orbital configurations, changes in vegetation patterns, and Northern Hemisphere continental-scale ice sheets, combined to maintain a much cooler global climate than now present."[11]

Average January temperatures were colder than –50°C over the interior of the North American (Laurentide) ice sheet with below freezing temperatures covering practically all the United States (figure 1). In a simulation of summertime glacial maximum temperatures, temperatures averaged below –18°C over the interior of the ice sheet but were colder than 18°C over much of the United States (figure 2).[12]

Disharmonious associations in Florida

A recent report emphasizes the fauna and flora Ice Age disharmonious associations in Florida during the Pliocene and Pleistocene.[13] (The location of the Flood/post-Flood boundary is an issue in this report and beyond the scope of this article. Since disharmonious associations would also be expected during the Flood, I will discuss the Pleistocene examples only, which are very likely from the Ice Age.) Animals that live in Florida today co-existed with tropical and Western grassland species during the Ice Age. Very few tropical mammals live in Florida today. Morgan and

Emslie admit that tropical animals living in Florida during the Ice Age is self-contradictory, but they think they understand it:

> "Although the appearance of tropical forms in Florida during glacial intervals seems counterintuitive, it actually makes sense when examined in close detail … . Much of temperate North America, including Florida, apparently had a more equable climate during glacial intervals … Florida would have experienced a warm equable climatic regime during the Wisconsinan [the last ice age] and earlier glacials, with somewhat milder winters and cooler summers compared to the warm continental climate found there today with its greater temperature extremes."[14]

So, their solution is a mild equable climate with a small seasonal contrast, which is also the deduction of other investigators, based on the existence of the disharmonious associations. Don Grayson states in regard to the hippopotamus bones associated with cold-tolerant animals in northwest Europe:

> "There must have been cooler summers for the reindeer and musk-ox; and on the other hand warmer winters for the hippopotamus and other species whose analogs are today found withdrawn toward the tropical regions."[15]

Grayson also summarizes the implications for the Ice Age climate of France: "The implications of the botanical co-occurrences seemed clear to Saporta: only a humid equable climate would have allowed such an association."[16]

Of course, the explanation of an equable climate flies in the face of the uniformitarian ice age model with much colder temperatures as shown by simulations. There is also the further problem of how mild equable climates occur during a uniformitarian ice age.

What about increased climatic tolerance?

One can argue that disharmonious associations are due to a higher climatic tolerance of Ice Age animals. There is some truth in this—most animals today can tolerate a different climate from what they are used to today. For instance, tigers can live in cold as well as warm climates. The Siberian tiger lives in east-central Asia, but it has a coat of fur that can become thicker in cold climates.

However, such an argument cannot apply to the hippo, which has no covering of hair, although it can handle a little cold in English zoos. Most investigators have dismissed the idea that hippos were cold adapted in northwest Europe during the Ice Age.[15]

Despite the wider range of climate tolerances for animals today and those animals of the Ice Age, disharmonious associations were so common among both plants and animals that this possibility cannot explain them all. Moreover, some of the fossils have living representatives, the climate tolerances of which are explicit and well known, such as holly, ivy, and water chestnuts. Fossils of these plants formed in the British Isles during the Ice Age, while today they are normally found farther south.[17]

Figure 2. Simulated June to August temperatures (degrees Celsius) over North America at the uniformitarian last glacial maximum (from Bromwich *et al.*[12]). Note that the 0°C line is near the ice sheet boundary with the 18°C line covering practically all the United States.

Disharmonious associations imply only one Ice Age

A further implication from the data on disharmonious associations is that there was only one Ice Age. The period after the last ice age in the uniformitarian multiple ice age scheme is called the Holocene, an interglacial, and it is admitted that the Holocene, like the present, has very few disharmonious associations: "Holocene faunas, except some from South America …, characteristically are analog [like today], or nearly so."[6] But, it is admitted that previous interglacials, as well as previous Pleistocene glaciations, all exhibited disharmonious associations: "Earlier interglacials and glacials reveal a fauna and flora more like that of a heterogeneous savanna."[18] Guilday reinforces this statement:

> "Pleistocene local faunas assigned to both pre-Wisconsinan glacial and interglacial periods are equally diverse in composition and their taxonomic makeup, especially of the reptiles and amphibians, suggests climate equability … without a hint of Holocene polarity [faunal separation]."[19]

For example, the previous interglacial, called the Sangamon in North America and the Eemian in Europe, displayed disharmonious association:

> "If the Sangamonian faunas are correctly categorized, then disharmony was nearly as common during the Wisconsinan [last ice age] as during an earlier interglacial that was every bit as warm as the Holocene."[20]

Since previous interglacials are supposed to have been climatically similar to the Holocene or the current climate, such disharmonious associations for the previous interglacial as well as earlier ones imply that there were *no* previous interglacials. Therefore, there was only one glacial period.

