# *Homo floresiensis*: Where does it stand?

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## Background

In 2003 the fossil hominin *Homo floresiensis* was discovered in Indonesia. Since then there has been contention over its phylogenetic placement:

- Most recent studies show that it is closely related to early *Homo* (Argue *et al.* 2017).
- This study examines the morphology of the hand to help clarify where *H. floreisensis* belongs

## Research Questions

- How does the hand morphology compare to that of other species?
- What are the implications of this morphology on functionality.


All available elements of the right hand of *H. floresiensis*. Photograph of casts.

## Methods and Materials

Nine species were examined for 10 manual traits, The traits of were then used to analyze the hand morphology of *H. floresiensis*.

- manual elements attributed to LB1: capitate, scaphoid, trapezoid and the various phalanges.
- These traits are based on the known primitive and derived states of the Hominin hand

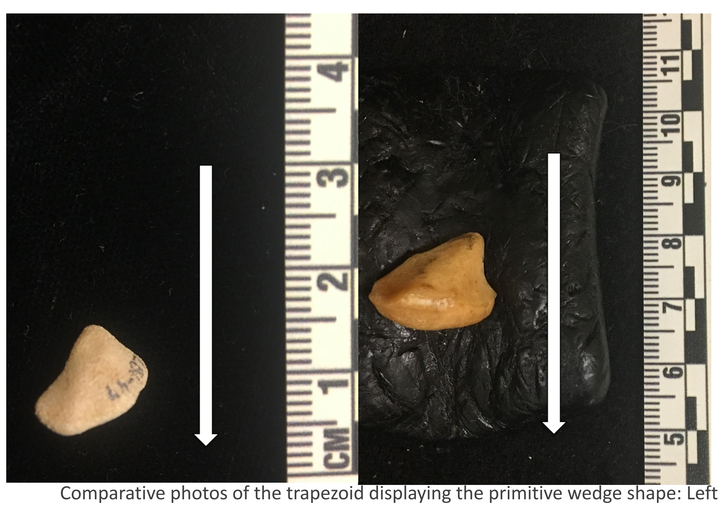
| Trait |
|---|
| A. 1. Os Centrale and scaphoid are fused to a single bone |
| 2. Os Centrale and scaphoid are two separate bones |
| B. 1.Trapezium articular surface on the scaphoid extends to the tubercle |
| 2. Trapezium articular surface does not extend to tubercle |
| C. 1.trapezoid is wedge shaped |
| 2. trapezoid is boot shaped |
| D. 1.capitate neck is waisted |
| 2.Capitate neck is expanded |
| E. 1.joint between second metacarpal and capitate is oriented radio-ulnarly |
| 2. joint between second metacarpal and capitate is oriented proximo-Distally |
| F. 1. capitate's trapezoid articular surface is relatively small and dorsally placed |
| 2. capitate's trapezoid articular surface is relatively large and palmarly placed |
| G. 1.scaphoid articular surface on the trapezoid is relatively large and triangular |
| 2.Scaphoid articular surface on the trapezoid is relatively small and rectangular |
| H. 1.Distal phalanges apical tufts are broad |
| 2.Distal phalanges apical tufts are narrow |
| I. 1.Proximal phalanges are curved |
| 2.Proximal phalanges are straight |
| J. 1.Expanded palmar surface on the capitate is present |
| 2. Expanded palmar surface on the capitate is lacking |
| K. 1.First metatarsal articulates in line with the foot |
| 2.First metatarsal articulates laterally with the foot |

List of traits sourced from previous research (Argue et al. 2017;Tocheri *et al.* 2008)

## Results

The manual elements lack the derived features found in later species of *Homo*. Overall, the traits follow a plesiomorphic trend: The findings make it difficult to determine the phylogenetic placement, however the traits do show that early tool makers likely retained primitive morphology.

- The trapezoid is wedge shaped
- The capitate retains a waisted appearance
- The capitate-second metacarpal joint of LB 1 is oriented radio-ulnarly



Comparative photos of the trapezoid displaying the primitive wedge shape: Left (LB1 *Homo floresiensis*). Right (145305 *Pongo pygmaeus*) Arrow points palmar to dorsal

Comparative photos of the Capitate displaying the waisted surface: Left (LB1 *Homo floresiensis*). Right (220327 *Pan troglodytes*). Arrow pints proximal to distal.

## Discussion

These findings are similar to those found in Tocheri *et al.* (2008). This evidence suggests that it is unlikely that *H. floresiensis* is directly linked to modern humans; however, the paucity of comparable material from *H. habilis* and *H. erectus* makes it difficult to evaluate other hypotheses.

Future Directions:

- Much is still unknown about *H. floresiensis* including how it arrived on Flores, and its precise phylogenetic placement.

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## References

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