# THE PALUXY RIVER FOOTPRINTS REVISITED

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## ABSTRACT

Field research by the authors at various times between 1982 and 1989 helped expose some of the elongate impressions imbedded in alleged 108 million year old Cretaceous ledges along the Paluxy River near Glen Rose, Texas. These human-like footprints were exposed in the same horizon with theropod dinosaur ichnites, as have prints in river itself over the decades, as reported by the local residents (1, 2).

In order to thoroughly document such significant discoveries, several excavations were initiated since the 1986 ICC proceedings in the search for pristine ichnites.

The results of these excavations plus the observable results of many previous excavations and the aspect ratio studies of many of the footprints strongly support the hypothesis that humans and dinosaurs coexisted. Furthermore, when radiocarbon dating results are combined with the paleoanthropological studies, the most logical conclusions are that: dinosaur extinction 65 million years ago is a myth; the long ages for sedimentary rock strata formation are non-existent; dinosaur extinction could have been caused by a major worldwide catastrophe happening perhaps only thousands of years ago.

## INTRODUCTION

Field research by the authors et al. (2) at various times between 1982 and 1989 helped expose some of the 60 elongate impressions imbedded in alleged 108 million year old Cretaceous ledges along the Paluxy River near Glen Rose, Texas. They were exposed in the same horizon with distinct three toed bi-pedal dinosaur ichnites. The elongate impressions would often resemble human prints by virtue of one or more characteristics, i.e., toes or toe tips; aspect ratios equivalent to modern humans; more shallow than dinosaur prints; shorter and often more erratic stride than that of dinosaurs.

In order to thoroughly document such significant discoveries for this conference, several excavations were initiated since the 1986 ICC proceedings (3).

In October, 1986, a Creation Research Science Education Foundation (CRSEF) consultant with Carl Baugh followed badly eroded dinosaur and human-like trails under the "Kerr Island" top stratum. The last eroded elongate ichnite (40 cm long) had the front portion still protected by the top stratum; when excavated, five toes were visible in proper human-like alignment. No more ichnites of either species were uncovered when the excavation was continued another three meters by the Novaez-Davis team in April, 1988. This was considered a confirmed human trail.

The CRSEF team of 1988 excavated behind a good quality 28 cm elongate indicator print found in 1983. Two more human-like prints were excavated. Because of insufficient detail for the individual ichnites of the confirmed human-like trail of June, 1988, a more extensive excavation was carried out in August, 1989. In this instance, a trail of twelve 40 cm long elongate prints with a stride of 110 cm were revisited. This excavation was stopped in 1982; and, reportedly was protected by a 15-30 cm layer of fresh river bank sediment since the excavation. Unfortunately, a flood had torn away the protective sediment and obliterated the human-like but not the dinosaur ichnites which were deeper and more stable.

When the excavation was continued another 6 meters by the CRSEF team, the 40 cm elongate trail was discontinuous and a dinosaur trail was very shallow and barely visible in this

same lithified area as where the human prints should have been. Happily, one human-like ichnite was uncovered going in the opposite direction; it was thought to have been made in a puddle of water that retarded local lithification.

We conclude that the large number of elongate impressions, combined by our own excavation experiences and aspect ratio data supports the hypothesis of human-dinosaur co-existence in time. But at what time period?

During the past 20 years, radiocarbon dates were obtained by independent teams at different laboratories. They were confirmed by this project at another laboratory in 1987. Carbonized wood for dating was excavated well back from the river between Cretaceous strata in the clay along with Coquinas in an excellent state of preservation. Measurable presence of C-14 in carbonized wood found in sedimentary rock strata cast serious doubts on the assumptions that such strata are 10's and 100's of millions of years old.

Thus, previous researchers and the good people of Glen Rose, Texas who brought these footprint discoveries to the attention of the scientific community have been vindicated. Also, the highly publicized myths of dinosaur extinction some amazing 65 million years ago along with the long ages for sedimentary rock strata, are laid to rest. Causes of recent extinctions and future research are discussed.

## STRATIGRAPHY AND PALEONTOLOGY

The fossils described in this paper were found in the Glen Rose Formation along the Paluxy River at the McFall and Kerr sites. This formation is predominantely limestone bounded by sandstones: the Paluxy Formation on top and the Twin Mountains Formation on the bottom (4). These formations are part of the Cretaceous Trinity Group, which is part of the Comanchean Series. This locality consists of alternating layers of clay and limestone. The upper portion of the clay layer was shaley; the bottom marly. The study focuses on the three upper layers of rock at these sites: the top limestone layer P (30 cm thick), the middle layer of clay Q (15-20 cm thick), and the bottom layer of limestone R (Figure 1). Alternating layers of rock continue down to the river, about 2 meters below this site. P color is light brownish gray, (10 YR 6/12); Q color is olive; R color is white (10 YR 1/1).

The upper layer limestone contains 4 deep three-toed dinosaur footprints in a distinct trail. This layer does not easily erode away. The tracks have been exposed for years and have not been affected by high water levels.

During removal of the clay layer between limestone layers, several interesting fossils were found in the clay. Most common were bits and pieces of oyster Coquina and coalified vegetable material such as in Figure 1. The oysters, probably sub-family Ostreinae, were fragmented. The shells were cemented around a central core. Davis (4) mentioned an oyster reef facies in the Glen Rose limestone. These bits and pieces may be remnant parts of this facies. Vegetable remains are either coalified or carbonized plant remains. One piece, 15 cm long, 2.5 cm wide, and 0.5 cm thick, was spear shaped. This may have been a root tip of Lepidodendron. Another noted in Figure 1 and now being C-14 dated was identified as a Gymnosperm. A paleobotanist suggested either pine or spruce.

The surface of the lower limestone layer R was the main focus of this investigation. Many dinosaur tracks and trails have been found along with a significant number of human-like tracks and trails. In addition, a fish fossil and cat-like tracks have been found on this layer (displayed at the Creation Evidences Museum (CEM) in Glen Rose).

The tracks found in this layer vary in depth from deep to shallow (10 to 0.6 cm). Certainly the dinosaurs were fairly heavy and should have made deep tracks, but some of the dinosaur tracks in some trails were less distinct because of lack of depth. One explanation for shallowness could be the limestone hardened at different rates where prints were being made. One location that was setting up quickly would not have allowed deep impressions such as material that was setting up more slowly. This explains why some human trails become discontinuous in some areas where dinosaur prints become shallow.

One spurious fossil-like impression of a known configuration was exposed in very hard clay about 1 cm above layer R. When the print was later identified as truly being in the clay, it was allowed to bake several days in the hot sun; it cracked and was easily flaked away, whereas impressions in the rock neither crack nor flake away and are as hard as concrete until heavy rains or severe flooding cause erosion.

Dinosaur Fossil Ichnites

It seems odd that no one doubts that the three-toed impressions we see along the Paluxy River and elsewhere were made by these reptiles even though no one has studied the feet of a live one. However, when we view elongate impressions of the same configuration of our own feet with five toes and the same toe taper, we squeamishly call them human-like and quasihuman ichnofossils.

In 1989, the CRSEF team revisited the 1982 site where many witnesses, video tapes, press reports and documentation of several dinosaur trails and a human-like trail of an individual having a 40 cm long foot angled away from dinosaur trail B (Figure 1). These trails are examples of what is seen up and down the Paluxy on stratum R. A brief description is as follows: The B dinosaur trail tracks averaged 45 cm long, 32 cm wide, and 8 cm deep with a pace of 121 cm; there were 8.

The D dinosaur trail averaged 39 cm long, 32 cm wide, 8 cm deep and had a pace of 125 cm There were eight of these, also.

There were 13 M prints in a row with a pace of 132 cm with M-5,7,9,11 being only 0.5 to 3.5 cm deep; all were right footprints and nearer where a human-like trail should have been observed. Apparently, the rate of lithification was greater nearer the right foot of the dino and of course the expected human trail than the left foot of M. The left foot depth ranged from 2.5 to 10 cm deep except for M-12 (near M-11), which was only 1 cm deep. The average length of M was about 45 cm, and width 34 cm D and M were only 50 to 100 cm apart, but going in the opposite direction.

A Clark-size, human-like print was adjacent to the shallow M-11 dinosaur print. The Clark print, 1989-wm, was 34 cm long and about 13 cm wide at the ball, and 8 cm at the heel; and the dinosaur print M-11 was 49 cm long and about 35 cm wide. It was obvious that the human had come through first in this small patch of an area that had not yet lithified; it is interesting to note that the center toe of this dino print was relatively deep at 3.5 cm, compared to the print before and after that were 1 cm or less in depth.

One of the most important dinosaur trails was actually on the top ledge P, designated P-McF. There were 4 prints heading perpendicular from the river's edge to the river bank. What is important here is the fact that they were the only footprints of either kind on the top strata P. The average dimensions were 40 cm in length, 30 cm wide with a depth of 4 cm, and a pace of 128 cm. This rock strata has resisted six years of open weathering indicating a rock relatively free of illite clay and porosity, which cannot be said for layer R. Because of these prints, it can be said that any fossils in stratum P, Q or R were existing at the time of the dinosaurs. Such fossils include carbonized wood for C-14 dating, oyster shells, a possible human tooth and petrified human finger.

