Zoomorphology (2024) 143:1–3
https://doi.org/10.1007/s00435-024-00656-5

OBITUARY

Obituary: Claus Nielsen (March 28th, 1938–January 18th, 2024)

Anders Hay-Schmidt[1] · **Jens T. Hoeg**[2]

Published online: 7 April 2024

One of the greatest and most influential zoologists of our times, Professor Claus Nielsen, passed away on the 18th of January 2024.

Claus Nielsen during a field trip to Phuket Thailand in 2003

✉ Anders Hay-Schmidt
ahay@sund.ku.dk

[1] Department of Odontology, Panum Institute 24.5.20, Faculty of Health, University of Copenhagen, Blegdamsvej 3, 2200 Copenhagen N, Denmark

[2] Marine Biology Section, Department of Biology, University of Copenhagen, Universitetsparken 4, 2100 Copenhagen Ø, Denmark

Claus finished high school in 1956. He started studying biology at the University of Copenhagen in 1956 and graduated in 1964. Here. he much enjoyed the tutorship of Professor Ragnar Spärck as illustrated by a small anecdote Claus liked to tell: before a student seminar on molluscs, Claus had characteristically read what was new and came across the recently published volume of Traite de Zoologie, which highlighted gill morphology (rather than shells) as the character suite of importance. On the professor's question, how one could classify bivalves, Claus readily replied: "Well, one could use gill morphology". As to which the professor smilingly replied: "Ahh, I gather someone can read French!" In fact, Claus's skills in languages was legendary. Not only did he speak and write fluent English, bu also mastered both French and German easily.

After his graduation, he went for a short period to the USA before returning to Denmark where he worked as assistant professor at the Marine Biological Laboratory, University of Copenhagen at Elsinore in 1965. During the 1960s and 1970s, Claus mainly worked on bryozoan embryology and systematics. Until 1969, this laboratory was headed by the world-famous Professor Gunnar Thorson, whose main research concerned the role of marine larvae. But in personal comments, Claus made it quite clear (to JTH) that their relationship was somewhat troubled. The very experimental line pursued by Claus was apparently not to his liking, or perhaps his choice of animal group. The outcome of Claus' research was the seminal biography on "Entoproct life cycles and the entoproct/ectoproct relationship" from 1972, in which ectoprocts were grouped together with entoprocts: in modern terms, they were classified as sister groups and positioned as spiralian phyla. This almost immediately positioned Claus as one of the best-known and most innovative invertebrate biologists, being cited in all subsequent general text textbooks.

Claus continued his work on ecto- and entoprocts and their relationship throughout his career and always came back to the conclusion that they were sister groups, belong to the spiralian phyla and unrelated to phoronids and brachiopods. This was also true in his computer cladistic analysis

(published in ca. 2000), based on morphological character sets.

Claus' main approach was with live animals followed by high-quality light and later scanning electron microscopy. In contrast, he never engaged much in TEM, although perusing such published data extensively in his books and reviews. One exception is his brilliant paper (Nielsen and Rostgaard 1976), where his use of simultaneous fixation with osmium and glutaraldehyde over ice resulted in some of the most beautiful, impressive TEM plates ever published.

Claus was chairman for the Marine Biological Laboratory (1970–1975) and from 1978 to 1980 he was Dean of the Faculty of Natural Science, University of Copenhagen, and managed to guide the faculty into calm waters. One characteristic event was his improvised organization of a dinner for all staff and students on the Science Campus in 1979, on the occasion of the 500-year anniversary of the University of Copenhagen. Learning that no such celebration was planned locally, he simply phoned the Carlsberg Foundation and asked if they could step in ad hoc: which happened!

In 1983, Claus moved from the Marine Biological Laboratory at Elsinore to the Zoological Museum of University of Copenhagen. The transfer to the Zoological Museum also moved his focus to the broader picture of animal evolution and together with Professor Arne Nørrevang at the Department for Comparative Anatomy, University of Copenhagen, he formed the framework for larval ciliary bands based on work done in the early 1970s by Professor Richard Strathmann at Friday Harbor Laboratories, University of Washington, and they also formulated the Trochaea theory, which in many ways redefined the perception/conception of animal evolution.

Claus' main focus during more or less his entire career was on descriptive embryology and trying to understand both how different organisms and organ systems develop and how this could be used in understanding the evolution of animals.

