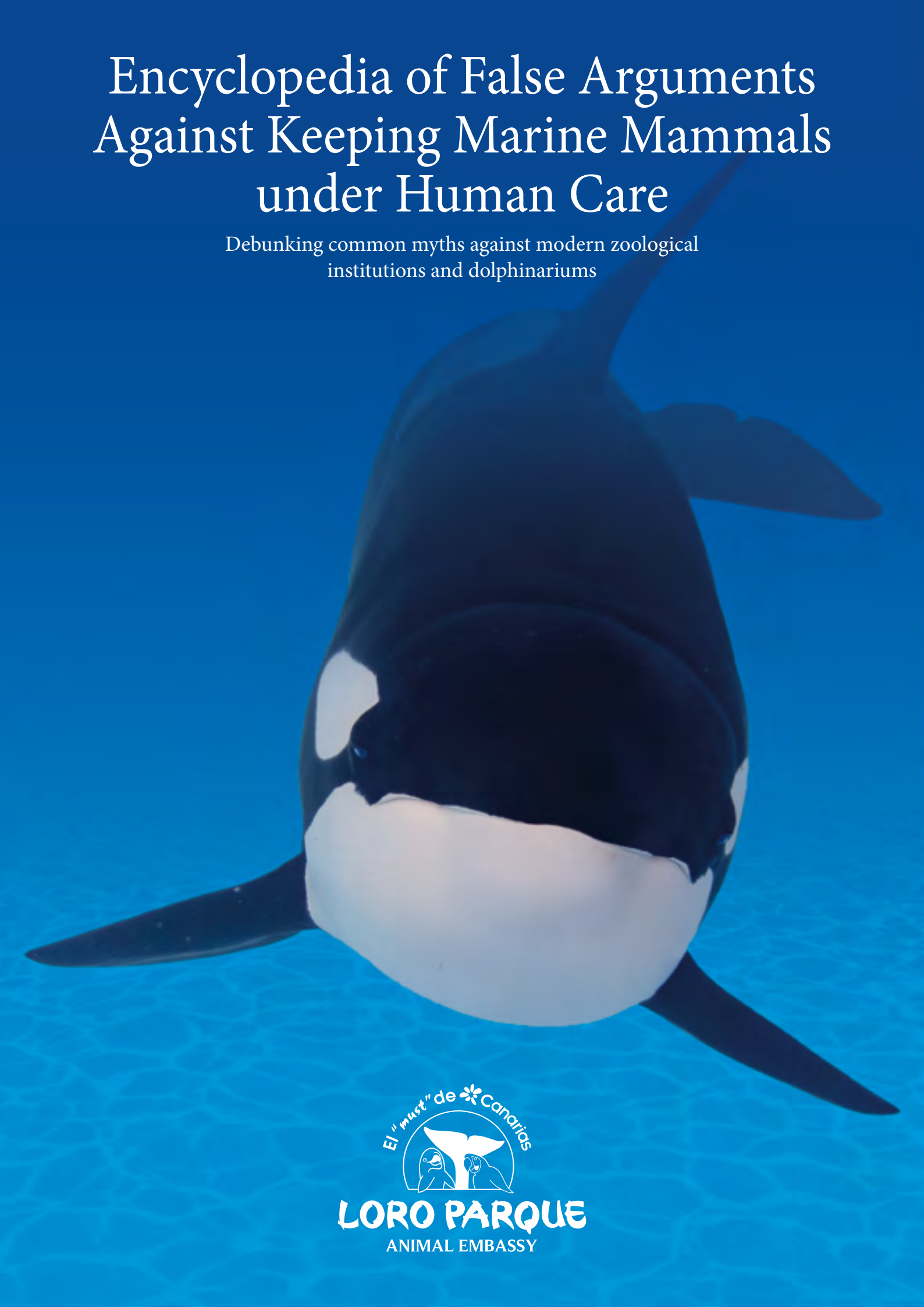
# Encyclopedia of False Arguments Against Keeping Marine Mammals under Human Care

Debunking common myths against modern zoological institutions and dolphinariums



El "must" de canarias

LORO PARQUE

ANIMAL EMBASSY

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# Introduction

Our World is facing the strongest environmental crisis ever, and its effects are causing the sixth major extinction of the planet Earth. More than 8.000 Millones human beings are exhausting the World's natural resources, extinguishing species, changing the climate, polluting the oceans, and expelling the animals from their natural habitats.

Human beings are responsible for the extermination of many animal species, like the American bison or the big whales, which were pushed to the brink of extinction due to an irrational hunting strategy. It is the very same strategy that is still in place today to manage the marine resources, and it is responsible for the killing of at least 100,000,000 sharks every year. Also, despite all the legal measures created to protect them, other charismatic animals are still being hunted to satisfy an insane demand fueled by ancient superstitions. For example elephants, that could have been over 29,000,000 when the first Europeans arrived to Africa, and today the total population could be as low as 415,000. Also lions, whose world population has been reduced to less than 25,000, a number lower than the humans living in a small town like Puerto de la Cruz.

In this critical situation the knowledge and experience regarding animals that has been developed during centuries in zoological gardens is essential to mitigate the negative effects that human growth is causing on the ecosystems. The educational, scientific and conservation roles of the modern zoos are essential to counter-fight the dramatic effects of this environmental crisis, and to lead a new animal protection spirit. The opportunity to have close encounters with animals is a powerful tool which creates sympathy and love for both wild animals and their ecosystems.

Paradoxically, zoos and dolphinaria are facing the hardest attacks in their history when nature needs them most. A very effective but small group of organizations, in terms of communication, are constantly trying to destroy the concept of a zoo, and putting at risk its very existence. In the last years we are regularly exposed to smear campaigns against zoos worldwide, mainly aimed in getting as much media attention as possible. Their intention is to create big scandals which allow them to get an enormous amount of donations, that will not serve to save endangered species from extinction, nor to provide better welfare to animals under human care. It is well known that these organizations use the lion's share of the donations they receive to pay high salaries, hire very expensive lawyers, travel first class and stay at luxury hotels.

When the strategy of such smear campaigns is analysed, the question arises: Are the attacks based on real facts? Or are they just myths without scientific evidence?

To help answer these questions, this document is a compilation of the accusations and arguments used against the keeping of animals, and specially cetaceans, in zoos. Every argument is analysed under the most updated scientific knowledge to check if they are based on real facts or if they are simply myths used to persuade good hearted people to attack zoos.

In the light of this science based information it is clear that the arguments against the zoos and dolphinaria are not sufficient to sacrifice them. We can't afford to destroy zoos, on the contrary, in the actual situation if they didn't exist it should be invented as an urgent necessity.

**Dr. Javier Almunia**
Director
Loro Parque Fundación


European dolphinaria do not have dolphins from Taiji.

[1] Hartmann, M. G. (2000). The European studbook of bottlenose dolphins (*Tursiops truncatus*): 1998 survey results. Aquatic Mammals, 26(2), 95-100.

[2] Venn-Watson, S. K., Jensen, E. D., & Ridgway, S. H. (2011). Evaluation of population health among bottlenose dolphins (*Tursiops truncatus*) at the United States Navy Marine Mammal Program. Journal of the American Veterinary Medical Association, 238(3), 356-360.

[3] Sweeney, J. C., Stone, R., Campbell, M., McBain, J., Leger, J. S., Xitco, M., ... & Ridgway, S. (2010). Comparative Survivability of Tursiops Neonates from Three US Institutions for the Decades 1990-1999 and 2000-2009. Aquatic Mammals, 36(3).

[4] Stolen, M. K., & Barlow, J. (2003). A model life table for bottlenose dolphins (*Tursiops truncatus*) from the Indian River Lagoon system, Florida, USA. Marine mammal science, 19(4), 630-649.

[5] Venn-Watson, S. K., Jensen, E. D., Smith, C. R., Xitco, M., & Ridgway, S. H. (2013). Evaluation of annual survival and mortality rates and longevity of bottlenose dolphins Marine Mammal Program from 2004 through 2013. Aquatic Manimals, 246(8), 893–898. https://doi.org/10.2460/javma.246.8.893

[6] Jaakkola, K., & Willis, K. (2019). How long do dolphins live ? Survival rates and life expectancies for bottlenose dolphins in zoological facilities vs . wild populations. Marine Mammal Science, 36(3), 248–261. https://doi.org/10.1111/mms.12601

[7] Robeck, T. R., Steinman, K. J., Gearhart, S., Reidarson, T. R., Mcbain, J. F., Monfort, S. L., & Robeck, T. R. (2004). Reproductive Physiology and Development of Artificial Insemination Technology in Killer Whales (*Orcinus orca*) 1. Biology of Reproduction, 71(April), 650–660. https://doi.org/10.1095/biolreprod.104.027961

[10] Robeck, T. R., Willis, K., Scarpuzzi, M. R., & O'Brien, J. K. (2016). Survivorship pattern inaccuracies and inappropriate anthropomorphism in scholarly pursuits of killer whale (*Orcinus orca*) life history: A response to Franks et al. (2016). Journal of Mammalogy, 97(3), 899–905. https://doi.org/10.1093/jmammal/gyw023

[58] Zhang, P., Sun, N., Yao, Z., & Zhang, X. (2012). Historical and current records of aquarium cetaceans in China. Zoo Biology, 31(3), 336–349. https://doi.org/10.1002/zoo.20400



# Origin

Criticism against dolphinaria is often demagogic, trying to gain people's sympathies by insinuating the link between captive cetaceans and horrible practices like drive fisheries in Taiji (Japan). This is totally false in Europe and the United States, where the breeding programs are so successful that reproduction has to be controlled in order not to run out of resources. For over two decades the dolphin population in Europe is self-sustainable and over 75% of the animals have been born under human care, some of them in third generation

*Dolphinaria source dolphins captured in Taiji. (The Dolphin Project, Rick O'Barry, 2011)*

This is false. Among European dolphinaria no specimen has been obtained from the Taiji drive fishery or any other. More than three quarters of the dolphins that live in Europe today (around 255) were born in European zoos. The rest were imported from the wild, thirty years ago (or even more in some cases) [1].

*The mortality rate is so high in dolphins that the populations can only be sustained by cap- turing wild animals. (Piraten Party, 2011)*

This is totally false. For decades european dolphinaria maintain a growing population without any importation of wild animals. The latest published research on the longevity of bottle-nose dolphins proves that the mortality rate is lower in zoo housed dolphins compared with wild dolphin populations [2, 3, 4, 5, 58] and, as result they can live as long as, or even longer, than their wild counterparts [6].

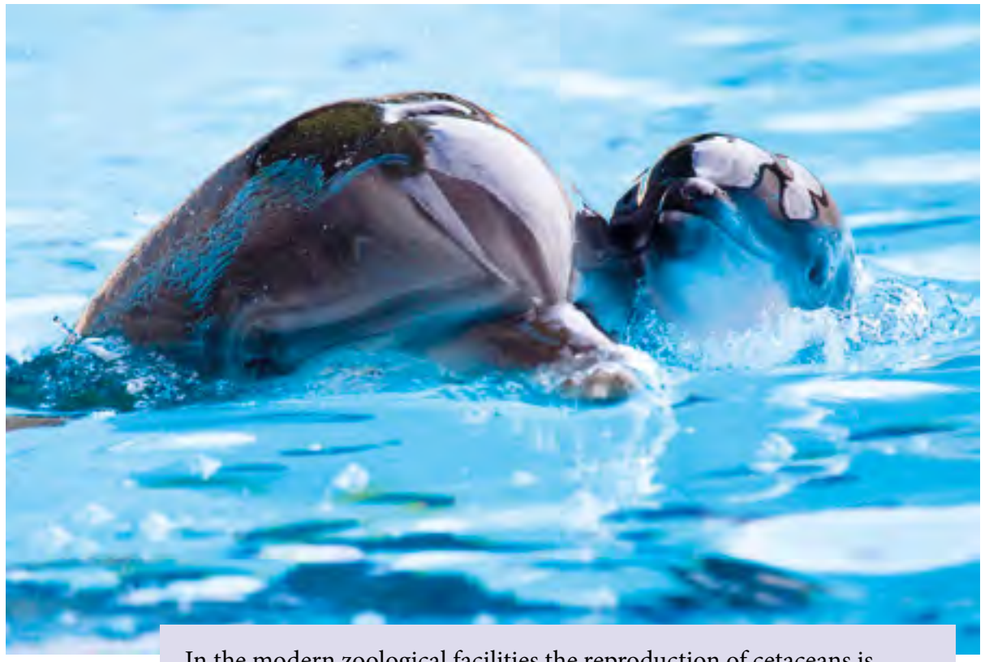
*Females are forced to breed by using artificial insemination. (Whale and Dolphin Protection Forum, 2013)*

It is not true that forced breeding takes place. The animals reproduce naturally, and if techniques are used such as artificial insemination, this is to avoid continuously moving males between dolphinaria. Where techniques such as artificial insemination are used, we can ensure that the population genetics is appropriate and thus avoid illnesses and the suffering of animals.

The scientific development of these techniques can be an essential tool in the survival of the most endangered cetaceans in the world, such as the vaquita, Commerson's dolphin or baiji [7].

*Killer whales in captivity have a high level of inbreeding, being all descended from a few breeders. (SOS Delfines, 2010)*

While orcas kept in captivity are descended from a small group of founders, currently problems associated with inbreeding do not exist [10]. There is much more inbreeding in other wild species in human care, such as thoroughbred horses for example.



In the modern zoological facilities the reproduction of cetaceans is highly successful, there is no need to source dolphin or killer whales from the wild.

[5] Venn-Watson, S. K., Jensen, E. D., Smith, C. R., Xitco, M., & Ridgway, S. H. (2013). Evaluation of annual survival and mortality rates and longevity of bottlenose dolphins Marine Mammal Program from 2004 through 2013. Aquatic Animals, 246(8), 893–898. https://doi.org/10.2460/javma.246.8.893

[63] EAAM (2017) Statement about marine sanctuaries. http://www.eaam.org/index.php?option=com_content&view=article&id=57&Itemid=61)



### *There is an extensive trade of dolphins for captivity and Japan is the main supplier of captured wild dolphins (Great Ape Project, 2011)*

This statement is misleading especially when talking about European dolphinaria. The majority (over 75%) of the dolphins in EAAM parks today have been born under human care. The remaining animals are founder stock that may have been acquired as long ago as the 1960's. No EAAM park has imported a dolphin from the wild since 2003. Furthermore, there are no bottlenose dolphins from the Japanese drive fisheries in any EAAM park. The EAAM strongly condemns the drive fisheries because of their inherent cruelty and issued a statement to this effect in 2007[63].

EAAM parks are successfully increasing the dolphin population in human care through breeding and cooperative exchanges. However, the importation of dolphins from the wild is not prohibited. CITES permits the import/export of bottlenose dolphins, including wild dolphins, where the exporting government finds that the export will not be detrimental to the survival of the species in the wild. The European Union imposes stricter measures for all cetaceans, however, importation is permitted for non-commercial purposes including research, education and breeding purposes for which conservation benefits will accrue to the species concerned.

### *The demand from Marine Mammal Parks is reactivating the captures of wild killer whales (Bill Neal, 2019)*

The zoos and aquariums cannot be blamed for the reactivation of the orca captures in Russia. Blackfish, PETA and other anti captivity organizations have to be blamed for this reactivation as they forced SeaWorld to stop their successful killer whale breeding program. If the killer whale breeding program would have continued worldwide there should be enough animals to source the Chinese parks without capturing wild animals.

### *Wild capture of cetaceans for the captive industry continues to be a threat to small, local populations (Dolphinaria-Free Europe, 2015)*

This statement might be true in very rare situations, for example the dolphin captures in the Solomon Islands, where it remains unclear if there is scientific information about the sustainability of the catchings. In any case, the European dolphinaria do not obtain animals from the wild, just when help is formally requested by the competent authorities to rehabilitate a stranded animal or house an unreleasable individual.

### *Low breeding success has rendered the captive dolphin population not self-sustaining (Dolphinaria-Free Europe, 2015)*

This statement is totally false, breeding success and perinatal survivorship is much higher in the zoos than in the wild [5]. The breeding success is so high in Europe that many zoos have to perform birth control not to run out of resources for their dolphins.

Moby, the oldest dolphin that ever lived under human care in Europe died at 60 in Nüremberg zoo.


[2] Venn-Watson, S. K., Jensen, E. D., & Ridgway, S. H. (2011). Evaluation of population health among bottlenose dolphins (*Tursiops truncatus*) at the United States Navy Marine Mammal Program. Journal of the American Veterinary Medical Association, 238(3), 356-360.

[3] Sweeney, J. C., Stone, R., Campbell, M., McBain, J., Leger, J. S., Xitco, M., ... & Ridgway, S. (2010). Comparative Survivability of Tursiops Neonates from Three US Institutions for the Decades 1990-1999 and 2000-2009. Aquatic Mammals, 36(3).

[4] Stolen, M. K., & Barlow, J. (2003). A model life table for bottlenose dolphins (*Tursiops truncatus*) from the Indian River Lagoon system, Florida, USA. Marine mammal science, 19(4), 630-649.

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[6] Jaakkola, K., & Willis, K. (2019). How long do dolphins live ? Survival rates and life expectancies for bottlenose dolphins in zoological facilities vs . wild populations. Marine Mammal Science, 36(3), 248–261. https://doi.org/10.1111/mms.12601

[7] Robeck, T. R., Steinman, K. J., Gearhart, S., Reidarson, T. R., Mcbain, J. F., Monfort, S. L., & Robeck, T. R. (2004). Reproductive Physiology and Development of Artificial Insemination Technology in Killer Whales (*Orcinus orca*) 1. Biology of Reproduction, 71(April), 650–660. https://doi.org/10.1095/biolreprod.104.027961

[9] Robeck, T. R., Willis, K., Scarpuzzi, M. R., & O'Brien, J. K. (2015). Comparisons of Life-History Parameters between Free-Ranging and Captive Killer Whale (*Orcinus orca*) Populations for Application Toward Species Management. Journal of Mammalogy, 96(5), 1055–1070. https://doi.org/10.1093/jmammal/gyv113

[10] Robeck, T. R., Willis, K., Scarpuzzi, M. R., & O'Brien, J. K. (2016). Survivorship pattern inaccuracies and inappropriate anthropomorphism in scholarly pursuits of killer whale (*Orcinus orca*) life history: A response to Franks et al. (2016). Journal of Mammalogy, 97(3), 899–905. https://doi.org/10.1093/jmammal/gyw023

[58] Zhang, P., Sun, N., Yao, Z., & Zhang, X. (2012). Historical and current records of aquarium cetaceans in China. Zoo Biology, 31(3), 336–349. https://doi.org/10.1002/zoo.20400

[95] Tidière, M., Gaillard, J. -M. J.-M. J.-M., Berger, V., Müller, D. W. H., Bingaman Lackey, L., Gimenez, O., Gaillard, J. -M. J.-M. J.-M. (2016). Comparative analyses of longevity and senescence reveal variable survival benefits of living in zoos across mammals. Scientific Reports, 6, 36361. https://doi.org/10.1038/srep36361

[98] Venn-Watson, S., Jensen, E. D., & Schork, N. J. (2020). A 25-y longitudinal dolphin cohort supports that long-lived individuals in same environment exhibit variation in aging rates. Proceedings of the National Academy of Sciences. doi.org/10.1073/pnas.1918755117




# Life Expectancy

One of the most recurrent criticisms is the idea that dolphins and killer whales live shorter lives under human care. This has been demonstrated to be false in many scientific researches that even the Born Free Foundation has admitted that in the modern dolphinara the life expectancy is equivalent to the wild populations of dolphins. But the reality is even better, the life expectancy of the dolphins is significantly higher in the modern dolphinaria. Despite this it is rare that dolphins can reach their 30th birthday in the wild, however in the European dolphinaria it is easy to find animals in their 40s and 50s. The two oldest dolphins that ever lived under human care were Nelly (who died at the age of 61 in USA) and Moby (who died at 60 in Europe). In many European facilities, like Loro Parque, it is common to have dolphins that are in their 40s.

*Dolphins and orcas in captivity live much less than in the wild. (SOS Dolphins, 2014)*

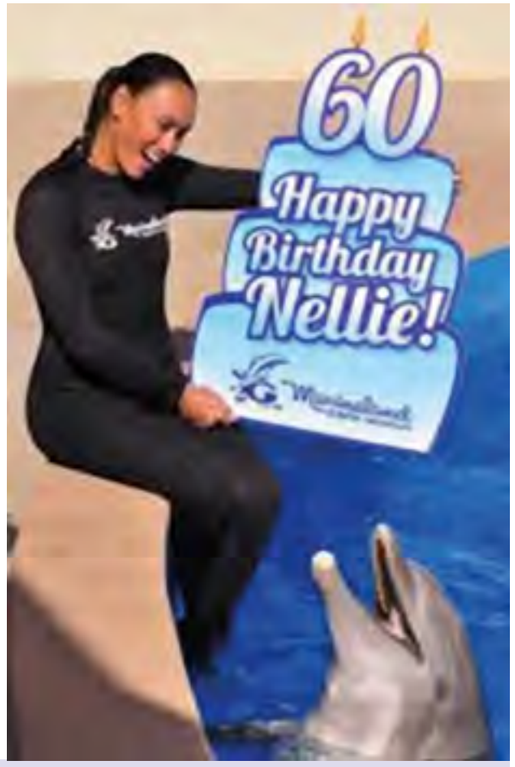
This is completely false for dolphins [2, 3, 4, 5, 58, 6] and there is not enough information to say for sure in orcas [9, 10]. The most recent scientific research [6] proves that the bottle-nose dolphin lifespan in each age class is higher under human care, where animals have a maximum life expectancy over 50 years, while in the wild the maximum life expectancy of a dolphin is 35 years. In orcas the actual data indicate that there is no reason to think that orcas under human care live less that their wild counterparts [9].