PALEOARCHEOLOGICAL MAPPING, EQUIPMENT, AND DISCUSSIONS (1989)

A team of ten investigators from Ohio, Michigan, Missouri, Texas, Oklahoma, and Kansas removed sections of a limestone layer along the Paluxy River bank near Glen Rose, Texas in August of 1989, hoping to uncover human-like fossil impressions along with the deeper dinosaur ones. We found a quality human-like footprint, and ten dinosaur ones, and exposed evidence of quickly laid, catastrophic deposits of Cretaceous sediments and clay.

The excavation was on the J.C. McFall ranch, about three miles west of Glen Rose, about a hundred yards north of the McFall house (Figure 1). The excavators used a jackhammer to break loose some sections of a hard 23 cm limestone layer P. This top layer had a distinct three-toed dinosaur trail but no human prints. The stone sections were lifted away by a backhoe. The clay was thoroughly examined for fossils; fossils were mapped and the last several centimeters of clay over layer R was removed carefully with sharpened ends of wooden instruments.

Beneath the upper limestone was a layer Q of marly and shaley clay 20 cm thick. In the clay, nearly a dozen specimens of tiny shells, oyster shells, Coquinas, carbonized wood, etc., were found. These suggest that the layer had been deposited by fast flowing watery mud that carried miscellaneous objects. Their excellent preservation suggests an unusual environment and/or short time deposition frame, which prevented complete petrification noted in layers P and R of Cretaceous limestone.

Beneath the clay layer Q was another limestone layer R which had been partially uncovered in 1982. It has at least four dinosaur trails nearby each other on its surface (B, M, D, WBB. Figure 1). This limestone contained a fish fossil (removed by Dr. Carl Baugh in 1982), suggesting a quick deposition of the material that hardened into limestone. The dinosaurs

walked upon it before it lithified. A human-like trail of 40 cm prints headed downriver from dinosaur trail B. We tried to follow and confirm this trail, but it was discontinuous. Dinosaur prints, M-7, M-9, M-11, M-12, were extremely shallow, which explains why the human trail was discontinuous.

Paluxy River Excavations (1989 to 1983)

In August 1989, the lower limestone layer R, we found one dinosaur track (M-11) that had a 34 cm human-like right foot impression directly adjacent to the shallow dinosaur track. 1989-wm was 3 cm deep at the arch side and very shallow (0.6 cm) opposite; and its exact limits are not clearly visible. The dinosaur track mud up-push partly distorts one side of the man-like track. See M-11 and 1989-wm in Figure 1 photographs.

In June 1988, a team of seven investigators excavated the McFall site one meter behind fossil human-like footprint 1983-mb-2 and extending downriver about 4 meters. We could go no further into the embankment as a large shady tree impeded our progress (Figure 2).

It was predicted that one or maybe two more human ichnites could be discovered that would confirm this trail. When the excavation was completed, 1988-md-3 and 1988-md-4 were indeed identified. These discoveries fulfilled the criteria of three or more ichnites in a row required in paleontology to identify the species making said ichnites. Details will be discussed in the Anthropology section.

In April of 1988, 5 CRSEF investigators followed about 3 meters beyond an indicator 40 cm human-like impression but this trail proved discontinuous as has so many others. However, it was considered a human-like indicator trail thus justifying more research. An all terrain forklift was used at this almost river level Kerr site island across from McFall site 3 to remove the top rock.

In late October of 1986, the first independent efforts of CRSEF-led teams followed carefully mapped eroded human-like impressions. The big toe and four toe tips were observed in proper alignment on the freshly excavated anterior end of an eroded 40 cm long impression.

In 1983 and in 1984, individual CRSEF members or advisors participated in excavations in which 1983-mb-2, 1984-hb and 1984-db were discovered and documented.

ANTHROPOLOGICAL STUDIES

Aspect Ratios

In order to determine if the elongate impressions were indeed made by human beings walking through sedimentary mud, it was necessary to examine the modern human foot, both female and male, and compare them with the fossil ichnites. A podiatrist volunteered to gather the necessary data by measuring the length and widths of feet of 10 males and 10 females, as is shown in Table 1. Ratios were taken of the measurements, with deviations noted, in footnote (a) of Table 1. For females, the average $R_1$ aspect ratio was 2.47, and $R_2$ was 1.56. For males, the average $R_1$ aspect ratio was 2.51, and $R_2$ was 1.40. $R_1$ equals foot length divided by ball width and $R_2$ equals ball width divided by the heel width. There appears to be no other species with these ratios. For example, $R_1$ for bears ranges from 1.5 to 2.0 (Kodiak and Black bears respectively). Note that there is a significant difference between the human sexes and a relatively large deviation among females relative to males.

Now that the standards were set, the aspect ratios of the casts of the Paluxy River elongate impressions were calculated (Table 2). $R_1$, the length of each impression divided by the width at the ball (behind the toes), was in precise agreement with the ratios obtained by the podiatrist for modern man and woman. $R_2$, the width at the ball divided by the width at the heel was also in agreement.

The above comparative study confirms that these prints not only "look" human but that their aspect ratios also agree with the modern human foot.

Several of the footprints listed in Table 2 on aspect ratios had sufficient depths to offer further evidence of their obvious human source. For example, 1983-mb-2 was deepest at the ball (1.8 cm), as was 1989-wm (3.2 cm). Some prints were slide-ins or were made in mud that was almost completely lithified and therefore only permitted very shallow ichnites such as 1984-hb (0.6 cm). Even the cast of the controversial Caldwell print (1965-C) is deeper at the ball of the foot (3.2 cm) as one might expect.

TABLE 1: RANDOM SAMPLING OF HUMAN FEET FOR ASPECT RATIO STUDIES (a)

| | SEX | AGE, YEARS | FOOT LENGTH CM | HEEL WIDTH CM | BALL WIDTH CM |
|---|---|---|---|---|---|
| | M (10) | 17 - 61 | 25.1 - 27.1 | 7.0 - 7.9 | 9.6 - 11.1 |
| Average | | 40 | 26.3 | 7.5 | 10.5 |
| | F (10) | 14 - 79 | 21.6 - 24.3 | 5.2 - 7.4 | 8.3 - 10.8 |
| Average | | 39 | 23.5 | 6.1 | 9.5 |

Aspect Ratio Formulas: $R_1$ = Foot length divided by ball width
$R_2$ = Ball width divided by heel width

(a) AVERAGE ($R_1$ and $R_2$)

| MALE | FEMALE |
|---|---|
| $R_1$ = 2.53 | $R_1$ = 2.47 |
| $R_2$ = 1.40 | $R_2$ = 1.56 |

RANGE ($R_1$ and $R_2$)

| MALE | FEMALE |
|---|---|
| $R_1$ (2.41 - 2.5) | $R_1$ (2.19 - 2.84) |
| $R_2$ (1.36 - 1.45) | $R_2$ (1.35 - 1.86) |

TABLE 2: MEASUREMENTS AND ASPECT RATIOS OF HUMAN-LIKE ICHNOFOSSILS

| DATE | EXCAVATION & CASTING TEAM | FOOT (a) LENGTH CM | HEEL (a) WIDTH CM | BALL (a) WIDTH CM | OTHER HUMAN-LIKE CHARACTERISTICS |
|---|---|---|---|---|---|
| 1983 -mb-2 | Miller/Baugh (left foot) | 27.3 $R_1$=2.53 | 7.0 $R_2$=1.55 | 10.8 $R_3$=2.1 | 5 toe tips; slight arch; toe taper and size (b) |
| 1984 -hb | Hall/Baugh (left foot) | 28.0 $R_1$=2.32 | 7.6 $R_2$=1.58 | 12.1 $R_3$=2.0 | 5 toe tips; arch; toe taper and size (c) |
| 1965 -c | Caldwell (right foot) | 38.1 $R_1$=2.5 | 10.2 $R_2$=1.5 | 15.2 $R_3$=2.3 | 5 distinct toes; good arch, toe taper and toe size (d) |
| 1984 -db | Detwiler/Baugh (right foot) | 40.0 $R_1$=2.5 | 13.5 $R_2$=1.19 | 15.9 $R_3$=1.9 | 5 toe tips; slight arch; toe taper, toe size (e) |
| 1986 -gb | Geologist/Baugh (right foot) | 40.0 $R_1$=2.6 | 12.7 $R_2$=1.2 | 15.2 $R_3$=NM | 5 toe tips; toe taper; only toes were pristine (f) |
| 1988 -md-3 | Miller/Davis (right foot) | 30.5 $R_1$=2.8 | 7.6 $R_2$=1.42 | 10.8 $R_3$=1.9 | 4 toe tips; toe tapers; tapers (g) |
| 1988 -md-4 | Miller/Davis (left foot) | 30.5 $R_1$=4.0 | 7.6 $R_2$=NM | 7.6 $R_3$=NM | Big toe; toe area tapers; no arch; slide-in (h) |
| 1989 -wm | Wilson/Miller (right foot) | 34.3 $R_1$=2.70 | 8.3 $R_2$=1.54 | 12.7 1.9 | 5 toe tips; distinct arch, toe taper and size (i) |
| 1987 -cb | Clark/Baugh (left foot) | 34.9 $R_1$=2.75 | 8.9 $R_2$=1.43 | 12.7 $R_3$=2.0 | 4 toe tips; distinct arch toe taper and size (j) |
| 1984/ 1988 -bd | Baugh/Davis (left foot) | 26.7 $R_1$=2.63 | 7.0 $R_2$=1.45 | 10.2 $R_3$=2.0 | 5 toe tips; distinct arch (k) |
| | | $R_1$ Avg. =2.6 | $R_2$ Avg. =1.45 | $R_3$ Avg. [1965-c & 1988-md-4 excluded] =2.0 | |

Aspect Ratio Formulas: $R_1$ = Foot length divided by ball width
$R_2$ = Ball width divided by heel width
$R_3$ = Width of great toe divided by average width of other toes

Footnotes to Table 2:

(a) See above aspect ratio formulas. NM means not measurable.