Settled at the Zoological Museum, Claus began his work on what later should become the Textbook "Animal Evolution, interrelationships of the living phyla". The first edition is from 1995 and the third (latest) edition from 2012, and it is still a bestseller and widely cited. The first edition also was honoured by becoming the "best selling zoology textbook of the year". This book, as all his writing, is characterized by a meticulous attention to producing superb graphics and a writing style that is second to none. He was preparing a fourth edition but did not finalize this. Between the scientific work and teaching, Claus managed to hold the post as Director for the Zoological Museum from 1992 to 1996. In 2005, he became Professor of Zoology at the Zoological Museum.

Claus Nielsen was Editor for Acta Zoologica from 1984 to 2003 and did great work in improving the visual impact of the journal by changing the format from A5 to A4, before the online era. This made it much easier to present high-resolution micrographs. In fact, in the early 1980s zoological morphology was not held in high regard. It is widely recognized internationally that Claus Nielsen was one of the main figures, if not the main one, who served to bring this important discipline back into high esteem. Very soon, also, Acta Zoologica became the most sought-after place to publish zoomorphological articles.

In the early 1990s Claus managed to spearhead what was perhaps one of his main contributions to zoology. Locally, at the Zoological Museum and its sister laboratory at the Department of Biology, the group of zoomorphologists had a hard time surviving, facing cutbacks in funding, staff, and esteem. This all changed when he gathered the group into successfully acquiring a grant from the Danish National Science Research Council to cover various expenses over 3 years. Being renewed three or four times, this grant essentially "saved the day" and even more importantly enabled the few postdocs and associate professors to transition into tenured jobs. In doing this, Claus characteristically trusted his group to use the money in a sound fashion. He never micro-managed any request for funds from the group, and the result was that soon Copenhagen became known as one of the few centres of zoomorphology in the world, envied and admired by many.

As a colleague, Claus was known for his always friendly attitude, his great willingness to share all sorts of his enormous knowledge on both animal biology and evolution, but also his in-depth knowledge of flowers and stories from his many journeys. Claus did not have a large group that he commanded, instead he followed the tradition from Professor KG Wingstrand of the open office policy, where all were welcome, and discussions and research were done in a genuine curious way. Of course, Claus also excellently fulfilled his mentor role for his students, which resulted in lifelong friendships. Claus' collaboration with external partners was another of his competences, from which many of us "students" and colleagues have benefitted. But also, the scientific output from Claus' collaborative projects is important and has continuously fed information to his ideas on animal evolution.

In the classroom, Claus was always an engaging and fascinating teacher. At marine field courses, he became known for singing "Tom Lehrer" songs after hours. On the other hand, true to his slightly reserved personality, he always excused himself to students for not joining in the common dining room: Claus was a gourmet and preferred going alone to a restaurant he found suitable for his dinner.

As a colleague, it was easy to like Claus. One could always drop in with exciting results and he was always willing to share his enthusiasm for what he was presently doing. He was a much-invited speaker at symposia and meetings. He attended very many meetings on marine biology or

larvae, often as a keynote speaker. If not there, the question would almost always be: "But where is Claus Nielsen?" He also enjoyed travelling to field stations abroad, preferably to warm countries. The coldness in the Arctic was not to his liking; he much preferred Thailand and other warmer places.

Far from being narrowly focussed on his science, Claus had broad interests. He was particularly interested in arts and classical music. For many years, he joined a chorus and regularly attended concerts and opera performances. Fine literature was perhaps much less to his liking. He at one time said he found "Buddenbrocks" by Thomas Mann "extremely boring". He much better liked cartoons on Tin-Tin by "Hergé."

Few if anyone has during the last half century influenced invertebrate zoology as Claus did, and he received the Alexander Kowalevsky Medal in 2001 and the Linnean Medal in 2015. He was highly esteemed, although not all people subscribed to all of his theories on phylogeny and morphology. Such is the way of science, and his impact and the inspiration he instilled in a whole generation of zoologists will undoubtedly be long lasting. Claus Nielsen will be sorely missed.

On behalf of colleagues and friends from the University of Copenhagen,

Anders Hay-Schmidt and Jens T. Høeg

Reference

Nielsen C, Rostgaard J (1976) Structure and function of an entoproct tentacle. Ophelia 15:115–140