

TIGHAR TRACKS

April 2016



CLUES & POSSIBILITIES

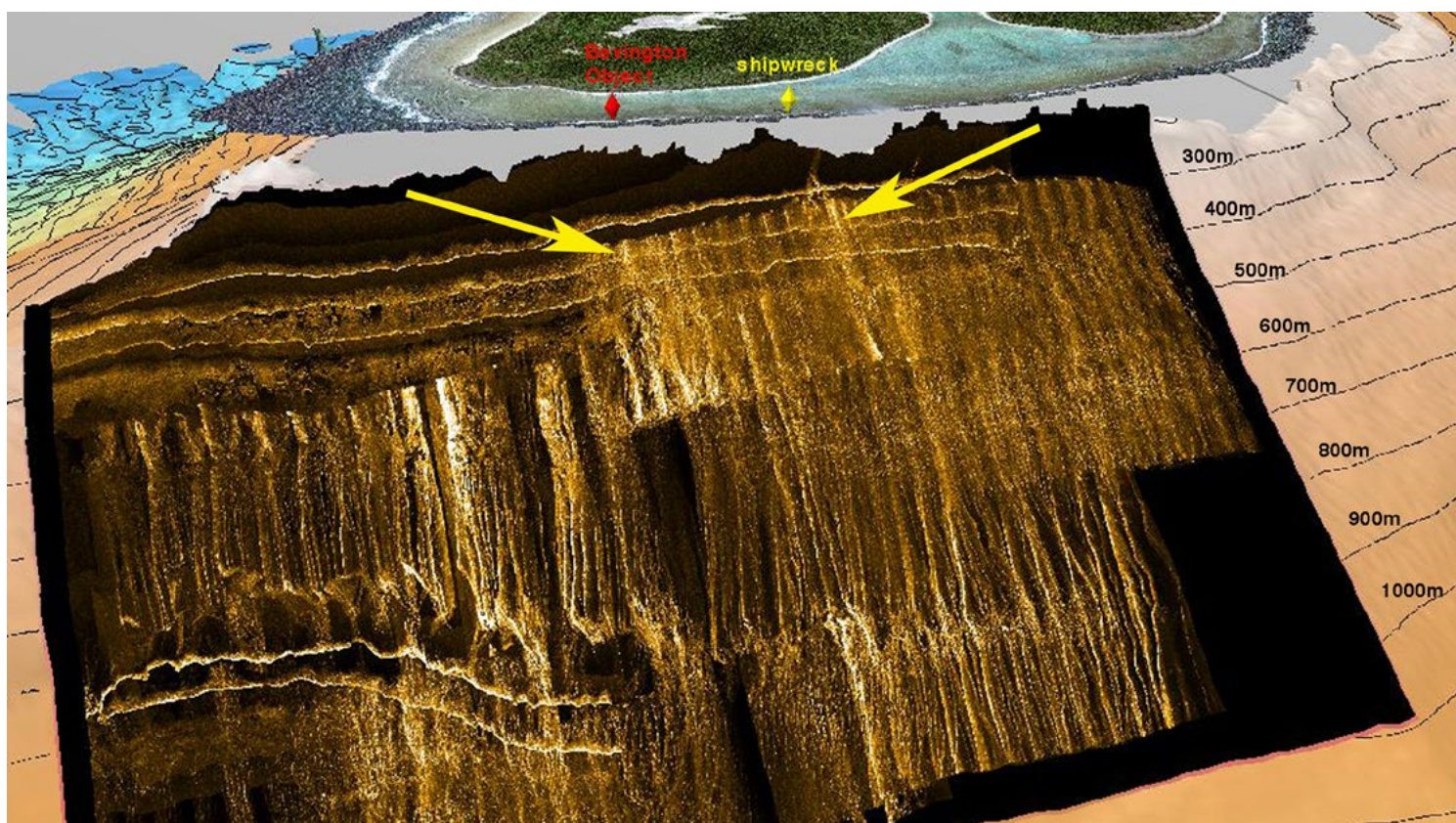
In “Can We Find the Electra?” (*TIGHAR Tracks*, March 2016) we estimated that, after being washed off the reef surface 400 meters north of the shipwreck, the aircraft floated for about 18 minutes before sinking within one nautical mile of the reef edge. If we’re right, the wreckage lies somewhere between the base of the cliff at 61 meters (about 200 feet) and 1,000 meters (3,281 feet) – but that’s a big area.

