

A sketch of Arnfried Antonius (1934 - 2010)

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Received 28-VI-2011.

Corrected 20-IX-2011.

Accepted 20-XII-2011.

Arnfried Antonius (Fig. 1) studied Zoology, Paleontology and Ethnology at the University of Vienna, Austria, gradually focusing his attention on the ecology and graphic micro-anatomical reconstructions of marine invertebrates (Antonius 1965). He completed his Ph.D. in 1967 with a dissertation on convolutid Platyhelminthes from the Red Sea (Antonius 1967). The Marine Biology Institute in Rovinj (then Yugoslavia, now Croatia) and the Museum of Natural History in Venice, Italy, were some of the places where he conducted his work during that time. Arnfried then explored Apulia (Italy), assisting Michele Sarà from the University at Bari, Italy, in search of an adequate location to establish a littoral research field station. Three sites were identified for a final consideration, but Michele Sarà relocated to Genoa and the project was abandoned. Driven to explore and see the world, Arnfried accepted an invitation by the hydrobotanist Fritz Gessner, to work at a new facility in Cumaná, Venezuela, in 1968, and joined the faculty of the Universidad de Oriente. Despite ample funding for the time, the facilities did not have a histology laboratory or microscopes. Arnfried thus started working with “larger” organisms, namely stony corals of the Golfo de Cariaco, where cold-water upwelling made for an interesting environmental setting (Antonius 1968, 1980), and Colombia (Antonius 1972). During the 4th Latin American Zoology



Fig. 1. Arnfried Antonius at Carry Bow Cay in 2001. Detail from a photo by Mike Carpenter.

Congress, held in Caracas in 1968, Arnfried met Jocelyn López Montes de Oca, who was studying chitons at the Universidad Autónoma de Santo Domingo (incidentally the first graduate of marine biology from that institution), and whom he later married. In 1969, when *Acanthaster planci* outbreaks on coral reefs in the Pacific brought forth panic and funding, Arnfried was invited to join research teams assessing the situation in Ifaluk and Woleei, Micronesia (Antonius 1971).

In 1972 Arnfried visited Klaus Rützler, a fellow graduate from Vienna, at the Smithsonian Institution's National Museum of Natural History in Washington D.C., to examine the

coral collections. This visit followed previous joint coral reef surveys and developed into a postdoctoral fellowship (Fig. 2). It also marked the beginning of Arnfried's continued involvement in Caribbean marine science, starting with reef surveys off the shore of Belize (then British Honduras) and a historic turn of events involving a briefly disoriented boat crew. Together with Klaus, he was assigned to charter a boat and retrieve an inflatable boat, outboard engine, compressor and other equipment from Glover's Reef. The equipment had previously been deposited there by a group of young, enthusiastic biologists and geologists, convinced that they would receive funding for the establishment of a research facility on one of the Caribbean's few atolls, following extensive surveys and a proposal-development workshop with representatives from approximately 40 institutions (Rützler 2009). Glover's Reef atoll is situated about 20 km east of the Mesoamerican Barrier Reef, Belize; the group's proposition was to compare it with a Pacific atoll, 10 years down the road. That grant never came through. Having retrieved the equipment, Arnfried and Klaus were returning from Glover's Reef when the boat captain lost his orientation and couldn't find Tobacco Cay Entrance. Instead, he found another cut through the reef, next to which there was a small island. Arnfried, Klaus and the rest of the crew went on land. The island was deserted but there was a sign saying, "Welcome to Carrie Bow Caye". And the rest is history, colloquially put, and has been well documented in Rützler's (2009) summary of the studies that have been carried out at the Smithsonian's Carrie Bow Cay Marine Field Station since its inception in 1972.

In 1973 Arnfried joined the Harbor Branch Foundation in Fort Pierce, Florida. At this time he had already started to address reef degradation of all kinds, supplementing field observations with experimentation and methods of pathology. In the same year he co-founded the Florida Reef Foundation and presented his first article on a "coral killing blue-green alga" at the 10th scientific meeting of the Association of Island Marine Laboratories of the Caribbean



Fig. 2. Acklins Island, Bahamas, 1970. Left to right: Walter Adey, Arthur Dahl, Tom Walker, Klaus Rützler and Arnfried Antonius. Photo by Mary Rice.

(now Association of Marine Laboratories of the Caribbean). The paper was published in the meeting's proceedings in 1976 and was the first report on what Arnfried later named Black Band Disease. From this time on, his work on a wide range of coral ailments became well known among coral reef researchers (Antonius 1976, 1977a, 1977b, 1981a, 1981b, 1984a, 1984b, 1985a, 1985b, 1987, 1988a, 1988b, 1989, 1991, 1993, 1995a, 1995b, 1995c, 1995d, 1996, 1998, 1999a, 1999b, 2000a, 2000b, Dahl *et al.* 1974, Antonius *et al.* 1978, 1990, Dodge *et al.* 1983, Rützler *et al.* 1983, Antonius & Riegl 1997, 1998, Antonius & Ballesteros 1998, Antonius & Lipscomb 2000, Verlaque *et al.* 2000, Antonius & Alfonso-Carrillo 2001, Riegl & Antonius 2003). His contributions to our understanding of specific coral diseases and afflictions were summarized by Richardson (2011), and the complete bibliography is included here.

Arnfried accepted a new position in Jeddah, Saudi Arabia, and moved there with Jocelyn in 1980. He joined the faculty at the King Abdulaziz University and began expanding his observations on coral pathology to the Red Sea and the Indo-Pacific (Antonius 1984a). In 1989, Arnfried and his family, now with daughter Anya, moved on to Austria where he continued his studies, gave lectures, was actively involved in the establishment of marine parks in Sinai, Egypt (late 1990s),

regularly visited the Caribbean, and guided graduate students until 2002. He concluded his research endeavors with the examination of “coral-killing” red algae and ciliates. After sudden health complications, which emerged in late December 2009, Arnfried passed away on January 13th, 2010.

The coral pathology session of the 35th AMLC scientific meeting in Costa Rica (2011) was dedicated to Arnfried Antonius, as proposed by Jorge Cortés. Arnfried’s contribution in kicking off awareness about coral pathology, amidst the widespread initial indifference about the topic among his peers, is well known and so my account does not pivot on his first descriptions of Black Band Disease. Instead, I intended to outline the path he walked throughout his years of involvement in marine science, many of which he spent in the Caribbean (Fig. 3). Fourteen years ago, at the 28th AMLC meeting, which was also held at the CIMAR in San José, Costa Rica, Arnfried and I spent



Fig. 3. Arnfried Antonius in 1980, photographing Black Band Disease progressions at Carry Bow Cay. Photo by Klaus Rützler.

several hours at a nearby tavern talking about our work experiences, our opinions on the status of coral reefs and research in the Caribbean, among other things. This was not our first or last encounter, but for me it was particularly memorable because it was then that I realized what I appreciated about Arnfried and where I felt a kinship to him. It was his passion for his work and fieldwork in particular, regardless of the logistic and environmental constraints, the popularity of the topic, or the institutional flag, if any, under which work was carried out. He was a kind man, a good listener, and always ready to help. Arnfried was keenly perceptive of regional differences in environmental ethics and was very objective as to the importance of marine research. It is thus not surprising that he had a great sense of humor and never took himself too seriously, or the science circus with which we often surround ourselves.

ACKNOWLEDGMENTS

I am deeply grateful to Jocelyn Antonius and Klaus Rützler for the information they have shared with me. Klaus Rützler provided the photos, and Bernhard Riegl shared a few accounts from Sinai. My thanks also go to Jorge Cortés for asking me to write this article, which I happily accepted.

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