



## ANIMALS AND MONEY

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

### The Economic Importance of Fighting Bulls in Madrid – Money Maker or Subsidized Animal Cruelty?

by Helen Rothfuß

Bullfighting has been deeply rooted in Spanish history for centuries and is a tradition maintained to this day. Due to a law passed in Spain in 2013, bullfighting is considered as national cultural heritage and is therefore legally preserved<sup>1</sup>.

Its economic importance has remained underexplored but might be a significant argument when bull fighting is publicly discussed. The economic importance of fighting bulls will be estimated for the main important area for bullfights, which is Madrid, hosting the most relevant bullfighting arena in Spain, the so called "Plaza de Toros de las Ventas"<sup>2</sup>.

Bullfights are complex and several fighting subtypes exist that slightly differ in their structure, for example in the age of the bull, or whether the bullfight is performed on horseback or on foot. In every bullfight three "Toreros", working with five assistants respectively, perform a choreographed fight against two bulls each. In total there are six separate fights, that all last about 20 minutes and a total of six bulls are killed. The assistants weaken the bull by sticking lances and barbed sticks into the muscles in the neck of the bull, forcing it to lower its head. Finally, this weakened position enables the Torero to kill the bull by sticking the sword into its neck. Sometimes the bull does not die instantly and a second attempt is necessary<sup>3,4</sup>. These practices make bullfighting an extremely controversial topic, due to animal welfare concerns<sup>5</sup>.

In 2019, Madrid hosted a total of 71 bullfighting events, which attracted roughly 946.000 spectators<sup>6</sup>. 699.000 of these tickets were sold for roughly 6 -160 € in 2019, remaining 247.000 visitors of the two less popular types of bullfighting, payed between 3 -90 €. Overall, the 71 events hosted in Las Ventas in Madrid could have generated between 4,9 mio - 134 mio € in sold tickets, calculated with lowest and highest priced tickets, respectively.

Las Ventas in Madrid can also be visited, with prices ranging from 6 € to 70 €<sup>7</sup>. According to the organizers, the tours attracted 102.500 visitors in 2019<sup>8</sup>, thereby generating an estimated 615.000 - 7,2 mio €.

In addition to ticket sales, breeding bulls also has an economic value. Breeding of fighting bulls, so called "Toros de lidia", contributes to the Spanish economy and is a source of employment. In the community of Madrid alone there are 90 breeding farms<sup>9</sup>. Upbringing costs of a bull ranges between 4.000-5.000 €<sup>10</sup>. In each bullfight, 6 bulls are used, meaning that for the 71 bullfighting events in Las Ventas in Madrid in 2019, a minimum of 426 bulls were purchased, generating a turnover of around 1,7 - 2,1 mio €.

In a 2013 report, the bullfighting lobby National Association of Bullfighting Events Organizers (ANOET) claimed the sector directly employs around 54.000 people and directly contributed 422 mio € to Spanish economy<sup>11</sup> and Madrid alone directly generated around 12 mio € through bullfights<sup>12</sup>. On the other side, liberal parties and animal welfare organizations believe the bullfighting sector in Spain can only survive due to large subsidy sums. They calculated that in 2013 the sector received around 570 mio € in subsidies from Spain and another roughly 130 mio € through the Common Agricultural Policy (CAP) of the EU<sup>13,14</sup>. During the early months of COVID-19, the animal rights group AnimaNaturalis stated that without subsidies, the sector would be reduced to a tenth of its size at the time<sup>15</sup>. EU subsidies in form of the CAP are still distributed to farms based on number of hectares and not on what is being produced or with which purpose. As long as Spain chooses to maintain bullfights, Spain is the only legal power influencing the raising and selling of fighting bulls<sup>16</sup>.

The total economic importance of bulls in Madrid could not be finally estimated, since the generated turnover stands opposite the largely subsidized costs of the sector. Available data on generated wealth through the bullfighting sector is largely put out by pro-bullfighting campaigns and can therefore be biased. Overall, there seems to be growing disinterest in bullfights. The number of bullfights in Spain has decreased by more than half during the span of around a decade<sup>17</sup>. Some regions in Spain no longer practice bullfights. There were multiple attempts to ban bullfighting, for example in Catalonia in 2010<sup>18</sup> and on the Balearic islands in 2017<sup>19</sup>, yet Spain's constitutional court overruled these bans on the basis of the Spanish cultural heritage law passed in 2013. Bullfighting continues to be a highly discussed and politically divided topic.