*Captive bottlenose dolphins may live as long as wild dolphins in the best facilities, but their annual mortality rates are still slightly higher (5.6% vs 3.9%, although this difference is not statistically significant) (Dolphinaria-Free Europe, 2015)*

This is a very important statement where Dolphinaria-Free Europe ( a lobby group established by organizations like Born Free (UK), Anima (DK), One Voice (FR), LAV (IT), Free Morgan Foundation (NE), etc.) publicly acknowledged that dolphins in the best dolphinaria live as long as in the wild. Unfortunately the document still used old scientific information (from the 90s), as the most recent research makes clear that they have a lower mortality rate and, as a consequence, live longer under human care[2, 3, 4, 5, 58, 6]. This recent study on longevity in dolphins is a good proof that dolphins in zoos can grow very old. It goes so far that it even has become a model, used as a basis for studies on human life expectancy [98].

*Orcas, on the other hand, have a significantly higher annual mortality rate in captivity than in the wild wherever they are held (6.2% vs 2.3%) (Dolphinaria-Free Europe, 2015)*

This statement from Dolphinaria-Free Europe is wrong, as they are not using the latest scientific information about orca longevity [6, 7, 95] which makes it clear that the life expectancy of orcas under human care is comparable to those in the wild.




Nelly, the oldest dolphin ever, died in Marineland Dolphin Adventure at age 61

[6] Jaakkola, K., & Willis, K. (2019). How long do dolphins live ? Survival rates and life expectancies for bottlenose dolphins in zoological facilities vs . wild populations. Marine Mammal Science, 36(3), 248–261. https://doi.org/10.1111/mms.12601

[9] Robeck, T. R., Willis, K., Scarpuzzi, M. R., & O'Brien, J. K. (2015). Comparisons of Life-History Parameters between Free-Ranging and Captive Killer Whale (*Orcinus orca*) Populations for Application Toward Species Management. Journal of Mammalogy, 96(5), 1055–1070. https://doi.org/10.1093/jmammal/gyv113



### *Handling, restraint, confinement, transport, isolation or crowding and an artificial diet lead to stress in captive cetaceans and, ultimately, a reduction in their life expectancy (Dolphinaria-Free Europe, 2015)*

This statement is clearly false, as the most recent research proves that life expectancy of cetaceans is similar or even greater under human care, which clearly demonstrates that the arguments to support the statement are speculations.

### *Mortality in captivity is much higher. (Dolphinaria Free Europe, 2013)*

This is completely false, it has been scientifcally proven that dolphin mortality in captivity is much lower than in the wild [6]. In orcas the most recently published scientific research [9] shows that the mortality rates are comparable, meaning that the mortality would be the same in orcas under human care as in their wild counterparts.

### *Orcas die much younger in captivity. (Free Morgan Foundation, 2014)*

Not true, there are a significant number of orcas in the wild that die before reaching sexual maturity. Moreover, when one analyzes the ages of about 350 wild orcas off the coast of Washington State it can be seen that less than 1% of the species exceed 60 years. Estimates of killer whale longevity made thirty years ago have been recently updated [9] and the result is that the life expectancy of a wild killer whale is around 30 years for males and 45 for females. Despite there have been killer whales under human care for less than 50 years (professionally managed) some individuals like Lolita lived until the age of 53 and others, like Corky II are already over 50 years old.

The superb veterinary care in modern zoos has made it possible to understand the reproductive cycle of killer whales in great detail. Early pregnancies are not possible in animals, females can only get pregnant when they are sexually mature.


[6] Jaakkola, K., & Willis, K. (2019). How long do dolphins live ? Survival rates and life expectancies for bottlenose dolphins in zoological facilities vs . wild populations. Marine Mammal Science, 36(3), 248–261. https://doi.org/10.1111/mms.12601

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# Early pregnancies

One of the typical arguments of the anti-captivity groups when talking about orcas is comparing their lifespan with humans. This is clearly overestimated under the light of the latest research [6, 7] and also leads to misconceptions when talking about the age of the first pregnancy of an orca. In any case the life parameters of orcas and humans are comparable.

*Orcas in captivity are forced to breed too Young; it is "like forcing a nine year old girl to become pregnant". (One Green Planet, 2013)*

This is a misleading and untruthful statement. Based on data of the age when an orca gives birth to its first viable offspring (i.e. surviving the first year) in populations of the coast of the State of Washington, some specimens have viable offspring observed at 11, 10 and even 9 years old. This means that some have become pregnant at 7 years old in the wild. Taking into consideration that miscarriages in the wild can pass totally unnoticed, it could be possible that some orcas were pregnant even before they reached the age of 7.

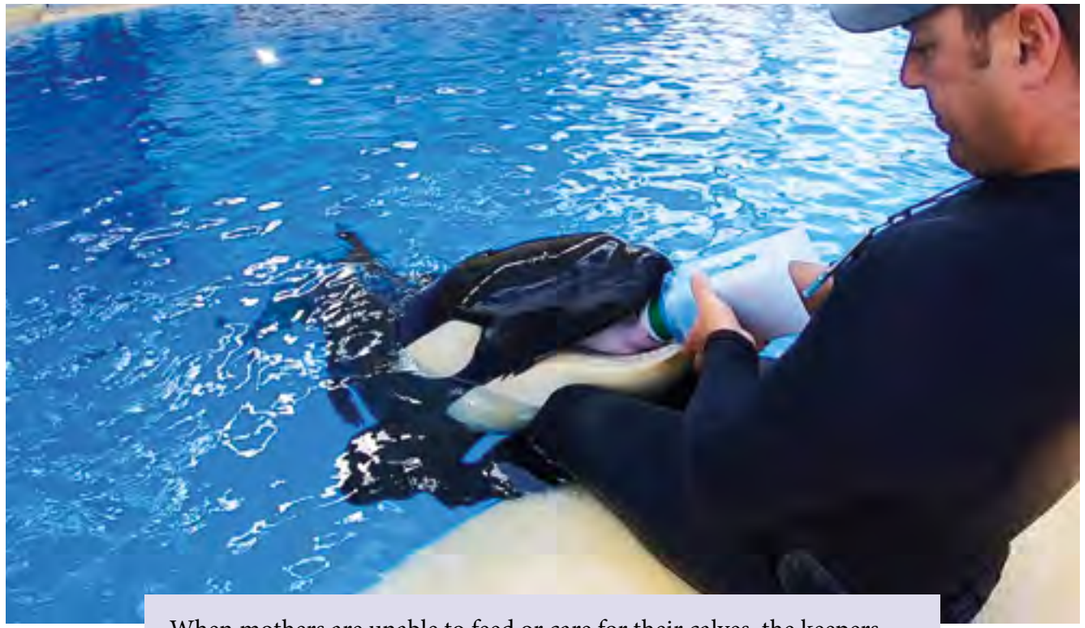
*The calves are separated from the mothers too young, and are moved from one area to another. (The Whale Sanctuary Project, 2014)*

While in the pods of orcas that have been studied in coastal Washington State the specimens remain in their families for life, it is not clear that this happens in all ecotypes (up to 10) described to date. Moreover, in some cases specimens separate from their groups in the wild, or they may lose their mothers prematurely. As such, this circumstance is not impossible in the wild.

This criticism comes from the film Blackfish, which highlights two separations. In one instance, involving a whale named Takara, the film leaves you with the impression she was a calf when separated. In fact, Takara was 12 years old when she was moved. In the second, involving a whale named Kalina, the film misleadingly shows footage of a calf that is only days old. Kalina was moved when she was 4½ years old because she was disruptive to her mother and other whales. Mums and calves are rarely separated and only for veterinary or welfare reasons in order to maintain a healthy social structure.

*One of the females (Kohana), who had been bred when she was an extremely young animal (only 7 years old), has attacked and rejected both of her calves. Consequently, these calves have had to be hand reared, creating further behavioural and social issues (Ingrid Visser - Free Morgan Foundation, 2012)*

There are several false statements in this paragraph. Kohana gave birth when she was 8, not 7, years old and this is not "an extremely young age" for a killer whale to breed. There are recordings of several wild killer whales in Washington State Coast giving birth at similar ages (R38 was born in 2000 and gave birth to R52 in 2009; R24 was born in 1987 and gave birth to R32 in 1996; I92 was born in 2000 and gave birth to I125 in 2009). Furthermore, 7 years has proven to be a common age of sexual maturity for Icelandic killer whales in zoological parks. The fact is that animals reproduce instinctively, and are not able to control their sexual impulses or their reproduction. As a consequence, only sexually immature animals can be considered too young to breed.



When mothers are unable to feed or care for their calves, the keepers can provide them with the necessary care, whilst in the wild these calves would already be dead.

[54] Olesiuk, P. F., Bigg, M. a, & Ellis, G. M. (1990). Life history and population dynamics of resident killer whales (*Orcinus orca*) in the coastal waters of British Columbia and Washington State. Reports of the International Whaling Commission (Special Issue).

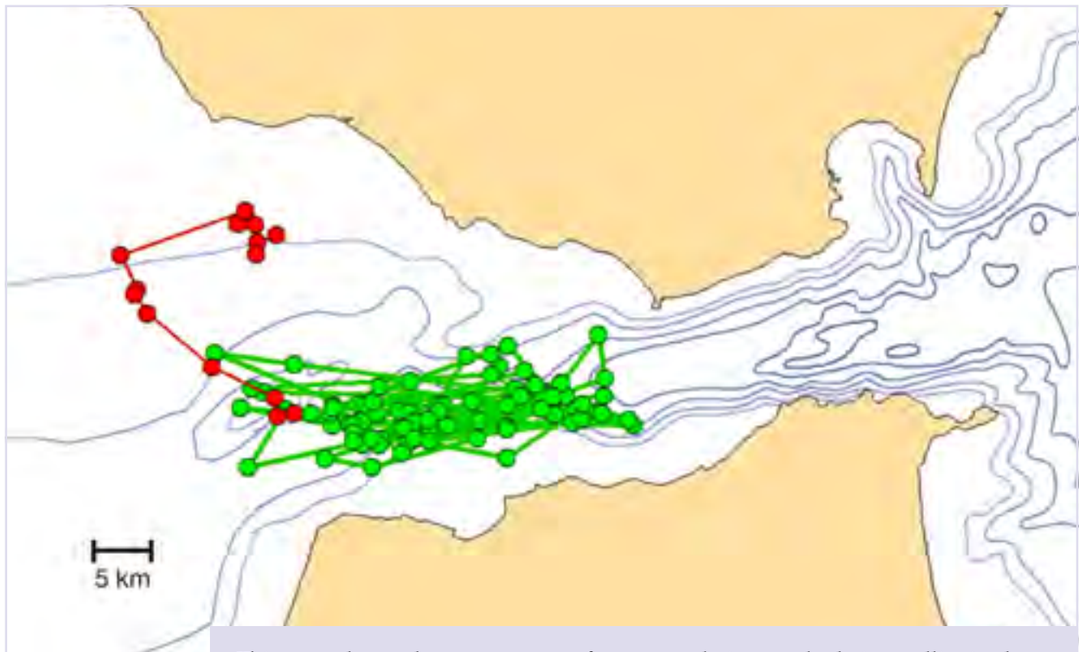


Finally, Kohana did not attack her calves; she failed to care for them, as sometimes happens with animals in any setting. Based on best professional practices and experience, husbandry and hand-rearing procedures were implemented to ensure the survival, health and welfare of the calves..

*Scientific studies say that the average age in the wild that females begin to reproduce is 14.9 years. PETA USA, 2016)*

The age of first viable calf (that means the first calf that survives) was established around 12 years for the killer whales off Washington State [54]. But this is the first viable, which means that killer whales can get pregnant before, lose the first calf and after year and a half have their first viable.  As mentioned on page 13, wild orcas can get pregnant when they are 7 years old, also, 7 years has proven to be a common age of sexual maturity for Icelandic killer whales in zoological parks. Due to responding to a sexual impulse, only sexually immature animals can be considered too young for reproduction.

Keiko's sea pen was 27.000 $m^3$ in volume, which is comparable to a conventional inland facility. For example, Orca Ocean in Loro Parque has a total volume of 22.000 $m^3$.




This map shows the movements of two orcas being tracked via satellite in the Strait of Gibraltar during 21 days. This data proves that when there is a source of food in a small area the orcas swim only few kilometers per day.

[55] Simon, M., Hanson, M. B., Murrey, L., Tougaard, J., & Ugarte, F. (2009). From captivity to the wild and back: An attempt to release Keiko the killer whale. Marine Mammal Science, 25(3), 693–705. https://doi.org/10.1111/j.1748-7692.2009.00287.x



# Space and environment

Depth, available surface, the quality of the water, or the material of the walls are regular arguments used by the organizations that criticize the zoos. Obviously a pool would never be comparable with the sea, but this is not the point, the point is can the requirements of an animal be fulfilled in a captive setting? Zoos and aquaria invest a lot of effort to keep the animals active, and both physically and mentally in good condition, by means of environmental enrichment or public presentations. In order to determine if an animal thrives in a captive setting one must take into account not only the available space, but all the activities and care received by the animals on a daily basis.

## *Space in zoos and aquariums is very limited and inadequate for the animals*

Animals have a number of needs regarding the environment in order to survive. Wherever they find such conditions they convert this area into their home, whether it is in a savanna, a redwood tree in the forest, a rock wall in the mountains or a zoo. Having a territory is not an individual desire of an animal, contrary to what happens to a human being. Animals simply need the resources of their territory to ensure their survival and reproduction; and that is why the dimensions of a territory vary within the same species. A lynx in the Western Alps needs about 80 km2 to be able to hunt the 50-70 deer or chamois each year. A lynx in the province of Wallis where forest rangers provide regular roe deer feeding reduces its territory to a few hundred metres, as it can come down from its tree weekly to hunt its roe deer. Exactly the same thing happens with wolves in Canada that live near fixed territories of bison, groups of dolphins in lagoons with lots of fish or killer whales during the abundance of tuna in the Strait of Gibraltar. This is why in zoos, where food is provided to the animals, the areas can be much smaller without affecting the animals.
*(Full letter from Dr. Peter Dollinger: http://blog.loroparque.com/open-letter-to-volker-sommer/?lang=en)*

*The surface and horizontal dimensions of the facilities for dolphins and orcas are 0,0001 of their wild habitat. (Orca Network, 2014)*
*The largest captive facilities are just a fraction of the size of the natural home ranges of whales, dolphins and porpoises (Dolphinaria-Free Europe, 2015)*

Orcas do not swim hundreds of miles because they have a physiological need to do so, they only do it forced by the need to get food. If they are able to find food in a small, shallow area, they remain in the same place and stop doing deep dives for long periods. This has been proven with killer whales tracked with satellite tags in Gibraltar Strait, where the animals have plenty of food in a small area, and they did not travel more than 10 miles per day.

This argument seems to make us believe that killer whales swim 100 miles a day for fun, and if they only swim 50, they will be half as happy. If an orca can find food by swimming 50 miles in one day instead of swimming 100, it is not known whether or not it will be half as happy, but certainly it will have expended half the energy. That energy can be invested into the survival of their offspring.

*The depth of the pool is inadequate and they cannot submerge as much as in the wild. (Free Morgan Foundation, 2014)*

When orcas have the opportunity to feed a few tens of metres, they do not submerge for pleasure. Data obtained from markers with depth sensors show that they only make deep dives to catch their prey, and the rest of the dives are shallower than 20 m. During the rehabilitation of Keiko (a killer whale born in the sea), his dives were recorded and 93% of them were between 6 and 26 metres (when he was outside the enclosure). [55].

Sun burn lesions produced in a wild dolphin after a stranding in Scotland. This kind of lesions have never been found on captive cetaceans.

Keiko's Sanctuary in Vestmannaeyjar Islands, does not seem the ideal place to swim 150 Km per day. Not even the sanctuaries can compare with the size of the ocean.

[11] Tedetti, M., & Sempéré, R. (2006). Penetration of ultraviolet radiation in the marine environment. A review. Photochemistry and Photobiology, 82(2), 389–397. https://doi.org/10.1562/2005-11-09-lR-733



*Orcas, for example, may travel as far as 150 kilometres in a day, whilst the largest orca tank in the world is 70 metres long (Dolphinaria-Free Europe, 2015)*

This is a misleading statement trying to convince the reader that orcas have the biological necessity to cover huge distances in order to fulfil their needs. This is not the case, the biological need of the orcas is food, and they cover the minimum distance necessary to find the preys they need to survive and reproduce. For example, the total perimeter of Orca Ocean facilities is about 120 m long, which allows the animals to cover their need for physical activity.

*Using a medical tank for holding orca is incompatible with, and in direct conflict of the animals' welfare, i.e., it prevents an orca from the freedom to express both fundamental natural body postures and normal behaviour. Such a violation is an unequivocal contravention of the most basic animal welfare standards (Ingrid Visser - Free Morgan Foundation, 2012)*

Loro Parque does not use the medical pool as a holding pool suggesting the contrary based in a few observations made during animal presentations (accounting less than 10% of the day) is simply absurd. It is irrelevant to waste several pages of the report comparing lengths of the animal, speculating with the size of the pool or the water depth in different situations when the authors do not have any information about the time that a particular animal is held in the medical pool.

*The size of a marine park pool is comparable to a Hotel swimming pool (Bill Neal, 2019)*

This is false, some killer whale facilities hold tens of millions of litres of water, which is equivalent to 9 Olympic pools. Loro Parque has 22,5 million litres of water, equivalent to 15 Olympic pools which are much bigger than a hotel swimming pool.

Orcas do not swim hundreds of miles because they have a physiological need to do so, but do it to get food. If they are able to find food in a small, shallow area, they remain in the same place and stop doing deep dives for long periods. This has been proven with killer whales tracked with satellite tags in Gibraltar Strait, where the animals have plenty of food in a small area, and they did not travel more than 10 miles per day. Let us remember that, if an orca can find food by swimming 50 miles in one day instead of swimming 100, it will have expended half the energy, which can be invested into the survival of offspring.

*The shallow water exposes them to the harmful effects of ultraviolet radiation. (Free Morgan Foundation, 2012)*

No reported skin problems in captive cetaceans have been due to ultraviolet radiation. Ultraviolet radiation is rapidly absorbed in the first meters of the water column [11].

*The artificial water causes eye and skin damage. (PETA, 2012)*

Artificial water does not exist. The products that are used to reduce the proliferation of bacteria in the water (like chlorine and ozone), if used properly, have no bearing on the animals. If chlorine is extracted from the seawater itself (using for example eclocid machines as in Loro Parque) the chlorine comes from natural sea water and there is no need to add chemicals to purify water.

Wild dolphins are exposed to water pathogens than can cause different skin diseases.


[26] Fair, P. A., Schaefer, A. M., Houser, D. S., Bossart, G. D., Romano, T. A., Champagne, C. D., … Reif, J. S. (2017). The environment as a driver of immune and endocrine responses in dolphins (*Tursiops truncatus*). PLoS ONE, 12(5), e0176202. https://doi.org/10.1371/journal.pone.0176202



*The design of the pools comes from thinking more about the benefits and the visitors than about the welfare of the animals. (Free Morgan Foundation, 2013)*

The design of any zoological facility come from considering many factors, the main one being the welfare of animals, but scientific use, educational activities, safety for visitors, etc. are also taken into consideration.

*Chemical additives are added to the water to keep it transparent so as to enhance artificially the visibility of the animals for pure economic interest. (Free Morgan Foundation, 2013)*

The water is filtered and treated so that the animals have the optimal water conditions for their health and welfare. As a consequence the water is clear, in the same way as water in the open sea free from sediments and contaminants. The high turbidity or even colour of the water is caused by organic particulated matter or algae; both can favour the bacterial growth putting the health of the cetaceans at risk. Recent scientific publications probe that the immunological system of wild dolphins is more stressed than those of dolphins under human care [26] which proves that the transparency and hygiene of the water is good for the welfare of the dolphins. Loro Parque uses in all its facilities marine water of maximum quality, taken from the Central Atlantic Ocean through a coastal dwell which provides a pre-filtration treatment through hundreds of metres of natural sand. In that way a regular supply of the purest marine water for all the marine species in the park is guaranteed.

*Chlorinated waters produce a sterile, unnatural environment. (Whale and Dolphin Protection Forum, 2010)*

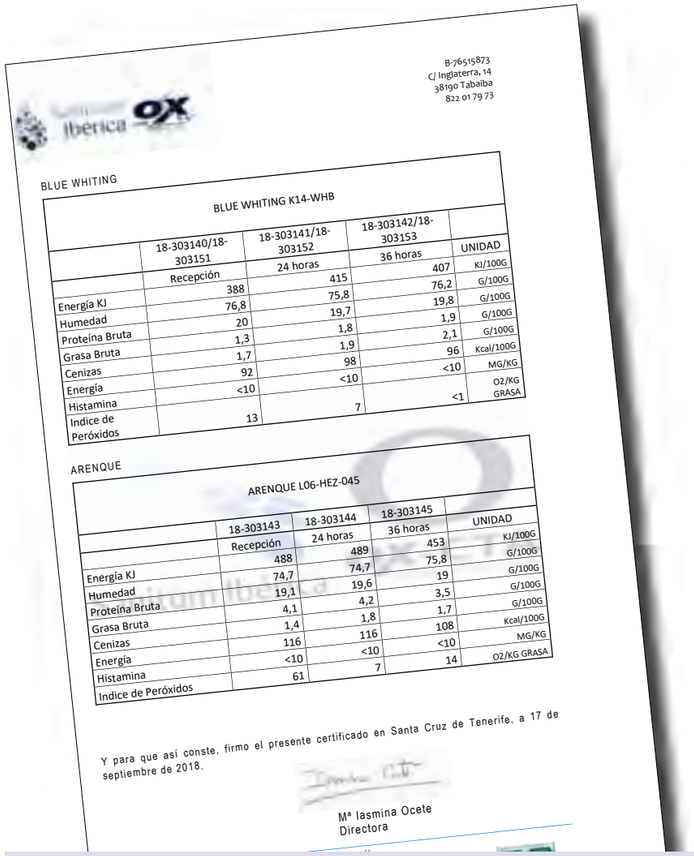
True, although this provides for better health and welfare of the animals. Recent scientific publications prove that the immunological system of wild dolphins is more stressed than that of dolphins under human care [26] which proves that the sterile water is good for the welfare of the dolphins. Moreover, if natural chlorine is extracted from the seawater itself (using for example eclocid machines as in Loro Parque) there is no need to add chemicals to purify water.

