

Obituary

Whitlow W. L. Au, 1941–2020

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Whitlow W. L. Au, a pioneer of understanding the echolocation of dolphins and whales, former president of the Acoustical Society of America (ASA),

first chairperson of the ASA Animal Bioacoustics Technical Committee, long-serving associate editor for *The Journal of the Acoustical Society of America*, first Silver Medal recipient in Animal Bioacoustics, and Gold Medal honoree, passed away at age 79 on February 12, 2020, at his home in Kailua, Hawai'i.

Whit received a BS in electrical engineering from the University of Hawai'i and an MS in electrical engineering from Washington State University (WSU; Pullman) before studying radar as a US Air Force scientist. He then returned to WSU to complete his PhD in electrical science. Whit turned his research to biosonar when he joined the US Navy Naval Undersea Center. His first publication on dolphin echolocation showed that dolphin signals can be very broadband, with center frequencies of 120 kHz, much higher than the 35- to 60-kHz signals reported at the time (Au et al., 1974). This new perspective was challenged by reviewers initially but set the stage for the enormous influence he had on the field, highlighted by his foundational book *The Sonar of Dolphins*.

In 1993, the Hawai'i branch of the Navy Center was closed and Whit jointly began the Marine Mammal Research Program at the Hawai'i Institute of Marine Biology on Coconut Island with the University of Hawai'i at Manoa. Moving to the university as a researcher/professor allowed his academic career to flourish dramatically. Whit made contributions in many areas of bioacoustics, expanding our understanding of the broadband characteristics of snapping shrimp sounds, the songs of humpback whales, the signaling and foraging behavior of wild odontocetes, the echo characteristics of potential dolphin prey, hearing in marine mammals, and the distribution of marine life around the Hawaiian Islands. Whit's reach was bolstered by the cross-disciplinary collaborations he fostered with his colleagues. To these collaborations, he brought a fearless approach to problems, seeing gaps in available technolo-

gies as an opportunity to do something novel. Using his technical expertise and perspective as an engineer, Whit tackled questions he was passionate about, had fun doing it, and was kind and generous to others he interacted with, no matter their position. Whit's collaborations with his graduate students, most studying zoology or oceanography, were among his most rewarding, many continuing throughout their careers. He loved and respected his graduate students, and they, in turn, returned his affection and his propensity for hard work and success.

Whit wrote 3 books, edited 3 others, and published 226 papers in the peer-reviewed literature. It is hard to imagine where the science of the echolocation of dolphins and whales would be today without the contributions of Whitlow W. L. Au. In addition to his many roles in the ASA, not least of which was as chief greeter of newcomers, Whit organized many bioacoustics workshops and sessions, sat on the Ocean Studies Board of the National Research Council of the National Academies, and served on a Danish Research Foundation Blue Ribbon panel.

He is survived by his wife of 53 years, Dorothy; their 4 children, Wesley, Lani, Wagner (Jim), and Nani; and 7 grandchildren.

Selected Publications by Whitlow W. L. Au

- Au, W. W. L. (1993) *The Sonar of Dolphins*. Springer-Verlag, New York.
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- Au, W. W. L., Floyd, R. W., Penner, R. H., and Murchison, A. E. (1974). Measurement of echolocation signals of the Atlantic bottlenose dolphin, *Tursiops truncatus* Montagu, in open waters. *The Journal of the Acoustical Society of America* 56, 1280-1290.
- Au, W. W. L., Pack, A. A., Lammers, M. O., Herman, L., Deakos, M., and Andrews, K. (2006) Acoustic properties of humpback whale songs. *The Journal of the Acoustical Society of America* 120, 1103-1110.
- Nachtigall, P., Supin, A. Y., Pawloski, J., and Au, W. W. L. (2004). Temporary threshold shifts after noise exposure in the bottlenose dolphin (*Tursiops truncatus*) measured using evoked auditory potentials. *Marine Mammal Science* 20, 673-687.

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