(b) Exposed July 6, 1983 with four witnesses; location is in Figure 2. 1983-mb-2, which was 2 cm deep, was immediately cast and then recast several weeks later by a skeptic who was paid for his silicone rubber cast by one of the witnesses. In 1986, a mold of the original cast (plaster of Paris), was compared with the silicone rubber one's mold

and they were identical, indicating the stability of pristine print; by 1985, the print had eroded but not beyond recognition; in the interim period, more erosion had occurred but toe taper and depth were still visible in 1988; no trace could be found due to a severe flood in 1989, which also wiped out many other human-like ichnites. The heel of 1983-mb-2 remained only 7 cm in front of the top stratum until 1988, when permission was granted to remove 1 meter more of the river bank Cretaceous stratum. A second human ichnite was discovered in front of 1983-mb-2 in 1983 and two more behind it in 1988 (md-3; md-4). This trail was perpendicular to the river and considered a confirmed human trail.

(c) This print was very shallow perhaps only 0.7 cm deep and was rather odd looking; however, the authors found a young man of 20 whose foot/toes fit into this one perfectly. Several other human-like ichnites were found near this one but all were discontinuous with no toes and were never mapped.

(d) This looks like a perfect human footprint with a mud suction uppull in the middle of arch area, but toes did not have a mud uppull which seems strange; unfortunately there appears to be little information as to its authenticity but for a geologist, Billy Caldwell, who saw and made a cast of the original after it had allegedly been cut out of the river at some undisclosed spot. It was about 2.5 cm deep at the ball.

(e) "Uncovered a 40 cm long human-like ichnite 1.3 cm deep in the same strata as dino prints 161 and 162; the sharpened end of a wooden paint brush was used as with the dino ichnites. I personally observed and participated in these discoveries. I later used my fingernails to dig at the bottom of the print to confirm to myself that it was genuine. Six casts of the print were made. During the casting, the surrounding Cretaceous limestone held up well; very little material stuck to the casts. I even put my foot into the ichnite; and, based on the toe spacing, toe taper, arch and general overall shape, I have no doubts about the print's authenticity and human characteristics (human #50)." Exposed August 4, 1984 by Detwiler/Baugh et al., as a pristine print.

(f) Six eroded human-like ichnites were observed and recorded in the river just a few feet south of the Kerr site in October, 1986. Although eroded, they had the aspect ratios of the modern human for $R_1$ and $R_2$ and ranged in length from 25 to 40 cm (one 25, three 30, two 40 cm - the same range noted for the McFall site human-like ichnites across the river and downstream). One of the 40 cm ones at what was thought to be the anterior end was unexposed. In the presence of a witness, the consulting geologist removed the remaining upper stratum and discovered five toe tips in the proper toe taper. This is considered confirmation of a trail, because toes were predicted to be found and they were indeed. Because this trail proved discontinuous when excavated another 3 meters in April of 1988, it was decided to try to confirm several other trails on the McFall site that had not been thoroughly authenticated. In this manner, two or more trails would help confirm the coexistence of dinosaur and humans; and in conjunction with the study of the aspect ratios of 5 or more individual fossil human-like ichnites, would provide statistical evidence for such a hypothesis.

(g) This print was excavated 10 cm to the rear and 45 cm downstream from 1983-mb-2. It was the fourth in a series of a right-left-right-left trail. The whole alleged trail gives the appearance of a human slipping and sliding in the mud as he or she fights to keep their balance or avoid something. Because the width of the four toes was the same as that for 1983-mb-2 we concluded it was made by the same individual.

(h) This print was excavated behind 1988-md-3's heel about 20 cm and to the right 20 cm. It might not have been a print but was considered so because the anterior had the correct toe taper and a possible great toe of a "left" foot. There is a small dinosaur print that appeared to have stepped into the "heel" area of this print. The crossover steps that this trail suggests is characteristic of the agility of human beings. A human-like impression only 1.4 cm deep and 40 cm long (no toes) was also excavated 4 meters away.

(i) 1989-wm was the only print found by our team this summer, even though we were allowed to remove 20 sq. m of layer P. It was an excellent human-like ichnite because of the distinct great toe, arch, heel and 4-toe tips in typical human-like taper. It was thought to have been made in a residual puddle of water which retarded lithification. It was adjacent to a much shallower (.64 cm) dinosaur impression which was made after the human-like print was made. Differing rates of lithification is the greatest problem researchers have at both the McFall and Kerr sites in discovering continuous trails. It is interesting to note that 1989-wm matches 1987-cb.

(j) 1987-cb was excavated across from the Kerr site, at McFall site 3, and appears to be a part of what is called the "Clark prints" as was 1989-wm. The aspect ratios seem to be very close as well as the lengths and width of each print. 1989-cb was a right foot and 1987-cb a left; both had very distinct big toes. A large, very distinct dinosaur footprint along with several human prints of other dimensions were found in a discontinuous pattern in this McFall site 3 some 100 meters upstream from site 1. 1987-cb is the only one that had toes at this site. The large dino impression had a mud uppull behind the center digit (like in the big toe of the 1987-cb human print). 1987-cb print was about 1.9 cm deep and the dinosaur print about 6.4 cm deep.

(k) This was a rediscovered print of the same size as 1983-mb-2 which was later ascertained to have been excavated in 1984 by CEM teams but was not recorded on the maps because it was discontinuous. It was eroded but had been protected by newly formed deposited sediment so toe impressions, arch and depth, were readily observed. Consequently, our casting manager made a cast. Later, it was totally eroded by the severe 1989 flooding that destroyed the 1982 trail of a 40 cm long human-like footprint sequence.

Other Aspect Ratios and Summary

Another interesting aspect ratio included in Table 2 was R-3: the ratio of the width of the great toe over the average width for the other toes. Ratio-4: the length from the tip of the big toe to the middle of the arch over the length from the mid-arch to the end of the heel is also discussed below.

In case of R-3, the ratio of the authors toes were 2.0 ± 0.1 and that of the Paluxy ichnites were easily the same, even though only the great toe and four toe tips were visible on most fossil ichnites.

In case of R-4, the ichnites containing quality arch impressions matched measurements for the modern human feet of about 1.3. The two Clark ichnites, 1987-cb and 1989-wm were prime examples of the investigators' ease in identifying these two ichnites as decidedly human in their origin and as prints made by the same individual. Differences existed between sexes.

Even 1983-mb-2 and 1988-md-3 could be shown to have been made by the same human individual, even though only the great toe and three toe tips were visible on 1988-md-3 as it slithered through a dinosaur tail balancing impression. We measured the width at the outer edge of the great toe to the outer edge of the fourth toe on each fossil ichnite and it was 8.8 cm. The toe tips were also close enough in width to identify the same person as having made this human-like trail.

This anthropological section can perhaps best be summarized by describing the eight pristine foot prints from Table 2 in the paleontological method of describing an alleged newly discovered species in the fossil record to see if it matches a known species. 1965-C is eliminated from consideration because of its lack of pristine or original data; 1988-md-4 is eliminated from consideration because it had only an elongate nature and proper toe taper at its anterior (but no confirmed toe tips). This description is as follows: elongate impressions in Cretaceous rock with the appearance of the modern human foot having as a rule a distinct great toe plus four smaller toe tips in the proper length, width and toe taper including a great toe pointing forward and not to the side as do the lower primates; the great toe almost always present in full extension with other toes as toe tips as would be expected for the human foot and weight distribution; the ball of the foot leaving a deeper impression than other areas when the species made a 2 cm deep impression; the presence of a human-like arch in some but not all impressions; a distinct heel in almost all ichnites, but the most eroded ichnite indicators (Kerr site); mathematical study using 4 aspect ratios in precise range of modern human foot whether using the techniques developed by the authors of this paper or that of Napier (8); trails left by these ichnites implies the source as having the same gait and directional agility for change as do modern humans.

The conclusion is inescapable. We have not found a new species. We have discovered homo sapiens making tracks with dinosaurs. For the details of each of the 10 ichnites, please refer to the extensive footnotes to Table 2.