*Facilities cannot provide an environment that simulates the complex natural marine environment. Most pools are smooth-sided, small and virtually empty of stimuli (Dolphinaria-Free Europe, 2015)*

This statement is misleading. Cetaceans live most of the time in environments with low complexity (the water column) compared for example with a tropical forest. A professionally organized environmental enrichment plan, and especially the social interactions are enough to stimulate the sensitive system of cetaceans under human care.

*Keeping killer whales in captivity in warm climate requires an enormous energy consumption that produces tons of greenhouse gases every year (Whale and Dolphin Protection Forum, 2010)*

This is not true for Loro Parque. Although keeping the water cool for the killer whales requires a lot of energy, it is done through a very efficient system which uses the overflowing sea water as a cooler, saving 30% of electricity. Besides, Loro Parque has promoted several green energy projects with a total power of 8,4 MW obtained from the wind and the sun. By 2024 the power of these green power plants will be increased up to 20,8 MW which would cover all the energy consumption of Loro Parque. At this point Loro Parque could offset the carbon dioxide emissions that it generates.



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38190 Tabaiba
822 01 79 73

BLUE WHITING

BLUE WHITING K14-WHB

| | 18-303140/18-303151 | 18-303141/18-303152 | 18-303142/18-303153 | |
|---|---|---|---|---|
| | Recepción | 24 horas | 36 horas | UNIDAD |
| Energía KJ | 388 | 415 | 407 | KJ/100G |
| Humedad | 76,8 | 75,8 | 76,2 | G/100G |
| Proteína Bruta | 20 | 19,7 | 19,8 | G/100G |
| Grasa Bruta | 1,3 | 1,8 | 1,9 | G/100G |
| Cenizas | 1,7 | 1,9 | 2,1 | G/100G |
| Energía | 92 | 98 | 96 | Kcal/100G |
| Histamina | <10 | <10 | <10 | MG/KG |
| Indice de Peróxidos | 13 | 7 | <1 | O2/KG GRASA |

ARENQUE

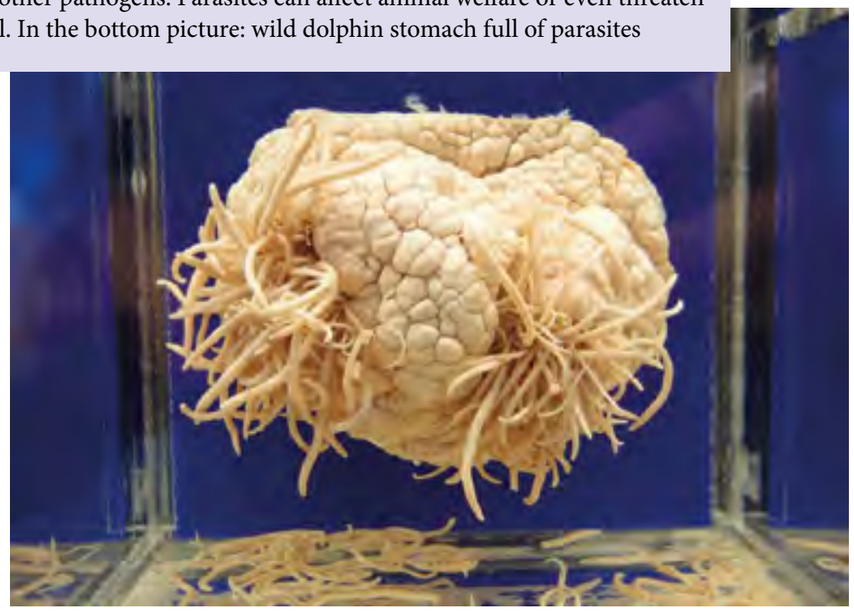
ARENQUE L06-HEZ-045

| | 18-303143 | 18-303144 | 18-303145 | |
|---|---|---|---|---|
| | Recepción | 24 horas | 36 horas | UNIDAD |
| Energía KJ | 488 | 489 | 453 | KJ/100G |
| Humedad | 74,7 | 74,7 | 75,8 | G/100G |
| Proteína Bruta | 19,1 | 19,6 | 19 | G/100G |
| Grasa Bruta | 4,1 | 4,2 | 3,5 | G/100G |
| Cenizas | 1,4 | 1,8 | 1,7 | G/100G |
| Energía | 116 | 116 | 108 | Kcal/100G |
| Histamina | <10 | <10 | <10 | MG/KG |
| Indice de Peróxidos | 61 | 7 | 14 | O2/KG GRASA |

Y para que así conste, firmo el presente certificado en Santa Cruz de Tenerife, a 17 de septiembre de 2018.

Mª Iasmina Ocete
Directora

Every fish batch is analysed to know their nutritional content and to verify if it is free from parasites and other pathogens. Parasites can affect animal welfare or even threaten the life of an animal. In the bottom picture: wild dolphin stomach full of parasites



[68] Tixier, P., Gasco, N., Duhamel, G., & Guinet, C. (2016). Depredation of Patagonian toothfish (*Dissostichus eleginoides*) by two sympatrically occurring killer whale (*Orcinus orca*) ecotypes: Insights on the behavior of the rarely observed type D killer whales. Marine Mammal Science, 32(3), 983–1003. https://doi.org/10.1111/mms.12307

[69] de Bruyn, P. J. N., Tosh, C. A., & Terauds, A. (2013). Killer whale ecotypes: Is there a global model? Biological Reviews, 88(1), 62–80. https://doi.org/10.1111/j.1469-185X.2012.00239.x



# Food

The anti-dolphinaria organizations consider that the cetaceans are unable to display natural behaviours when they are kept under human care. They also refer many abnormal behaviours as hyperaggressivity, lack of communication, stereotypical behaviours or lack of social structures. The truth is that the only natural behaviour not displayed in dolphinariums is hunting, but apart from that, it has been demonstrated that they establish healthy balanced social groups

## *Cetaceans in captivity are fed dead and frozen fish. (PETA, 2012)*

There is no difference in the nutritional composition between live and dead fish. In the freezing process there may be some loss of vitamins that are provided instead by vitamin supplements. The diet of marine mammals under human care has been used for decades, and is perfectly designed to meet their nutritional needs. The fish that are used must pass the same quality controls as those for human consumption.

All the animals in LP are provided with an adequate diet established by their carers together with the veterinary team. The daily amount of fish that each animal should receive is prepared according to its diet and as a function of the weekly monitoring of weight.

Depending on size and other factors, Loro Parque orcas are fed between 35 – 60 kg of fish per day in variable portions. Fish species include capellin, sprat, herring, squid, and blue whiting. Food is analysed with respect to food quality (such as histamine and peroxyde index) and nutritive parameters (such as protein, fat, and calorific content) by the provider and samples are analysed additionally by the laboratory at Loro Parque. Before use, each batch of fish is also analysed for microbiological contamination, parasites, and toxins at the University of La Laguna. Before feeding, the fish are inspected one by one by the animal keepers, and any that show malformations, parasites or a generally poor aspect are discarded. The diet is balanced with dietary supplements established by the veterinary department

## *In the wild orcas have a very varied diet, but in captivity they are fed only three or four species of fish. (Orca Network, 2014)*

It is incorrect to say that orcas have a very varied diet in the wild. Each ecotype can feed on a variety of prey, but within the same ecotype orcas concentrate on a few species of prey, sometimes only one [69, 69]. For example, is well known that Southern Residents are mainly focused on Chinook salmon.

## *Frozen fish has less nutritional value than fresh, but frozen fish is used because it is cheaper than fresh. (Orca Network, 2014)*

There is no difference in the nutritional composition between live and dead fish. In the freezing process there may be some loss of vitamins, which instead are provided by vitamin supplements. Frozen fish is used for logistical and supply reasons, and also it is much easier to check the quality and prevent the introduction of disease through the diet. To feed cetaceans only quality fish is used, the same as with human food which avoid for example the transmission of parasites. Cheap fish is not used under any circumstances.

[12] Houser, D., Mulsow, J., Branstetter, B., Moore, P., Finneran, & Xitco, M. (2019). The Characterisation of Underwater Noise at Facilities Holding Marine Mammals. Animal Welfare, 28(2), 143–155. https://doi.org/10.7120/09627286.28.2.143

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[16] Jensen, F. H., Bejder, L., Wahlberg, M., Soto, N. A., Johnson, M., & Madsen, P. T. (2009). Vessel noise effects on delphinid communication. Marine Ecology Progress Series, 395(Ross 1976), 161–175. https://doi.org/10.3354/meps08204

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[21] Nachtigall, P. E., & Supin, A. Y. (2008). A false killer whale adjusts its hearing when it echolocates. The Journal of Experimental Biology, 211(Pt 11), 1714–1718. https://doi.org/10.1242/jeb.013862

[22] Nachtigall, P. E., & Supin, A. Y. (2015). Conditioned Frequency-Dependent Hearing Sensitivity Reduction in a Bottlenose Dolphin (*Tursiops truncatus*). The Journal of Experimental Biology, 218(May), 999–1005. https://doi.org/10.1242/jeb.104091

[23] Nachtigall, P. E., & Supin, A. Y. (2013). A false killer whale reduces its hearing sensitivity when a loud sound is preceded by a warning. Journal of Experimental Biology, 216(16), 3062–3070. https://doi.org/10.1242/jeb.085068

[24] Kremers, D., Lemasson, A., Almunia, J., & Wanker, R. (2012). Vocal sharing and individual acoustic distinctiveness within a group of captive orcas (*Orcinus orca*). Journal of Comparative Psychology, 126(4), 433–445. https://doi.org/10.1037/a0028858





*As they have hearing very sensitive to the noise of the pumps and filtration systems they become stressed. (SOS Dolphins, 2014)*

When properly isolated the noise from the pumps does not reach the pools. The most recently published scientific research [12] comparing the underwater noise pollution of 14 dolphinariums in USA proves that measurements of noise in cetacean pools show noise data comparable to that found in the sea under normal conditions (with low human disturbance). The noise is much higher in sea areas where human activity is intense, and in fact alterations in dolphin, orca and beluga vocal behaviour associated with noisy human activities like whale watching, have been described [13, 14, 15, 16, 17].

*Their echolocation clicks continually bounce off the walls and they cannot use it, and it ends-up atrophied. (Whale and Dolphin Protection Forum, 2010)*

This statement is a myth without any scientific support. The first description of cetacean echolocation was made under human care in 1961 [18], and currently there are detailed studies of echolocation being performed in several species of cetaceans [19, 20], and as such there is no atrophy. Cetaceans do not echolocate continuously, and may emit or stop emitting at will. It is described in porpoises that when they emit an echolocation click they reduce their sensitivity of hearing [21] so as not to harm it (one has to realize that in the melon of these animals a sound pulse is emitted at about 180 decibels to make a click). It has been measured that they will control the intensity of the echolocation pulse, so it is unlikely they will have any discomfort resulting from their own echolocations.
On the other hand, there is scientific prove of dolphins and false killer whales reducing their hearing sensitivity when exposed to loud sounds [22, 23] which suggests that cetaceans can control their hearing sensitivity and reduce the impact of intense sounds.

*Their whistles bounce off the walls of the pools and end-up stunting their communication system. (SOS Dolphins, 2014)*

Again, this statement is simply ridiculous. The most recently published scientific research [12] comparing the underwater noise pollution of 14 dolphinariums in USA proves that noise in the pools is comparable to the noise found in the sea under normal conditions (with low human disturbance). When communication whistles are recorded in pools no echoes appear, as the animals are able to adapt the sound intensity to the circumstances. In Loro Parque the holding facility for the orcas is fully equipped with hydrophones recording sounds 24/7 and every day thousands of killer whale communication calls are recorded. In a scientific study carried out at Loro Parque using this equipment, it has been established that the dialect of a group of orcas had a number of vocalizations comparable to those found in wild groups [24].

The scientific studies made with zoo housed orcas show a broad repertory of positive social behaviors (play, affiliative and sexual) while the agonistic behaviors account for less than 1% [25].

[24] Kremers, D., Lemasson, A., Almunia, J., & Wanker, R. (2012). Vocal sharing and individual acoustic distinctiveness within a group of captive orcas (*Orcinus orca*). Journal of Comparative Psychology, 126(4), 433–445. https://doi.org/10.1037/a0028858

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*Artificial groups of orcas are created from different ecotypes with different dialects which are unable to communicate. (Free Morgan Foundation, 2013)*

This is a very risky speculation, because there is no detailed scientific information on voice communication of orcas beyond the fact that there are different dialects. There is no scientific indication that animals using different dialects are unable to communicate. Orcas are the only animal species in which it is hypothesized that vocal dialect may evolve throughout life unlike, for example, birds. In a scientific study carried out at Loro Parque using this equipment, it has been established that the dialect of a group of orcas had a number of vocalizations comparable to those found in wild groups [24]. The group was initially formed by four animal from 2 different groups that had different dialects, nevertheless they now have a common dialect

*Orcas in the wild never leave their natal pod, but captivity has never exhibited specimens of the same pod, and specimens are often exchanged and mixed. (Free Morgan Foundation, 2013)*

While in the pods of orcas that have been studied in coastal Washington State the specimens remain in their families for life, it is not clear that this happens in all ecotypes (up to 10) described to date. Moreover, in some cases specimens separate from their groups in the wild, or they may lose their mothers prematurely. As such, this circumstance is not impossible in the wild.

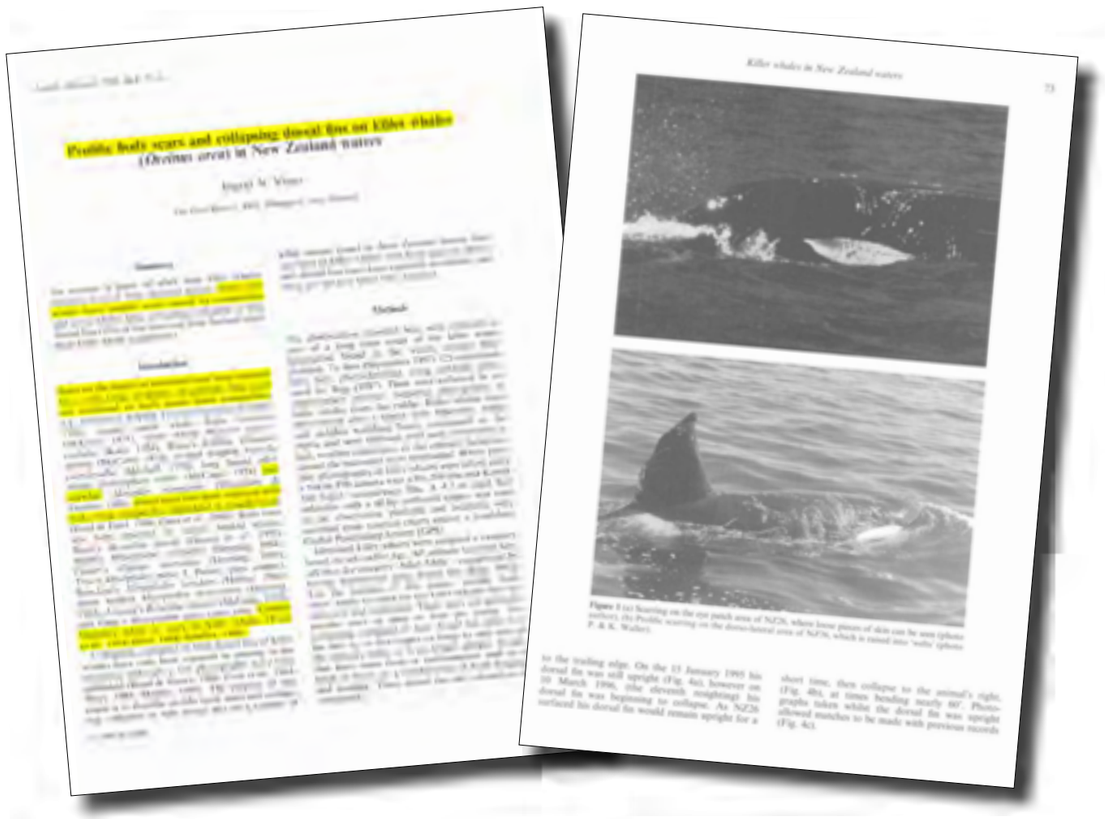
*Dolphins and orcas are forced to live in unnatural groups. (Whale and Dolphin Protection Forum, 2010)*

While orcas generally live in their family pod during their lifetime, there have been cases where an animal can change pod, even males whose pod has lost all the females which have attached themselves to another pod. Thus, it is not unnatural that groups other than family groups occur. While in the pods of orcas that have been studied in coastal Washington State the specimens remain in their families for life, it is not clear that this happens in all ecotypes (up to 10) described to date. Dolphins live in much more flexible fission-fussion groups where animals do not belong to the group for their entire life.

*Limited social environment Captive dolphins sharing a pool are often unrelated, from different geographic regions or from different species, which can result in changes to natural group dynamics leading to dominance-related aggression, injuries, illness and even death (Dolphinaria-Free Europe, 2015)*

This statement is misleading, the natural group dynamics under human care can be managed by the trainers and keepers. New social bonds can be created and/or strengthened using environmental enrichment and training techniques. This careful management of the social groups can reduce aggression and all the negative consequences of introducing new individuals in a group, or even the integration of animals from different origins.

Dorsal fin collapse is not a phenomenon exclusive of captive individuals, male orcas with collapsed dorsal fins can also be found in the wild.
https://www.youtube.com/watch?v=p5y6lwNmLOM




[27] Visser, I. N. (1998). Prolific body scars and collapsing dorsal fins on killer whales (*Orcinus orca*) in New Zealand waters. Aquatic Mammals, 24, 71-82.

[41] Alves, F., Towers, J. R., Baird, R. W., Bearzi, G., Bonizzoni, S., Ferreira, R., … Dinis, A. (2017). The incidence of bent dorsal fins in free-ranging cetaceans. Journal of Anatomy, (September). https://doi.org/10.1111/joa.12729



# Collapsed dorsal fin

*The dorsal fin is bent due to inadequate space of the pools and swimming only in one direction. (Whale and Dolphin Protection Forum, 2010)*

This statement is false; the dorsal fin bends only in males because it grows much more than females (this is a secondary sexual characteristic). Females perform the same exercise as males and no bent dorsal fins appear in females. The dorsal fin is a structure of connective tissue, with no muscular supporting structure, and as such exercise has nothing to do with it. The dorsal fin bends in the wild sometimes due to trauma, and under human care the most likely explanation is that it heats and softens as captive orcas spend more time on the surface. Bent dorsal fins have been also described in wild animals, usually caused by traumas (intra-specific aggression, ship collisions and even rifle shots) [27, 41].

*Lack of exercise and boredom cause the dorsal fins of the males to bend. (Orca Network, 2011)*

This is a ridiculous myth derived from the movie “Free Willy”. Throughout the entire recording of the film the captive orca Keiko was used to represent Willy. Keiko had a bent dorsal fin. However, at the end of the film, when images of Willy released and in the sea were shown, they used footage of wild orcas, namely a pod in which the male did not have a bent dorsal fin. Hence the myth that dorsal fin returns to be upright when orcas are free. The cause of the dorsal fin of orcas bending is explained above and it does not have to do with the emotional status of the animals.


Rake marks are so common in the wild that they even appear in the websites of researchers like Ingrid Visser, who attacks dolphinariums claiming that these marks are rare in wild orcas [27].

[27] Visser, I. N. (1998). Prolific body scars and collapsing dorsal fins on killer whales (*Orcinus orca*) in New Zealand waters. Aquatic Mammals, 24, 71-82.

[39] Killer whales of Prince William Sound and Southeast Alaska A Catalogue of Individuals Photoidentified, 1976-1986. Edited By Graeme Ellis. West Coast Whale Research Foundation. 1040 West Georgia Street, Room 2020. Vancouver, British Columbia.

[40] Killer whales of Southeast Alaska A Catalogue of Photoidentified individuals (1997) Dahlheim, M, Ellifrit D. and Swenson J. Eds. Marine Mammal Laboratory, Alaska Fisheries Science Center, National Marine Fisheries Service NOAA. Day Moon Press, Washington, 90 pp.

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# Rake Marks

*Orcas in captivity will bite and leave marks which do not exist in the wild. (Free Morgan Foundation, 2011)*

This statement is flatly false. If any catalogue of orca photo-identification is consulted [39, 40], or just looking at pictures of orcas in the wild, you can see that the rake-marks (teeth-marks) are common in orcas. Actually in all cetaceans, dolphins have been calculated with over 60% of individuals having them [41] (the remaining 40% are usually young individuals, in which they do not appear), a fact used regularly to identify specimens or even to evaluate differential aggression by gender[42, 43]. There are also scientific publications that describe orcas where these marks are so abundant they are considered "prolific"[27]. As cetaceans do not have hands, many agonistic or sexual behaviour with conspecifics implies using the mouth, and can result in rake marks.

*Orca and dolphin rake-marks (bite-marks) can put their lives in danger. (Whale and Dolphin Protection Forum, 2010)*

This is not entirely true. While an open wound can be an entry for pathogens into the bloodstream of cetaceans, this is only dangerous in contaminated waters. The daily hygienic control of the water in dolphinaria (in Spain the water quality in dolphinaria is controlled 50 times more than pool water for human use) makes this risk negligible.

Attacks from wild dolphins to humans are not rare, there are at least three human fatalities caused by wild dolphin attacks.


[25] Sánchez-Hernández, P., Krasheninnikova, A., Almunia, J., & Molina-Borja, M. (2019). Social interaction analysis in captive orcas ( *Orcinus orca* ). Zoo Biology, (July 2018), 1–11. https://doi.org/10.1002/zoo.21502

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# Aggressiveness

*Dolphins and orcas in captivity show high aggressiveness. Orcas in captivity are stressed and attack humans, whereas in the wild an attack by a killer whale on a human being has never been described. (Free Morgan Foundation, 2011)*

This is simply speculation. It is well known that dolphins and orcas in the wild show frequent aggressive behaviours against other cetaceans [28, 29], their own conspecifics [30, 31] and even calves, with reports of infanticides in dolphins [32, 33, 34, 35, 36] and orcas [37].A comparative study of the aggressiveness of dolphins and orcas in the wild and in captivity has never been conducted, hence it can not be said that they are more aggressive under human care.

