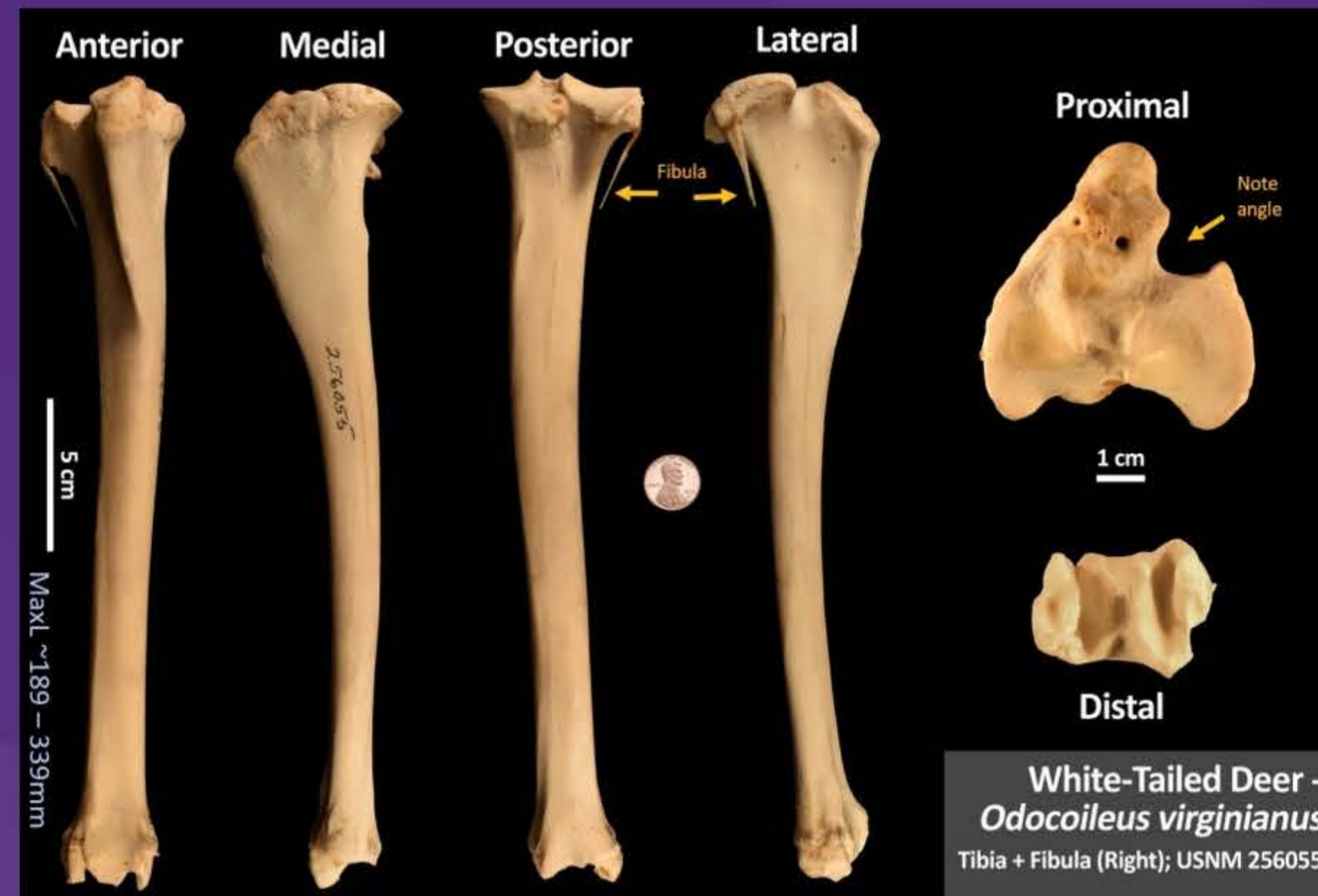


Validating the Osteoid web tool for skeletal species identification

Sidney M. Steiner, M.S.A. '24 | Department of Anatomy | Des Moines University
Heather Garvin-Elling, Ph.D.



OsteoID Bone Identification

The Osteoid web tool utilizes morphological information and dimensional measurements to determine whether or not an unknown bone is human or non-human, and if applicable, to which species the bone belongs. Species identification resources are essential in evaluating an unknown bone, as the bones of some species can very easily be mistaken for human remains. The Osteoid web tool was published in 2021 and is available as a free, online resource for public use. Since then, its effectiveness has not been tested. This study was conducted to determine the rate at which Osteoid correctly confirms a species identification.