Are there clues in the sonar data that may help focus the search? TIGHAR members have suggested some interesting possibilities.

FOLLOW THE SCARS

Chris Hindle, TIGHAR #4752, has been doing underwater search and survey work with manned submersibles and ROVs for 35 years, much of it in coral reef environments. He looks at the side-scan sonar imagery of the western reef slope at Nikumaroro and sees something that he recognizes. “That’s scarring,” he says, pointing to light-colored striations in the sonar map. “When heavy objects tumble down a reef slope they damage the coral as they go and, at those depths, it doesn’t grow back. To find the thing that caused the damage, follow the scars.”

There are two places on the western reef slope where striations are apparent in the side-scan sonar data collected during TIGHAR’s 2012 Niku VII expedition. One area is directly behind the wreck of SS *Norwich City*. When the ship went aground in 1929 roughly half of its length rested on the reef surface. In 1939 the stern half of the ship broke off and tumbled down the slope.





When photographed during the New Zealand Aerial Survey of Gardner Island on December 1, 1938, the SS Norwich City was still intact.

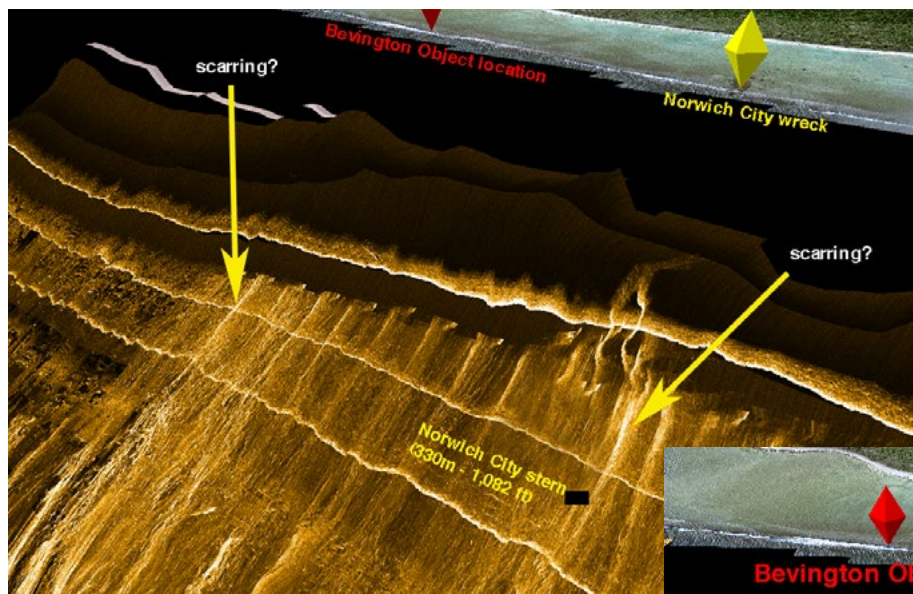


During a storm in the first week of January 1939 the stern of the ship broke off and tumbled down the reef slope.

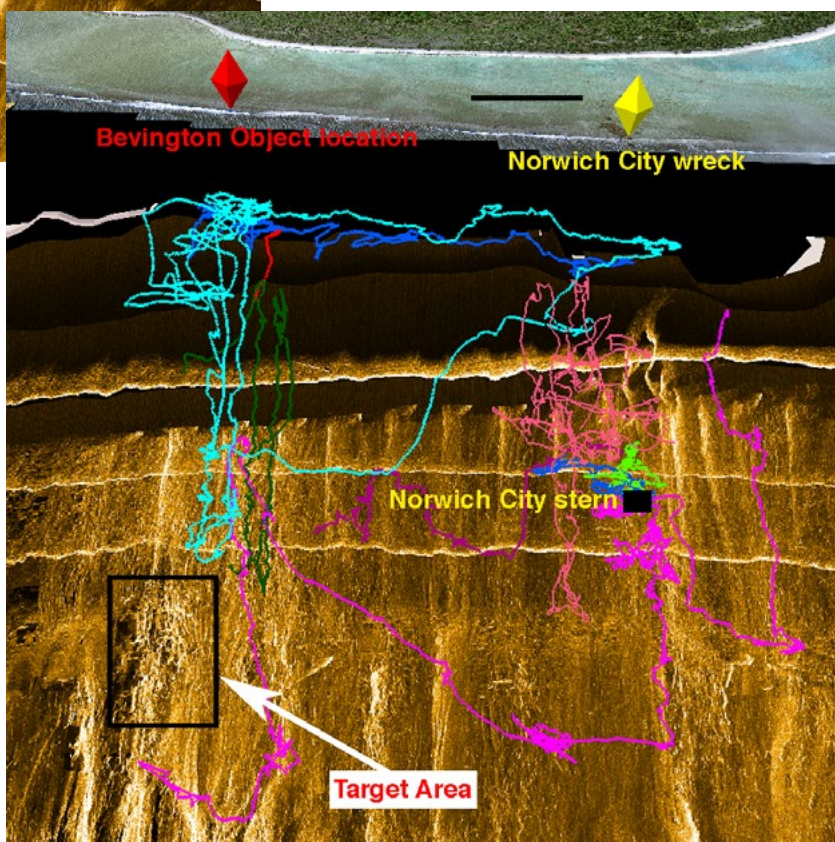
On July 15, 2012 we found the wreckage of the stern at a depth of 330 meters (1,082 feet). The correlation between the striations in the sonar imagery and the location of the stern wreckage argue strongly for the striations being damage to the coral caused as the heavy debris tumbled down the slope.