It is argued that orcas have caused fatalities in zoological facilities and not in the wild, and therefore they become aggressive under human care. In the case of dolphins the contrary has occurred in which they have killed several people in the wild [38] but never in institutions. Could one then say that freedom makes them aggressive? Obviously not.

A recent study made by ethologists from the University of La Laguna [25] has measured that the social behaviours found in the orcas at Loro Parque in the absence of human staff are mainly affiliative and sexual, while aggression counts for less than 1% of the total behaviour. This proves that orcas under human care cannot be considered hyperaggressive.

*Under human care males sexually abuse females. (The Whale Sanctuary Project, 2012)*

To have a forced copulation in cetaceans is remarkably complex, since males cannot restrict the movements of females. It is possible that at certain times the males exert greater sexual pressure on females, but this has also been widely described in the wild for these species [32, 33, 34, 35, 36, 37]. Hence, is clear that the sexual abuse from male dolphins is not exclusive of zoos, and there are no scientific studies to compare both situations.

*Introductions of new specimens into established groups can lead to aggression and destabilization of the social structure. (Dolphinaria Free Europe, 2014)*

This is correct, although trainers and keepers can manage the animals so that the introduction of new specimens is unproblematic. Loro Parque has performed several introductions of new specimens in the killer whale group and despite some initial social unrest, a scientific study has shown that the antagonistic and aggressive behaviours in the group are very low [25].

Dental damage is widespread in wild killer whales, there are many examples that the their teeth are easily damaged by abrasion.


[61] Ford, J. K., Ellis, G. M., Matkin, C. O., Wetklo, M. H., Barrett-Lennard, L. G., & Withler, R. E. (2011). Shark predation and tooth wear in a population of northeastern Pacific killer whales. Aquatic Biology, 11(3), 213-224

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[97] Ford, J. K.B., 2018 Killer whale- *Orcinus orca*. Pp.: 531-537. Encyclopedia of marine mammals. Third Edition. Academic Press. https://doi.org/10.1016/B978-0-12-804327-1.00010-8




# Dental damage

The anti-dolphinaria organizations depict a dramatic situation from the point of view of the health of the cetaceans under human care. They refer many different illnesses and pathologies that affect the captive animals, which contradicts the fact that they live longer than their wild counterparts. Recent scientific research has shown that the immunological system of the wild dolphins is more stressed than the dolphins under human care, which clearly proves that the latest have less pathologies. On the other hand, these critics never mention that in dolphinaria the animals are diagnosed and treated by professional veterinarians, one important advantage to relieve pain and suffering that their wild counterparts do not have.

## *Dental damage is the prove of boredom (Rick O'Barry, 2016)*

This is absurd, there are many documented cases of dental damage in the wild for different reasons (abrasive food, manipulation of abrasive objects, etc.) there is not a single scientific study that relates dental damage in killer whales and boredom. The upper and lower teeth articulate powerfully with each other, which can cause tooth wear, even in younger individuals [97]. In killer whales teeth typically have extremely limited function in food processing, so how can broken teeth compromise the welfare of an animal? If the broken teeth do not produce any pain, inflammation or infection, there will not be significative effect in the welfare of the animal.

## *Can you imagine how painful it must be drilling a damaged tooth to avoid an infection (Rick O'Barry, 2016)*

The question should be: Can you imagine how painful it must be having dental damage and infections and not being able to visit a dentist in your entire life? Well this is the situation of wild killer whales, many of them have tooth damage [61, 62] (even worse than the damage you can see in any killer whale under human care) but they would never get veterinary help. They have to live with these painful wounds without any relief every single day of their entire lives.

Under human care the veterinarians can relieve the pain and treat the damage avoiding inflammation or even infections. Obviously, as any veterinarian can confirm, all the treatments are carried out without any pain, using local anaesthetics. The fact is that when a tooth drill has to be performed (rarely) the animals participate voluntarily, keeping the mouth open while the procedure is carried out.

## *The apical damage seen on captive orca often becomes so extensive that it results in life-threatening damage, which the facilities attempt to mitigate by drilling (Ingrid Visser - Free Morgan Foundation, 2012)*

This is a speculation about infections caused by damaged teeth without any supporting evidence. The authors fail to provide data on how many orcas have died due to teeth damage, so this argument is not supported.

Severe tooth damage found on one wild killer whale stranded in Alaska in 2013.

[61] Ford, J. K., Ellis, G. M., Matkin, C. O., Wetklo, M. H., Barrett-Lennard, L. G., & Withler, R. E. (2011). Shark predation and tooth wear in a population of northeastern Pacific killer whales. Aquatic Biology, 11(3), 213-224

[62] Rica, C. (1996). A report of killer whales (*Orcinus orca*) feeding on a carcharhinid shark in Costa Rica. Marine Mammal Science, 12(4), 606-611.



*Due to captivity, orcas have problems of wear and tear of teeth that can cause serious infections and even death. (Free Morgan Foundation, 2011)*

The wear of teeth is not an exclusive problem of captive killer whales, there are many examples of wild killer whales with their teeth worn to the gum [61, 62]. While orca´s teeth under human care are often damaged, strict veterinary control and daily dental hygiene prevent inflammation, infections and pain. In the case of wild orcas, there is no way to control inflammation and infection, and presumably this produces a painful process in the wild killer whales.


Orcas under human care display a wide range of affiliative social behaviours, some of them unknown, such us the gentle tongue biting described for the first time to science in a scientific research performed at Loro Parque.

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# Stereotypical behaviours

*Captive orcas and dolphins swim in circles, which is a clear sign of stereotypy. (Free Morgan Foundation, 2011)*

There is a scientific debate on the classification of swimming in circles as a sign of stereotypy. It is obvious that in a circular pool swimming in circles is favoured, but it does not indicate stereotyping. On the other hand, observations and studies of stereotyping in the sense of swimming have been made, but with no conclusive results [46]. When pools are built with irregular shapes (like in Loro Parque) swimming in circles is not observed.

*Orcas show stereotyped behaviours and signs of boredom like biting doors and walls, floating motionless, etc. (The Whale Sanctuary Project, 2012)*

Some orcas may exhibit these behaviours, but classifying them as abnormal or stereotyped behaviours can only be done by expert ethologists. In order to assess the welfare of the orcas not only the presence or absence of stereotypical behaviours has to be considered, but also their frequency and the presence or absence of other affiliative social behaviours like play, synchronized swimming, etc [44, 45]. If this stereotypical behaviour appears, it can be corrected with proper social management of the group and with environmental enrichment.

*When denied adequate space, large, wide-ranging carnivores commonly develop problems such as abnormal repetitive behaviour (termed stereotypies) and aggression (Dolphinaria-Free Europe, 2015)*

This statement has been scientifically demonstrated for large terrestrial carnivores (mainly big cats, such as tigers, lions, cheetahs, jaguars, etc.) but not for fish eating marine mammals. At the same time, it has been demonstrated that a complex facility (according the characteristics of the species) and a professionally driven environmental enrichment program can solve this problem.

*Orcas in captivity are bored and depressed (Bill Neal, 2019)*

This is simply a tendentious speculation, since there is no scientific evidence that the mental health of orcas is compromised in zoo settings.

*The social activities in the wild are replaced by artificial activities and shows. (Free Morgan Foundation, 2013)*

There are no natural or artificial activities, these are all physical activities of the animals. A recent study made by ethologists from the University of La Laguna [25] has measured that the social behaviours found in the orcas at Loro Parque in the absence of human staff (out of the presentations) are mainly affiliative and sexual, while aggression counts for less than 1% of the total behaviour. That proves that the animals exhibit natural behaviours when they are not conditioned. Animal presentations can be considered an environmental enrichment tool, and the performance of high energetic behaviours in the presentations provides physical activity comparable with swimming several miles. Many of the behaviours that are regularly shown in public demonstrations are totally natural (fast swim, jump, making waves, tail slap, strandings, etc.)

[2] Venn-Watson, S. K., Jensen, E. D., & Ridgway, S. H. (2011). Evaluation of population health among bottlenose dolphins (*Tursiops truncatus*) at the United States Navy Marine Mammal Program. Journal of the American Veterinary Medical Association, 238(3), 356-360.

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[59] Lucke, K.; Finneran, J.; Almunia, J.; Houser, D. (2016) Variability in Click-Evoked Potentials in Killer Whales (*Orcinus orca*) and Determination of a Hearing Impairment in a Rehabilitated Whale. Aquatic Mammals 42(2):184-192





*Tranquilizers and antipsychotic medicines are routinely administered to the animals. (Whale and Dolphin Protection Forum, 2010)*
*Use of tranquillizers Diazepam (Valium® and generics) is used by the captive dolphin industry to control stereotypies and anxiety, recognised as common problems in dolphinaria (Dolphinaria-Free Europe, 2015)*

This is false. Tranquilizers and antipsychotics are controlled veterinary drugs, if used in a group of orcas, each one of thousands of kilos, the quantity would be so enormous that it would be impossible to hide. Furthermore, it makes no sense to sedate animals that perform physical exercise and are very active in presentations to the public. To prove this, several years ago the Nurëmberg Zoo took blood samples of their dolphins with a public notary, and the analysis revealed no traces of drugs.

*Stress gives them ulcers. (Whale and Dolphin Protection Forum, 2010)*

Ulcerative lesions are not exclusive of cetaceans under human care, they are regularly found on wild stranded cetaceans. There are no studies comparing the prevalence of ulcers in wild cetaceans and those under human care, nor under different conditions of stress. Hence this statement is simply speculative.

*The stress induced in captive cetaceans leads to premature illness and death. (Whale and Dolphin Protection Forum, 2010)*

This is speculation, as there has never been a published scientific study that proves this statement. Moreover it has been scientifically proven that dolphins live longer in zoological institutions [2, 3, 4, 5, 6], and in the case of orcas [9, 10] there is not enough data to say that they do not.

*Loud music and the regular, repetitive noise of pumps and filters are thought to cause significant stress to captive cetaceans, who are highly dependent on their sense of hearing (Dolphinaria-Free Europe, 2015)*

This statement is false. The sound from the music is mainly reflected by the water surface and it has been demonstrated that their impact underwater is negligible [59]. On the other hand, when properly isolated the noise from the pumps does not reach the pools. The most recently published scientific research [12] comparing the underwater noise pollution of 14 dolphinariums in USA proves that measurements of noise in cetacean pools show noise data comparable to that found in the sea under normal conditions (with low human disturbance). The noise is much higher in sea areas where human activity is intense, and in fact alterations in dolphin, orca and beluga vocal behaviour associated with noisy human activities like whale watching, have been described [13, 14, 15, 16, 17]. That proves that the natural habitat can be much more stressful than the dolphinaria.

Orcas are not endangered?
In several places like Gibraltar Strait or Vancouver Island there are big concerns about the effect to the lack of prey in the future of the highly specialized killer whale pods. Recently published scientific research speculates that due to the high toxic load of killer whales, by 2050 half of their wild pods could disappear due to the low reproduction rates caused by the pollutants [47].
Loro Parque Fundación is funding a project to protect the endangered orca population of Gibraltar Strait the investment so far has been 320000 $

[47] Desforges, J. P., Levin, M., Jasperse, L., De Guise, S., Eulaers, I., Letcher, R. J., … Dietz, R. (2017). Effects of Polar Bear and Killer Whale Derived Contaminant Cocktails on Marine Mammal Immunity. Environmental Science and Technology, 51(19), 11431–11439. https://doi.org/10.1021/acs.est.7b03532

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# Conservation status

Some criticism is aimed to demonstrate that there is no conservation interest in keeping or even breeding cetaceans under human care. This is a short-minded perspective that does not take into account that dolphins and orcas can be used as models to speed up the learning curve if a new species of cetacean has to be bred in captivity to avoid extinction. This has been the case of the vaquita, a critically endangered porpoise that will be extinct in the near future because the decision to capture some individuals for captive breeding was taken too late (when less than 40 individuals remained in the population). The conservation role of the cetaceans in zoos has to be considered as a long term strategy to protect, not only dolphins and killer whales but all the cetaceans.

*Dolphins and whales are not endangered species and they should not be in captivity because their breeding is not necessary to recover natural populations, they should not be in captivity and all specimens should be released. (Whale and Dolphin Conservation, 2010)*

Despite not being threatened at global level, scientific information and knowledge about management of these species can serve as a model in establishing breeding programmes for other species. Moreover, some orca populations, such as in the Strait of Gibraltar, are considered threatened locally [47], so it makes sense to develop in situ conservation actions based on scientific knowledge obtained ex situ.

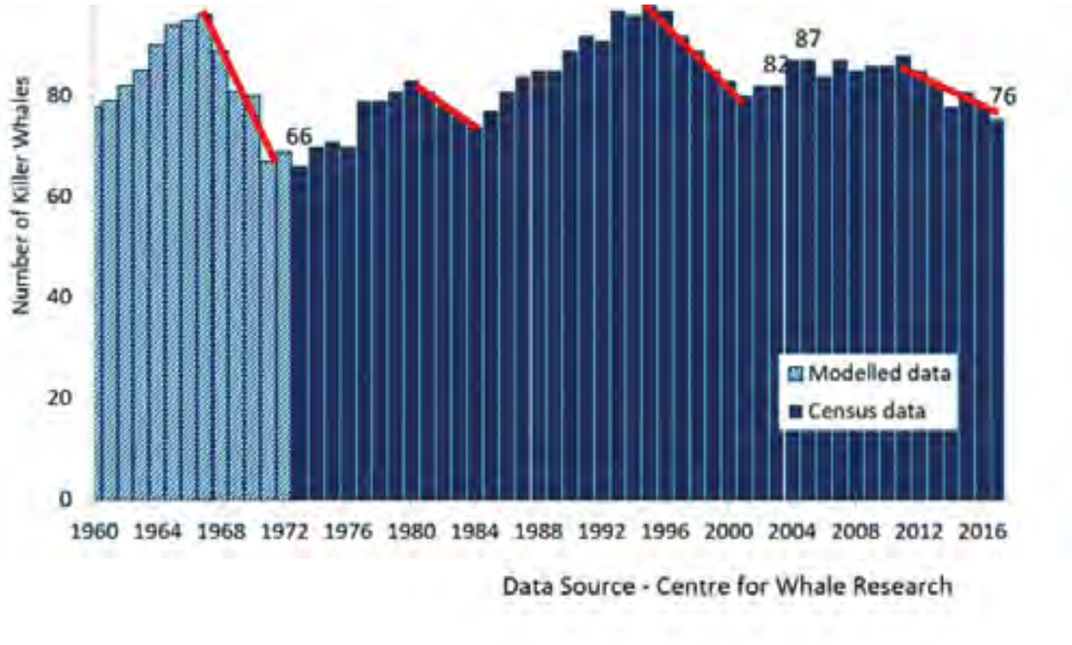
Precisely because they are not threatened release is not necessary because, according to the International Union for Conservation of Nature (IUCN), animal reintroductions or population supplementation should only be done in case of threatened species (or locally extinct populations) [70].

*Dolphins and orcas in captivity cannot be re-adapted to live in the wild and therefore they are not useful for conservation. (Orca Network, 2010)*

Although at present there is no scientific information on reintroductions carried out successfully, we cannot completely rule out the possibility that reintroduction techniques suitable for cetacean will be developed in the future. At present the conditions required by the IUCN to carry out reintroductions of cetaceans do not exist [70], and therefore it makes no sense to invest effort in developing methodologies for reintroduction.

*Collections of dolphins and orcas are hybridized and have no genetic value. (Animal Diversity Web, 2005)*

With the current taxonomic knowledge orcas (*Orcinus orca*) are a single species, in the same way as bottlenose dolphins (*Tursiops truncatus*), and their populations are managed as such under human care. If in the future taxonomic differences should become established, these will need to be considered when establishing reintroduction programmes.




The evolution of the number of Southern Resident Killer Whales off the coast of Washington state clearly shows that the population was fully recovered in 1994 from the captures in the 60s and 70s. The recent reduction of the population should be attributed to other causes.

[48] Ward, E. J., Holmes, E. E., & Balcomb, K. C. (2009). Quantifying the effects of prey abundance on killer whale reproduction. Journal of Applied Ecology, 46(3), 632–640. https://doi.org/10.1111/j.1365-2664.2009.01647.x

[49] Bain, D. E., Williams, R., Smith, J. C., & Lusseau, D. (2007). Effects of vessels on behavior of individual southern resident killer whales (*Orcinus sp.*). ESR, 6(3), 29pp.



*Captures of orcas in the 1970s affected the natural population off the coasts of Washington. (One Green Planet, 2014)*

That is not true. The populations of resident orcas off the coast of Washington state have been growing continuously since they began to be monitored in the 70s. There is a difference in growth rate between northern and southern residents, but there is no reason to suggest that this was due to the capture of specimens. The difficult situation of the southern residents can be better explained by the lack of prey (chinook salmon) [48] and also by the perturbations caused by the intense vessel traffic in the area [49].

[18] Norris, K. S., Perkins, P., Prescott, J. H., & Asadoria.Pv. (1961). An experimental demonstration of echo-location behaviour in porpoise, *Tursiops truncatus* (Montagu). Biological Bulletin, 120(2), 163-.

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[20] Au, W. W., & Moore, P. W. (1984). Receiving beam patterns and directivity indices of the Atlantic bottlenose dolphin *Tursiops truncatus*. The Journal of the Acoustical Society of America, 75(1), 255-262.

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[47] Desforges, J. P., Levin, M., Jasperse, L., De Guise, S., Eulaers, I., Letcher, R. J., … Dietz, R. (2017). Effects of Polar Bear and Killer Whale Derived Contaminant Cocktails on Marine Mammal Immunity. Environmental Science and Technology, 51(19), 11431–11439. https://doi.org/10.1021/acs.est.7b03532

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The anti-dolphinaria organizations criticize the amount and quality of the research done with captive cetaceans. The truth is that the vast majority of the basic knowledge about cetaceans has been acquired in research performed in dolphinaria (the description of the echolocation, the first bioacoustic studies, many physiological parameters, etc.). The members of the European Association for Aquatic Mammals have published over a hundred scientific papers on cetaceans in peer reviewed journals in the last few years. Many of the conservation projects performed every year around the world are founded by dolphinaria and zoos.

## *The artificial conditions in dolphinaria make it difficult to extrapolate investigations to natural populations (Naomi Rose, 2004)*

This statement is not completely true. While keeping animals captive means that some studies may not be directly extrapolated (in the case of behaviour, for example, it's easy to think that will not be the same in both situations). However, the research of animals under human care focuses on issues that are independent of their location: physiology, biometrics, metabolism, immunology, etc.

In some cases the possibility to undertake experiments where animals are kept under controlled conditions is essential, as in the study of isotopic fractionation for determining the diets of wild animals [50, 51]. If it had not been for the experiments on the controlled feeding conditions of orcas in Loro Parque, it would not have been possible to accurately determine the diet of wild orcas worldwide. This research has been used to determine critical habitat [52, 53] that ultimately was used to establish Marine Protected Areas for killer whales.

There are many other examples of relevant research made with cetaceans in zoo settings, for example: first description of echolocation in cetaceans [18], detailed studies on echolocation [19, 20], cetacean audiometry [59], ability of cetaceans to reduce their hearing sensitivity for incoming loud sounds[57], effects of toxic substances on cetacean health and reproduction [47], estrous cycle and breeding period [65], bioacoustics [24], personality [66], behaviour [25], etc.

The killer whales are perfect ambassadors to raise the awareness about all the threats faced by the oceans nowadays: toxic substances, plastic pollution, climatic change, ocean acidification, underwater noise, etc.

[71] Swanagan, J. S. (2000). Factors influencing zoo visitors' conservation attitudes and behavior. Journal of Environmental Education, 31(4), 26–31. https://doi.org/10.1080/00958960009598648



# Environmental education

The educational value of the cetaceans under human care is often criticized by the anti-dolphinaria organizations. They do not consider the enormous educative potential of the zoos, that gather 700 millions of visitors every year. Even the UICN has acknowledged the importance of the zoos in achieving the Aichi Biodiversity Target 1: "By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably. "

*The shows with dolphins and orcas are circus-style exercises with no educational value. (SOS Dolphins, 2011)*

*Environmental education is not justified in the shows because the animals show unnatural behaviour or a degree of amplitude, frequency or repetition that does not occur in the wild. (Whale and Dolphin Protection Forum, 2013)*

The presentations with dolphins and orcas introduce educational elements, even though not all contents are for educational purposes, and are carried out to capture the attention of a public that has no or little previous knowledge of animals. Their main aim is to awaken empathy in ways that build a bond between species and visitors. While there are many opinions on how to present the animals, there is always opportunity to improve the way in which educational content is transmitted in the presentations, educational surveys conducted randomly in LP show that all impressions that the visitors receive at the shows are positive: (intelligence, affection, conservation ... are the most frequent words in response to an open survey question: What did the presentations with animals suggest to you?)

*Empathy with animals can be obtained in other ways that are a long way from the performances of dolphins who fake musical skills with a false score (Free Morgan Foundation, 2012)*

While you can improve some of the specific exercises shown at the presentations, they are effective in creating empathy with animals from an audience that predominantly does not have basic knowledge of zoology, even experience with nature. A scientific research in Atlanta Zoo proved that visitors attending the elephant demonstration were more likely to actively support the elephant conservation than those who simply viewed the animals in their exhibit and read graphics [71].

*The animal shows are not educational because they demonstrate the supremacy of man over animals. (BALFIN, 2009)*

The superiority of man over animals might not be educational, but is not immoral, only appearing immoral in some new-age cultural trends.

