Dr. D. Jeffrey Meldrum & the Footprint Facts

Dr. D. Jeffrey Meldrum is an anthropologist with the Department of Biological Sciences, Idaho State University. He has been involved in sasquatch research for more than ten years and worked very closely with the late Dr. Grover S. Krantz of Washington State University. He has personally undertaken field research and has seen first-hand what are believed to be sasquatch footprints. He has studied numerous footprint casts, analyzed several videos showing what could be sasquatch, and performed a detailed analysis on the Patterson/Gimlin film.

Dr. Meldrum has participated in several television documentaries about the sasquatch, providing highly professional theories and conclusions on the physical aspects of the creature. He lectures on the subject in both the United States and Canada. He is the primary professional anthropologist involved in the field of sasquatch studies.

The following presentation is based on posters Dr. Meldrum displays for his talks and lectures. The information provided generally summarizes his findings and conclusions on footprints, although one should consult his book (shown on the right) for complete coverage on this subject and all other sasquatch-related subjects.

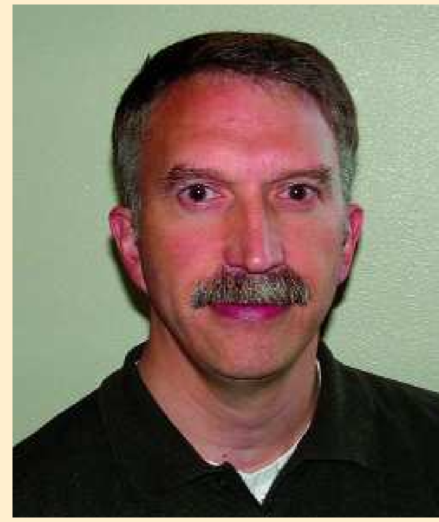
Evaluation of Alleged Sasquatch Footprints and their Inferred Functional Morphology

by Dr. D. Jeffrey Meldrum

Introduction

Throughout the twentieth century, thousands of eyewitness reports of giant bipedal apes, commonly referred to as “Bigfoot” or “Sasquatch,” have emanated from the montane forests of the western United States and Canada. Hundreds of large humanoid footprints have been discovered and many have been photographed or preserved as plaster casts. As incredible as these reports may seem, the simple fact of the matter remains: the footprints exist and warrant evaluation. A sample of over 100 footprint casts and over 50 photographs of footprints and casts were assembled and examined, as well as several examples of fresh footprints.

Tracks in the Blue Mountains: The author examined fresh footprints first-hand in 1996, near the Umatilla National Forest, outside Walla Walla, Washington. The isolated trackway comprised in excess of 40 discernible footprints on a muddy farm road, across a plowed field, and along an irrigation ditch. The footprints measured approximately 35 cm (13.75 inches) long and