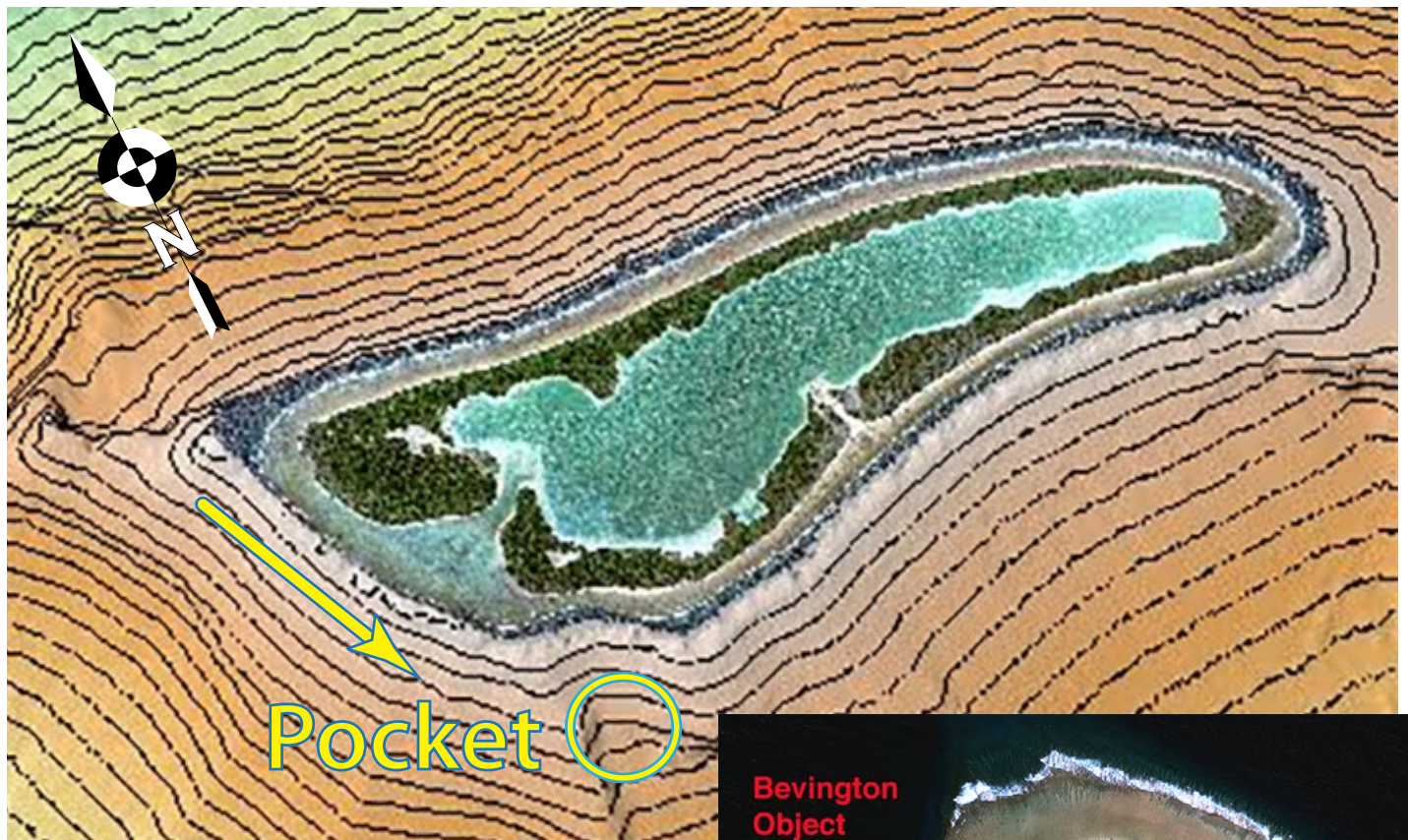
If the reef scarring theory is correct, the wreckage of the plane should be at or near the end of the scar. Have we already looked there? No. The “snail trails” of where the ROV went in 2012 all miss the implied target area.