[2] Venn-Watson, S. K., Jensen, E. D., & Ridgway, S. H. (2011). Evaluation of population health among bottlenose dolphins (*Tursiops truncatus*) at the United States Navy Marine Mammal Program. Journal of the American Veterinary Medical Association, 238(3), 356-360.

[3] Sweeney, J. C., Stone, R., Campbell, M., McBain, J., Leger, J. S., Xitco, M., ... & Ridgway, S. (2010). Comparative Survivability of *Tursiops Neonates* from Three US Institutions for the Decades 1990-1999 and 2000-2009. Aquatic Mammals, 36(3).

[4] Stolen, M. K., & Barlow, J. (2003). A model life table for bottlenose dolphins (*Tursiops truncatus*) from the Indian River Lagoon system, Florida, USA. Marine mammal science, 19(4), 630-649.

[5] Venn-Watson, S. K., Jensen, E. D., Smith, C. R., Xitco, M., & Ridgway, S. H. (2013). Evaluation of annual survival and mortality rates and longevity of bottlenose dolphins Marine Mammal Program from 2004 through 2013. Aquatic Manimals, 246(8), 893–898. https://doi.org/10.2460/javma.246.8.893

[6] Jaakkola, K., & Willis, K. (2019). How long do dolphins live ? Survival rates and life expectancies for bottlenose dolphins in zoological facilities vs . wild populations. Marine Mammal Science, 36(3), 248–261. https://doi.org/10.1111/mms.12601

[7] Robeck, T. R., Steinman, K. J., Gearhart, S., Reidarson, T. R., Mcbain, J. F., Monfort, S. L., & Robeck, T. R. (2004). Reproductive Physiology and Development of Artificial Insemination Technology in Killer Whales (*Orcinus orca*) 1. Biology of Reproduction, 71(April), 650–660. https://doi.org/10.1095/biolreprod.104.027961

[9] Robeck, T. R., Willis, K., Scarpuzzi, M. R., & O'Brien, J. K. (2015). Comparisons of Life-History Parameters between Free-Ranging and Captive Killer Whale (*Orcinus orca*) Populations for Application Toward Species Management. Journal of Mammalogy, 96(5), 1055–1070. https://doi.org/10.1093/jmammal/gyv113

[10] Robeck, T. R., Willis, K., Scarpuzzi, M. R., & O'Brien, J. K. (2016). Survivorship pattern inaccuracies and inappropriate anthropomorphism in scholarly pursuits of killer whale (*Orcinus orca*) life history: A response to Franks et al. (2016). Journal of Mammalogy, 97(3), 899–905. https://doi.org/10.1093/jmammal/gyw023

[58] Zhang, P., Sun, N., Yao, Z., & Zhang, X. (2012). Historical and current records of aquarium cetaceans in China. Zoo Biology, 31(3), 336–349. https://doi.org/10.1002/zoo.20400



*Education, research and conservation are mere excuses for the captivity industry, which is only interested in the commercial exploitation of animals. (Free Morgan Foundation, 2011)*

Education, conservation and research were proposed by the World Association of Zoos and Aquariums (WAZA) as the basis of modern zoos long before any law was enforced. The money raised by zoos and aquariums is the third financial source for biodiversity conservation projects worldwide. Only the accredited zoos of the European Association of Zoos and Aquariums (EAZA) raised 110 million € for biodiversity conservation from 2016 until 2020. Since 1994 Loro Parque has donated over 75 million dollars to its foundation which has been able to save 12 species from extinction investing over 27,3 million dollars in more than 250 conservation projects worldwide.

*Dolphin presentations are as educational as shows with dancing bears. (Born Free Foundation, 2009)*

Shows with dancing bears show no love for animals. By contrast, as demonstrated by educational surveys about presentations with cetaceans, these certainly suggest it.

*Orcas presented in the presentation are a sad caricature of wild orcas, giving the public a distorted view of the orcas and their environment. (The Whale Sanctuary Project, 2015)*

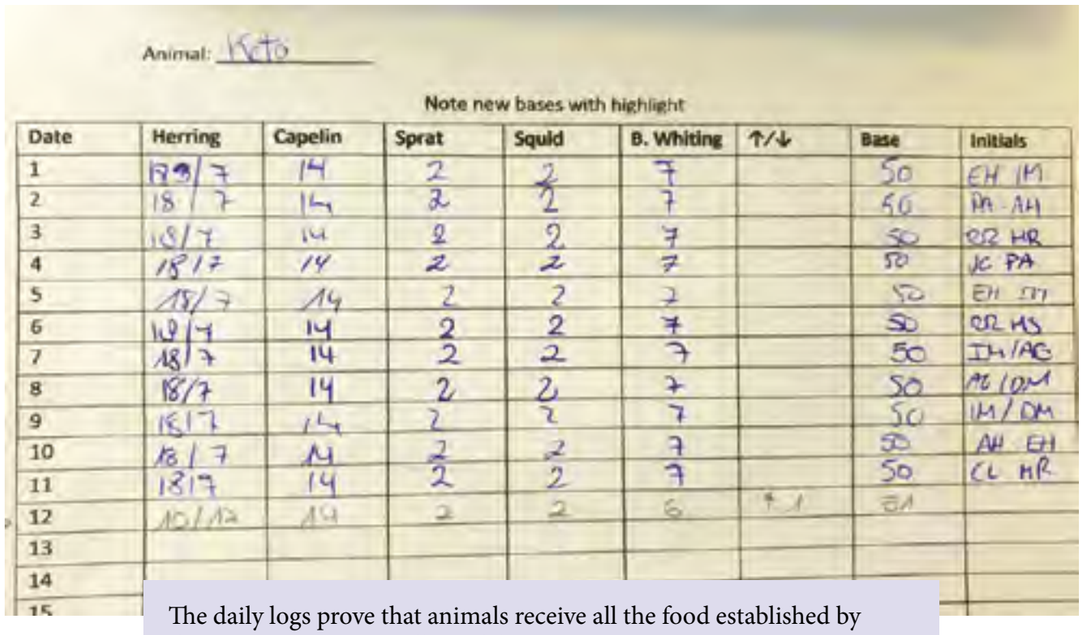
The main aim of the presentation is not to show a catalogue of behaviours of the species in the wild; it is not a biology class, but is to create empathy in the visitors towards the animals.

*Educational materials are boring and of poor quality, which can be compared to publicity flyers. (Free Morgan Foundation, 2011)*

Loro Parque publishes educational materials with quality and designed by educators. In addition information technology and audiovisual aids are used for educational games, videos and other elements to capture the attention of the participants. In the last 25 years Loro Parque Fundación has published over 3,000 scientific dissemination articles, hundreds of oral contributions to technical symposiums, tenths of scientific articles in peer reviewed journals and 116 issues of the quarterly newsletter *Cyanopsitta*. Moreover, nine editions of the International Parrot Congress have been celebrated in Loro Parque (with over 5,000 attendants), tens of workshops on parrot management and over 1,000 students have performed apprenticeships in Loro Parque and Loro Parque Fundación.

*Educational programmes avoid issues like the longevity of orcas or bent dorsal fins. (PETA, 2010)*

Not true. The educational programmes (also the guided visits) give the accepted scientific explanation of the cause of the bent dorsal. Moreover, the longevity of orcas is a matter yet to be determined. The most recent longevity data for dolphins and killer whales is used in the educational programmes [2, 3, 4, 5, 6, 9 , 10, 58].



Animal: Keto

Note new bases with highlight

| Date | Herring | Capelin | Sprat | Squid | B. Whiting | ↑/↓ | Base | Initials |
|---|---|---|---|---|---|---|---|---|
| 1 | 19/7 | 14 | 2 | 2 | 7 | | 50 | EH IM |
| 2 | 18/7 | 14 | 2 | 2 | 7 | | 50 | IM AH |
| 3 | 18/7 | 14 | 2 | 2 | 7 | | 50 | CR HR |
| 4 | 18/7 | 14 | 2 | 2 | 7 | | 50 | JC PA |
| 5 | 18/7 | 14 | 2 | 2 | 7 | | 50 | EH IM |
| 6 | 18/7 | 14 | 2 | 2 | 7 | | 50 | CR MS |
| 7 | 18/7 | 14 | 2 | 2 | 7 | | 50 | IM/AC |
| 8 | 18/7 | 14 | 2 | 2 | 7 | | 50 | MC/DM |
| 9 | 18/7 | 14 | 2 | 2 | 7 | | 50 | IM/DM |
| 10 | 18/7 | 14 | 2 | 2 | 7 | | 50 | AH EH |
| 11 | 18/7 | 14 | 2 | 2 | 7 | | 50 | CL HR |
| 12 | 10/12 | 14 | 2 | 2 | 6 | +1 | 21 | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |

The daily logs prove that animals receive all the food established by the veterinarians, regardless of their participation in presentations or training sessions.

[25] Sánchez-Hernández, P., Krasheninnikova, A., Almunia, J., & Molina-Borja, M. (2019). Social interaction analysis in captive orcas ( *Orcinus orca* ). Zoo Biology, (July 2018), 1–11. https://doi.org/10.1002/zoo.21502



# Training

Some common myths about cetaceans are related with their training, or, more precisely called, operant conditioning. The anti-dolphinaria organizations try to convince the public that dolphins and killer whales are forced to perform by food deprivation or even punishment. That might be the case when Rick O'Barry, one of the most critic activists against dolphinariums, trained dolphins to play the flipper role on TV. It is well known that he tried to teach captive dolphins to catch their own food, cutting the fins of the live fish before feeding them to the animals. The modern techniques of animal training do not have anything to do with this. Animal training is based in positive reinforcement, but not exclusively food. The link between animal and trainer is the strongest motivation to make the animals participate in any activity. If training is not based on trust, animals would refuse to cooperate with humans, no matter how hungry they were.

*Animals are blackmailed to act for food. (Whale and Dolphin Conservation Society, 2009)*

The conditioning of behaviour through positive reinforcement is not blackmail. This kind of training is based on the basic instincts that drive natural selection. Animals tend to repeat those behaviours that provide benefits such as obtaining food. Assuming that behaviour modification with food is blackmail, is like considering that pet owners are blackmailing or even kidnapping their animals because they feed them.

*Animals are punished so that they act. (Whale and Dolphin Protection Forum, 2010)*

This is not true in modern zoos, as they only use positive reinforcement in the conditioning of cetaceans.

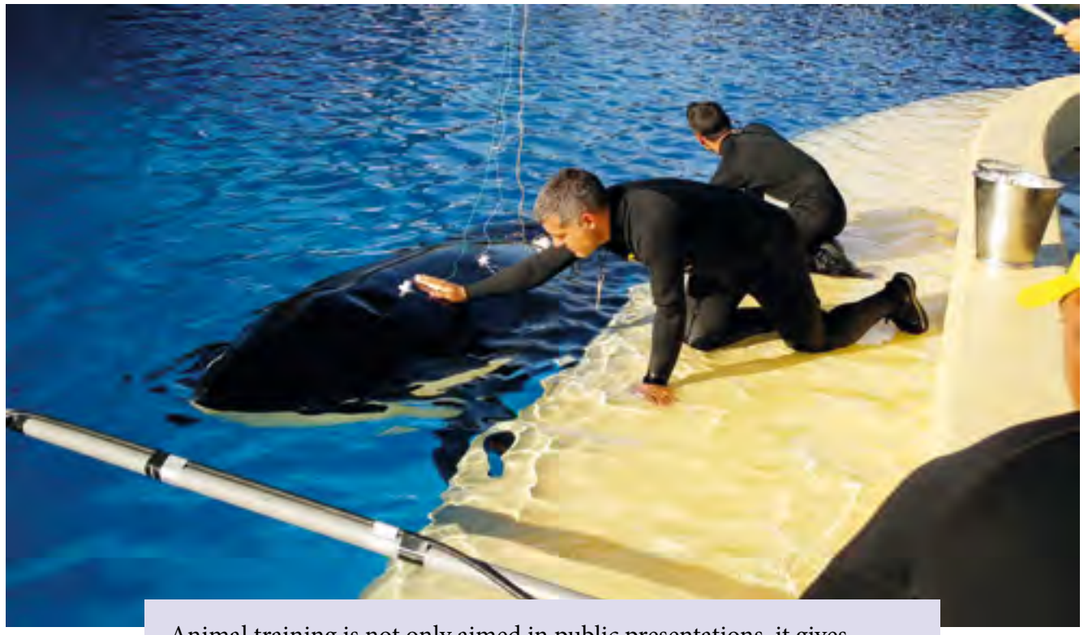
*Food deprivation is used to get the animals to obey. (Free Morgan Foundation, 2011)*

*Trainers keep cetaceans on a constant hunger as a control mechanism (Bill Neal, 2019)*

This is not true. The animals have a daily food base that they completely receive fully, whether or not participating in presentation or if they carry out the exercises properly. Motivation is the key element in the training of the animals. Big predators, like killer whales, can fast for several weeks, consequently they could easily disobey, as they have evolved to resist several weeks without food.

*Trainers treat the animals without empathy, not caring when they are aggressive between each other. (Free Morgan Foundation, 2011)*

This is false. To ignore aggression is not a sign of lack of empathy, but the proper way to handle these situations. Undue attention by the trainers in case of an aggression simply reinforces that behaviour in the animals, which would make this rare behaviour (less than 1% according to the scientific research [25]) to appear more often.



Animal training is not only aimed in public presentations, it gives an extraordinary access to the animals to perform complex scientific research impossible to realize with wild killer whales. Training also gives the veterinarian team the possibility to obtain a broad number of diagnostic samples, and provides the animals with mental and physical challenges to enrich their lives and, at the same time, keep them fit.



## *Keto obeys his trainer because he is hungry (Rick O'Barry, 2016)*

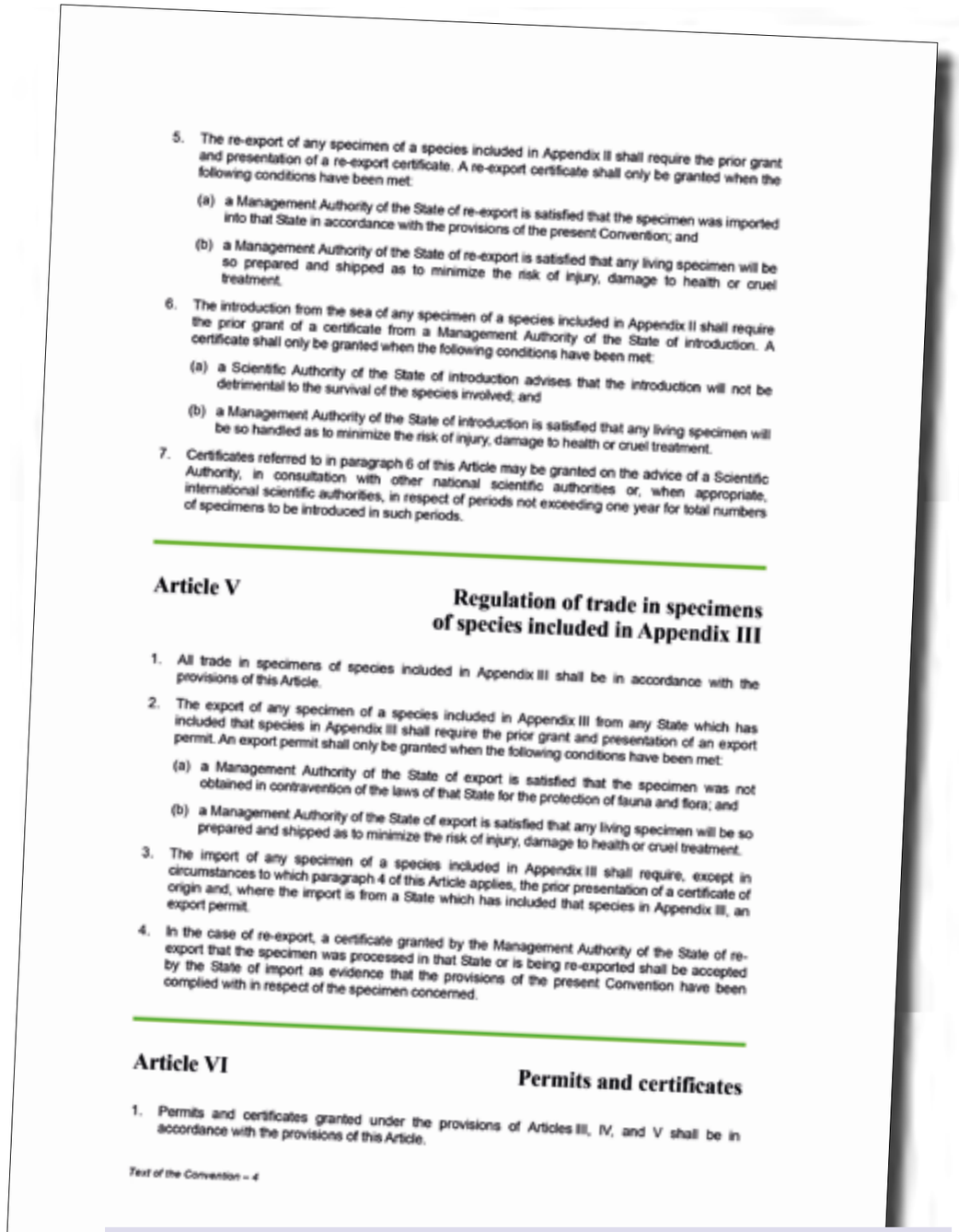
Food deprivation has not been used as a training method in western parks for more than 3 decades. For sure that was the training method that Mr. O'Barry used when he was a dolphin trainer, and maybe that was also the reason why nobody wanted him to work training dolphins and he had to become an anti dolphinarium activist.

The behaviours they do demonstrate in the presentations (as well as all other behaviours, like husbandry behaviours, medical etc.) are 100% positive reinforcement. Many anti dolphinarium activists misunderstand what positive reinforcement means. "You won't get your treat now", doesn't mean "you won't get fed". Not feeding the animals would be negative punishment - withholding something they want - the complete opposite of positive reinforcement. The modern dolphinariums care about their animals, especially the trainers, who wouldn't want to work with hungry, frustrated animals, as they would become very unpredictable and dangerous.

Every single animal at Loro Parque has a diet designed to fulfil its nutritional needs, and all of them get the whole diet, no matter whether or not they participate in the animal presentations. Animals are never kept hungry. Orcas, for example, have 9 meals a day, three of them have been already eaten when the first presentation starts.

## *Keto does not like to perform (Rick O'Barry, 2016)*

Based on his remarks, it seems pretty clear that Mr. O'Barry forced his dolphins to perform in the past, but this is not the case in the modern zoos. The training of any animal is based on trust and motivation; nobody would be able to force a killer whale to perform a behaviour if he or she does not want to. It is only the establishment of strong links of trust between trainers and animals when the behaviours are performed consistently. The records of consistency of Loro Parque's Killer whales are extraordinarily high and that could have not be achieved if the animals were not willing to participate.



5. The re-export of any specimen of a species included in Appendix II shall require the prior grant and presentation of a re-export certificate. A re-export certificate shall only be granted when the following conditions have been met:

   (a) a Management Authority of the State of re-export is satisfied that the specimen was imported into that State in accordance with the provisions of the present Convention; and

   (b) a Management Authority of the State of re-export is satisfied that any living specimen will be so prepared and shipped as to minimize the risk of injury, damage to health or cruel treatment.

6. The introduction from the sea of any specimen of a species included in Appendix II shall require the prior grant of a certificate from a Management Authority of the State of introduction. A certificate shall only be granted when the following conditions have been met:

   (a) a Scientific Authority of the State of introduction advises that the introduction will not be detrimental to the survival of the species involved; and

   (b) a Management Authority of the State of introduction is satisfied that any living specimen will be so handled as to minimize the risk of injury, damage to health or cruel treatment.

7. Certificates referred to in paragraph 6 of this Article may be granted on the advice of a Scientific Authority, in consultation with other national scientific authorities or, when appropriate, international scientific authorities, in respect of periods not exceeding one year for total numbers of specimens to be introduced in such periods.

**Article V** — **Regulation of trade in specimens of species included in Appendix III**

1. All trade in specimens of species included in Appendix III shall be in accordance with the provisions of this Article.
2. The export of any specimen of a species included in Appendix III from any State which has included that species in Appendix III shall require the prior grant and presentation of an export permit. An export permit shall only be granted when the following conditions have been met:

   (a) a Management Authority of the State of export is satisfied that the specimen was not obtained in contravention of the laws of that State for the protection of fauna and flora; and

   (b) a Management Authority of the State of export is satisfied that any living specimen will be so prepared and shipped as to minimize the risk of injury, damage to health or cruel treatment.

3. The import of any specimen of a species included in Appendix III shall require, except in circumstances to which paragraph 4 of this Article applies, the prior presentation of a certificate of origin and, where the import is from a State which has included that species in Appendix III, an export permit.
4. In the case of re-export, a certificate granted by the Management Authority of the State of re-export that the specimen was processed in that State or is being re-exported shall be accepted by the State of import as evidence that the provisions of the present Convention have been complied with in respect of the specimen concerned.

**Article VI** — **Permits and certificates**

1. Permits and certificates granted under the provisions of Articles III, IV, and V shall be in accordance with the provisions of this Article.

*Text of the Convention – 4*

The CITES convention regulates the commerce of endangered species to ensure that the commercial use does not put at risk its mere existence in the long term. There are exceptions to the general prohibition of commercial use granted for example to zoological institutions that perform research, conservation and education.

[94] Veredict Raad van Satate (2019) Rechtbank Amsterdam, 17/3356 201804732/1/A3. https://www.raadvanstate.nl/uitspraken/@116356/201804732-1-a3/?highlight=201804732/1/A3#toonpersbericht





*The CITES convention prohibits commercial use of cetaceans. (Free Morgan Foundation, 2016)*

The CITES convention regulates the commercial use of animals of threatened species to prevent their extinction. There are exceptions that apply in the case of zoos, which aim not to trade (buy and sell) with animals, but use them for science, education and conservation. The CITES authorities recognize zoos as entities whose primary purpose is not commercial. Zoos are allowed to display individuals of Annex I species (the highly protected) as long as they have a CITES permits issued for each individual. This interpretation has been corroborated by the Dutch Raad van State [94].