Data from our measurements of man-like footprints up to 28 cm in length, fall within the minimum/maximum ranges of bare footprint measurements made by Dr. Louise Robbins (6). She sampled 514 subjects over 14 years old. Since some of our fossil ichnites exceed the 30.6 cm maximum length of Robbins' statistical group, we could not compare our data with hers beyond that point. Robbins is a professor of physical anthropology, a forensic footprint expert, and she has measured the Laetoli hominid footprints for Dr. Mary Leakey (Figure 2).

Our footprint ratios and ranges, based on our random sampling of human feet (Table 1), show sexual differentiation. This agrees with Robbins' finding that it is possible to project the probable sex of individuals making footprints.

We chose our reference points for measuring human and fossil footprints with the aim of establishing aspect ratios peculiar to man, like the indices by Napier (8) and Grieve and Gear (5). Other researchers (1, 2) have documented the Clark and Taylor trails using grid-contour gauges and computer graphics to enhance the accuracy of determining the identity of the footprint maker. Future research might employ the standardized human foot landmarks designated by Robbins (6), as well as her grid.

## Sasquatch (Bigfoot)

It has been suggested, sometimes in jest, sometimes in all seriousness, that the often very large (12" - 16" long) elongate ichnites observed on the McFall sites along the Paluxy River could have been made by the illusive "Sasquatch." Grover Krantz, in his excellent study (7) of footprints made by this "new animal" has provided some very interesting casts made of such alleged creatures which roam the State of Washington and are reported in many other parts of the USA and the world. To see if this "Bigfoot" explanation for the Paluxy ichnites could be true, we compared the human footprint parameters of modern man with that of the human-like ichnites of the Paluxy River and that of the "Sasquatch" casts, as follows:

| | Aspect Ratios | Modern Man | McFall Site Human-like Ichnites | Alleged Sasquatch Cast |
|---|---|---|---|---|
| I | (L/W at toes) | 2.5 | 2.6 | 1.9 ± 0.1 |
| II | (W at toes/W at heels) | 1.47 | 1.45 | 2.0 ± 0.2 |
| III | (W at great toe/ W at other toes | 2.0 | 2.0 | 1.3 ± 0.2 |
| No. of Toes, size | | Great toe plus 4 smaller ones | Same as modern man | Great toe plus 4 same size |
| Dermal Ridges | | Yes | None detected along Paluxy | Yes, in 0.01 mm sized loess |
| Arch | | Yes, varies flat to high | Yes, not always distinct | Distinct flat arch |
| Toe angularity | | Very angular | Same as modern man | Nearly straight |

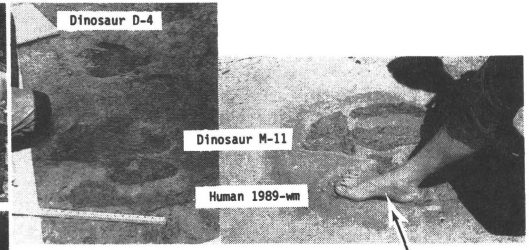
As seen from the available data above, the alleged Sasquatch or its progenitor evidently is not the maker of the human-like footprints at the McFall site.

## RADIOCARBON DATING

As the Paluxy Project slowly matured and data was collected, the authors came across a report by Bierle and Fields, et al., (9) which discussed the discovery of an eight foot long tree limb imbedded in the Cretaceous limestone of the Paluxy River. Bierle had his specimen dated at 12,800 B.P. Morris, in his book (1), listed dates for other specimens collected from among the Paluxy rocks, all of which are listed in Table 3 as specimens no. 1, 2, and 3.

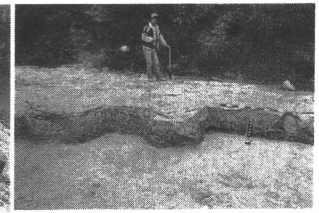
As a result of this fascinating information, we looked for an opportunity to radiocarbon date a suitable specimen ourselves. That time came in February 1987, in front of some 20 witnesses who had been invited to observe an excavation for human-like footprints at McFall site 3. As the clay between Cretaceous strata was being carefully removed and inspected for fossils, Dr. Baugh uncovered a 16 cm by 3 cm piece of carbonized wood, possibly a leaf or root of the Lepidodendron. Paluxy Project representatives asked for and Dr. Baugh generously gave us this wood. Several months later, other material was collected by our consulting geologist at the dinosaur burial site 5 km upriver, and both were radiocarbon dated, giving values of 37,480 B.P. and 45,920 B.P. (specimens 8 and 7 respectively), on






Photos of Clark print, 1989-wm adjacent to dinosaur M-11. Note excellent fit to contour of human foot and distinct toes.

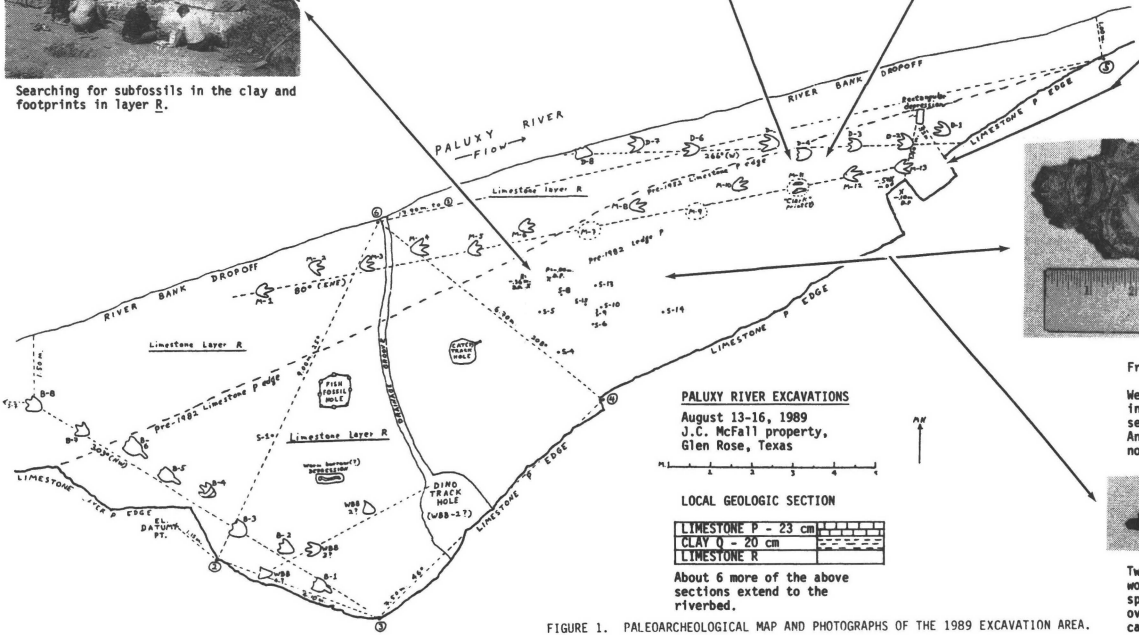




Layer R after 1989 excavation.



Searching for subfossils in the clay and footprints in layer R.

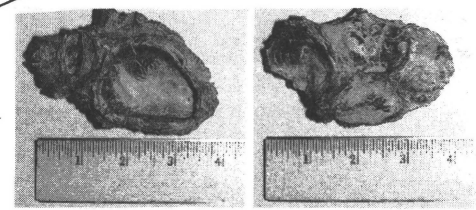



PALUXY RIVER EXCAVATIONS
August 13-16, 1989
J.C. McFall property,
Glen Rose, Texas

LOCAL GEOLOGIC SECTION

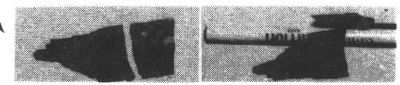
| | |
|---|---|
| LIMESTONE P - 23 cm | |
| CLAY Q - 20 cm | |
| LIMESTONE R | |

About 6 more of the above sections extend to the riverbed.



Front Back

Well preserved oysters (Coquina) discovered in the clay-marl in August, 1989. Marine segmented worm tubes (Marine Polychaete Annelids) were visible on this excellent non-petrified specimen.



Two views of a 10 gram specimen of carbonized wood to be radiocarbon dated. A similar specimen excavated upstream at McFall site 3 over a pristine dinosaur print was radiocarbon dated at 37,500 B.P.

FIGURE 1. PALEOARCHEOLOGICAL MAP AND PHOTOGRAPHS OF THE 1989 EXCAVATION AREA.