The target area is about 100 meters wide and extends from a depth of 400 meters (1,312 feet) to 500 meters (1,640 feet) at the base of the presumed scar. It's well within the general search area we intend to cover anyway, but we'll want to give it some special attention.



The second area where striations are evident is directly west of the Bevington Object location, the place where we think the Electra was washed off the reef leaving behind the wreckage of a main landing gear assembly. If the striations behind the shipwreck are scarring caused by tumbling wreckage, the striations behind the Bevington Object may have been caused by a similar event. The striations behind the shipwreck begin at a shallower depth and are more pronounced than those to the north, but the stern of the ship began its downward journey close to the reef edge and was far more massive than a Lockheed Electra that may have floated away from the edge before sinking.





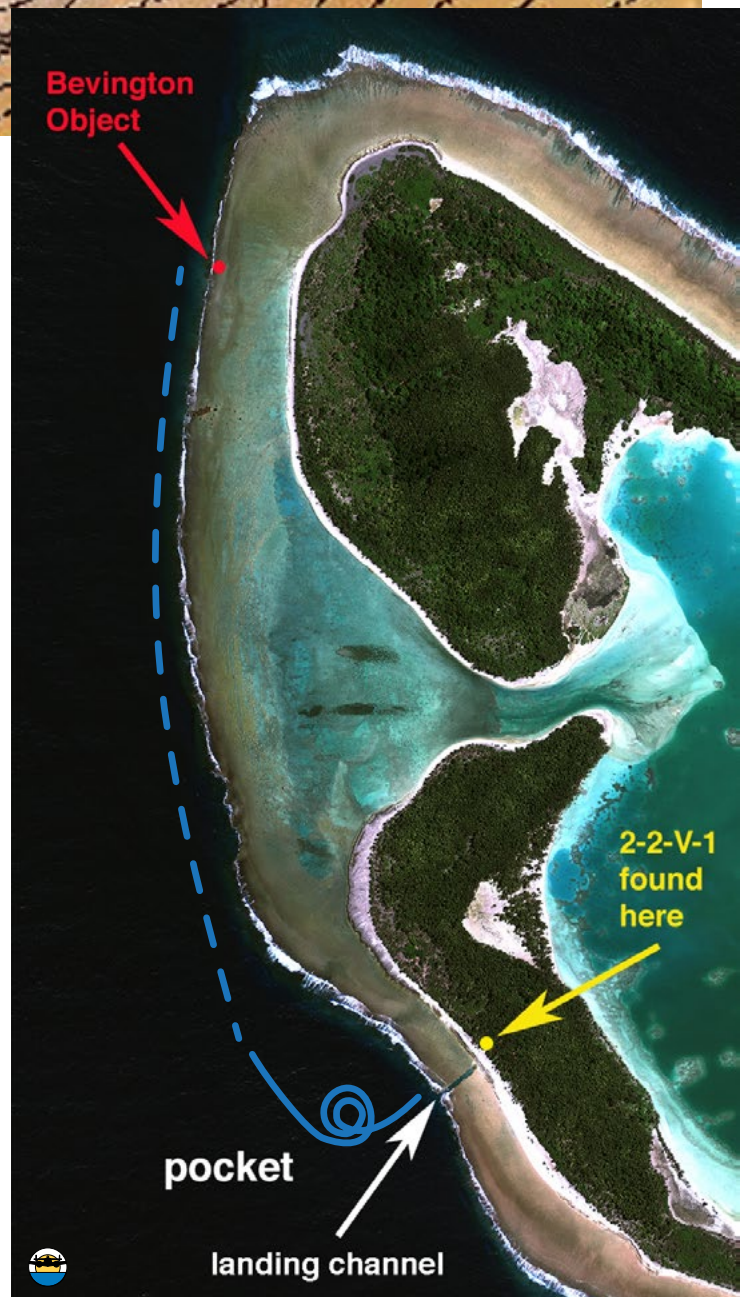
OUT OF POCKET

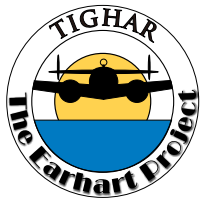
Bill Warren, TIGHAR #3480, wondered whether we had studied the currents leeward (southeast) of the island. He suspected that there might be a “gyre” that collects lightweight metal debris that has been moved by currents. A gyre is a circular ocean current, usually on a large scale, but small localized gyres are possible where a coastline current is influenced by topography.