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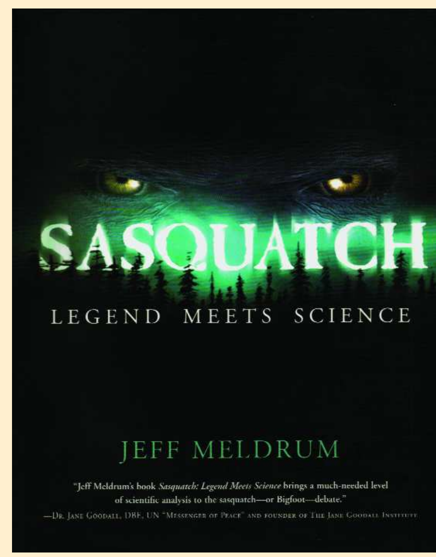
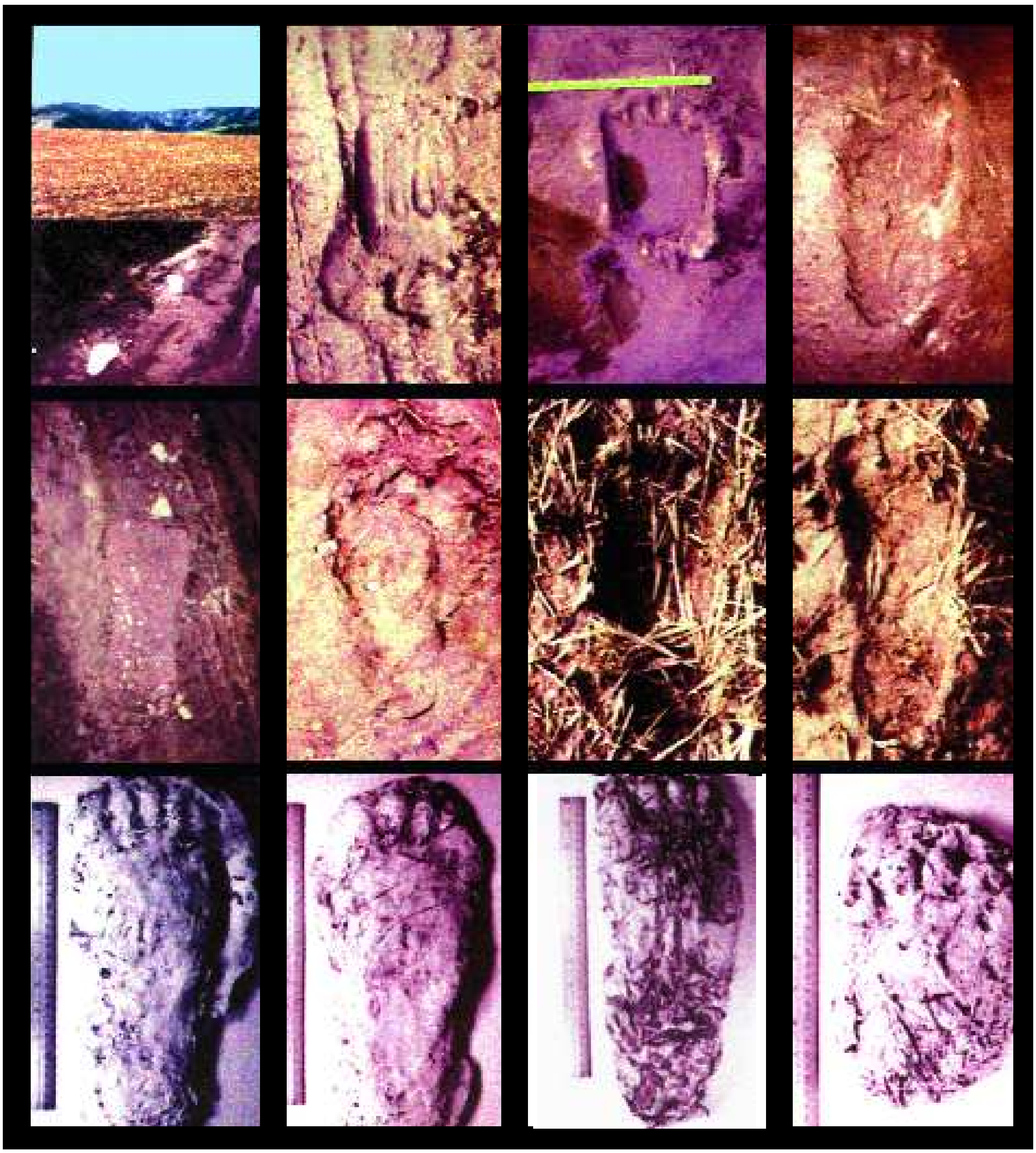


In September 2006, Dr. Meldrum’s epic work, Sasquatch: Legend Meets Science, *was released. This highly authoritative book provides a scientific, in-depth account and critical analysis of the evidence we have to date on the probable existence of sasquatch. Dr Meldrum has concluded:*

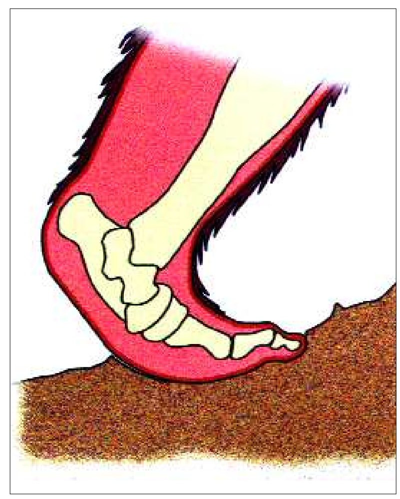
“from a scientific standpoint, I can say that a respectable portion of the evidence I have examined suggests, in an independent yet highly correlated manner, the existence of an unrecognized ape, known as sasquatch.”