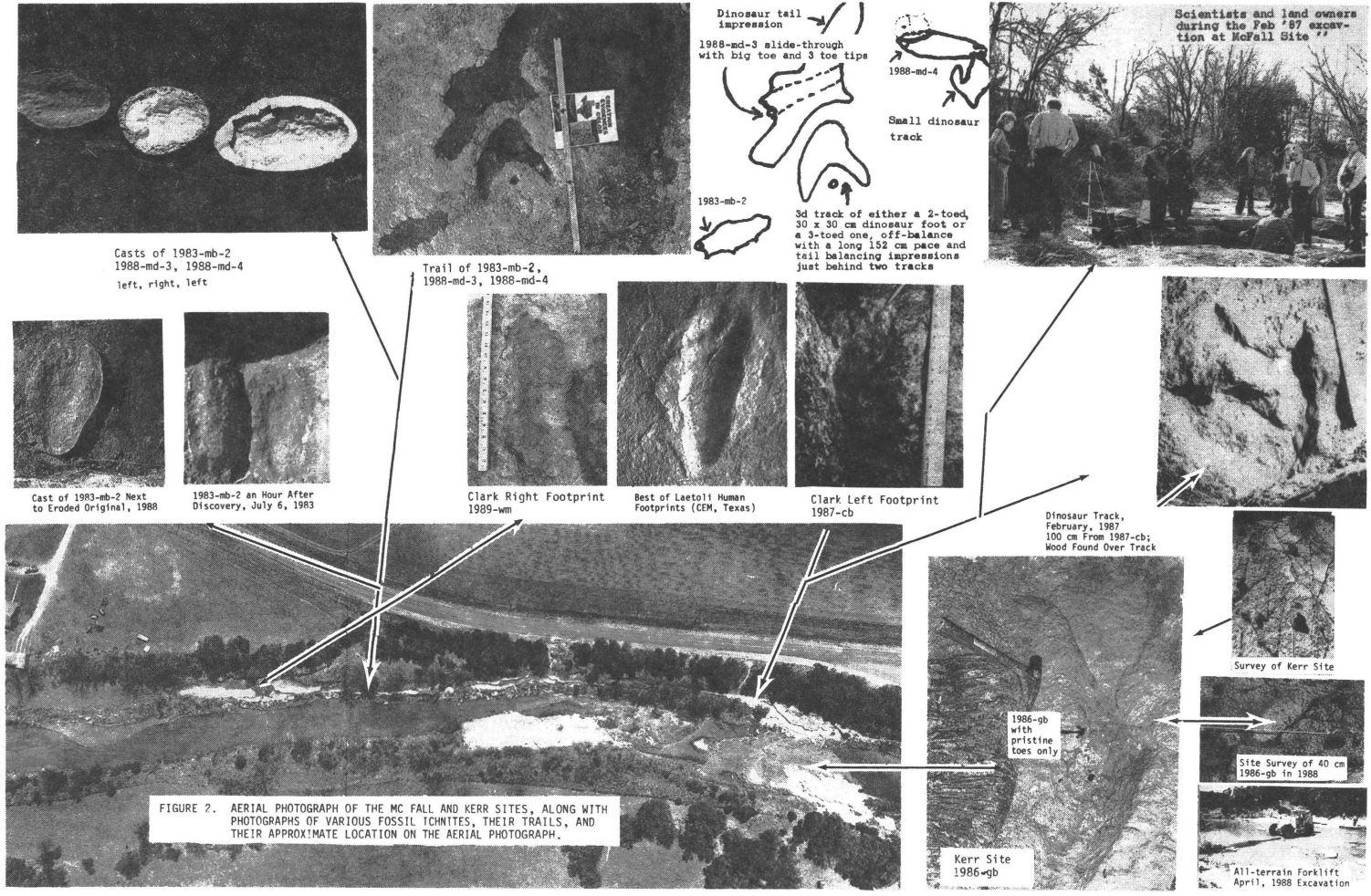



FIGURE 2. AERIAL PHOTOGRAPH OF THE MC FALL AND KERR SITES, ALONG WITH PHOTOGRAPHS OF VARIOUS FOSSIL ICHNITES, THEIR TRAILS, AND THEIR APPROXIMATE LOCATION ON THE AERIAL PHOTOGRAPH.

TABLE 3: RADIOCARBON DATES FOR PALUXY RIVER STRATA AND PARALLEL PUBLISHED DATES OF INTEREST

| | SPECIMEN/ REFERENCE (a) | WHERE FOUND | RADIOCARBON DATES YEARS. B.P.(b) | COMMENTS |
|---|---|---|---|---|
| 1. | Carbonized wood | Taylor Site | 38,000 | 1969 |
| 2. | Carbonized wood | Taylor Site | 39,000 | 1969 |
| 3. | Charcoal | River bottom | 12,800 | 1978 |
| 4. | Dinosaur coprolyte | Parker Ledge | 39,500 | 1986 |
| 5. | Dinosaur bone | ditto | 36,500+ | 1987 |
| 6. | Dinosaur pelvic bone fragments | ditto | 32,400+ (c) | 1989 |
| 7. | Coalified wood | ditto | 45,920 +5550/-3250 | 1987 |
| 8. | Carbonized wood | McFall Ledge, clay | 37,480 +2950/-2140 | 1987 |
| 9. | G-N - 1495, 2022 Neanderthal bones | Iraq, Libya, and Morocco | 50,600; 40,700; 32,000+ | Same age as most Paluxy dates |
| 10. | UCLA-285, human and animal bones | Taban cave Phillipines | 21,000 | In between Paluxy specimens 3 and 4 |
| 11. | Y-103, skull | Florisbad, S. Africa | 35,000+ | Same age as most Paluxy dates |
| 12. | UCLA-1292, Sabre tooth tiger femur | La Brea, CA tarpits | 28,000 | Roughly same as most Paluxy dates |
| 13. | N-141-3, extinct fauna and flora fossils | Japan | 29,300- 37,000 | Same dates as extinct mammals and dinosaurs |
| 14. | H-145, mammoth bone | Heidelberg, Germany | 3,370 | Supports post flood existence of mammoths |
| 15. | Pi-75, calcareous petrified wood | Italy | 10,090 | Dating of some petrified wood possible |
| 16. | L-228, fossil wood | Miocene sand-stone, Wash-ington State | 27,000+ | Wood in sandstone of 5 to 24 million B.P. |
| 17. | C-580, carbonized wood | Moto, Angola | 11,189 | Carbonized - younger than Paluxy wood |
| 18. | C-577, burned bone | France | 11,109 ± 480 | Example using bone to date stratum (d) |
| 19. | Charcoal with bones of mammals | Texas, USA | 37,000+ | Elephants, horses, antelopes, etc. |

(a) Specimens 11, 14, 16 in SCIENCE (1957-1962); Specimens 9, 10, 12, 13, 15, 17, 18, 19 in RADIOCARBON (vol. 1-10). Paluxy references 1 through 8 will be provided upon project completion.

(b) These dates are based on the assumption of $T_{\frac{1}{2}}$ = 5568 years and not corrected for difference between SPR and SDR (11). When corrected using difference between radiocarbon 14 production and decay rates (specific) as reported by Libby (10), as shown by Whitelaw (11), the dates over 10,000 B.P. can be corrected to alleged true dates ranging from 6,000 to 7,000 B.P.

(c) This specimen and perhaps another one will also be radiocarbon dated by the accelerated mass spectrometer.

(d) This is an example of using bone to date directly as has been done with CEM's dinosaur bones; this sample had "sufficient organic material obtained by acid dissolution."

equipment that had a sensitivity of 55,000 B.P. A similar carbonized wood specimen from McFall site 1 excavated 100 meters away will be radiocarbon dated also.

Dinosaur dung (coprolyte) and bone were radiocarbon dated at 39,500 plus and 36,500 plus B.P. (specimens 4 and 5). Dinosaur bone fragments (specimen 6) were dated by our team in 1989 at 32,400 plus B.P. The reliability of Paluxy area radiocarbon dates is considerably enhanced by dating four types of material: dinosaur coprolyte and pelvic bone fragments, and charcoal and carbonized wood. It has been suggested that the black to brown surface of the radiocarbon dated bones is due to the absorption of the dinosaur decay products. Indeed, when we scraped one gram from the bone surface, and analyzed quantitatively, significant carbon and hydrogen were discovered. The dark staining was limited to the limestone stratum encasing the dinosaur bones and the clay immediately above. Thus, it appears that the staining of the bones, etc., was due to the decomposition of dinosaur flesh.

The radiocarbon date of each specimen was then corrected by the Libby method as described in Table 3. This correction simply makes use of the fact, which Libby himself recorded (10), that the specific production rate of C-14 today in the earth's biosphere exceeds the specific decay rate so that ancient dead matter had a much lower specific activity (dis/min-gm) at the moment of death than it does today.

What then does all this mean? According to Whitelaw (11), assuming that the original carbon in these specimens had not been contaminated by alien carbon from more ancient dead vegetation, these dates signify wood, vegetation, or carbon-bearing animal matter that died a few centuries after creation and was already buried or otherwise preserved, when a catastrophe (noted in traditions of many civilizations), preserved it in sedimentary strata.

However, because radiocarbon dating is more difficult to interpret beyond 5,000 years, we truly cannot say exactly when the Glen Rose strata was deposited. All we can say is that human and dinosaurs were making tracks together during periodic and perhaps catastrophic deposition of thick, Cretaceous sediments. More research is required to determine whether the depositions resulted from catastrophic or non-catastrophic tidal flooding.