The predominant surface and near-surface current along the western end of Nikumaroro is southward. Looking at the bathymetry (bottom topography) of the coastline as mapped by the Hawai’i Undersea Research Laboratory (HURL) sonar aboard KOK in 2012, there is a “pocket” in the reef at the southern end of the west end just where the coast turns the corner. The reef flat is narrower there than at any point on the atoll and it is where the landing channel was blasted through to the beach to facilitate the evacuation of the island when the colony was abandoned due to drought in 1963.

Artifact 2-2-V-1 was found near the head of the landing channel in the wash-up from a significant weather event that occurred some time between TIGHAR’s initial visit to the island in 1989 and our return in 1991. If the artifact is debris from the Electra it could have been carried southward by the current, trapped in the “pocket”, and subsequently washed ashore through the landing channel.

If that is what happened there could be more debris caught in the pocket. It’s worth taking a look.





A SHOE FETISH IV

Shoes have played a large and sometimes confusing part in TIGHAR's investigation of the Earhart disappearance. New information, courtesy of the Bata Shoe Museum in Toronto, Canada, has now resolved some important questions and provided a clearer picture of how the remnants of shoes found on Nikumaroro figure in the puzzle.

The first mention of shoes as evidence of Earhart's fate dates from long before TIGHAR took up the torch. As early as 1960, at the height of media coverage of allegations that Amelia had been "captured" by the Japanese, a Coast Guard veteran contacted the *San Diego Union* newspaper to insist that they had it all wrong. In 1946, Floyd Kilts had been disassembling the wartime Coast Guard Loran navigation radio station on Gardner Island (now Nikumaroro) when:

A native tried to tell me about it. But I couldn't understand all of it so I got an interpreter. It seems that in the latter part of 1938 there were 23 island people, all men, and an Irish magistrate planting coconut trees on Gardner for the government of New Zealand.

They were about through and the native was walking along one end of the island. There in the brush about five feet from the shoreline he saw a skeleton.

What attracted him to it was the shoes. Women's shoes, American kind. No native wears shoes. Couldn't if they wanted to—feet too spread out and flat. The shoes were size nine narrow. Beside the body was a cognac bottle with fresh water in it for drinking.

Kilts went on to relate how the Irishman tried to take the bones to Fiji in an open boat but died on the way. "The natives are superstitious as the devil and the next night after the young fellow died they threw the gunnysack full of bones overboard, scared of the spirits. And that was that."

The editor of the newspaper wrote to the British Colonial Secretary hoping to verify Kilts' story. He received a reply from the District Commissioner of the Phoenix Islands District:

I have searched through the early records of the Phoenix Islands District and can find no report of the discovery of a skeleton on Gardner Island in 1938.

Proponents of the Japanese Capture theory quickly dismissed Kilts' tale as pure fiction. In a



Miami, May 1937. Amelia is wearing her walking shoes. With the castaway's skeleton found on Gardner Island in 1940 was part of the sole of a woman's shoe that "appears to have been a stoutish walking shoe or heavy sandal." Inset: Bally walking shoe manufactured in Switzerland, 1932. Example in Bata Shoe Museum collection.

1991 letter to TIGHAR Senior Archaeologist Tom King, Fred Goerner, author of *The Search For Amelia Earhart* (Doubleday, 1966), wrote:

The story of the 'woman's skeleton' was generated from San Diego through Associated Press in 1961. It was a story by a gentleman named Floyd Kilts who worked with the California State Department of Veteran's affairs, and who had been on Gardner at the time the U.S. Coast Guard (1943-1947) had a Loran navigation station there. CBS checked out the story at the time, and it could be classified as nothing else but apocryphal. It was fifth-hand rumor that had initially gone through a translation from Gilbertese to English, and no one knew the original source.