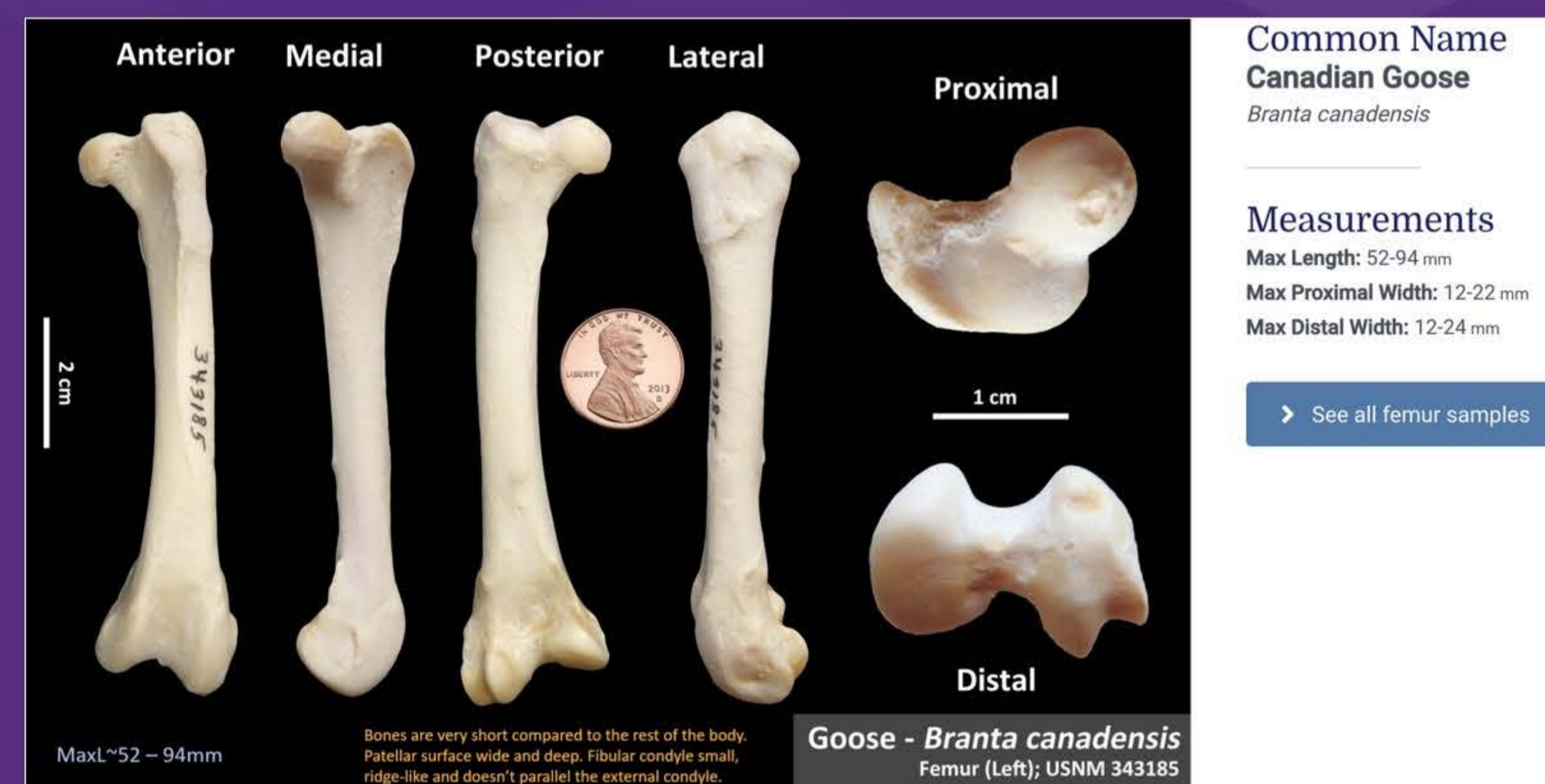
Among the 56 unidentified faunal long bones evaluated in this study, Osteoid correctly classified 96% based on measurements alone.

- The proximal width of a goose femur was measured one millimeter outside the range specified by Osteoid.
- Proximal width: 23mm. (12-22mm)