Table 3 also lists selected published radiocarbon dates that apply to the research that is being conducted along the Paluxy River. For example, Neanderthal skeletons have been dated from 32,000 up to 50,600 B.P., which are the same ages for the dinosaur and carbonized wood specimens from along the Paluxy. Calcareous petrified wood and carbonized wood specimens have both been radiocarbon dated. Fossil wood in Miocene strata shows a young date for ancient rock; and, coexistence of horses, elephants and antelope with dinosaurs and man is suggested by the date 37,000+ B.P. near Dallas, Texas.

## FOSSIL ICHNITE DISCOVERIES AND THEIR CREDIBILITY

### Texas, USA

This state seems to have more than its share of human-like fossil ichnites. The Paluxy River area provides the most sites which are scientifically discussed by Morris (1). Although most of these ichnites have been subject to erosion, and their credibility challenged by being confused with dinosaur ichnites, Morris has remained skeptical but extremely interested. He also recorded some very interesting C-14 dates from carbonized wood of the Paluxy River strata (1).

Baugh (2) has provided the main impetus in keeping alive the interest in the fossil ichnites along the Paluxy by concentrating on the strata well above the river and exposing pristine footprints. In his doctorate dissertation, he has documented 60 human-like fossil ichnites with over 200 dinosaur prints. One of his criteria for determining genuine human footprints is the aspect ratios of fossil ichnites, which is also used by others (6). He discusses the different trails he and his fellow workers have excavated under the top stratum as well as the famous Taylor and Ryals trails and other famous individual ichnites of alleged human origin. To the above he has added computer generated graphs of many fossil human ichnites that add even more credibility to an already overwhelming body of evidence supporting human-dinosaur coexistence. A human-like tooth and finger have also been thoroughly studied by Baugh, which were found in the clay-marl and limestone rock itself respectively. He also C-14 dated dinosaur fossils. It is fortunate for all interested in the study of origins that Dr. Carl Baugh decided to move to the Paluxy area to continue to study the phenomenon of possible Cretaceous human occupation since his initial major discoveries in 1982.

There have also been reports of fossil human ichnites in other locations in Texas including a serious one in the Trinity River in downtown Ft. Worth, Texas (12), and near a nuclear electric generator facility near Glen Rose, Texas.

Arizona, USA

In a two part paper (13) Rosnaw, Howe, et al., have begun a very serious study of surface impressions resembling dinosaur, human and mammals in Arizona. These are located in the Kayenta of Arizona and Tuba City. Although these researchers are not positive in their conclusions, they have established a set of seven criteria which are worthy of all serious researchers to follow. It would seem to us that the evidence which Baugh has provided in his dissertation has met all seven criteria for the human-like ichnofossils which are: size range, shape, many prints confirmed trails of three or more prints of normal human stride and gait, good internal detail (toes, etc.) prints bordered by mud (now rock) up-push and finally fossil human bones.

Connecticut, USA

In 1858, Hitchcock (14) mentions some interesting human-like fossil ichnites in the Connecticut Valley. In 1988, Whitmore (15) discussed these prints and those of dinosaurs in his masters thesis on the Hartford Basin. Hitchcock interpreted some of the dinosaur-like footprints as actually being birds, which if true, would be out of place fossils. Obviously, this is an area that requires more study also.

Turkmenia, USSR

We were very pleased to have been able to trace this rumor of human dinosaur coexistence through a fellow investigator of the Paluxy footprints from the Pittsburgh area. He had read about it in a brief abstract. A note to the author got us a copy of the original article (16), which stated that "Impressions resembling in shape a human footprint were discovered next to the tracks of the prehistoric animals." Some 1500 dinosaur prints had been observed on the surface rocks designated the "Mesozoic era or 150 million B.P."

The scientist involved responded to our Paluxy data two years later and if the current thaw in international relationships holds up we will invite this gentleman to our next excavation. Petrified dinosaur bones of two dinosaurs were excavated about three miles upstream from the major footprint sites along the Paluxy also indicating a catastrophe as in the Russian report, which also claims that "not far from the clearings with the dinosaur tracks we found heaps of stones, resembling dinosaur skeletons," etc. In another article, 86 horse-like footprints were observed in alleged 90 million year old strata but also not confirmed. We believe that a thorough mathematical study of modern mammalian feet as has been done by Baugh and the authors of this paper for human-like ichnofossils could be very productive in identifying hard to understand ichnofossils. There are more than enough fossil ichnites the world over to justify thorough investigations of their credibility, as this project has done.

## CONCLUSIONS AND FUTURE RESEARCH

No one has disputed that the dinosaur tracks found at the Paluxy River sites are genuine. It is now time to recognize that the human-like ichnites, by virtue of meeting the most stringent of criteria, are indisputably human. Their credibility is significantly enhanced by repeated fresh discoveries in a pristine condition by many scientists as well as the stringent criteria of size, shape, aspect ratios, five toe configuration associated with the feet of living human beings. Evolutionary theorists might conclude that both species coexisted less than 3 million years ago; geologists conclude beyond 100 million years ago.

However, radiocarbon dates for coprolyte, wood, and bone discovered in and between rock layers containing dinosaur tracks demonstrate that dinosaurs were alive and plentiful only ten's of thousands of "radiocarbon" years B.P. Therefore, the most logical conclusions are that at least the Neanderthal and Cro-Magnon people coexisted with the dinosaurs; and, that the 100 million year old Cretaceous rock strata are only thousands of years old and did not take millions of years to form as the Mt. St. Helens experience and laboratory data attest.

The above underlined conclusions, along with massive Cretaceous and other sediments, conjures up the catastrophe noted frequently in many ancient civilizations - a worldwide flooding, perhaps coinciding with other catastrophes. Whether or not a flood was occurring at the time of the Paluxy sedimentation, the very fact of dinosaur coexistence with humans raises the possibility of recent asteroid and comet impaction with the earth. Asteroids could be an indirect cause of massive extinctions only thousands of years ago, not 65 million (17, 18, 19, 20, 21). Both scientists and news media are making much of an asteroid near miss in 1989, another one in 1937, and the famous Tunguska explosion in Siberia in 1908; all of which were undetected until after the fact. Therefore, we would be remiss if we failed to point out the compelling need for expanding asteroid monitoring projects in light of our conclusions. Perhaps technology now exists for attaching rockets to asteroids on a catastrophic collision course with the earth, thus altering their orbit.

Many thanks to all who have had the wisdom to support this project. Future research will include applying forensic, and two and three dimensional modeling techniques (22), to human and mammal ichnofossils; continued study of dinosaur bone fragments for radiometric dating; excavating seven strata during one major excavation; and determining rate of deposition of sedimentary layers and specific time periods.

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## DISCUSSION

The radiocarbon ages from Paluxy samples reported in Table 3 are nearly all near the practical upper range of normal radiocarbon measurement apparatus. Such dates are very sensitive to contamination by modern carbon. The Paluxy site seems to be far from impervious to percolation by ground water bearing modern organic substances (e.g. humic acid) which could easily provide a source of modern contamination. Consequently, these dates should only be regarded as a lower limit on the radiocarbon age of the various samples. Thus, the only legitimate conclusion from the collective data set for the Paluxy samples is that it indicates an age for the associated strata greater than about 30,000 radiocarbon years Before Present. The conclusion that these radiocarbon dates demonstrate the youthfulness of the Paluxy strata is not warranted. In terms of a creationist model of the past, these radiocarbon results (when considered in isolation from their stratigraphic position) are only sufficient to conclude that the respective organisms died at some point in time prior to about five hundred years following the Flood (Aardsma, this conference).

Gerald E. Aardsma, Ph.D.
Santee, California

There are many flaws in this paper and I do not have space to detail all of them.

The Tracks Figure 1 shows a person's foot in an alleged human track. The map given below the photograph clearly shows that the alleged human track is the print of one toe of a three-toed dinosaur that is part of a long trackway. Close inspection of the photograph reveals the other two toe prints of the dinosaur track. The measurements given for the alleged human tracks are well within the range of dinosaur toes but match no humans known from any time. Where are the bones of humans that would make footprints 40 cm long? The aspect ratios prove nothing when measured on part of a track (a dinosaur toe print) instead of the entire track. Measuring just one toe print may yield numbers like those of humans, but they mean nothing. Furthermore, measuring a series of such toes will yield similar measurements, but they still do not indicate any affinity with humans. Also, note how the dinosaur tracks occur in trackways (right, left, right, left, . . .) but the "human" tracks do not.

Five toes does not a human footprint make. Farlow (1987, Figure 18) illustrates a number of sauropod dinosaur hand and foot skeletons that have five digits. Langston (1979; reproduced as Figure 9 in Farlow, 1987; see enclosures) has shown how a dinosaur footprint can come to superficially resemble a human footprint through loss of details in sediment layers above and below the actual track surface. Human-like tracks can also be made by the impression of the distal metatarsus of a dinosaur that normally kept that part off the substrate (Figure 39 of Farlow, 1987). Kuban (1989a, 1989b) has shown other ways in which man-like tracks could be produced by dinosaurs. None of the alleged human tracks shown in this article are convincing; even the one from Laetoli is such a poor photograph that the identity of its maker is questionable. How odd that the recent 454 page book on dinosaur footprints (Gillette and Lockley, 1989) is not cited even once. This shows either a lack of familiarity with the real scientific literature or a deliberate attempt to suppress information unfavorable to the Creationist view.