The TIGHAR addition that the 'woman's shoes' were the same size worn by Earhart is truly creative, especially when one considers that Earhart did NOT wear women's shoes when flying. She wore men's shoes. The last photos taken in New Guinea show the style of brogan, and there were no high heels.

Harry Maude, the British official responsible for the colonization of the Phoenix Islands was equally incredulous. In a 1991 letter responding to queries from Goerner, Maude wrote:

Gardner is such a small atoll and was inhabited for so long that every inch of the place must have been walked over many times; anything out of the ordinary would have been reported and be on record. Not so much happens on a small atoll from day to day and unusual events and findings form the subject of endless gossip and conjecture. A skeleton wearing lady's shoes would have been a sensation retailed throughout the Central Pacific.



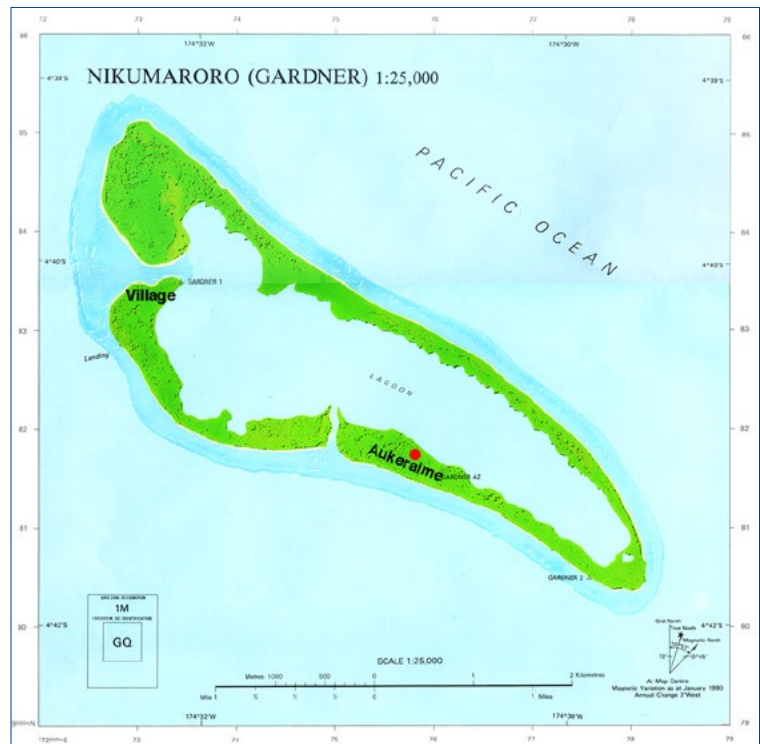
December 20, 1938. First eight-man work party arrives at Gardner Island.

TIGHAR recognized that Kilts' story did not track with the island's known history, and yet it was sprinkled with kernels of truth. Kilts was correct that the first all-male work party arrived in late 1938 but there were eight men, not twenty-three. The island population rose to that number when their families arrived a few months later. There was no "Irish magistrate" on Gardner but the British Colonial Service officer in charge, Gerald Gallagher, was known by his nickname "Irish." He did not die in an open boat on the way to Fiji but he did die on the island in 1941, not of peritonitis but of tropical sprue¹, an intestinal condition. Was the distorted tale told to Kilts in 1946 the product of "endless gossip and conjecture" that grew out of a genuine unusual event – the discovery of human remains?



Gerald "Irish" Gallagher, Officer-in-Charge, Phoenix Islands Settlement Scheme, at home on Gardner Island (Nikumaroro) in 1940.

If bones had been found might they have been buried by the discoverers? In 1991 we excavated a small grave on a part of the island known as



Aukeraime on the southern arm of the atoll far from the abandoned village. The grave yielded the remains of an infant, but nearby we found the fragmented rubber sole of a shoe, a "Cat's Paw Rubber Co. U.S.A." replacement heel and a second heel. Could these be the shoes in the Floyd Kilts' story?

In 1992 we asked the Biltrite corporation who now owned Cat's Paw to help us analyze the shoe parts we had found on the island. They said that the tightness and pattern of stitching holes in the rubber sole indicated that it had been a woman's



shoe of an oxford type. Photos of the shoes Earhart wore when flying showed them to be women's blucher-style oxfords, not men's brogans as claimed by Goerner. The Cat's Paw heel was said to match a mold used in the mid-1930s. It appeared that we had found a "woman's shoe, American kind" of the same vintage and style worn by Earhart.