*Many countries have banned dolphins in captivity. (Dolphinaria Free Europe, 2014)*

A few countries have banned dolphins in captivity, others (such as the UK and Switzerland) have not banned them, but established minimum maintenance criteria and none of the existing companies at the time decided to make the investment needed to achieve them. Others like France, Spain, Germany and Belgium have regulated the keeping of dolphins under human care. Some other countries, especially eastern countries are authorizing new projects.

*For years it has been, against the law around, the world to capture orcas (Bill Neal, 2019)*

This is not true; orca hunting has not been banned internationally as these regulations have to be put in place by each country on its own Economic Exclusive Zone (EEZ). Iceland, Norway and Japan still allow hunting of these animals and some aboriginal communities in Greenland, Russia, the United States of America and the Caribbean continue to consume their meat as a means of subsistence, as it is not prohibited.

*We have no right to keep any animal in captivity. (PETA, 2009)*

That is a respectable philosophical opinion, but it cannot be imposed on the rest of the World.

It is easy to find examples of cetaceans suffering in the sea, but it does not mean that freedom equals suffering, in the same way that captivity does not equal suffering.


[9] Robeck, T. R., Willis, K., Scarpuzzi, M. R., & O'Brien, J. K. (2015). Comparisons of Life-History Parameters between Free-Ranging and Captive Killer Whale (*Orcinus orca*) Populations for Application Toward Species Management. Journal of Mammalogy, 96(5), 1055–1070. https://doi.org/10.1093/jmammal/gyv113

[10] Robeck, T. R., Willis, K., Scarpuzzi, M. R., & O'Brien, J. K. (2016). Survivorship pattern inaccuracies and inappropriate anthropomorphism in scholarly pursuits of killer whale (*Orcinus orca*) life history: A response to Franks et al. (2016). Journal of Mammalogy, 97(3), 899–905. https://doi.org/10.1093/jmammal/gyw023

[24] Kremers, D., Lemasson, A., Almunia, J., & Wanker, R. (2012). Vocal sharing and individual acoustic distinctiveness within a group of captive orcas (*Orcinus orca*). Journal of Comparative Psychology, 126(4), 433–445. https://doi.org/10.1037/a0028858

[56] Harley, H. E. (2013). Consciousness in dolphins? A review of recent evidence. Journal of Comparative Physiology A, 199(6), 565–582. https://doi.org/10.1007/s00359-013-0816-8

[99] Mitchell, C. (2016). The evolution of brains & cognitive abilities. In: Evolutionary Biology, pp 73-87. Springer




# Captivity equals suffering

*Scientific studies show that dolphins are highly intelligent, sociable and sensitive animals with a "self-understanding" similar to our own and consequently suffer in captivity (PETA Deutschland 2014)*

Studies of self-recognition in dolphins have recently been re-analysed and show that the original study contained major errors [56]. Nevertheless, dolphins are scientifically interesting because they have developed their intellectual capabilities in an environment which is almost totally alien to ours. The results of most of our research into such topics have been gained from animals in dolphinariums. However, at present we have no clear indications that dolphins are closer to human beings than other animals, such as parrots for example [56]. Nor should we expect this because a direct comparison with human beings makes little sense. The evolution of all adaptations is characterised specifically by the environment and biology of the animal and therefore results in a multitude of adaptations which do not follow directly from each other. This is also why it is impossible to create an intelligence ranking. This situation is comparable to the branches of a tree of which one would never say that one branch is better than another. Moreover, the "suffering" of the animals is something that has to be elucidated from the animal welfare science. The most recent approaches to measure animal welfare in cetaceans considers social and emotional aspects of the animals, which takes into account their intelligence and sociability.

*Orcas and dolphins are animals with self-awareness (and are also extremely intelligent animals or extremely social animals) and cannot be deprived of their liberty. (The Whale Sanctuary Project, 2016)*

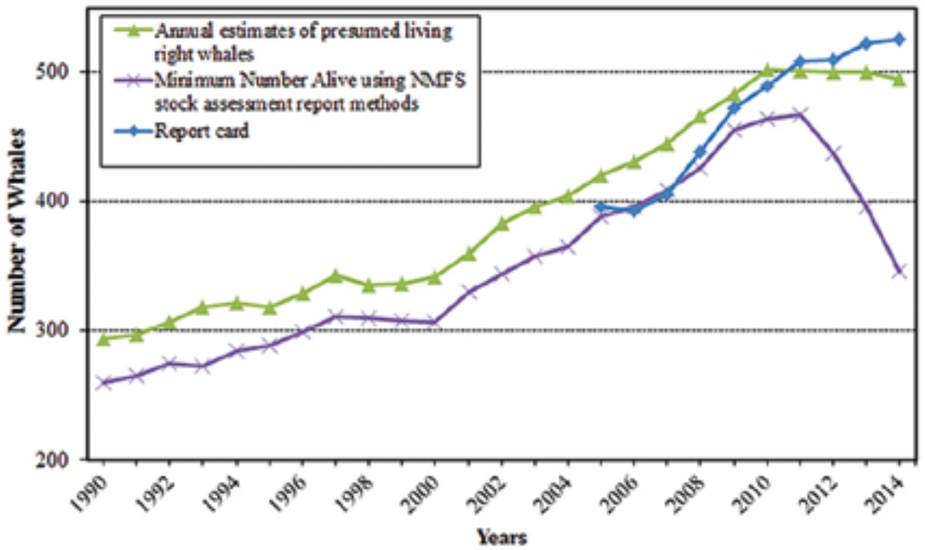
The intelligence of dolphins does not seem to be much higher than that of other animal species (birds for example) based on recent scientific information [99]. The issues of self-awareness have not been demonstrated [56].

*Captivity endangers the physical and mental health of orcas. (The Whale Sanctuary Project, 2015)*

This is simply a tendentious speculation, since the recent scientific data shows that there are no differences in the mortality rate of wild and captive orcas [9, 10]. Nor is there evidence that the mental health of orcas is compromised. If we consider the dialect use as a proxy for mental health, the fact that the orcas under human care communicate with dialects of similar complexity [24] would not support this speculation.

*The shows are against the dignity and spirit of these intelligent creatures, making them act as clowns. (Free Morgan Foundation, 2011)*

The perception of visitors to the presentations does not suggest any attack on the dignity of animals.




The sympathy for cetaceans created by dolphinariums and films like flipper fueled the global support to measures like the ban in whaling. The whale populations have been steady recovering hanks to the moratorium on its hunting. Recently some critically endangered species like the North Atlantic Right Whales are experiencing declines associated with new threats.

[2] Venn-Watson, S. K., Jensen, E. D., & Ridgway, S. H. (2011). Evaluation of population health among bottlenose dolphins (*Tursiops truncatus*) at the United States Navy Marine Mammal Program. Journal of the American Veterinary Medical Association, 238(3), 356-360.

[3] Sweeney, J. C., Stone, R., Campbell, M., McBain, J., Leger, J. S., Xitco, M., ... & Ridgway, S. (2010). Comparative Survivability of *Tursiops Neonates* from Three US Institutions for the Decades 1990-1999 and 2000-2009. Aquatic Mammals, 36(3).

[4] Stolen, M. K., & Barlow, J. (2003). A model life table for bottlenose dolphins (*Tursiops truncatus*) from the Indian River Lagoon system, Florida, USA. Marine mammal science, 19(4), 630-649.

[5] Venn-Watson, S. K., Jensen, E. D., Smith, C. R., Xitco, M., & Ridgway, S. H. (2013). Evaluation of annual survival and mortality rates and longevity of bottlenose dolphins Marine Mammal Program from 2004 through 2013. Aquatic Manimals, 246(8), 893–898. https://doi.org/10.2460/javma.246.8.893

[6] Jaakkola, K., & Willis, K. (2019). How long do dolphins live ? Survival rates and life expectancies for bottlenose dolphins in zoological facilities vs . wild populations. Marine Mammal Science, 36(3), 248–261. https://doi.org/10.1111/mms.12601

[9] Robeck, T. R., Willis, K., Scarpuzzi, M. R., & O'Brien, J. K. (2015). Comparisons of Life-History Parameters between Free-Ranging and Captive Killer Whale (*Orcinus orca*) Populations for Application Toward Species Management. Journal of Mammalogy, 96(5), 1055–1070. https://doi.org/10.1093/jmammal/gyv113

[10] Robeck, T. R., Willis, K., Scarpuzzi, M. R., & O'Brien, J. K. (2016). Survivorship pattern inaccuracies and inappropriate anthropomorphism in scholarly pursuits of killer whale (*Orcinus orca*) life history: A response to Franks et al. (2016). Journal of Mammalogy, 97(3), 899–905. https://doi.org/10.1093/jmammal/gyw023

[57] Lucke, K., Siebert, U., Lepper, P. a, & Blanchet, M.-A. (2009). Temporary shift in masked hearing thresholds in a harbor porpoise (*Phocoena phocoena*) after exposure to seismic airgun stimuli. The Journal of the Acoustical Society of America, 125(6), 4060–4070. https://doi.org/10.1121/1.3117443

[58] Zhang, P., Sun, N., Yao, Z., & Zhang, X. (2012). Historical and current records of aquarium cetaceans in China. Zoo Biology, 31(3), 336–349. https://doi.org/10.1002/zoo.20400



This statement is simply an opinion.

### *Visitors to the parks with cetaceans have been declining in recent years and many have closed or no longer exhibiting dolphins and orcas. (Dolphinaria Free Europe, 2014)*

It is not true that visitors decrease. Some companies have ceased to display these animals and others have opened new dolphinaria. In the last year the attendance trend perceived within the zoo community has been positive.

### *There are no rational and credible reasons for keeping dolphins in captivity (PETA Deutschland 2014)*

Many examinations, for which animals have to be observed repeatedly and influence has to be taken in a controlled manner, can only be carried out in a zoo. Possibly the most important research projects in zoos are those which serve to protect animals in the wild. A good example of this are the studies on the effects of noise pollution. The German noise pollution values for the marine environment established by German Federal Maritime and Hydrographic Agency are based on the hearing tests carried out by a German scientist on porpoises in a zoo [57]. Without such information, noise spectrum of whales and dolphins in their marine environment would still be unregulated or oriented according to estimates. However, research in zoos has shown that high estimates can often be wrong because it proves a far higher sensitivity in porpoises than was previously assumed. Effective noise guidelines for the protection of marine animals are very important where industrial activities are carried out in marine environments. And this is only an example of why it is necessary to have cetaceans in zoo settings, there are many others regarding physiology, ecotoxicology, cognition, etc.

### *The complex necessities of cetaceans make them unable to adapt to captive settings, despite the useless efforts to "enrich" their environment with balls and toys (FAADA, 2014)*

This statement is totally absurd, cetaceans thrive in dolphinariums as is scientifically proven by the fact that they live as long as, or even longer, than in the wild [2, 3, 4, 5, 6, 9, 10, 58]. The environmental enrichment of zoo housed animals is not simply throwing them some balls and toys to play, it is a complex science that aims to promote natural behaviours in the animals by means of a variety of devices and mechanisms.

### *Whales and dolphins kept in European Zoos and dolphinaria are facing a worrying situation (Great Ape Project, 2011)*

More than 95% of the dolphins in the European Association of Marine Mammals (EAAM) facilities are bottlenose dolphins (*Tursiops truncatus*). The bottlenose dolphin is not an endangered species but instead, according to the IUCN, is a "species of least concern." The IUCN's 2008 report states that although there are many threats operating on local populations, the species is widespread and abundant, and none of these threats is believed to be resulting in a major global population decline." Similarly, bottlenose dolphins are listed on Appendix II of the Convention on International


In 2015 Loro Parque was accused of killer whale mistreatment by PETA UK. After a detailed inspection by several members of the operative unit of the Spanish Environmental Police (SEPRONA) the official report dismissed the accusation and stated that the housing and care of the cetaceans at Loro Parque was excellent.

[72] Hooker, S. K., & Baird, R. W. (2001). Diving and ranging behaviour of odontocetes: a methological review and critique. Mammal Review, 31(1), 81–105. https://doi.org/10.1046/j.1365-2907.2001.00080.x

[73] Hastie, G. D., Wilson, B., & Thompson, P. M. (2006). Diving deep in a foraging hotspot: acoustic insights into bottlenose dolphin dive depths and feeding behaviour. Marine Biology, 148(5), 1181–1188. https://doi.org/10.1007/s00227-005-0143-x

[74] Corkeron, P. J., & Martin, A. R. (2004). Ranging and diving behaviour of two 'offshore' bottlenose dolphins, *Tursiops sp.*, off eastern Australia. Journal of the Marine Biological Association of the United Kingdom, 84(2), 465–468. https://doi.org/10.1017/s0025315404009464h

[75] Klatsky, L. J., Wells, R. S., & Sweeney, J. C. (2007). Offshore Bottlenose Dolphins ( *Tursiops truncatus* ): Movement and Dive Behavior Near the Bermuda Pedestal. Journal of Mammalogy, 88(1), 59–66. https://doi.org/10.1644/05-mamm-a-365r1.1



Trade in Endangered Species (CITES). Regardless of their actual conservation status, the European Union treats all cetaceans as endangered species for regulatory purposes.

In zoological settings, the depth dimensions of habitats for bottlenose dolphins reflect those of the bays and estuaries in which they are typically found. Dives of bottlenose dolphins typically last from 20 to 40 seconds. The depth of dives depends on the habitat in which the dolphins are found. Bottlenose dolphins are generally found in bays, in tidal waters, and along open ocean beaches, often at depths of 3 metres or less. While dolphins can dive longer and deeper where motivated by the need to forage or to protect themselves from predators, they do not necessarily need to do so when these factors are absent [72, 73, 74, 75]. Moreover, the depth of pools is only one of the many factors that can influence, but not by itself determine, the well-being of dolphins.

Like the European Union and the World Animal Health Organisation, the EAAM supports the use of objective indicators to assess animal well-being, rather than over-reliance on enclosure dimensions which are neither scientifically founded nor determinate of welfare. Because inspectors often seek guidance on enclosures when assessing welfare, however, the EAAM has agreed on recommended dimensions for state-of-the-art facilities for dolphins.

## *Whales and dolphins are treated with cruelty in the Marine Mammal Parks (Bill Neal, 2019)*

It is not true that killer whales are treated with cruelty in marine parks. Modern marine park and aquariums like Loro Parque have in place high standards to keep animals under human care that guarantee their well-being. In any case that can be described as cruelty and when the parks had been accused of animal mistreatment (Like the PETA accusations to Loro Parque) those were refused by the competent authorities. In the case of the PETA denouncement of Loro Parque the Spanish Environmental Police (SEPRONA) reported that the accusations were unfounded. Some prestigious organizations, like The American Humane, the Association of British Travel Agents (ABTA), the European Association for Aquatic Mammals (EAAM) or the Alliance for Marine Mammal Parks and Aquariums (AMMPA) have developed independent standards that certify the correct management and positive welfare of the killer whales housed at the modern facilities. Loro Parque is regularly inspected by independent audit companies (TÜV, SGS, etc.) or by independent experts from the zoological community to accredit its compliance with these standards.

When Morgan was rescued in Holland she weighed only 470 Kg, and was severely malnourished and dehydrated. That obviously can't be considered a capture.

[67] Vester, H., & Samarra, F. I. (2011). Comparison of Morgan's discrete stereotyped call repertoire with a recent catalogue of Norwegian killer whale calls. Henningsvær, Norway: Ocean Sounds.





*Morgan can be reintroduced to her natural habitat. (PETA Deutschland, 2016)*

Morgan's family was never found and Morgan was declared non-releasable by seven independent experts on killer whales: Cornelis Camphuysen (Royal Netherlands Institute for Sea Research), Dr. John Ford (Pacific Biological Station), Dr. Christophe Guinet (Centre National de Recherche Scientifique), Dr. Mardik Leopold (IMARES), Dr. Cristina Lockyer (The North Atlantic Marine Mammal Commission), Dr. James McBain (Expert in killer whale veterinarian medicine) and Dr. Fernando Ugarte (Greenland Institute of Natural Resources).

*The Dolfinarium Harderwijk in the Netherlands captured Morgan and transported her to its facility under a permit specifically so that she could be rehabilitated for subsequent release. (PETA Deutschland, 2019)*

This is a misleading statement as it uses the term "capture" to describe the government-requested rescue of a young and severely malnourished killer whale that was alone and dying in shallow waters. Morgan would be dead without the around the clock efforts the expert staff and management of Dolfinarium Harderwijk.

*Morgan has to be released back in the sea, were her family is located (Great Ape Project, 2011)*

Unfortunately the efforts made by experts to locate Morgan's family pod in the North Atlantic killer whale population were unsuccessful. As the photo identification of Morgan was not possible (she was not present in any of the catalogs of the North Atlantic) and the DNA matching was not precise enough the researchers tried to match her dialect with the known dialects in the North Atlantic. A bioacoustic matching made in 2011 revealed a 65% of coincidence with one pod of orcas in Norway (The P-pod)[67]. This group cannot be considered Morgan's family pod, as all the members of the family have a 100% matching in the acoustic dialect. Besides the group was seen only once in 2005 in Tysfjord (Norway) during summer, since then there was no information on their location. So at the moment that the matching was found the location of the group had been unknown for more than 6 years.

In the summer of 2012, a male that was seen with the P-Pod in 2005 was seen again, but none of the females of P-pod were seen with him. As the males in this ecotype can jump from one pod to another, not even the researchers from Orca Coalition said that they found P-Pod. Maybe this male was just visiting the pod seven years ago and in 2012 was with his own group. The truth is that during the last 11 years nobody has ever seen any female from the P-pod (the only known group that could have some relationship with Morgan's family group). So the truth is that nobody has never identified, nor

Keiko's grave in Halsa (Norway).

[25] Sánchez-Hernández, P., Krasheninnikova, A., Almunia, J., & Molina-Borja, M. (2019). Social interaction analysis in captive orcas ( *Orcinus orca* ). Zoo Biology, (July 2018), 1–11. https://doi.org/10.1002/zoo.21502



seen the family group of Morgan.

### *Morgan's health and welfare would be seriously compromised if she remains in captivity (Great Ape Project, 2011)*

The health and welfare of Morgan and all the orcas in Loro Parque are permanently monitored by the veterinarian staff, which have extensive experience in cetacean veterinarian medicine. These professionals have the most advanced diagnostic tools, have full access to the animals and are able to take blood and urine samples, behavioural records, ultrasound explorations, etc. Moreover, Loro Parque receives regular visits from independent experts in cetacean veterinarian medicine some of them with over 40 years of experience taking care of cetaceans all around the world. None of the above mentioned professionals with full access to the animals have ever expressed any concern about the health or the welfare of the group of killer whales housed at Loro Parque. Eight years after the statement of the Great Ape Project Morgan is still in perfect health and welfare status, and she is completely integrated in the group of killer whales at Loro Parque, to the point that she become mother of a calf in 2018.

### *Morgan was to be held at Loro Parque as an interim measure whilst the legality of her continued captivity was debated (Ingrid Visser - Free Morgan Foundation, 2012)*

This statement is false, as the transfer of Morgan to Loro Parque was not temporary, but a final decision of the Ministry of Economic affairs, Agriculture and Innovation of the Dutch Government to move Morgan to Loro Parque without any reservation or condition as to the length of her stay there, as the only viable alternative was euthanasia. The decision was based on the conclusion that Morgan was not likely to survive if returned to the wild. The court confirmed the validity of the CITES permit issued by the Dutch Government for Morgan's transport to Loro Parque.

### *Morgan is over than 100 times more like likely to be attacked at Loro Parque than any orca (Ingrid Visser - Free Morgan Foundation, 2012)*

No comparison of "likelihood" of "attacks" can be made due to Visser's lack of definition, methodology and correlated data. Dr. Visser is intentionally misleading the reader using words like "attack" for dramatic appeal. The failure to define aggression in this paper is obviously intentional as use of the word raises concern and gives the appearance of importance in stark contrast to the scientific social, health and welfare reality. A recent published research by independent ethologists has proven that the aggressive behaviours in the social group of killer whales at Loro Parque accounts for less than 1% of the behaviours [25]. The same study shows that the agonistic behaviours are not exclusively related to Morgan, but more or less evenly spread.

### *Morgan should be removed from Loro Parque immediately and placed into a sea-pen. If her physical and mental health are to be preserved there is no other option (Ingrid Visser - Free Morgan Foundation, 2012)*

As all the claims and assertions made by Ingrid Visser to found this recommendation are unsupported by scientific data, misinterpreted or simply wrong, thus, this conclusion is not valid. Removal to be placed in isolation in a sea-pen (predicate to Dr. Visser's ultimate campaign goal of release in the ocean where she would most certainly die) is a cruel recommendation for a young social animal that has significant hearing loss and has adapted to and become dependent on human care.

Asimetric dental damage has been described in North Atlantic orcas, related with the suction feed of herrings. This animal presented a severe dental damage on her upper left gum due to the suction of herrings, which proves that orca teeth are easily erodible.

[94] Veredict Raad van Satate (2019) Rechtbank Amsterdam, 17/3356 201804732/1/A3. https://www.raadvanstate.nl/uit-spraken/@116356/201804732-1-a3/?highlight=201804732/1/A3#toonpersbericht



Morgan is best served by continuing to live with the Loro Parque killer whale group which has become her family.

*The potential for a violation of the CITES transport permit and a 'mistaken' pregnancy to occur are naturally high when a sexually mature male is kept with a sexually mature female (Ingrid Visser - Free Morgan Foundation, 2015)*

False, there is no limitation in the CITES permit of Morgan about breeding. Dr. Visser made a particular interpretation of the CITES permit that has not been publicly acknowledged by any CITES authority, no CITES authority has addressed Loro Parque to express any concern about the management of Morgan nor to limit breeding or public display [94].