Radiocarbon Dates The wood that was radiocarbon dated came from loose clay, not from the rocks containing the footprints. To believe that they were contemporaneous demonstrates a lack of scientific skepticism. Shale layers between hard limestones can weather, disintegrate, and be washed away, leaving a space for more recent material to be washed in, especially near a river such as the Paluxy. No evidence was presented that the dated "dinosaur bone" and "dinosaur coprolite" were in fact from dinosaurs. Furthermore, the references of Table 3 are unacceptable vague, e.g., "SCIENCE 1957-1962" and "RADIOCARBON (vol. 1-10)". Specific dates must have specific references, giving author, year, volume and page. Without such references, the table is useless.

Conclusion Dinosaurs have been known scientifically since the 1820's. Their fossilized bones have been excavated from hundreds of sites worldwide. Scientists have collected hundreds of skeletons and thousands of bones of dinosaurs of many sizes from many different paleoenvironments. **No fossil human bones have every been found with dinosaur bones.** Furthermore, dinosaur bones have never been found with bones of horses, cows, sheep, goats, pigs, chickens, dogs, cats, or any other large vertebrate known to be contemporaneous with humans. These facts cannot be ignored, and it will take more than a few questionable interpretations of footprints to even suggest, much less prove, that humans were contemporaries of the dinosaurs. This kind of pseudoscience does nothing for the Creationist cause, and it is time that such efforts be directed into more productive areas of research. There are no human footprints in the Paluxy limestones.

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Dale M. Gnidovec, Ph.D.
Columbus, Ohio

This paper has been master fully conceived and well executed. Glen Kuban left the impression with many people that the Taylor tracks, and by inference, all Paluxy tracks are simply dinosaur prints that within a few years will develop colored points at their tips. Would these authors be well advised to reference Kuban's paper(s) and tell the reader what relationship their work has to his?

Would it be wise to list where the authors had their C-14 dates done? I couldn't tell on table 3 or in the text who did the C-14 work.

Can the authors get an exact date for ref. #16?

George J. Howe, Ph.D.
Newhall, California

Since I am a specialist only in the fields of applied (toxicological/pharmacological) biochemistry and molecular biology, I have a possibility to evaluate only a few aspects of the paper by Dr. Fields, et.al., namely the aspects closed to analytical chemistry (correctness of the methods, calculations and techniques for chemical analyses of the samples studied).

I would like to note the following:

1) A review on radiocarbon dates has a representative list of references for well-known publications of the authors who have used adequate types of physical/chemical techniques for dating (both in respect of chemical treatment of the samples and mathematical treatment of the data).

2) The general conclusions of the paper look correct and well-argued in the physico-chemical aspects.

3) The forthcoming perspectives of this or similar research are interesting and very important.

Dmitri A. Kuznetsov, M.D., Ph.D., D.Sc.
Moscow, Soviet Union

It is doubtful that much of scientific merit can be extracted from this paper:

**1) The paper lacks a proper site description, as it lacks:**

a) a formal description of the rocks involved.

b) a stratigraphic column of relationship for the rocks involved.

c) a proper map (with scale, orientation, etc.) of the location and orientation of all the prints alluded to.

2) **The paper lacks a proper excavation description, as it lacks:**

a) a complete list of the precise dates of excavation (e.g. for 1987-cb, 1984-hb, and 1984/88-bd).

b) a complete list of the excavators and witnesses.

c) descriptions of the various excavation procedures.

3) **The paper lacks a proper description of the prints found, as it lacks:**

a) a complete list of the prints located (e.g. the 'several human prints' found near 1987-cb of note j).

b) adequate photographic documentation of the prints located (e.g. the 'several human prints' near 1987-cb of note j, the impression 4 meters from 1988-mb-3 and -4 of note h, the five 'eroded human-like ichnites' near 1986-gb of note f, and 1984/1988-bd).

c) an adequate description of the method(s) employed to photograph and measure the prints.

d) orientation information on the prints.

e) complete depth information (e.g. 1983-mb-1, the prints excavated in 1986, the 'several' near 1987-cb of note j, 1988-md-3 and -4.

f) measurements on several of the prints (e.g. 1983-mb-1, the 'several' associated with 1987-cb in note j, the 5 eroded prints near 1986-gb of note f, and the impression 4 m. from 1988-md-3 and -4 of note h).

g) toe width measurements and $R_4$ aspect ratios.

4) **It is extremely doubtful that the implied measurement errors are anywhere near being accurate, because:**

a) according to table 2 and elsewhere, measurements were made to the tenth of a centimeter. The assumed measurement error of such a number would be ± 0.1 cm., and it is virtually impossible to make measurements on even the best of footprints to an accuracy of 0.1 cm.

b) I cannot measure even the most well-defined dimension of the cast of the Caldwell print in my possession (which the authors claim "looks like a perfect human footprint," and thus implicitly more defined than most of the others) to an accuracy of 0.1 cm. (length: ± 0.5 cm.; heel and ball widths: ± 0.2 cm.).

c) the photographs indicate that the prints involved are not well defined, especially compared to the Caldwell print, so the error is certainly much greater than even 0.2 cm.;

d) although the reported measurements imply an invariant measurement error, the photographs and the comments of the authors clearly indicate that the quality of the prints varies widely (e.g. the "exact limits are not clearly visible" in 1989-wm, whereas 1965-c "looks like a perfect human footprint").

5) **The value of the print measurements themselves are suspect because:**

a) the exaggerated measurement error heightens the possibility that the measurements were of imagined print outlines rather than actual features of the sediment surface.

b) my experience with pictures of the Taylor trail is that different viewers uninfluenced by others will trace different outlines for the same track. This means that reproducibility of measurements and casting by investigators uninfluenced by others should be a necessary part of Paluxy investigations, and such procedure is lacking here.

c) since a complete and precise description of the measurements taken is not provided, I am not convinced that comparable measurements were taken on different prints, or on different feet, or on feet vs. prints.

6) **The paper lacks proper statistical procedure and measures:**

a) since the paper fails to establish the relationship between dimensions of print features and the dimensions of human feet, there is reason to doubt the true validity of the comparisons between the two.

b) although the reduced sample size of the ichnofossils cannot be helped, the sample size of human feet is too small for satisfactory statistical comparisons (10 male and 10 female measures for foot length, heel width, and ball width; and 8 authors for toe measurements).

c) means for human foot measurements are reported, but standard deviations are not, making proper statistical comparisons of the means impossible.

d) although the paper claims that there are significant differences between measurements of the feet of males and females and there is a lack of significant difference between the ichnites and the human feet, no statistical tests of confidence levels are reported; and

e) there are some anomalous claims in Table 2 (e.g. the mean male $r_y$ 2.53, is outside the reported range of 2.41-2.5, and although both the heel width and ball width of 1988-md-4 are reported, $R_z$ is listed as not measurable).

7) **Used in the paper, though considered dubious by the authors, was the 'Caldwell Print' (1965-c). Excellent photos shown at the conference and a cross-section of this print make it very clear to me that the Caldwell print is <u>not</u> due to impression, but rather to mechanical erosion, and that probably due to human carving. The limestone in which the print is found is an algal limestone full of small algal stroms, apparently ripped up and deposited in a rather chaotic fashion. Qualitatively speaking, there seems to be a preferred orientation of the stroms which would indicate that the Caldwell print is on the *underside* of the slab. Furthermore, the laminae of the various stroms at the print-side surface of the slab are without exception cross-cut by the print itself. The laminae are not caused by the print, but cut into by the print. The print has clearly been cut into the rock after lithification.**

8) **Unlike the authors claim, the paper fails to satisfactorily document even a single series of more than a single print. Three trails are referred to, implied, or claimed in the paper:**

a) 1989-wm and 1987-cb with other prints of the 'Clark trail', the 12 prints found in 1982, and possibly with 1986-gb and 5 other 'badly eroded' human-like trail(s) on the 'Kerr Island' site. The 'Clark trail' and the 'badly eroded' trail(s) were undescribed in the paper and their orientation and position relative to 1986-gb, 1987-cb, and 1989-wm were not indicated. 1989-wm, 1987-cb, and possibly 1986-gb were considered part of the same trail because of similar measurements (without a statistical defense) in spite of the fact that their relative orientation is not given and they appear to be spread along at least 100 meters of stream bed.

b) "a trail of twelve 40 cm long elongate prints" excavated in 1982 was not described in this paper. Attempts to follow the 'trail', which supposedly has been eroded away, met with no success.

c) 1983-mb-1, 1983-mb-2, 1988-md-3, and 1988-md-4. The dimensions and orientation of 1983-mb-1 was not discussed in the paper, and the nature of the remaining "slipping and sliding" prints is dubious:

1) The 'stride' length and direction changes (1988-md-4 is 20 cm. behind and 20 cm. to the right of 1988-md-3, which in turn is 10 cm. behind and 45 cm. to the side of 1983-mb-2).

2) the nature of 1988-md-4 is so distorted that "it might not have been a print" except for its position.