Fueling the Electra in Bandoeng, Java. Earhart is wearing the blucher-oxford shoes she wore when flying.

In March 1997 we returned to the site and did a more extensive excavation but found nothing of significance. We had hit a dead end. The shoe parts we found in 1991 appeared consistent with shoes Earhart wore and seemed to match the shoes in Kilts' story but, as Maude had told Goerner, anything as out of the ordinary as the discovery of human remains wearing women's shoes should have been more than rumor. We had Gerald Gallagher's official quarterly reports detailing the development of the settlement on the island and there was no mention of the discovery of bones or shoes. If something like that had happened it should be on record.

A few months later, in June 1997, we learned that the thing that could not have happened had, in fact, happened. The discovery was on record. A TIGHAR member doing un-related archival research in Tarawa stumbled upon a file titled "Gardner Island, Human remains, discovery of." The file contained a series of telegrams dating from 1940 in which Gallagher reported finding a partial skeleton which "may be the remains of Amelia Earhardt (sic)." Found with the bones were a few artifacts, including part of a woman's shoe. The file in Tarawa contained Gallagher's copies of his communications with the British Western Pacific High Commission in Fiji. To find the other end of the conversation we searched the records of the WPHC, at that time stored in the Archive and Library Section of the Foreign and Commonwealth

What Kilts had been told was gossip and conjecture, but it was born of an actual event that was considered so potentially explosive that it was kept strictly secret by the British authorities.

Office within a secure British communications installation in Hanslope Park, England. Getting the necessary clearances wasn't easy but we came away with the documents we were looking for.

By late 1998 we had the whole story. What Kilts had been told was gossip and conjecture, but it was born of an actual event that was considered so potentially explosive that it was kept strictly secret by the British authorities. Only a handful of officials at the highest levels the Western Pacific High Commission knew about the incident. When the head of the Medical School in Fiji examined the bones and reported that "it may be definitely stated that the skeleton is that of a MALE" (emphasis in the original), the matter was dropped. The bones and artifacts were subsequently lost, but

documents we found at Hanslope Park included the measurements upon which the doctor based his report. We asked two forensic anthropologists to evaluate the bone measurements using currently available techniques. They found that the skeleton was a person:

- More likely female than male
- More likely European than Polynesian or other Pacific Islander
- Most likely between 5'5" and 5'9" in height.

Bones and shoes that may have been Earhart's had been found on Gardner Island, but where? The British files included no map marking the spot on the atoll where the discovery had taken place and Gallagher's description of the location was maddeningly vague.

Had we already found the shoes? In February 2001 we published a research paper titled "A Shoe Fetish," in which we described in detail the shoe parts found in 1991 at the Aukeraime shoe site.²

In "A Shoe Fetish, Part 2," published two months later in April 2001, we addressed what we knew about the shoes Earhart and Noonan had with them on the world flight and how they compared to the artifacts found at the Aukeraime site. There were some problems. A forensic imaging analysis of a photo of Earhart standing on the wing of the Electra showed that her shoes were 242.9mm in length (size 8 to 8.5), significantly shorter than the 27.7cm (size 12) of the Aukeraime sole.³



The known spacing of the rivets on the wing enabled forensic imaging expert Jeff Glickman to accurately measure the length of Amelia's shoe.

Not only was the Aukeraime sole too long but the location of the Aukeraime site did not fit well with the clues in Gallagher's reports. It was too far inland and showed no sign of being the castaway campsite that Gallagher described.

2 <http://tighar.org/Projects/Earhart/Archives/Research/Bulletins/29 ShoeFetish1/29 ShoeFetish1.html>

3 <http://tighar.org/Projects/Earhart/Archives/Research/Bulletins/31 ShoeFetish2/31 ShoeFetish2.html>

In 1996, before the documentation of the bones discovery came to light, we had visited a site across the lagoon on the northern arm of the atoll. We dubbed it the Seven Site because it featured a large natural area of bare coral rubble in the shape of a numeral seven. We were searching for a metal tank used as a “water collection device” rumored to have been seen in that area during WWII. We wondered if the tank might be a re-purposed airplane fuel tank. We found the tank but it was a steel cistern of a type we had seen in the abandoned village. Disappointed, we dismissed the site as being of no further interest. However, with the discovery of bones and shoes now confirmed, the location of the Seven Site seemed like a good fit with Gallagher’s description. When we returned to the island in September 2001 we took a second look at the Seven Site and immediately began finding features and artifacts that matched items Gallagher mentioned.



