

Hot Topics in Biology

Homo floresiensis

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Homo floresiensis

- Skeleton of adult human-like species
 - Female
 - Three feet tall
 - Dated to only 18,000 years ago
- Discovered on Flores Island, in Indonesia
- New species is believed to be descended from *Homo erectus*, the closest known relative of *Homo sapiens* (modern humans).
- Small size may be attributable to “island dwarfing.”



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Homo floresiensis

The recent discovery of the skeleton of a three-foot tall adult female belonging to a new human-like species, *Homo floresiensis*, is exciting news to anthropologists. The new species, named after the island on which the skeleton was discovered, appears to be descended from populations of *Homo erectus*, the closest known relative of modern humans. The skeleton was estimated to be 18,000 years old. This means that populations of *Homo floresiensis* existed well after modern man appeared approximately 160,000 years ago. Thus, researchers are wondering if the two species interacted.

The first descendents of *Homo floresiensis* to reach Flores Island may have been similar in size to *Homo erectus*. Researchers hypothesize that the small size of *Homo floresiensis* (only three feet tall) is due to a process known as “island dwarfing.” This phenomenon has been observed in other mammals, where local isolation, absence of predators, and small population sizes, combined with restricted resources, lead to reductions in body size and modifications in brain size. The smaller individuals with reduced energy requirements are favored by natural selection in environments where food is limited and there is no need for defense against predators. In a small population with a limited gene pool, these changes could occur quite rapidly.

References:

Brown, P., et al. (2004). A new small-bodied hominin from the Late Pleistocene of Flores, Indonesia. *Nature* 431:1055-1061.

Morwood, M.J., et al. (2004). Archaeology and age of a new hominin from Flores in eastern Indonesia. *Nature* 431:1087-1091.

Lahr, M.M. and Foley. R. (2004). Human evolution writ small. *Nature* 431:1043–1044.

Flores Island



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Flores Island

The Greater Sundas Islands include Borneo, Java (including the small island of Madura), Sumatra, Sulawesi, and Belitung. The Lesser Sundas (renamed Nusa Tenggara in 1954) are all Indonesian. They include Bali, Lombok, Flores, Sumba, Sumbawa, and Timor. Flores Island, where the new species, *Homo floresiensis*, was discovered, is located in eastern Indonesia and is heavily wooded, rugged, and mountainous. *Homo floresiensis* may have evolved from populations of *Homo erectus* that migrated by boat to Flores island from Java as long as 800,000 years ago.

References:

Morwood, M.J., et al. (2004). Archaeology and age of a new hominin from Flores in eastern Indonesia. *Nature* 431:1087-1091.

Lahr, M.M. and Foley, R. (2004). Human evolution writ small. *Nature* 431:1043-1044.

Taxonomy of the New Species

- Order: Primates
- Suborder: Anthropeidea
- Family: Hominidae (hominids)
- Tribe: Hominini (hominins)
- Genus: *Homo*
- Species: *Homo floresiensis*

The current interpretation of the other members of the genus *Homo* is as follows:

Homo habilis
Homo rudolfensis
Homo ergaster
Homo erectus
Homo heidelbergensis
Homo neanderthalensis
Homo sapiens



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Taxonomy of the New Species

A number of factors help biologists decide whether an organism belongs to a new species. In the case of *Homo floresiensis*, the new hominid presented a unique combination of primitive and more recently evolved (derived) features not found in any other taxon. Some of the important characteristics used to differentiate among hominids are: brain size (earlier hominids had brains with volumes around 400-450 cm³, while modern humans have brains averaging 1,300 cm³); jaw shape (during human evolution, jaws have become less elongated, with the development of more pronounced chins); and bipedal posture (whether or not they walked on two legs). *Homo floresiensis* presents a small brain volume, but has facial and dental features more similar to *Homo erectus*, the closest known relative to modern humans. In addition, *Homo floresiensis* appears to have walked on two legs.

The Family Hominidae contains humans, great apes and their extinct relatives (<http://tolweb.org/tree?group=Hominidae>). Members of this family also are referred to as “hominids.” The Tribe Hominini consists of several, related genera (*Homo*, *Ardipithecus*, *Australopithecus* and *Paranthropus*) with bipedal posture, among other shared, derived characteristics. Members of this tribe are called “hominins.” Current evidence now points toward three species of the genus *Homo*: *Homo sapiens* (modern humans), *Homo erectus* and *Homo*

floresiensis.

Reference:

Brown, P., et al. (2004). A new small-bodied hominin from the Late Pleistocene of Flores, Indonesia. *Nature* 431:1055-1061.

Smithsonian National Museum of National History. (2004). *Smithsonian Institution Human Origin Program*. Retrieved 11-03-2004 from

http://www.mnh.si.edu/anthro/humanorigins/ha/a_tree.html