13 cm (5.25 inches) wide. Step length ranged from 1.0–1.3 m (39–50.7 inches). Limited examples of faint dermatoglyphics were apparent, but deteriorated rapidly under the wet weather conditions. Individual footprints exhibited variations in toe position that are consistent with inferred walking speed and accommodation of irregularities in the substrate. A flat foot was indicated, with an elongated heel segment. Seven individual footprints were preserved as casts.

Site of more than 40 tracks.



Evidence of a Midtarsel Break: Perhaps the most significant observation relating to the trackway was the evidence of a pronounced flexibility in the midtarsal joint. Several examples of midfoot pressure ridges indicated a greater range of flexion at the transverse tarsal joint than permitted in the normal human tarsus. This is especially manifest in the footprint shown below, in which a heel impression is absent. Evidently, the hindfoot was elevated at the time of contact by the midfoot. Due to muddy conditions, the foot slipped backward, as indicated by the toe slide-ins, and a ridge of mud was pushed up behind the midtarsal region.



Patterson/Gimlin Film Subject: On Friday, October 20, 1967, Roger Patterson and Bob Gimlin claimed to have captured on film a female Bigfoot retreating across a gravel sandbar on Bluff Creek in northern California. The film provides a view of the plantar surface of the subject's foot, as well as several unobstructed views of step cycles. In addition to a prominent elongated heel, a mid-tarsal break is apparent during midstance, and considerable flexion of the midtarsus can be seen during the swing phase. The subject left a long series of deeply impressed footprints. Patterson cast single examples of a right and a left footprint.

Three days later (Monday, October 23, 1967) the site was visited by Robert Lyle Laverty, a timber management assistant, and his survey crew. Laverty took several photographs, including one of a footprint exhibiting a pronounced pressure ridge in the midtarsal region. This same footprint, along with nine others in a series, was cast six days later (Sunday, October 29, 1967) by Bob Titmus, a Canadian taxidermist.