Further excavations of the Seven Site in 2007 and 2010 left little doubt that it is where the castaway died, but questions about the shoes remained. Did Earhart’s walking shoes really have a cream-colored sole and heel? And what to make of the shoe parts we found in 1991? The Aukeraime shoe was too big, but if it wasn’t Earhart’s what was an American woman’s oxford from the mid-1930s doing on Nikumaroro?

With the help of Collections Manager Suzanne Petersen at the Bata Shoe Museum in Toronto we now have some answers.

The identification of the Aukeraime sole as being from a woman’s shoe was in error. Men’s shoes also featured tight stitching.

Ms. Petersen found several examples in the Bata collection of 1930s-vintage women’s oxfords of the same style worn by Earhart. All have leather soles.

Ms. Petersen found an exact match for Earhart’s walking shoes. They were manufactured in Switzerland in 1932 by Bally. The sole is light-colored leather and the heel is cream-colored (now somewhat yellowed) crepe rubber.



“Shoe Fetish, Part III,” published in February 2004, focused on the shoe parts Gallagher found with the bones and raised the question of how he concluded from only “part of a sole” that it was from a woman’s “stoutish walking shoe or sandal.”

Might the color of have been the tip-off? Photos of Earhart taken during the world flight show that, in addition to the blucher-oxford style shoes she wore when flying, she had a pair of comfortable two-tone walking shoes with what appear to be cream-colored soles and heels.⁴



⁴ http://tighar.org/Projects/Earhart/Archives/Research/Bulletins/48_ShoeFetish3/48_ShoeFetish3.html

CONCLUSIONS

The rubber Aukeraime sole may be from a man's shoe, and is unlike any shoe known to have been aboard the Electra (Noonan's shoes also had leather soles). However the shoe got to Nikumaroro, it seems to have no connection to the Earhart disappearance.

Gallagher's opinion that the shoe remnant he found with the bones was from a "woman's stoutish walking shoe or sandal" fits the description of the Bally shoes worn by Earhart.

There remains a discrepancy between Earhart's forensically-determined shoe size, 24.3 cm, a modern American woman's size 8 to 8.5, and Gallagher's estimate that the incomplete sole he found with the bones was from a size 10 shoe. Gallagher was British and UK shoe sizes are the same for men and women. Today a UK size 10 shoe has a length of 27.9 cm, equivalent to a U.S. women's size 12.5. Without any information about how much of the sole Gallagher found it is impossible to judge the accuracy of his estimate.

The investigative process requires constant re-evaluation and patience. It took thirty-seven years and a healthy dose of good luck to find proof that the fantastical story told by Floyd Kilts was based on an actual occurrence. It took twenty-five years to determine that, despite initial appearances, the shoe sole and heels TIGHAR found in 1991 are probably not part of the Earhart puzzle. It took twelve years to identify Earhart's walking shoes. More answers will be forthcoming. The name of the game is persistence.



SOME SHIRTS ARE BACKORDERED

We had so many orders for the new TIGHAR Field Shirts that we overwhelmed L.L. Bean's stock and some sizes are backordered. Most members will get their shirts on time, but for others there'll be a short delay. The good news is that until the backordered shirts come in, we can continue to accept orders. So if you missed the April 15 deadline and would like a TIGHAR Field Shirt (or another one) you can still place an order in the TIGHAR Store.*



*http://tighar.org/store/index.php?route=product/product&product_id=152

COMING IN MAY



The May 2016 issue of *TIGHAR Tracks* will include a draft of the second chapter of *Finding Amelia – The True Story of the Earhart Electra*. Chapter Two, titled "The Tree Upon Which Costly Airplanes Grow," covers the period May 1935 through February 1936 and tells the story of how Amelia Earhart selected and acquired an airplane to fly around the world. Spoiler Alert: It didn't happen the way she said.

Draft Chapter One, "The Twin-Engined Lockheed," covering 1932 to 1934, was published in the November 15 issue of *TIGHAR Tracks* and is on the TIGHAR website.*

The research and writing of *Finding Amelia – The True Story of the Earhart Electra* is funded by the TIGHAR Literary Guild. For each \$100 contribution to the Guild the donor gets a signed copy of the final book when published. Visit the TIGHAR Store to join the Guild or continue your support. Thank you.

*http://tighar.org/Publications/Books/ElectraBook/Electra_Chapter_1.pdf

** http://tighar.org/store/index.php?route=product/product&product_id=150

