BioS Reports

glimpse into the activities of the Master's course „Biology in Society"

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EXCURSIONS AND OTHER NEWS

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

Cheers to the end of the second semester!

After finishing the final written exams of their master's degree, BioS students and professors went out for some drinks and chats, reflecting on courses and the programme.

ANIMALS AND MONEY

This part of BioSReports unravels interesting relations between animals and the economy.

The economic importance of whales in Húsavík – Iceland

by Nele Kheim

Cetacea (which is the biological name of the group including whales, dolphins and porpoises) and whales in particular, are nowadays perceived as symbols of nature. Observing them in their natural habitat can be a humbling experience, making people feel connected to nature. In 2019, more than 15% of the 2 million tourists visiting Iceland, attended whale watching tours[1,2]. Húsavík, a small town in Skjálfandi Bay, with around 2300 inhabitants, is even referred to as the whale watching capital in Europe[3]. The main attractions is/are whale watching and the local whale museum. Furthermore, Húsavík hosts a research center of the University of Iceland, focusing on marine biology and cetaceans in particular, altogether making them an important foundation for the local economy[4]. Around 104,000 tourists came to Húsavík in 2019 for whale watching, which currently costs between 75 and 141€ per person[5,6,7]. An estimate of the financial turnover can be calculated by using the median price of 109€, which sums up to more than 11 million € for 2019.

Húsavík Whale Museum, collaborating with the local research center, adds an educational component to the whale watching industry in Húsavík and attracts around 30,000 visitors per year. Adults pay 2200ISK, which currently equals approximately 15.5€ (March 2022), children can enter for free[8]. According to the museum the percentage of full price paying adults is around 40%, since groups and whale watching tourists also get discounts. Considering this, the financial turnover can be estimated to range between 200,000 and 300,000€. With whale watching starting around 25 years ago, the entire tourism industry has blossomed. It attracts tourists to visit and stay in the town, which has a huge indirect impact on the local economy in terms of accommodation, infrastructure, supermarkets and restaurants. However, the importance of whales or Cetacea in Iceland is not purely recreational. Iceland is one of three countries among Norway and Japan, that still permits commercial whale hunting[9]. In Iceland roughly 50-200 whales were killed annually between 2010 and 2018[10]. The economic impact of whaling could not be assessed properly. Some articles claimed profits of around 10.4 million€ annually between 2009 and 2017, but the respective study could not be found[11]. However, these numbers apply for the whole of Iceland and cannot be scaled down to the region of Húsavík. During the past few years, the Icelandic whaling industry has suffered. In 2019 Japan withdrew from the International Whaling Commission (IWC) and is now hunting whales commercially, without considering international suggestions on quotas[12]. Thus, Icelandic whale products are too expensive to compete on the market. No whales have been hunted in Iceland since 2019 due to the outbreak of the Covid-19 pandemic. Besides, the demand for whale meat has decreased, altogether leading Iceland to discontinue their hunting quotas after 2024 and officially put an end to its whaling industry[13].

Whales undeniably shape the economy of Húsavik. I calculated that the financial impact of whale watching greatly exceeds the impact of educational institutions like the museum, in the order of two magnitudes. It appears, that whaling does not play a crucial role for the economy of the region around Húsavík.

Regarding animal welfare, Whale watching and whaling are very differently perceived and interpreted by people. However, for the animals which are in both cases located and followed by boats, both activities are presumably stressful[15]. Finding sustainable, international, legally binding codes of conduct that minimize the impact of the industry on the animals, is a future challenge of the steadily growing industry.

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FACT CHECK

In this section students evaluate the scientific evidence behind a certain urban myth.

The dangerous myth: Vitamin D protects against cancer

by Elisa Peters, Emily Fichter, Leonard Kurzweg, Charlotte Kricke

Certainly, people have been recommended to take vitamin D, and there is often talk of a worldwide vitamin D deficiency. In a global study from 2014, about 45% of volunteers were found to have inadequate vitamin D levels. Some people believe this vitamin deficiency to be associated with reduced protection against diseases. Therefore, vitamin D is claimed to have many preventive properties against depression, diabetes, and cancer. But what is true about this myth?

Vitamin D is a hormone produced when the skin is exposed to sunlight, whereas only a fraction be absorbed through food sources. Factors influencing vitamin D supply include geographical location, which determines exposure to sun rays, local air pollution and other factors like age, skin pigmentation, and pregnancy. Life habits such as diet, cultural dress codes, and daily outdoor activities also play an important role in vitamin D supply.

Its main functions are in bone mineralisation and maintaining the calcium balance in our body. It likely plays a role in many other cellular processes, as vitamin D can be recognized/taken up by nearly every cell in the body. In experiments with animal models and cell cultures, anticarcinogenic properties, such as promotion of cell death and inhibition of cell growth, were found. Based on these results, researchers hope to exploit a cancer-preventing effect in humans.

In the report "Vitamin D and cancer prevention - between truth and speculation", the current state of studies on the issue of cancer prevention through vitamin D was outlined in detail. One of the biggest problems in this area of research is that we can't experiment with humans the way we do with animal models or cell cultures. Therefore, clinical trials are conducted, in which probands are administered vitamin D to investigate the influence on cancer prevention and mortality. Getting an overview and to be able to summarise all these individual studies, so-called meta-analyses are performed. These are systematic, representative, and objective statistical evaluations comparing several studies. The report focuses on meta-analyses of vitamin D supplements and their impact on cancer incidences and mortality.

Currently, there is no clear evidence supporting the hypothesis that vitamin D supplements prevent cancer. However, there is indication that vitamin D supplementation may reduce mortality in cancer patients. This was demonstrated especially in patients with colorectal cancer. Such results should be treated with caution, as studies often examine only certain population groups, e.g., those from specific geographic regions, gender, or age groups. Also, the number of participants and the number of studies used are often insufficient. In addition, the concentration of supplemented vitamin D varies from study to study, making comparison difficult. Furthermore, it is challenging to separate cancer-promoting factors such as alcohol, smoking or genetic predispositions from the preventive effects of vitamin D.

Therefore, from a scientific point of view, it is risky to promote the myth that "vitamin D protects against cancer". The statements are unproven and require far more study data than is available today.

Literature

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13

EXCURSIONS AND OTHER NEWS

Who will join BioS in 2022?

by Klaus Reinhardt

The bylaws of BioS required applicants to demonstrate a special suitability for the course in an interview.

The interview panel (Mrs Dr Keiler, Mr Prof Reinhardt, Mr Prof Zierau) received 32 non-EU applications from 17 countries (with India top: 6 applications). We invited 21 (66%) for zoom interviews, based on motivation letter, type of BSc degree, and marks (in that order). Nine people turned up for the interview, only one was unsuitable. We sent out eight (7female, 1male) invitation letters (38% of interviewees).

Seemingly, 39 EU applicants had registered electronically but we only received 22 applications in paper (and in time), only 4 not from TU Dresden. All 22 were invited for an interview (for which current BioS student Leonie Hobohm joined the panel – thank you, Leonie); 19 turned up. Luckily, none of 13f,6m interviewed candidates were unsuitable. Thus, all in all, we sent out 27 invitation letters. Exactly the same number as 2021. We will be excited to see how many people will join BioS for 2022.