*For instance, she has been observed 'lunging' high out of the water when coming to 'station'. It is unclear why she does this, however such behaviour may indicate that Morgan is extremely hungry (Ingrid Visser - Free Morgan Foundation, 2012)*

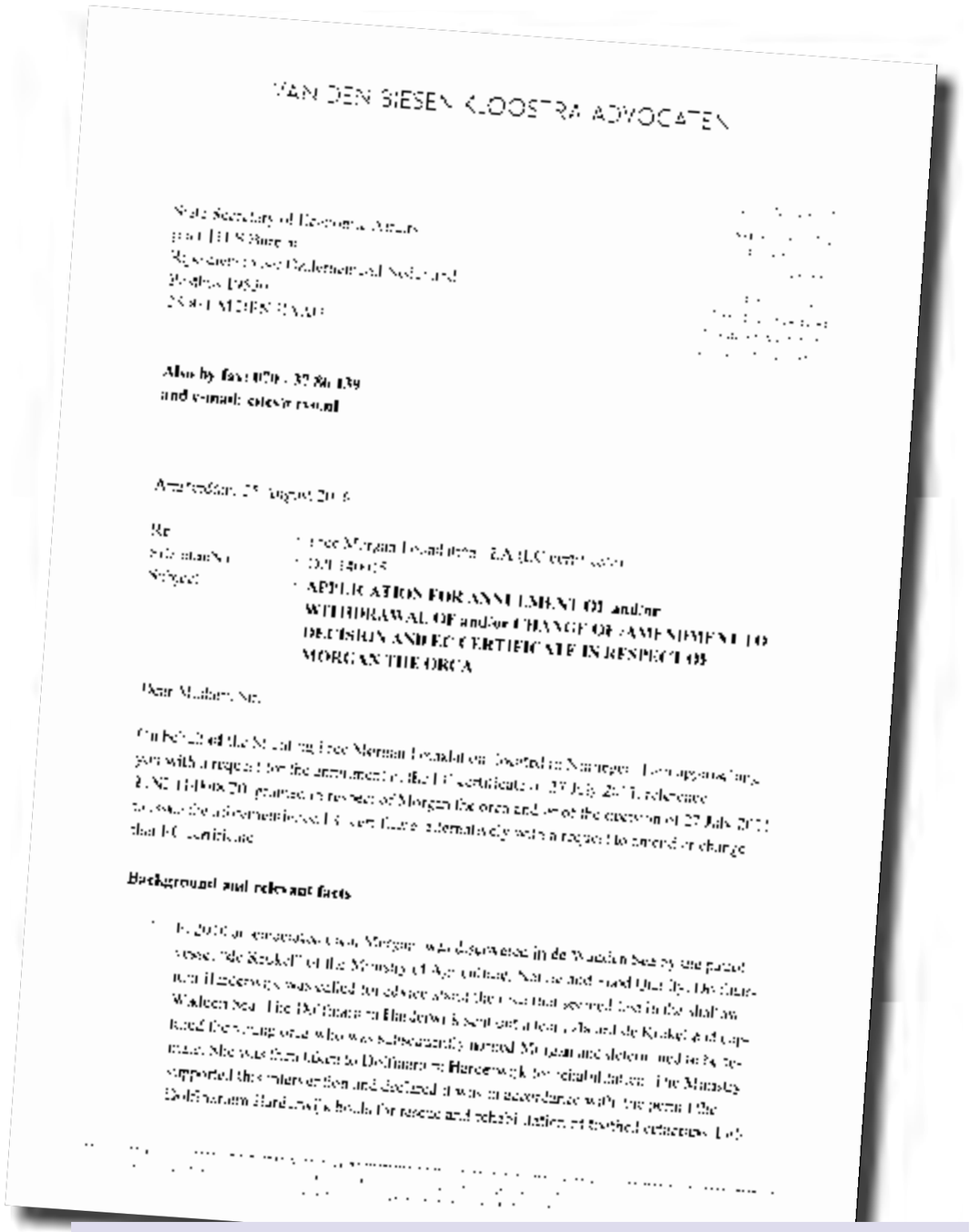
This statement is complete speculation. It is impossible to imply hunger from this behaviour, especially by not making any basic consideration about the diet or the weight trend of Morgan which is available to Competent Authorities and zoological organisations.

*Morgan, a wild-born orca, held at Loro Parque, is also from a fish-eating population of orca (from Norway) and that population has not historically been recognised as having extreme tooth wear (Ingrid Visser - Free Morgan Foundation, 2012)*

From this statement it cannot be concluded that fish-eating Norwegian orcas do not have easily erodible teeth, as the authors stated that only the transients are known to have reinforced teeth. There are many indications that killer whale teeth are easily erodible, not only by abrasive preys (like sharks) but also by more soft materials like herring skin or vegetable fibre rope.

*Assessments by local authorities are not identifying the very same issues that can be seen by anyone who stands in the public viewing areas. Health assessments by a veterinarian (who has a long-standing history with Loro Parque) and by those currently working at the facility, show extreme divergence from the documented evidence collected from the public viewing areas. (Ingrid Visser - Free Morgan Foundation, 2012)*

The authors are accusing the local authorities and the independent veterinarians (with decades of experience in cetaceans that report about the orcas) of lack of knowledge or, even worse, breaking the law. Any of these accusations must be substantiated with documentation it can not simply rely on informal evidences collected without following the appropriate scientific method.



VAN DEN BIESEN KLOOSTRA ADVOCATEN

Also by fax: 070 - 32 86 139
and e-mail: [redacted]

Amsterdam, 25 August 2016

Re
[redacted]
Subject: APPLICATION FOR ANNULMENT OF and/or WITHDRAWAL OF and/or CHANGE OF AMENDMENT OF DECISION AND EC CERTIFICATE IN RESPECT OF MORGAN THE ORCA

Dear Madam, Sir,

On behalf of the Netherlands Free Morgan Foundation (hereinafter: Free Morgan Foundation) we hereby file with a request for the annulment of the EC certificate of 27 July 2011, reference NL 114B0020, granted in respect of Morgan the orca and/or the decision of 27 July 2011 to issue the aforementioned EC certificate, alternatively with a request to amend or change that EC certificate.

**Background and relevant facts**

The Free Morgan Foundation requested the annulment of Morgan's CITES permit the Dutch Authorities arguing that Loro Parque was not performing scientific research with killer whales. The request was rejected by the Dutch supreme court in 2019.


[67] Vester, H., & Samarra, F. I. (2011). Comparison of Morgan's discrete stereotyped call repertoire with a recent catalogue of Norwegian killer whale calls. Henningsvær, Norway: Ocean Sounds.

[94] Veredict Raad van Satate (2019) Rechtbank Amsterdam, 17/3356 201804732/1/A3. https://www.raadvanstate.nl/uitspraken/@116356/201804732-1-a3/?highlight=201804732/1/A3#toonpersbericht




*Morgan's CITES permit does not allow breeding her because is in included in the Annex A of the convention. Free Morgan Foundation addressed a letter to the Spanish CITES authorities (who never responded) about this issue (Ingrid Visser - Free Morgan Foundation, 2019)*

This is false, the letter was responded to by the CITES Autorities in December 2015 and replied that "it should be noted that the Community Certificate issued by the Dutch CITES MA doesn't set any express legal limitation to breeding and authorized to keep the orca for research, breeding or educational purposes". The response from the CITES Spanish Management authority is part of the documents submitted in a court case that ocurred in the Netherlands. In this court case Free Morgan Foundation is requesting the invalidity of the Morgan's CITES permit. The Dutch CITES authorities and the court rejected this request from Free Morgan Foundation [94].

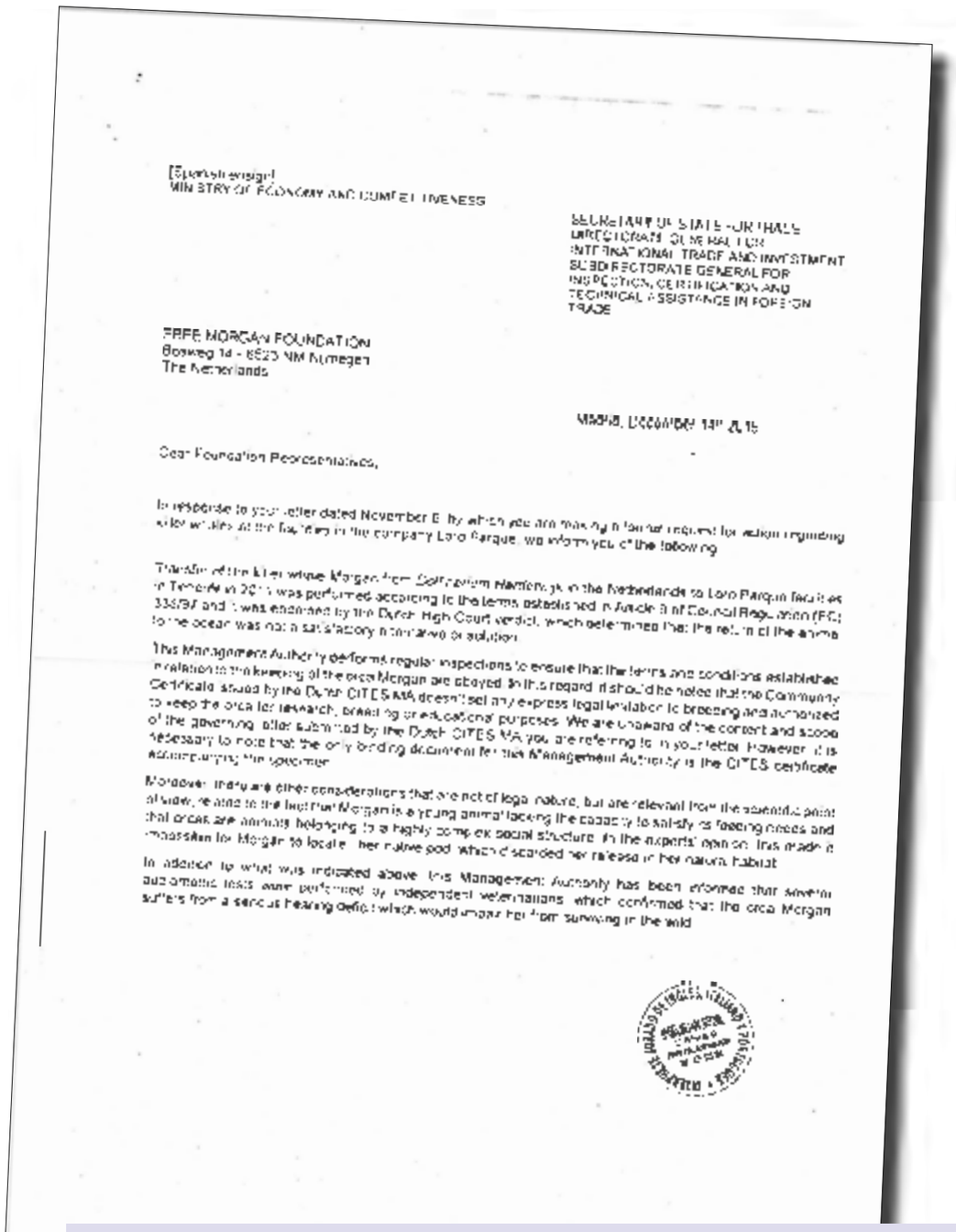
*The transfer of the orca Morgan has been authorized for research purposes. However, the animal was then used for other purposes, such as performances and reproduction. (Free Morgan Foundation, 2019)*

This restrictive interpretation of the regulation 338/1997 is just supported by Free Morgan Foundation. The Spanish CITES Authorities were addressed by Free Morgan Foundation on this particular issue in 2015 and they replied that " it should he noted that the Community Certificate issued by the Dutch CITES MA doesn't set any legal limitation to breeding and authorized to keep the orca for research, breeding or educational purposes.". The Dutch Raad van State rejected this interpretation of Free Morgan Foundation and clarified that animal presentations and reproduction do not contradict the CITES permit [94].

*In 2011 a group of orcas with 77 percent of certainty the family group of Morgan was found (Free Morgan Foundation, 2019)*

This statement is not true. A bioacoustic matching made in 2011 revealed a 65% of coincidence with one pod of orcas in Norway (The P-pod) [67]. This group cannot be considered Morgan's family pod, as the matching in the acoustic dialect should be 100% for all the members of the pod. Besides the group was seen only once in 2005 in Tysfjord (Norway) during summer, since then there has been no further information on its location. So at the moment that the match was found the location of the group was unknown for 6 years.

In the summer of 2012, a male that was seen with the P-Pod in 2005 was seen again, none of the females of P-pod were seen with him. As the males in this ecotype can jump from one pod to another, not even the researchers from Orca Coalition said that they found P-Pod. Maybe this male was just visiting the pod seven years ago and in 2012 was with his own group. The truth is that during the last 11 years nobody has seen any female of the P-pod, a group with some relation with the familiar group of Morgan. So the truth is that nobody has never identified, nor seen the family group of Morgan.



[Spanish original]
MINISTRY OF ECONOMY AND COMPETITIVENESS

SECRETARY OF STATE FOR TRADE
DIRECTORATE GENERAL FOR
INTERNATIONAL TRADE AND INVESTMENT
SUBDIRECTORATE GENERAL FOR
INSPECTION, CERTIFICATION AND
TECHNICAL ASSISTANCE IN FOREIGN
TRADE

FREE MORGAN FOUNDATION
Bosweg 1d - 6523 NM Nijmegen
The Netherlands

MADRID, DECEMBER 13th, 15

Dear Foundation Representatives,

In response to your letter dated November 6 by which you are making a formal request for action regarding killer whales at the facilities of the company Loro Parque, we inform you of the following

Transfer of the killer whale Morgan from Dolfinarium Harderwijk in the Netherlands to Loro Parque facilities in Tenerife in 2011 was performed according to the terms established in Article 8 of Council Regulation (EC) 338/97 and it was endorsed by the Dutch High Court verdict, which determined that the return of the animal to the ocean was not a satisfactory alternative solution.

The Management Authority performs regular inspections to ensure that the terms and conditions established in relation to the keeping of the orca Morgan are obeyed. In this regard it should be noted that the Community Certificate issued by the Dutch CITES MA doesn't set any express legal limitation to breeding and authorized to keep the orca for research, breeding or education purposes. We are unaware of the content and scope of the governing plan submitted by the Dutch CITES MA you are referring to in your letter. However, it is necessary to note that the only binding document for the Management Authority is the CITES certificate accompanying the specimen.

Moreover, there are other considerations that are not of legal nature, but are relevant from the scientific point of view, as one is the fact that Morgan is a young animal lacking the capacity to satisfy its feeding needs and that orcas are animals belonging to a highly complex social structure. In the experts' opinion, this made it impossible for Morgan to locate her native pod which prompted her release in her natural habitat.

In addition to what was indicated above, the Management Authority has been informed that several auditory tests were performed by independent veterinarians which confirmed that the orca Morgan suffers from a serious hearing deficit which would impair her from surviving in the wild.

The Spanish CITES authorities, the European Parliament and the Dutch supreme court responded to Free Morgan Foundation that there was no limitation to breed Morgan.

[59] Lucke, K.; Finneran, J.; Almunia, J.; Houser, D. (2016) Variability in Click-Evoked Potentials in Killer Whales (*Orcinus orca*) and Determination of a Hearing Impairment in a Rehabilitated Whale. Aquatic Mammals 42(2):184-192



### *On December the 4th, 2017 the Free Morgan Foundation published a press release accusing Loro Parque of breaking the law "Orca Morgan Pregnant? Loro Parque in Violation!" (Free Morgan Foundation, 2017)*

Free Morgan Foundation tries to mislead the public opinion saying that the CITES permit was issued under the strict condition that the orca had to be kept for research, suggesting that breeding was not allowed, but the truth is that the "research use" was the exemption to the Habitats Directive in order to keep Morgan used by the Dutch Authorities. This exception does not impede the breeding, and the CITES permit of Morgan does not limit breeding either. Free Morgan Foundation has been trying to convince the CITES Authorities about this bizarre interpretation of the CITES regulations sending letters to the Spanish, Dutch and International Autorities that enforce the Convention. They have not received any support from them, on the contrary, the Spanish CITES Authorities answered that " … it should be noted that the Community Certificate issued by the Dutch CITES Management Authority (MA) doesn't set any express legal limitation to breeding and authorized to keep the orca for research, breeding or education purposes". But Free Morgan Foundation never published this response in their website, nevertheless, you can find all the letters sent to the different CITES MA.

Finally, the Free Morgan Foundation accuses Loro Parque of breeding orcas for "Financial profit" which is total nonsense. Under the EU regulations all the cetacean species are considered non-commercial, hence they cannot be bought or sold, but only exchanged between authorized zoological facilities, making any financial profit of breeding orcas impossible.

### *Orca Morgan is tormented by her confinement (Rick O'Barry, 2016)*

Mr. O'Barry used in several campaigns the same video of Morgan bashing one of the doors in Orca Ocean, that explains itself the rare appearance of such behaviour, as they need to use the same video again and again. In some campaigns they insidiously suggested a "panic attack" to explain the behaviour, in more recent campaigns he says she is tormented by her confinement. How can they infer such things from a short video? This is a mystery.

The video shows Morgan (within the medical pool) and Tekoa in pool B interacting through the door. The interpretation that Morgan is tormented is completely incorrect and malicious; all we can see is that Morgan wants to open the door to access pool B and be with Tekoa.

In the same way a dog scratches a door when it wants to enter another room, orcas push the doors when they want to access another pool. It is surprising that advocates of ending the breeding of orcas in human care should be offended by these images, precisely because sexual frustration at not being able to access the pool where there are orcas of the opposite sex with which to mate can trigger this type of behaviour.

### *Orca Morgan was separated from her family in Norwegian waters and captured and transferred to Loro Parque (World Cetacean Alliance, 2014)*

This statement is false and tries to mislead the public opinion. The phrase suggests that Morgan was captured "taken from the wild", avoiding to explain that she was rescued when found alone, dehydrated and malnourished almost 3.000 Km south from Norway. That makes clear that nobody is responsible for her original separation from her family. The statement seems to make it a given that Morgan's family was known, and fails to mention that her family was never found, and her "closest" relatives (there is no scientific information that can clarify how close those relatives are) were seen once in 2005 and never again. That was the reason, the impossibility to find her original pod, why the unanimous scientific recommendation to the Dutch Authorities was not to release Morgan.

[24] Kremers, D., Lemasson, A., Almunia, J., & Wanker, R. (2012). Vocal sharing and individual acoustic distinctiveness within a group of captive orcas (*Orcinus orca*). Journal of Comparative Psychology, 126(4), 433–445. https://doi.org/10.1037/a0028858

[25] Sánchez-Hernández, P., Krasheninnikova, A., Almunia, J., & Molina-Borja, M. (2019). Social interaction analysis in captive orcas ( *Orcinus orca* ). Zoo Biology, (July 2018), 1–11. https://doi.org/10.1002/zoo.21502

[47] Desforges, J. P., Levin, M., Jasperse, L., De Guise, S., Eulaers, I., Letcher, R. J., … Dietz, R. (2017). Effects of Polar Bear and Killer Whale Derived Contaminant Cocktails on Marine Mammal Immunity. Environmental Science and Technology, 51(19), 11431–11439. https://doi.org/10.1021/acs.est.7b03532

[59] Lucke, K.; Finneran, J.; Almunia, J.; Houser, D. (2016) Variability in Click-Evoked Potentials in Killer Whales (*Orcinus orca*) and Determination of a Hearing Impairment in a Rehabilitated Whale. Aquatic Mammals 42(2):184-192

[66] Úbeda, Y., Ortín, S., St. Leger, J., Llorente, M., & Almunia, J. (2019). Personality in captive killer whales (*Orcinus orca*): A rating approach based on the five-factor model. Journal of Comparative Psychology, 133(2), 252–261. https://doi.org/10.1037/com0000146

[76] Kirchner, A.C.; Ojeda, M. and Almunia, J. (2016) Comparing day and night vocalizations in *Orcinus orca*. 44th Symposium of the European Association for Aquatic Mammals. Benidorm

[77] Rosa, F.; Sanluis-Leal, J.C.; Luke, J. P.; Almunia, J. (2015) Looking for number of degrees of freedom at *Orcinus orca* calls for the design of a classifier. XXV International Bioacoustics Congress. Murnau, Alemania.

[78] Sanluis-Leal, J.C.; Luke, J. P.; Rosa, F.; Almunia, J. (2014) Smart IP net to acquire and detect bio-sounds. 42nd Symposium of the European Association for Aquatic Mammals. Puerto de la Cruz.

[79] Almunia, J.; Sanluis-Leal, J.C.; Luke, J. P.; Rosa, F. (2012) Automatic localization by acoustic methods of *Orcinus orca* individuals at Loro Parque facilities. 40th Symposium of the European Association for Aquatic Mammals. Madrid

[80] Almunia, J., J. Cirillo, B. Eshetu and D. Todt (2012) Development of a common vocal repetorire in a new social group of orcas (*Orcinus orca*) 40th Symposium of the European Association for Aquatic Mammals. Madrid

[81] J.P. Luke, J. Almunia and F. Rosa. Framework for develop prototype bioacoustic devices in aid of open sea Killer Whale protection. Bioacoustics. 20(3):287-296

[82] J. P. Lüke, J. Almunia, F. Rosa (2011) Parametric modeling of *Orcinus orca* calls as an aid for bioacoustics studies. 39th Symposium of the European Association for Aquatic Mammals. Barcelona

a stranded killer whale. 42nd Symposium of the European Association for Aquatic Mammals. Puerto de la Cruz.

[83] SANLUIS, J.C.; LUKE, J.P.; ROSA, F.; ALMUNIA, J. Smart IP net to acquire and detect bio-sounds. 42nd Annual Symposium of the European Association for Aquatic Mammals. Puerto de la Cruz, Canarias, España 2014.

[84] ALMUNIA, J.; SANLUIS, J.C.; LUKE, J.P.; ROSA, F. Automatic localization by acoustic methods of "*Orcinus orca*" individuals at Loro Parque facilities. 42nd Annual Symposium of the European Association for Aquatic Mammals. Puerto de la Cruz, Canarias, España 2014.

