



ANIMALS AND MONEY

This part of BioS Reports unravels relationships between animals and the economy.

Black-Lip Pearl Oyster - A Treasure for the Tanzanian Economy?

Eleonore Kreß

Pearls are a symbol of wealth and worn as jewellery all over the globe. The production of shells and pearls worldwide was 700 tonnes in 2020, with a global trade value reaching US\$ 521 million in the same year [1,2]. Major producers include China, Japan, French Polynesia and Australia, specializing in either freshwater or marine pearl cultivation [3]. Due to their rarity, pearls can be sold at high prices, helping these nations to boost their economy. In contrast, Tanzania currently is not a major producer of pearls, but its inhabitants may benefit from it in the future [4,5]. The African country already has expertise in coastal aquaculture (e.g. fish, crabs, seaweed). It is therefore interesting to investigate whether an expansion into pearl oyster cultivation could improve the economic situation in Tanzania [4].

Pearls are a by-product of pearl oysters. One of the most important members of this family is the black-lip pearl oyster, *Pinctada margaritifera*, native to the Pacific and Indian Oceans [6,7,8]. In the wild, this species produces nacre as a defence against foreign bodies and parasites. Over time, the nacre-coated particles result to be what we know as pearls [7]. Nowadays, most pearls are produced on pearl farms where its formation is induced by introducing a nucleus to the oyster as an irritant [5,6]. This technique is used to produce two different types of pearls: half-pearls (hemispherical pearls) and round pearls. A half-pearl takes 9-12 months to grow (several can grow simultaneously), while a round pearl can take up to 5 years to form. The price of pearls and pearl jewellery depends on the place of origin and the type of pearl (marine or freshwater) [3,5]. In jewellery shops, a necklace of 54 to 59 freshwater pearls can cost between US\$ 199 and US\$ 453, while a necklace of 58 marine Akoya pearls can cost up to US\$ 4680 [9,10,11]. Recent pilot studies suggest that the production of half-pearls could offer far-reaching and promising opportunities for income generation in Tanzania [5]. Looking at a scenario of a farm with 200 oysters, 684 half-pearls could be produced per year. At US\$ 6.25 for one half-pearl, an annual gross revenue of US\$ 4275 could be generated [5] – almost four times the average per capita income (US\$ 1140 in 2021) [12]. A single pearl oyster would contribute US\$ 21 in annual revenue, excluding production and maintenance costs.

Compared to the major pearl producers, the potential income generated by Tanzanian oyster farmers would be minimal. However, exploration of this practice could be profitable and help stabilise the economy of the developing country. Since aquaculture is a well-implemented practice in Tanzania, pearl oyster farming holds untapped potential to increase profits. Introducing training for farm workers and more appropriate tools could facilitate the process. With such advances, pearl oyster farming could contribute to a larger proportion of Tanzania's aquaculture.

EXCURSIONS AND OTHER NEWS

Lab Rotation to Publications

Klaus Reinhardt

MSc theses, or parts of it, can be of such high quality that their data contribute to scientific publications. For course work before the thesis, this is much rarer. In BioS, we had at least two such cases. In the first publication, resulting from the Skills course "Electron Microscopy", three students, Maria, Charlice and Anne, helped to investigate the spindle formation during spermatogenesis in a species of praying mantis. The main result was that the two mitochondrial derivatives, which in most insects twist around the sperm tail in a double-helix, are connected by a zipper-like structure. The article [1] is published in the journal PLoS ONE.

In the second publication, two BioS students, Emily and Elisa, helped to collect data during their Lab Rotation in Heiko Stuckas's group. The project tested the suitability for genetic sampling for mammal monitoring: in habitats suitable for small mammals, pieces of water pipes were equipped with a little piece of food, luring the mammal in and stimulating it to leave a dropping, and hence, DNA traces of their gut. More than a thousand samples were analysed, and Emily and Elisa helped in the lab, and also optimised scripts for semi-automatic data analysis. That this trap (see picture (c) H. Stuckas) worked will help to contribute the handling of small mammals. The article [2] was published in the journal Mammal Research.

Many congratulations to the students and perhaps future students will be as lucky to see their course work directly contributing to scientific papers.



EXCURSIONS AND OTHER NEWS

Small insights in student's or professor's points of view, field trips, and other stuff we do.

Student Job Stories: An Interview with Gabriel Pinto Veas

Ezgi Ece Yavuz

Finding a student job in Dresden can be challenging, especially for international students. For BioS Reports I talked with Gabriel Pinto Veas on balancing master studies and financial responsibilities.

Gabriel introduced himself as probably the oldest master's student in the Biology in Society program. He moved to Dresden with his wife 2,5 years ago and today he shares his experience working as a part-time cleaner while managing his studies.

Ece: Gabriel, can you tell us about your current job?

Gabriel: I have worked for a cleaning company for over a year now, cleaning stores in a shopping mall. My shifts are early in the morning, usually from 6-10 a.m. At first, I worked six days a week but now I only work on weekdays.

Ece: What do you like most about your job?

Gabriel: It's quite relaxing. It's not too physically demanding, and in a way, it feels like a morning exercise routine. Depending on the store, I can even listen to music or podcasts while working.

Ece: What's the most difficult part of your job?

Gabriel: The work itself isn't challenging, but dealing with people can be. Sometimes people can be rude, and communication gets especially tough when they speak hard-to-understand German dialects.

Ece: How do you manage to balance your job with your academic responsibilities?

Gabriel: It was really hard at first, especially last year when I was doing lab rotations and courses. I had to wake up before 5 a.m. to start my shift in the morning. Then, I would head straight to the lab and work until 9 p.m. I was also working Saturdays, giving me one free day a week. It was exhausting. Luckily, now I work less and can focus on my thesis. Even when I am really tired after a shift, I feel accomplished because I have already done a lot before most people even start their day.

Ece: Have you learned any unexpected skills from this job?

Gabriel: I've picked up a lot of German words related to cleaning. My German isn't great, but I'm fluent in "cleaning German" now!

Ece: Do you have any memorable stories from your job?

Gabriel: So many! Once, I had to confront a guy who was stealing cleaning carts. Another time, I locked my keys inside and had to wait 90 minutes. But one of the best moments was when our supervisor, who was very strict and wanted to get promoted, got fired. After that, the whole team became more relaxed and happier.

Ece: Would you recommend this type of work to other students?

Gabriel: If you're still taking courses, I wouldn't recommend it. You also need to be good at communicating with your professors or supervisors that due to work you might be late for classes. I can understand some people like to have proper office hours or working in evenings but for me I can accommodate around my job for now. Nonetheless, I would like to look for other jobs when I graduate.

Ece: How much do you earn, and do you think it's enough for a student to live in Dresden?

Gabriel: I earn €13.50 per hour. On special shifts in holidays, you can earn 50% more. I live with my wife, so we share expenses, but we also have more expenses than a student who lives in a dorm or shared flat.

Ece: Do you think it's difficult for international students to find jobs in Dresden?

Gabriel: Yes, it's quite difficult. Most jobs at the university require German, and mastering the language takes a lot of time—time that we also need to devote to our studies. In other cities that have larger international communities, students typically find jobs more easily, but here in Dresden students often end up working as bike couriers, hotel staff, or cleaners. I wish the university would pay more attention to this issue and provide better support for international students. Additionally, I've noticed sometimes professors prefer hiring German-speaking students for their labs—not all professors, but some. I understand the importance of language proficiency, but I wish there was more flexibility. It would really help if professors took into consideration the reality that many students must also work outside the university.