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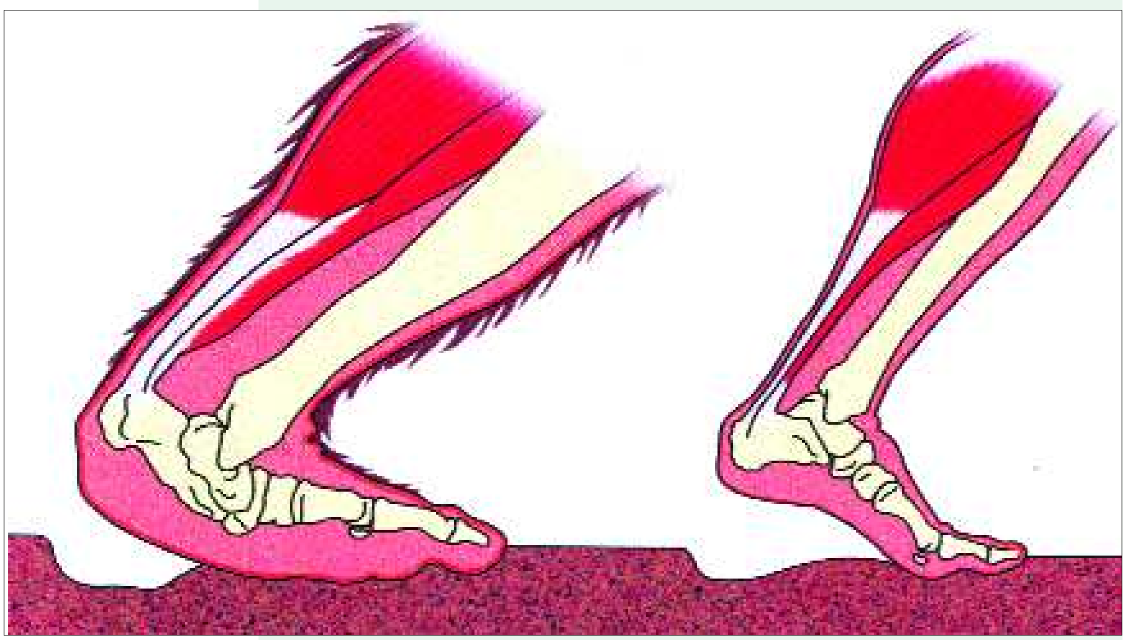
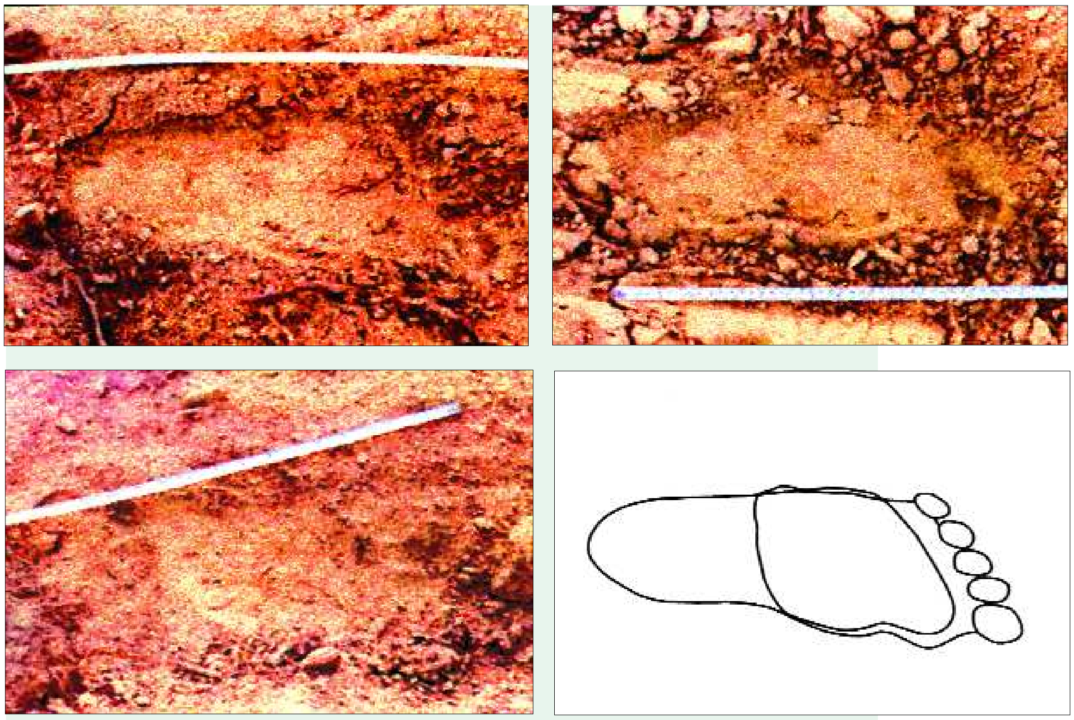
"A model of inferred skeletal anatomy is proposed here to account for the distinctive midtarsal pressure ridge and 'half-tracks' in which the heel impression is absent."