A creationist Ice Age explanation of the data

Disharmonious associations and an equable climate are one of many evidences for a radically different Ice Age than uniformitarians believe—one caused by the climatic consequences of the Genesis Flood.[1] Cool summers, especially over mid- and high-latitude continental areas, would be caused by volcanic ash and aerosols in the atmosphere immediately after the Flood catastrophe and reinforced by abundant post-Flood volcanism. Much warmer ocean water at mid and high latitudes than today, as a result of heat from the Flood, would cause warmer air above the ocean. Such warm sea surface temperatures would not only evaporate much more water vapor into the atmosphere needed for a rapid Ice Age, but would also release a lot of latent heat to the atmosphere by the condensation of water vapour. Such warming would be most effective in causing warmer winters than today, especially in areas of onshore flow of moist, warm air, such as the west coasts of North America and Europe. Cooler summers and milder winters, an equable climate, is exactly what the disharmonious associations imply, contrary to the bitterly cold temperatures of a uniformitarian ice age. Such an equable climate would be expected during the early Ice Age, but would gradually change in the mid and late Ice Age as the oceans cooled and evaporation slowed.

Moreover, such a climate can explain the most outrageous disharmonious association of hippopotami associated with cold-tolerant animals in northwest Europe during the Ice Age. Warm, moist onshore flow by predominantly westerly winds would result in warm, wet winters in northwest Europe early in the Ice Age. Such a habitat would be congenial for hippopotami spreading out from the 'mountains of Ararat'. But the post-Flood Ice Age climate was dynamic, and as Ice Age temperatures cooled during the mid and late Ice Age the population of cold-tolerant animals in northwest Europe would have continually increased. Glaciation would likely start in the northern mountains of the UK and then spread to lower elevations and southward. The hippopotami were unable to migrate to escape the changing climate and would have ended up dying late in the Ice Age with cold-tolerant animals.

References

1. Oard, M.J., *Frozen in Time: Woolly Mammoths, the Ice Age, and the Biblical Key to Their Secrets*, Master books, Green Forest, AR, pp. 44–45, 2004.
2. Stuart, A.J., Mammalian extinctions in the Late Pleistocene of northern Eurasia and North America, *Review of biology* **66**:453–562, 1991.
3. Rensberger, J.M. and Barnosky, A.D., Short-term fluctuations in small mammals of the Late Pleistocene from eastern Washington; in: Martin, R.A. and Barnosky, A.D. (Eds.), *Morphological Change in Quaternary Mammals of North America*, Cambridge University Press, Cambridge, MA, pp. 299–342, 1993.
4. Graham, R.W. and Lundelis Jr, E.L., Coevolutionary disequilibrium and Pleistocene extinctions; in: Martin, P.S. and Klein, R.G. (Eds.), *Quaternary Extinctions: A Prehistoric Revolution*, University of Arizona Press, Tucson, AZ, pp. 223–249, 1984.
5. Graham and Lundelis, ref. 4, p. 224.
6. Stafford, Jr., T.W., Semken, Jr, H.A., Graham, R.W., Klippel, W.F., Markova, A., Smirnov, N.G. and Southon, J., First accelerator mass spectrometry ^{14}C dates documenting contemporaneity of nonanalog species in late Pleistocene mammal communities, *Geology* **27**:903, 1999.
7. Nilsson, T., *The Pleistocene—Geology and Life in the Quaternary Ice Age*, D. Reidel Publishing Co., Boston, MA, pp. 223–233, 1983.
8. Sutcliffe, A.J., *On the Tracks of Ice Age Mammals*, Harvard University Press, Cambridge, MA, p. 24, 1985.
9. Stuart, A.J., *Pleistocene Vertebrates in the British Isles*, Longman, London, p. 52, 1982.
10. Mitchell, J.F.B., Modelling of palaeoclimates: examples from the recent past, *Philosophical Transactions of the Royal Society of London B* **341**:271, 1993.
11. Bromwich, D.H., Toracinta, E.R., Wei, H., Oglesby, R.J, Fastook, J.L. and Hughes, R.J., Polar MM5 simulations of the winter climate of the Laurentide Ice Sheet at the LGM, *J. Climate* **17**:3415, 2004.
12. Bromwich, D.H., Toracinta, E.R., Oglesby, R.J, Fastook, J.L. and Hughes, R.J., LGM summer climate on the southern margin of the Laurentide Ice Sheet: wet or dry? *J. Climate* **18**:3322, 2005.
13. Morgan, G.S. and Emslie, S.D., tropical and western influences in vertebrate faunas from the Pliocene and Pleistocene of Florida, *Quaternary International* **217**:143–158, 2010.
14. Morgan and Emslie, ref. 13, p. 155.
15. Grayson, D.K., Nineteenth-century explanations of Pleistocene extinctions: a review; in: Martin, P.S. and Klein, R.G. (Eds.), *Quaternary Extinctions: A Prehistoric Revolution*, University of Arizona Press, Tucson, AZ, p. 18, 1984.
16. Grayson, ref. 15, p. 19.
17. Stuart, ref. 9, p. 15.
18. Guthrie, R.D., Mosaics, allelochemics andnutrients—an ecolotical theory of late Pleistocene megafaunal extinctions; in: Martin, P.S. and Klein, R.G. (Eds.), *Quaternary Extinctions: A Prehistoric Revolution*, University of Arizona Press, Tucson, AZ, p. 264, 1984.
19. Guilday, J.E., Pleistocene extinctions and environmental change: a case study of the Appalachians; in: Martin, P.S. and Klein, R.G. (Eds.), *Quaternary Extinctions: A Prehistoric Revolution*, University of Arizona Press, Tucson, AZ, p. 255, 1984.
20. Alroy, J., Putting North America's end Pleistocene megafaunal extinctions in context; in: Macphee, D.E. (Ed.), *Extinctions in Near time—Causes, Contexts, and Consequences*, Kluwar Academic/plenum Publishers, New York, p. 113, 1999.