## FACT CHECK

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

### Cannabis – Gateway to the Drug Abyss?

by Birte Martens, Anne Ryndyk, Sophia Winkler

Cannabis is the most common illicit drug in the European Union, with an estimated 22.2 million users aged 15-64 in 2020<sup>1</sup>. Its status as an illicit drug may soon change, however. More and more countries are discussing legalizing the recreative use of cannabis. In fact, the new German government is planning to legalize recreational use, much to the dismay of those who oppose legalizing cannabis. An argument often used against the legalization is that it is a gateway drug. Gateway drugs are drugs that lead to the use of other, harder drugs, such as cocaine. Typically, the gateway sequence is said to start with alcohol and tobacco, which lead to cannabis, which in turn leads to more damaging, addictive drugs. CSU politician Emmi Zeulner claimed that cannabis is a gateway drug in a speech on the German Narcotics Law in front of the German parliament in 2017<sup>2</sup>. During the speech, Frank Tempel (Die Linke) retorted that the gateway effect of cannabis has been scientifically refuted. But what is the truth?

Unsurprisingly, considering the controversy of the subject, there are multiple studies seeking to examine the gateway effect of cannabis<sup>3,4,5,6,7,8</sup>. Almost all of them have found a strong association between cannabis use and later use of harder drugs. However, correlation is not enough to prove causation, and many confounding factors have been identified<sup>9,10,11,12</sup>. It is possible that these factors are the real cause and that the observed effect is simply due to affected people being likely to consume both cannabis and other drugs. These factors include mental illnesses, such as depression or anxiety, and several demographic factors, such as a difficult childhood. Additionally, some people may simply be genetically predisposed to drug use. However, even after adjusting for these factors, a strong association between cannabis use and later use of harder drugs was found<sup>13</sup>. Furthermore, higher doses of cannabis increased the risk of using harder drugs later in life and the age of onset of cannabis use also had an effect. People who started using cannabis at a younger age were at higher risk to using harder drugs later on. This indicates that cannabis could cause other drug use, especially in adolescents. A study on rats revealed further evidence that cannabis could potentially influence addictive behavior, but only some behaviors were affected, and similar effects are yet to be observed in humans<sup>14</sup>.

Research has shown that drug use in general, including alcohol and tobacco, correlates with later use of harder drugs, regardless of whether the gateway sequence is followed<sup>15</sup>. It seems clear that cannabis use is correlated with the use of harder drugs in later life, but the underlying causes have not been identified. Hence, it is unclear whether the gateway hypothesis is correct or whether cannabis use and use of harder drugs simply share the same causes. Identifying and preventing these causes may be more effective in preventing the use of hard drugs than focusing on one particular drug.

## EXCURSIONS AND OTHER NEWS

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

### Saxonian Switzerland and Scientific Talks

by Asude Demir, Helen Rothfuß, Nele Kheim



Lecture in Bad Schandau held by Prof. Klaus Reinhardt.

As in 2021, during the introductory week of BioS 2022 in Bad Schandau we were honoured to be joined by guest speakers, who presented their scientific work and current research. Dr. Caitlin McDonough-Goldstein from the University of Vienna gave an insight into her research on understanding gender and sex determination and finding a queer feminist approach to research on sexual reproduction. She suggested to shift the focus, especially in medical research, from looking for differences between sexes to investigating the influences of hormone levels on drugs or pathologies. This is more meaningful for research, since differences between individuals can be bigger than between sexes.

From the Senckenberg Museum in Dresden, Dr. Heiko Stuckas talked about salinity driven selection and local adaptation in Baltic Sea Mytilid Mussels. Lastly, Dr. Oliver Otti from the Zoology institute of TU Dresden presented the role of microbes and ecological factors affecting reproductive traits in male and female bed bugs.