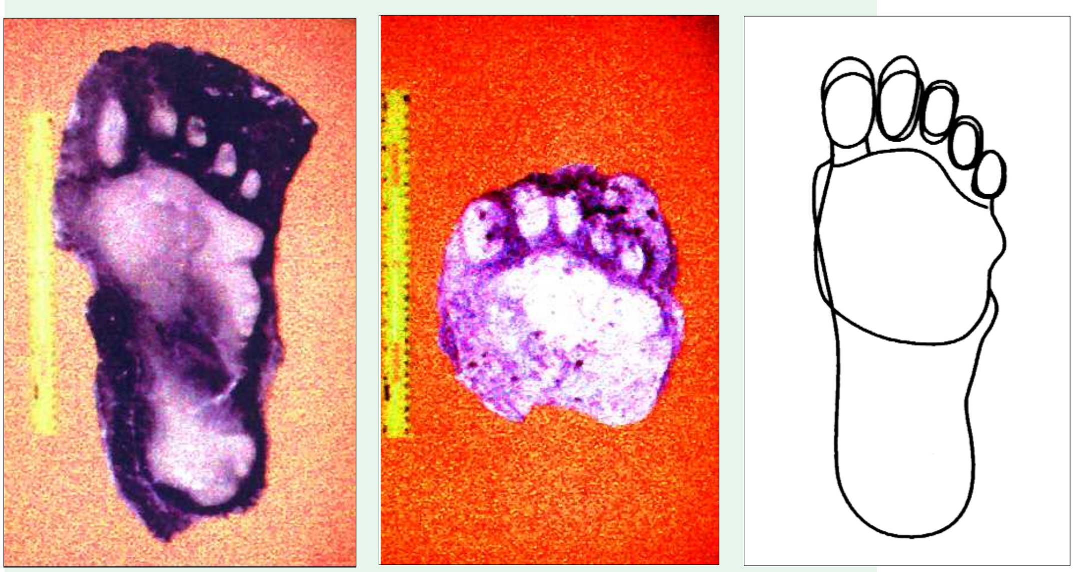
tracks” in which the heel impression is absent. In this model, the Sasquatch foot lacks a fixed longitudinal arch, but instead exhibits a high degree of midfoot flexibility at the transverse joint. Following the midtarsal break, a plastic substrate may be pushed up in a pressure ridge as propulsive force is exerted through the midfoot. An increased power arm in the foot lever system is achieved by heel elongation as opposed to arch fixation.



Additional Examples of “Half-Tracks”: A number of additional examples of footprints have been identified that exhibit a midtarsal break, either as a pronounced midtarsal pressure ridge or as a “half-track” produced by a foot flexed at the transverse tarsal joint. Each of these examples conforms to the predicted relative position of the transverse tarsal joint and elongated heel. The first example is documented by a set of photographs taken by Don Abbott, an anthropologist from the British Columbia Museum (now Royal Museum), in August 1967. These footprints were part of an extended trackway, comprising over a thousand footprints, along a Blue Creek Mountain road in northern California.



Deputy Sheriff Dennis Heryford was one of several officers investigating footprints found by loggers on the Satsop River, Grays Harbor County, Washington, in April 1982.[1] The subject strode from the forest across a logging landing, then, doubling its stride, left a series of half-tracks on its return to the treeline. Note the indications of the fifth metatarsal and calcaneocuboid joint on the lateral margin of the cast. The proximal margin of the half-track approximates the position of the calcaneocuboid joint.



1. This area is known as Abbott Hill.

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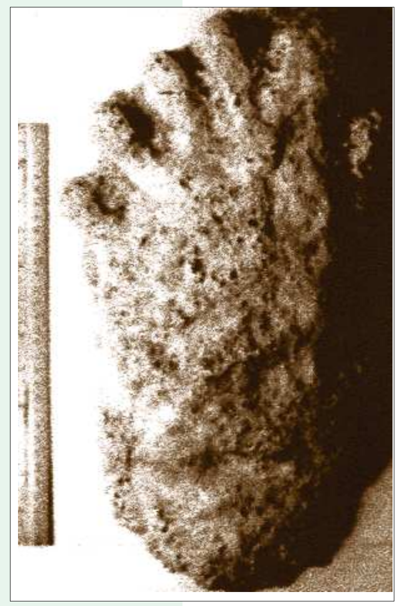
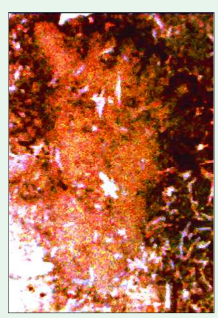
Examples of Foot Pathology: The track of an individual with a presumed crippled foot was discovered in Bossburg, Washington in 1969. The malformed right foot has been previously misidentified as a case of *talipes equinoverus* (clubfoot). However, it is consistent with the general condition of *pes cavus*, specifically metatarsus adductus or possibly skew foot. Its unilateral manifestation makes it more likely that the individual was suffering from a lesion on the spinal cord rather than a congenital deformity. Regardless of the epidemiology, the pathology highlights the evident distinctions of skeletal anatomy. The prominent bunnionettes of the lateral margin of the foot merit the positions of the calcaneocuboid and cuboideometatarsal joints, which are positioned more distal than in a human foot. This accords with the inferred position of the transverse tarsal joint and confirms the elongation of the heel segment. Furthermore, deformities and malalignments of the digits permit inferences about the positions of interphalangeal joints and relative toe lengths, as depicted in the reconstructed skeletal anatomy shown below.