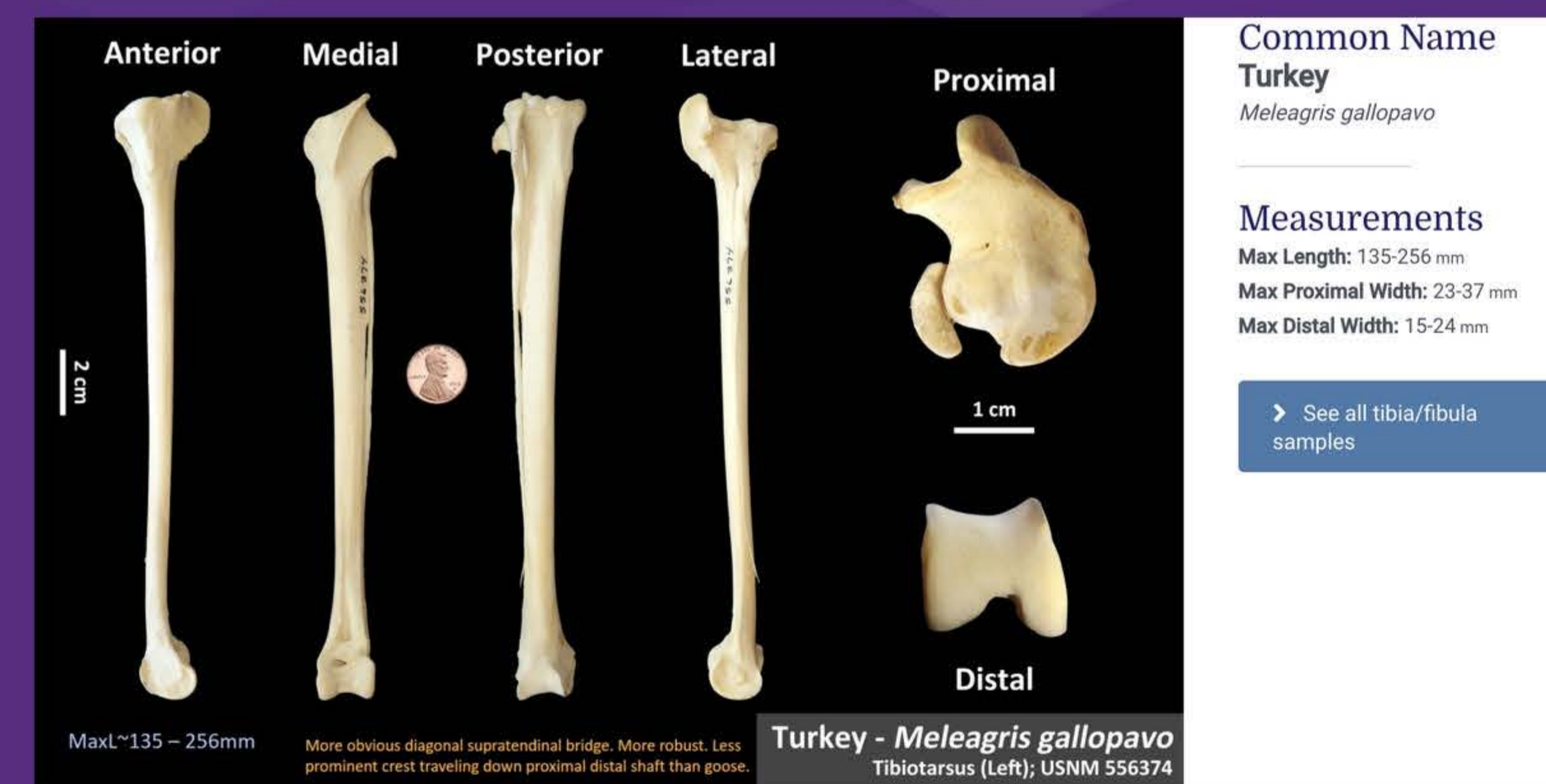


Both the proximal and distal widths of a turkey tibiotarsus measured outside the range specified by Osteoid.

- Proximal width: 46mm. (23-37mm)
- Distal width: 30mm. (15-24mm)



Above: Example of Goose output from OsteoID website.
Below: Photographs of the one goose femur that fell 1 millimeter outside of the published range.



Above: Example of Turkey output from OsteoID website.
Below: Photographs of the one turkey tibiotarsus that fell outside of the published range.



- These findings indicate that the Osteoid web tool was very effective at aiding in species identification of bony elements.
- The goose femur measurement, being only one millimeter outside the posted range, could be a measurement error, or natural variation.
- The turkey tibiotarsus measured well outside of the posted range. This specimen could be a domesticated turkey, giving explanation to its exceptionally large size. Domesticated turkeys are subject to selective breeding, special feed, and possible hormone additives. All of these factors are intended to produce a larger bird.
- Accuracy rate of the Osteoid tool could be improved by adding more measurements to the dataset and including both domestic and wild specimens for each species, when applicable.

- A collection of unknown bony specimens were sorted by element: humerus, radius, ulna, etc. The sample included juvenile and adult specimens, as well as both complete bones and bone fragments.
- Species identification was determined by evaluating known morphological characteristics. Textbooks aided and confirmed final species determination.
- Length, proximal width, and distal width were measured using an osteometric board and recorded in millimeters.
- Measurements were compared with ranges specified by the Osteoid tool.

Sources used during this project, include:

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For more information, see: Garvin HM, Dunn R, Sholts SB, Litten MS, Mohamed M, Kuttickat N, Skantz N. Forensic Tools for Species Identification of Skeletal Remains: Metrics, Statistics, and OsteoID. *Biology*. 2022; 11(1):25. <https://doi.org/10.3390/biology11010025>