

# Return to the River of Doubt

A proposed UC San Diego expedition would recreate a century-old, binational effort to explore one of the least-known corners of the globe

## Roosevelt-Rondon Scientific Expedition

The 1914 expedition to chart and study a barely known tributary of the Amazon River was originally planned to be a relatively safe trip down known rivers. Roosevelt changed the plans once his party reached South America.

**Former President Theodore Roosevelt** was a life-long naturalist who joined Rondon as co-commander largely because he was seeking adventures that would dull the pain of losing his bid for a third term as president. He came so close to dying that he asked to be left behind so that he would not slow the expedition.



The Brazilian government chose to rename the River of Doubt the Rio Roosevelt in honor of the former president.

**General Cândido Mariano da Silva Rondon** was Brazil's most famous and accomplished Amazon explorer. He hoped to chart the River of Doubt. His slow, meticulous surveying slowed the expedition and upset Roosevelt. But the two men generally admired each other.

## Retracing steps

The proposed expedition will follow the same route and use similar means of transportation as the Roosevelt-Rondon expedition. Reaching the river was a journey into itself through swampland, jungle and savannah that spread the expedition's supplies and people thin.

### 1. Quiet start

The first leg was an uneventful ride up the Paraguy River in a paddle-wheel boat. The group stopped for hunting trips and ate through much of their food.



The new expedition, which would likely be comprised of 35 people, would travel the Paraguy River in a galsa (above) that would take them through the Pantanal region, one of the world's largest wetlands.



### 3. Death and doubt

The trip down the uncharted River of Doubt included hunger, illness and death. At times, it appeared likely that no one in the group would make it out alive. The new expedition would retrace this leg the most.

Roosevelt first made a speaking tour through the continent, where he was often confronted by protesters who were upset by his push to build the Panama Canal.

## Modern expedition's aims

The proposed expedition would focus on science, particularly the collection of biological specimens. It would also compare Roosevelt's notes to how the river has changed in 100 years.

### Applying animal designs to engineering

UC San Diego engineering professor Ilan Meyer studies biomimicry using designs found in nature to design products for human uses.



One example is the arapaima fish (above). It has scales impermeable to the teeth of the piranha (inset). Meyer believes this could be applied to developing flexible ceramic body armor.

### Studying changing tribes

At the time of the original expedition, indigenous tribes in the uncharted portion of the river had never encountered outsiders. These tribes had an internal debate about whether to allow the expedition through uncharted.

Most indigenous tribes today (below) have had contact with outsiders and pose little threat.



Rondon had a relief party of seven men waiting for the party at the Arapacha River.

Even a century ago, rubber traders had settled more than halfway up the river. Encountering civilization much earlier than they expected probably saved Roosevelt and his group.

The original expedition reached the River of Doubt by following a telegraph line hung by another Rondon expedition.

## Avoiding mistakes

Meyers and the other planners of the new expedition are trying to avoid three major mistakes that were made during the original mission. Illustrations say those mistakes included:

### Poor planning

The Roosevelt part of the expedition was organized by a man whose only experience was in the Arctic, and the results were nearly fatal. Many of the supplies he chose were useless.

### Professional planning

Meyers is a veteran Amazon explorer who would travel with a smaller team that may include members of the Brazilian army.

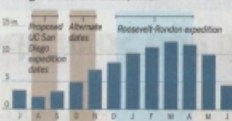
### Poor timing

Roosevelt and Rondon entered the Amazon basin during the wettest part of the rainy season. The rain made it hard to work, filled the river with debris and gave rise to troublesome insects.

### Good timing

Meyers' team would depart in August or October, avoiding prolonged, heavy rain.

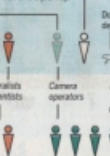
### Average rainfall in Manaus, Brazil



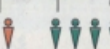
## Roosevelt-Rondon expedition on the River of Doubt

Roosevelt didn't have any primary role other than co-commander. The articles and journal he wrote survive as the primary documentation of the journey.

One of the expedition's two naturalists and its only cameraman couldn't go down the River of Doubt because of supply concerns.



## Proposed UC San Diego expedition



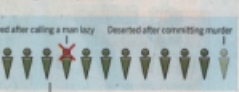
### Poor watercraft

The Roosevelt-Rondon expedition used heavy dugout canoes that rose only a few inches above the waterline (below). The canoes were hard to maneuver, making it impossible to navigate some of the river's smaller rapids. The team spent days dragging them through the jungle.



### Modern watercraft

The proposed expedition plans to use hired-still kayaks (above right) and inflatable rafts that can run all but the most dangerous of rapids and waterfalls.



# AMAZON • Trip will gauge how nature has transformed after 100 years

FROM A1 and suffered a leg wound that required bush surgery. He became so weak that he asked to be left to die on the jungle floor. Although he survived, historians said the trip ultimately shortened his life.

Scientists and filmmakers have explored the River of Doubt since then. But the region remains little known, a fact that's been tagging at

Meyers, a veteran explorer of the Amazon. The expedition, tentatively set for this summer and fall, would be "a homage not only to Roosevelt and Rondon, but to the native tribes they encountered," said Meyers, 67. "I also would like to see what kind of transformation there has been in the past 100 years in the fauna, flora and in the

people who live there." Meyers is collaborating with Jeffrey Leitzman, an Emmy Award-winning filmmaker from Del Mar who specializes in travelogues. Leitzman is owner of Barnstormer Production, which has created programming that has aired nationally on PBS and other networks worldwide. "We decided to share in my documentary what

Theodore Roosevelt experienced," said Leitzman, 48, a UC San Diego graduate. "We'll also be sharing our scientific discoveries. We'll benefit greatly from a century of advances in film technology, outdoor equipment and medicine." Leitzman and Meyers have discussed the possibility of using a small, camera-toting drone to film canopy and terrain dur-

ing the expedition, which is expected to take about six weeks to complete. The focus will be on changes in flora and fauna. Meyers also plans to spend time on one of his main research thrusts: bioinspiration. He studies natural materials in living organisms and tries to find ways to use them in products that can help people. For example, Meyers has paid special attention to the

skins of toucans, which are light, strong and rigid, and to the arapaima fish, which is armored against piranha attacks. "This is a wonderful opportunity to return to the Amazon in the aftermath of my life, 45 years after I spent two months in a village helping the population, and to contribute to knowledge through this exciting venture," Meyers said.