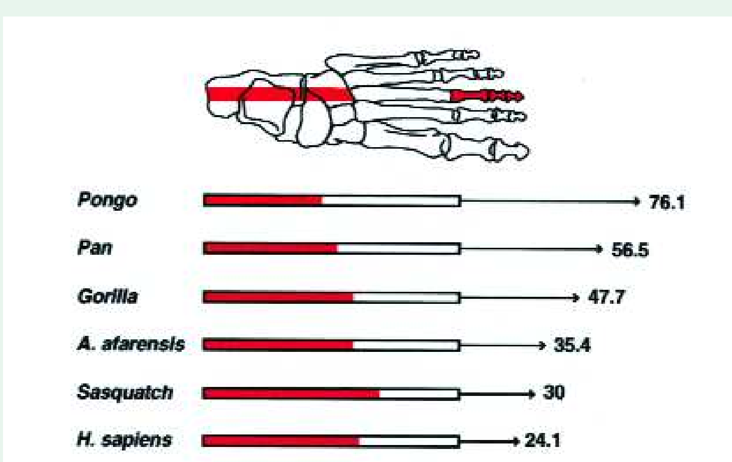
Relative Toe Length and Mobility: Variations in toe position are evident between footprints within a single trackway, as well as between individual subjects. In some instances, the toes are sharply curled, leaving an undisturbed ridge of soil behind toe tips resembling "peas-in-a-pod." In other instances the toes are fully extended. In either case, the toes appear relatively longer than in humans. Among the casts made by the author in 1996 is one in which the toes were splayed, pressing the fifth digits into the sidewalls of the deep imprint, leaving an impression on the profile of these marginal toes. This is the first such case that I am aware of. Expressed as a percent of the combined hindfoot/midfoot, the Sasquatch toes are intermediate in length between those of humans and the reconstructed length of australopithecine toes. Furthermore, the digits frequently display a considerable range of abduction.





Far left image shows the profile of the fifth toe on a half-track cast taken by the author outside of Walla Walla, Washington in 1996.



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Compliant Gait: The dynamic signature of the footprints concurs with numerous eyewitness accounts noting the smoothness of the gait exhibited by the Sasquatch. For example, one witness stated, “it seemed to glide or float as it moved.” Absent is the vertical oscillation of the typical stiff-legged human gait. The compliant gait not only reduces peak ground reaction forces, but also avoids concentration of weight over the heel and ball, as well as increasing the period of double support.

Human walking is characterized by an extended stiff-legged striding gait with distinct heel-strike and toe-off phases. Bending stresses in the digits are held low by selection for relatively short toes that participate in propulsion at the sacrifice of prehension. Efficiency and economy of muscle action during distance walking and running are maximized by reduced mobility in the tarsal joints, a fixed longitudinal arch, elastic storage in the well-developed calcaneal tendon, plantar aponeurosi, and deep plantar ligaments of the foot.

In contrast, the Sasquatch appear to have adapted to bipedal locomotion by employing a compliant gait on a flat flexible foot. A degree of prehensile capability has been retained in the digits by maintaining the uncoupling of the propulsive function of the hindfoot from the forefoot via the midtarsal break. Digits are spared the peak forces of toe-off due to compliant gait with its extended period of double support. This would be an efficient strategy for negotiating the steep, broken terrain of the dense montain forests of the Pacific and intermountain west, especially for a bipedal hominoid of considerable body mass. The dynamic signatures of this adaptive pattern of gait are generally evident in the footprints examined in this study.

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