3) the drawings of the prints in figure 2 are not human-like, and 4) the measurements of the prints change [1988-md-4 and 1988-md-3 to 1983-mb-2 in cms.: length (30.5 to 30.5 to 27.3); heel width (7.6 to 7.6 to 7.0); ball width (7.6 to 10.8 to 10.8); $R_1$ aspect ratio (4.0 to 2.8 to 2.53); $R_2$ aspect ratio (1 to 1.42 to 1.55), and $R_3$ aspect ratio (unmeasurable to 1.9 to 2.1)] and the relative orientation of the prints are not provided.

**9) The interpretation of the Carbon-14 data of the paluxy items is questionable:**

a) no procedure is mentioned in the paper whereby the effects of contamination were minimized or eliminated.

b) no references were provided.

c) age errors are not provided on most of the radiocarbon ages listed in Table 3.

**10) Many of the references made in this paper are dubious or absent:**

a) John Morris's book (Ref. 1) is considered by the authors as a 'scientific' discussion, containing apparently viable conclusions, and documentation of the Taylor and Clark trails with grid-contour gauges and computer graphics. In fact, the authors are wrong on all three counts: it was a lay publication which itself lacked substantial documentation, it was withdrawn from sale by the author because an unspecified number of its conclusions were no longer valid, and it 'documented' the Taylor and Clark trails only by photographs which lacked captions.

b) The conclusions of the paper rely substantially on the Carl Baugh's research (Ref. 2), which is claimed to be a 'doctorate dissertation'. A serious challenge to the validity of this degree and its issuing institution (Kuban, G.J., 1989, NCSE Reports, 9(6):15-18) raises serious questions about the conclusions and procedure involved in the production of this paper. furthermore, as far as I know, Baugh's paper has not been published -- either in full or abstract form -- so it is unavailable for critique.

c) a number of claims are not referenced (e.g. the identification of a piece of coalified or charcoalized wood as possibly a "root tip of Lepidodendron", the "requirement in paleontology" of three or more ichnites to identify species, the uniqueness of human aspect ratios, the aspect ratios of bears, the human prints near Glen Rose's electric generator facility, and how "Mt. St. Helens experience and laboratory data attest" to how the Glen Rose rock "did not take millions of years to form" -- an incorrect conclusion, by the way).

d) the reference for a 'serious' report of footprints in the Trinity River is from an imprecisely referenced newspaper account.

e) the Turkemia, USSR prints are undocumented except by a scientist without listed qualifications and a newspaper account.

**11) The conclusions of the entire paper are suspect when reference is made to other unconfirmed claims (e.g. cat-like tracks and a fossilized human finger in Glen Rose sediments) or even falsified claims (e.g. a "possible human tooth", which appears without much doubt at all to be a fish tooth: Creat./Evo., 21:38-39; Creat./Evo. Newsl., 7(4):15-16; 7(5):18-20; NCSE Rept., 9(3):14-15).**

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## CLOSURE

The authors thank each of the five respondents for taking the time to review this paper. Their questions and comments will be addressed within the ICC limitations of 1500 words. Because of these constraints the complete details including maps, photographs, etc., asked for by several reviewers will be made available as a supplement upon request from CRSEF, P.O. Box 292, Columbus, Ohio, 43216. We are indebted to the ICC Technical Review Committee for allowing us to include information on chemical analysis of dinosaur bones, part of which was presented as a poster session at the ICC by Dr. Lionel Dahmer. See Section 2, of this Volume for this analysis.

This is an ongoing project. It is subject to the delays and whims of both man and nature. Thus we ask the reader's patience and understanding as we ourselves try to sort out this controversial and complex subject. Many reviewers asked similar questions, one being "why haven't radiocarbon labs been identified?" These were not listed because one of our team members was denied lab time when he volunteered that his specimens were dinosaur bones. This caused a four year delay in getting these bones dated. Obviously we fear "stonewalling" of future requests for any of our dating. We have and can make available copies of our radiocarbon reports for this project. These reports will affirm the authenticity of the dates.

The question of recent carbon contamination was raised frequently. Such contamination has not been overlooked in the dating of our material. We feel if contamination has taken place it has been limited by the following factors. (1) The labs we worked with took great precaution in removing all humic acid (young carbon) while preparing the sample for dating. The specimens were treated with NaOH to remove humic material, rootlets, carbonates, all of which could add modern carbon. Contamination is unlikely according to the people with whom we worked. (2) There is no geological evidence that the clay (both hard and soft) at the Paluxy River in between the strata was washed out and then replaced as some have suggested. This phenomenon probably has happened in other areas, but there is no evidence for it here. If clay was ever washed out the strata would not be horizontal, but would be faulted in many places because there would be no material under the top limestone stratum to support it. (3) Clay layers are nearly impervious to water. The Paluxy strata has well compacted clay layers in between limestone layers which contained our wood specimens. This would have prevented new carbon getting in and old carbon getting out. The bone samples were taken directly from the limestone. Where the Acrocanthosaurus skeleton was found both the blackened rock and the surrounding dark clay above the dinosaur skeleton contained up to 0.5% carbon which suggests it was from the decay of the dinosaur. Only 30 cm above the skeleton the carbon percent had dropped to less than 0.1%, which suggests the carbon found was original carbon from the dinosaur, and it had not migrated far from the skeleton. Since the original carbon apparently had a hard time leaving the rock and clay wouldn't contamination from new carbon also be difficult? Other reasons against contamination will be found in our supplement.

We would like to thank Dr. Aardsma for his comments. We realize our dates should not be taken literally. But we do feel there is significance in them. It is incredible that something allegedly 100 million years old should give any radiocarbon dates at all. Because some radiocarbon was present, this shows our specimens to be much younger than conventional scientists allow. In several instances we went to labs who gave us plus and minus figures for our dates. Most reports in radiocarbon literature do not give plus and minus errors for older dates. We did send the same bone fragments to several labs and got similar dates with accuracies close to plus or minus 250 years (discussed in the supplement on chemical analysis of dinosaur bones).

We would like to thank Dr. Gnidovec for his comments. We did not get our wood from loose clay or float material as implied in his response. Our bones were identified by a competent paleontologist from a major Texas University. Three CRSEF members helped excavate the ten meter Acrocanthosaurus. Space limitations prevented us from giving full references for Table III. These references are available upon request.

We realize we have not yet found a good human-like trackway or a perfect footprint. But some of our fossil impressions are better in quality to Leakey's prints found in Africa which have hardly been disputed. However, what we have established is individual impressions are very human-like when compared to modern human feet. We also realize dinosaurs can make tracks which are close to human size (as in the eroded Taylor trail). They can be distinguished from one another by careful study. One new way we have employed is by anthropological studies using aspect ratios between modern humans and the fossils we have found. The newly excavated impressions agree well.

We would like to thank Dr. Howe for his complementary remarks. We agree there have been misinterpretations of eroded footprints (Taylor trail) as Kuban has done so well at pointing out. He has helped in the scientific study of these footprints and we appreciate his work.

With regard to reference 16, no additional information exists, however a copy of reference 16 is available upon request at the above address. Other information will be given in the supplement.

We would like to thank Dr. Kouznetsov for his response and comments.

Finally, we would like to thank Dr. Wise for his comments. They have helped us to critically evaluate our paper. Some of his questions have already been answered in the above paragraphs. Our site was north of Rte. 205 on the banks of the Paluxy River about five miles from Glen Rose, Texas. The site is located on the J.C. McFall property as noted in Figure 1 and the aerial view in Figure 2, the Glen Rose West Quadrangle.

Specific details about excavations were not included because of space limitations. Upon request details can be forwarded. We agree that footprint descriptions and photographs were inadequate, and we hope to present them in a more detailed paper focusing on these aspects when better footprints and a good trail have been excavated.

We agree with Dr. Wise's recommendations on measurements. We will use his suggestions for future publications. Our sample size of modern human feet needs to be larger, but our preliminary studies showed good correlation to reference 6.

Dr. Wise confuses the Caldwell print with the Burdick track; the photos at the ICC was the Burdick, not the Caldwell. Dr. Wise's comments will be forwarded to the Creation Evidences Museum (CEM) in Glen Rose, since they have been studying the Burdick impression.

We agree the Clark trail should have been the Clark prints. They are called Clark prints because they are similar in size. Perhaps they may be called a discontinuous trail. We have found no pristine trails, but the trail found in 1988, is considered a fair trail by us. Hopefully the supplement will demonstrate this. The Kerr tracks will also be discussed there.

We agree such things in the Paluxy such as the cat track, the finger, and the tooth are debatable. Some have claimed these to be the real things (not us). They are on display at the Creation Evidences Museum for study.

More careful work needs to be done on the fossils and the impressions found in the Paluxy River at Glen Rose, Texas. The reason for our paper was not to prove the tracks at Paluxy were of human origin, but to shed more light on this possibility. Our purpose was to show the book is still not closed on the Paluxy. Human-like footprint impressions, radiocarbon studies and pictographs of dinosaurs show the need for the university community to begin serious studies on the dinosaur and human coexistence hypothesis.

W. Fields, H. Miller, J. Whitmore, D. Davis,
G. Detwiler, J. Ditmars, R. Whitelaw, G.Novaez