

Pioneering female ichthyologist and conservationist honored by naming of a new, cryptic species of the fish genus *Polymixia* from Bermuda

Gloria Elaine Hollister Anable, 1900–1988, is honored today by the naming of a new, formerly cryptic species of the spiny-rayed fish genus *Polymixia*. Species of *Polymixia* have been called ‘living fossils’ because of their unusual retention of primitive features, and because *Polymixia* is the last survivor of a Cretaceous radiation of polymixiiform fishes.

Our research naming the fish was published on Friday (July 16, 2021) in the journal *Ichthyology & Herpetology* and is available open access at

<https://meridian.allenpress.com/copeia/article/109/2/567/467982/A-New-Cryptic-Species-of-Polymixia-Teleostei>

Gloria Hollister was a key member of the William Beebe Bathysphere Expeditions in the 1930s that set world records for deep-sea descent and biological observations off Bermuda, setting records herself for deepest descent by a woman. Hollister also described new species of fishes and she perfected a method for clearing fish specimens and staining their bones, allowing study of the skeleton through transparent flesh, a method still widely used with slight modification by ichthyologists today. She participated in expeditions to tropical jungles, and later most famously led a 1936 expedition to Kaieteur Falls in what is now Guyana. During World War II she worked with the American Red Cross to promote its pioneering Blood Donor Program (its first such program) via its Speaker’s Bureau. After World War II she led the citizens’ group that saved what is now the Mianus River Gorge Preserve from development and, with the help of the Nature Conservancy, acquired the land. Mianus River Gorge became the first U.S. National Natural Landmark and was the first such acquisition of the Nature Conservancy and the model for its successful later land acquisition program.

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Hollister brief biography from the appendix to our paper in *Ichthyology & Herpetology*:

Gloria E. Hollister Anable

The new species of the fish genus *Polymixia* in Bermuda is named it in honor of Gloria Elaine Hollister (1900–1988) for her landmark contributions to deep-sea research, ichthyology, tropical jungle exploration, pioneering work for the Red Cross Blood Bank during WWII, and conservation (Berra, 1988; Moore, 2014; Nature Conservancy 2020; Grande and Wilson, 2021).

Hollister graduated with a degree in zoology from Connecticut College (B.S. 1924) and a Master’s from Columbia University (M.S. 1925), working with W. K. Gregory among others.

During this time, she participated in an expedition to British Guiana, and records suggest that she

met William Beebe for the first time. After graduation from Columbia, she worked in cancer biology at the Rockefeller Institute, and then in 1928 she was recruited to Beebe's new Department of Tropical Research (DTR) at the New York Zoological Society (NYZS, now the Wildlife Conservation Society).

As a key member of William Beebe's deep-sea bathysphere explorations in the waters off Bermuda from 1928 to 1940, Hollister's main responsibilities were surface-to-bathysphere communication and the recording of the conversations to and from the bathysphere, as well as ichthyological identifications and research (Strochlic, 2020a, b). Some of her dive transcripts are reproduced in Beebe's (1934) book "Half Mile Down," and all formed the basis for Else Bostelmann's artistic renderings of the deep-sea fishes, thus inspiring a generation of young naturalists (Krause, 2018).

Hollister's scientific expertise was most importantly in the field of ichthyology. She co-authored descriptions of new fish species from the West Indies (Beebe and Hollister, 1933, 1935), including the Shortstripe Goby, *Elacatinus chancei* (Beebe and Hollister, 1933), and her ichthyological knowledge allowed her to understand and accurately report what Beebe saw in the deep sea. She also descended in the bathysphere herself, setting records for depth of descent by a woman—410 feet (125 m) in 1930 and 1,208 feet (368 m) in 1934—the latter a record that stood for decades.

Working in the team's laboratory on Nonsuch Island (now a nature preserve) in Bermuda (Strochlich, 2020b), and between field seasons at the DTR in New York, Hollister perfected and published the first reliable method of clearing and staining fishes for study of their osteology. She called the results "Fish Magic" (Hollister, 1930). The fishes' flesh was cleared with potassium hydroxide and glycerine, and bone was stained with Alizarin Red S (Hollister, 1934).

She then applied the technique to study and publish descriptions of the caudal skeletons of many Bermuda fishes (Hollister, 1936, 1937a, 1937b, 1940, 1941).

Hollister frequently gave public lectures on natural history, exploration, and the bathysphere, with titles such as “With Beebe in Bermuda” and “My Jungle Days” (Anonymous, 1932: https://digital.lib.uiowa.edu/islandora/object/ui%3AAtc_44379_44375). Funds from her public lectures were used for the bathysphere expeditions and for a planned expedition into the jungles of (what was then) British Guiana; Hollister led the expedition in 1936, using a small airplane and reaching as far as Kaieteur Falls, along the way studying the native fauna such as the golden tree frog and the rainbow tanager.

In 1941 she left DTR and joined the American Red Cross to help organize its first blood donor project; the blood was badly needed for shipment to Britain, and after Pearl Harbor also for injured U.S. soldiers, airmen, and sailors. She became the public face of the Red Cross and blood donation through the Red Cross Speaker’s Bureau in Washington DC.

Hollister married Anthony Anable in 1941. After the end of the war, she led a citizens’ effort to save from imminent destruction a natural area near the New York-Connecticut border called the Mianus River Gorge. In collaboration with the Nature Conservancy, Hollister and like-minded conservationists purchased the Gorge, which became the first ever land purchase project of The Nature Conservancy, and later became the first U.S. National Natural Landmark to be officially registered. Among her later honors were the Gold Medal of Connecticut College (1970) and the Outstanding Achievement Award (1981) of the Society of Women Geographers.

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