[85] ROSA F.; SANLUIS LEAL, J.C.; LUKE, J.P.; ALMUNIA, J.. Looking for number of degrees of freedom at *Orcinus orca* calls for the design of a classifier. XXV International Bioacoustics Congress. Murnau, Alemania 2015

[86] Ubeda, Y.; Llorente, M. and Almunia, J. (2016) Personality in Zoo-Housed Killer whales: a rating approach based on Five Factor Model. 44th Symposium of the European Association for Aquatic Mammals. Benidorm

[87] KIRCHNER, A.C.; OJEDA, M.; ALMUNIA, J. (2016) Comparing day and night vocalizations in *Orcinus orca*. 44th Symposium of the European Association for Aquatic Mammals. Benidorm

[88] LALUEZA, E.; MORALES, H.; ALMUNIA, J. (2017) Analysis of cohesion calls in *Orcinus orca*. 45th Symposium of the European Association for Aquatic Mammals. Genoa

[89] MORALES, H.; LALUEZA, E.; ALMUNIA, J. (2017) Analysis of call sequences in *Orcinus orca*. 45th Symposium of the European Association for Aquatic Mammals. Genoa

[94] Veredict Raad van Satate (2019) Rechtbank Amsterdam, 17/3356 201804732/1/A3. https://www.raadvanstate.nl/uitspraken/@116356/201804732-1-a3/?highlight=201804732/1/A3#toonpersbericht

[96] Houser, D. S., Mulsow, J., Almunia, J., & Finneran, J. J. (2019). Frequency-modulated up-chirp stimuli enhance the auditory brainstem response of the killer whale ( *Orcinus orca* ). The Journal of the Acoustical Society of America, 146(1), 289–296. https://doi.org/10.1121/1.5116141

[98] Houser, D.S., Muslow, J., Almunia, J. and Finneran, J.J. (2019). Frequency-modulated up-chipr stimuli enhance the auditory brainstem response of the killer whale (Orcinus orca) . J. Acoust. Soc. Am 2019 Jul; 146 (1):289. doi:10.1121/1.5116141



### *There are a lot of rumours going around that Morgan is deaf. Unfortunately these are perpetuated by the pro-captivity fans who have not bothered to check their facts (Free Morgan Foundation, 2019)*

The details on the severe hearing deficit found in Morgan by a group of independent experts were published in a scientific journal in 2016 [59]. A new research made with a more sensitive detection system that prove the deafness of Morgan was published in 2019 in a scientific journal [96].

### *Morgan should be retired to a marine sanctuary planned in Iceland once it is ready (Free Morgan Foundation, 2019)*

It is absurd to request the retirement of Morgan to a sanctuary in Iceland. First of all because there are no orca sanctuaries anywhere in the world. The only project which is intended to build a killer whale sanctuary (in the United States) has been searching for an appropriate place during the last four years (spending over one million dollars) unsuccessfully. The actual project in Iceland is intended to house belugas, and it would be impossible to hold two different species in the same sea pen.

### *Loro Parque has not published one scientific publication on Morgan (Free Morgan Foundation, 2019)*

Since the arrival of Morgan by the end of November 2011 Loro Parque Fundación has funded and implemented several scientific projects with *Orcinus orca*, and has also collaborated with different research groups that requested the scientific use of the group of orcas. The research activities were focused in bioacoustics, genetics, physiology, ethology, biotracking and biometrics, and as a result of this scientific work with killer whales five papers have been published in peer-review journals, eight communications have been presented to international congresses, and two masters and two diploma thesis have been produced [24, 25, 47, 59, 66, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89].

### *Morgan is used for breeding purposes in a commercial context (Free Morgan Foundation, 2018)*

It is not possible to use Morgan in a commercial breeding program. In Europe orcas are Annex A under the Council Regulation (EC) No 338/97 on the protection of species of wild fauna and flora by regulating trade, thus they can't be used commercially. Orcas can not be bought or sold in the European Community, as a result, the breeding of orcas does not have any commercial interest [94].

Keiko's sanctuary in Westman Islands (Iceland)

[90] Robinson, L. M., Altschul, D. M., Wallace, E. K., Úbeda, Y., Llorente, M., Machanda, Z., … Weiss, A. (2016). Chimpanzees with positive welfare are happier, extraverted, and emotionally stable. Applied Animal Behaviour Science, 191, 90–97. https://doi.org/10.1016/j.applanim.2017.02.008





*A cetacean sanctuary is a place where whales and dolphins can be rehabilitated or can live permanently in an environment that maximizes well-being and autonomy and is as close as possible to their natural habitat (The Whale Sanctuary Project, 2019)*

The critics of zoological parks are increasingly suggesting the creation of sea pens or sea cages (i.e., fenced enclosures in open oceans or seas) to hold marine mammals. Typically publicized as "sanctuaries" trying to depict a more appealing public image, sea pen proponents seek to provide space for rehabilitation of rescued animals and/or the relocation of zoo animals. There are no sea pens in Europe nowadays, however, certain organizations are publicizing their ideas and proposals to build sea pens in various Member States, suggesting that this will be a better way to keep non-releasable cetaceans.

Unfortunately these organizations do not provide scientific based arguments to support the advantages of keeping cetaceans in sanctuaries. It seems the sole use of the term sanctuary implies a better welfare itself, but this can not be taken for granted.

Hence, in order to support the rehousing of cetaceans bred under human care to marine refuges, the potential benefits and pitfalls of the sanctuaries must be analysed in detail from the animal perspective, and also from the environmental perspective. From the animal perspective the obvious benefits seem to be: increased space, increased depth, natural environment, confinement with natural materials, opportunities to interact with wildlife, natural sources of food, etc. But there are also not so obvious pitfalls, like environmental hazards, reduced accessibility to the animals, security of the facilities and financial security. It is also important to take into consideration the effects of the sanctuary from the environmental point of view, that range from the risk of genetic contamination in case of an accidental escape of animals, the spreading of pathogens to wild populations, or the oxygen depletion caused by an overload of organic matter from the excrements of the animals.

A simplistic approach to the effects of rehousing marine mammals from zoo settings into a marine sanctuary would assume that more naturalistic facilities would surely increase animal's welfare. Nevertheless, this can not be just taken for granted, and a detailed evaluation is needed in order to assess the real benefits and identify hidden pitfalls. For example, animal welfare has been studied in primate sanctuaries and modern zoo facilities, and results prove that sanctuaries do not improve subjective welfare in chimpanzees [90].

*In a seaside sanctuary, cetaceans will be able to swim in a straight line for some reasonable distance before meeting a barrier (Naomi Rose, Whale Sanctuary Project, 2019)*

Extra space is one of the arguments used by the organizations which promote the sea pens or marine sanctuaries. They claim that animals will enjoy a significative increase in the available space. But a question remains: Would a space increase improve the welfare of the cetaceans? Or it will just be more pleasant for the humans viewing them? So the point is not how big the sanctuary is, but how this additional square metres are going to improve the welfare of the animals.

If we consider the maximum speed that can be achieved by a cetacean, the modern accredited facilities allow them to accelerate enough to reach it. That can be easily calculated from the height of their jumps, which clearly proves this is not a limitation. Thus, the sanctuary dimensions will not

Placing cetaceans in a sanctuary do not necessarily men that they will spontaneously improve their rate of swimming and diving. Keiko's training continued in the sanctuary to keep him active and on fit.

[55] Simon, M., Hanson, M. B., Murrey, L., Tougaard, J., & Ugarte, F. (2009). From captivity to the wild and back: An attempt to release keiko the killer whale. Marine Mammal Science, 25(3), 693–705. https://doi.org/10.1111/j.1748-7692.2009.00287.x

[90] Robinson, L. M., Altschul, D. M., Wallace, E. K., Úbeda, Y., Llorente, M., Machanda, Z., … Weiss, A. (2016). Chimpanzees with positive welfare are happier, extraverted, and emotionally stable. Applied Animal Behaviour Science, 191, 90–97. https://doi.org/10.1016/j.applanim.2017.02.008



mean an improvement on the animal capacity to reach their maximum speed. Obviously, a bigger space would allow the animals to keep this speed for longer periods of time. Nevertheless, cetaceans in zoos rarely swim at maximum speed if they are not requested by the trainers (and consequently rewarded). It does not seem that the simple fact of having a larger facility would motivate the cetaceans to spontaneously swim at maximum speed for longer periods [55].

On the other hand the regular use of the whole space available in a Sanctuary cannot be taken for granted. As any expert working with cetaceans in zoological settings knows, animals tend not to use the whole space in the facility; and a sanctuary, no matter how large it is, is still a closed setting. Consequently, it does not necessarily mean that cetaceans are going to use all the space in the sanctuary just because it is available. In the best scenario the use of the whole sanctuary should be enhanced and maintained by training. It is unrealistic to pretend that just leaving the animals in a bigger area would spontaneously make the dolphins and orcas swim around.

The sanctuary supporters claim that animals will "swim and dive" in the sanctuaries (Jared Goodman, director of animal law for PETA). That's obvious, they also swim and dive at the zoos. Curiously enough, none of them state that the animals will improve their swimming or diving skills, because there is no scientific evidence of that kind.

From the physical dimensions' perspective, sanctuaries cannot be considered significatively different from modern accredited facilities. Candance Calloway, environmental writer and animal advocate, stated "No matter how big SeaWorld builds their tanks they will always be hopelessly tiny compared to the environment where orcas live.". Same thing is true for sanctuaries, no matter how big the seapen is, the cove or the bay, compared to the environment where orcas or dolphins live, even the more optimistic plan for a sanctuary would be thousands of times smaller. For example, the Whale Sanctuary Project is promoting a place in a cove or a bay that will be at least 0.6 square kilometres in area. Despite the size being bigger than the inland facilities, it still only accounts for a tiny fraction of the natural habitat of a killer whale. Consequently, rehousing cetaceans in a sanctuary does not guarantee that they will spontaneously improve their daily rates of swimming and diving.

Judging by the data made public by the Whale Sanctuary Project, it seems that 0,6 square kilometres is considered an acceptable size for killer whales, but how did they come up with this particular number? Why not 0,5 or 0,1? In the case of Lolita, the organization Orca Network has proposed a sanctuary in San Juan Island (Vancouver) which is 0,01 square kilometres (roughly 5 times a regular zoo facility) and they also found it acceptable. So, where is the limit? The truth is that nobody can draw the line between acceptable and unacceptable space based on square metres, this question can only be answered in terms of welfare indicators. When animal welfare is optimum, it will not improve with extra space, no matter how big a facility can become. Unfortunately there is no scientific evidence to clarify if the size of a sanctuary is better for the animals compared with a modern accredited facility. Nevertheless, despite the lack of scientific information about cetaceans, animal welfare has been studied in primate sanctuaries and modern zoo facilities, and results prove that bigger facilities (sanctuaries) do not improve subjective welfare in chimpanzees [90]. As a result, there is no scientific evidence to support a hypothetical increase of welfare associated with bigger facilities in cetaceans. The available information from other species suggest that the effect of increasing space in welfare could be limited or even nonexistent.

Summarizing, the relocation of cetaceans in a sanctuary with a bigger space than an accredited zoological facility:

- Will not improve their ability to reach maximum speed.
- Does not necessarily mean that cetaceans are going to use all space.
- Does not guarantee the spontaneous increase in their rate of swimming and diving.
- Could even not result in an improvement of their welfare.

Consequently, the increase of available space in a Sanctuary does not seem to be a strong argument, when animal welfare is considered.

"A sanctuary can easily become a very attractive area for tourist boats, which could become a threat for the cetaceans."

[26] Fair, P. A., Schaefer, A. M., Houser, D. S., Bossart, G. D., Romano, T. A., Champagne, C. D., … Reif, J. S. (2017). The environment as a driver of immune and endocrine responses in dolphins (*Tursiops truncatus*). PLoS ONE, 12(5), e0176202. https://doi.org/10.1371/journal.pone.0176202

[55] Simon, M., Hanson, M. B., Murrey, L., Tougaard, J., & Ugarte, F. (2009). From captivity to the wild and back: An attempt to release Keiko the killer whale. Marine Mammal Science, 25(3), 693–705. https://doi.org/10.1111/j.1748-7692.2009.00287.x



*Whales and dolphins will also be able to dive deeper in a sanctuary than in any known tank, which may be among the most important differences for them in a sanctuary (Naomi Rose, Whale Sanctuary Project, 2019)*

Similarly to the available space, the depth of the facility provides the animals with the possibility to dive deeper. The Whale Sanctuary Project has established that their model sanctuary for orcas should have a minimum depth of 15 m at least in half of the available surface. The sanctuary for Lolita proposed by The Orca Network has a maximum depth of 12 m (medium low tide values). It has also been taken into account that in a coastal setting the depth is reduced close to the shore, thus there will be a significative portion of the surface with low depths (i.e. < 2 m). On the other hand, the tide range has to be taken into account, as in some areas it can mean maximum variations of 5 to 10 meters in spring tides (which could also affect the available surface).

The proposed depth figures are not really impressive, as many zoological facilities for orcas already have comparable depths. Moreover, it has to be considered that the diving behaviour in cetaceans is not driven by the available depth in a facility. Cetaceans dive mainly to feed on their preys, when these preys are located at low depths the animals are forced to display deep diving behaviours, but there are not scientific records of dives deeper than their preys "just for fun".

Hence, it is unrealistic to pretend that just leaving the animals in a sanctuary 15 or 20 metres deep in some areas, that would spontaneously make them dive deeper and for longer periods. During the rehabilitation of Keiko (a wild born orca) his dives were recorded and 93% of them were between 6 and 26 metres (when he was outside the seapen). During all periods of his rehabilitation Keiko spent more than 80% of the time in the upper 4 m of the water column [55]. As the main reason why the cetaceans display regularly diving behaviours is to find food, the only way to force frequent diving behaviours is to provide them with underwater food sources.

From the physical point of view this increase in depth offered by the sanctuaries would not mean a significant change in the environment. The actual zoological facilities for cetaceans offer the animals depths where they can experiment pressures that range from 2 to 2,5 atmospheres. In order to double this (increasing significantly the pressure experienced in a dive) the sanctuary should have over 40 metres of maximum depth. The logistics of the net and mooring maintenance at this depth will increase the costs exponentially too, thus it is highly unlikely to have areas with depth over 20 m in a sanctuary. As a result the depth of the sanctuary would not offer a significative change in the environment (depth/ pressure) experienced by the cetaceans.

*By their very nature, seaside sanctuaries are going to offer more choices, more challenges, and more stimulation to cetaceans under human care (Naomi Rose, Whale Sanctuary Project, 2019*

One of the most important arguments for the organizations promoting the sanctuaries is the opportunity for the animals to experience the natural environment, as the water will come from the sea without any filtering or treatment process. It seems that just because it is water directly taken from the sea it must certainly produce a positive effect in the cetaceans. However, seawater naturally contains pathogens (virus, bacteria, fungi and parasites) that are virtually absent in the water used in the zoological facilities. Hence, it is undeniable that the water of the sanctuary is more natural, but it does not imply that is better for the welfare of the cetaceans. On the contrary, a recently published peer reviewed paper demonstrates that the immune system of wild dolphins from a coastal population shows clear signs of health stress compared to a group of animals housed on a certified zoo [26]. By increasing the chance of get in touch with pathogens the cetaceans in a sanctuary will have its welfare diminished, and the need for a proper veterinary care of the animals will increase.


Different plastic items found in the stomach of a killer whale stranded in South Africa in 2015.

[60] Alexiadou, P., Foskolos, I., & Frantzis, A. (2019). Ingestion of macroplastics by odontocetes of the Greek Seas, Eastern Mediterannean: often deadly! Marine Pollution Bulletin, 146, 67–75. https://doi.org/10.1016/J.MARPOLBUL.2019.05.055



As a consequence,the actual scientific knowledge proves that the permanent contact of the cetaceans in a sanctuary with untreated sea water would increase the risk of recurrent pathologies that will stress their immune systems diminishing their welfare and even their lifespan.

Other potential benefits for the cetaceans housed in a sanctuary seems to be the fact that, except for the nets and gates placed to contain the animals in the bay, all the rest of their environment is limited by natural materials: sea bottom, cliffs, rocky shore, beaches, pebbles, etc. Once more, one can take for granted that all these natural materials would enrich the life of the cetaceans. But it must also be considered that some of these can be dangerous for animals bred under human care, that haven't been exposed to most of them previously.

Loose objects in the environment can be easily ingested by cetaceans [60] especially in closed environments, like sea pens or sanctuaries. In 2010 a orca called Nami was transferred from a sea pen in a cove in Taiji, were she lived for 25 years to a multi-pool facility in the Port of Nagoya Pubic Aquarium, where she died in January of 2011.

During a necropsy, The Port of Nagoya Public Aquarium veterinarians found that Nami had 491 stones weighing a total of 81.4 kilograms (179.5lbs) in her stomach. There were no stones in the pool where Nami was kept at the aquarium in Nagoya, which indicates that the stones were consumed while she was in the sea pen. The histopathology reports concluded that the cause of death was severe bronchopneumonia in conjunction with degenerative changes in the liver and systemic lymphadenitis that may have been the result of opportunistic microflora causing subsequent septicemia. Additional secondary infections of common microflora such as P. miarbilis, P. aeruginosa, and P. oryzihabitans likely resulted from Nami becoming immunocompromised. Would Nami have contracted this fungal infection if she was not in a sea cage and did not have access to the rocks of the sea pen and surrounding area?

But ingestion of foreign objects it is not exclusive of cetaceans bred under human care [60], in December 2015 a wild killer whale appeared stranded in the coast of South Africa, the animal was seen alone in the area during the previous days. Her necropsy showed several plastic objects in her stomach: a shoe, an ice cream container, plastic bags, etc. The animal had also big clumps of seagrass and sea cucumbers, evidence that in a situation, where she was unable to catch prey, she ingested virtually any object she could find.

Apart from the ingestion of foreign objects there are other potential hazards related with the natural materials in the limits of the sanctuary. Some rocky shores can have abrasive areas, and sharp edges that can produce cutting wounds in the cetaceans. The animals bred under human care haven't been exposed to these kind of sharp and abrasive materials, thus they could get hurt during the adaptation.

Thus, the presence of natural materials in the environment of the sanctuary can provide enrichment to the cetaceans, but it can also become a threat to their health and welfare. Hence, the presence of loose objects in the sanctuary has to be regularly assessed in order to avoid ingestions.

## *Marine Sanctuaries will provide dolphins and orcas with the oportunity to catch their own live fish (One Green Planet, 2018)*

The contact with wildlife seems to be positive when considered from a naive or romantic point of view. But the truth is that captive bred cetaceans have not been exposed to live fish or other marine organisms, they do not have previous experience with jellyfish, sea urchins, or other dangerous fauna. This means that the learning process to get to know the wild fauna can be at least unpleasant for many of them.


When Keiko was in Norway there was no indications about his ability to catch fish himself, but he was obviously very much attached to the humans.

[55] Simon, M., Hanson, M. B., Murrey, L., Tougaard, J., & Ugarte, F. (2009). From captivity to the wild and back: An attempt to release Keiko the killer whale. Marine Mammal Science, 25(3), 693–705. https://doi.org/10.1111/j.1748-7692.2009.00287.x



Some people believe that once in the sanctuary the cetaceans will instinctively interact with the wildlife and will catch live fish. Unfortunately this has not been proven for cetaceans bred under human care, and there is only limited evidence in wild caught dolphins that have been trained for long periods in a sea pen. Only a few successful rescue, rehabilitation and release programs for killer whales have been performed. But the outcome can not be considered successful for animals with longer captive periods, like Keiko the orca, or the Sugarloaf Sanctuary dolphins.

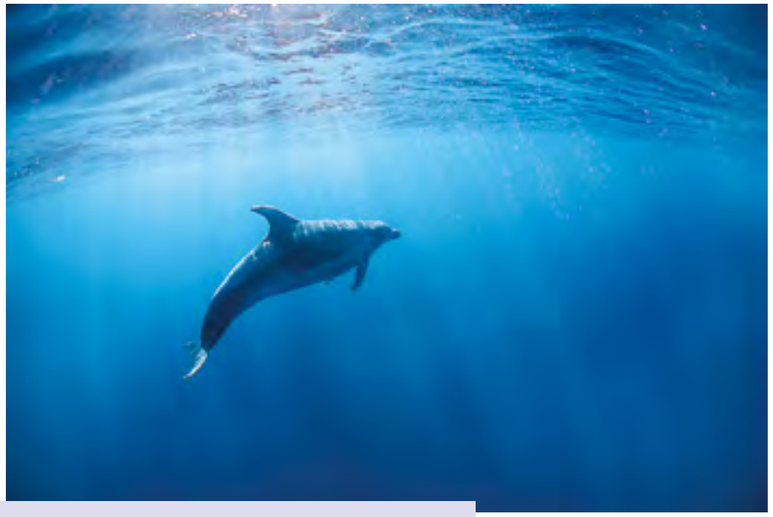
Keiko was a male born into a wild group of killer whales in Icelandic waters. He was captured in 1979 near Vestmannaeyjar, Iceland, approximately 2 yr old. After 21 years in captivity, in 1998, he was transferred to a sea pen in Klettsvik, a natural bay in the archipelago of Vestmannaeyjar, Iceland, where he received training aimed at a release to the wild [55]. During the summers of 2000, 2001, and 2002, Keiko was trained to follow his caretakers' boat and take open ocean swims. Each summer, he spent several days in the proximity of wild killer whales that seasonally inhabit the waters around Vestmannaeyjar to feed on summer-spawning herring. After 4 years of rehabilitation process in a sea pen, in July 2002, Keiko was left among wild killer whales with a satellite tag. He spent one month in the vicinity of the killer whales and abandoned Iceland, travelling east until he reached Norway for one more month. As soon as he arrived to Skålvikfjorden in Norway he get in touch with people (Fishermen, whale watching boats, etc.). The report on the rehabilitation and release of Keiko [55] concluded that it was possible that Keiko did not feed at all during the two months he was independent of human care. Hence, four years of training in a sea pen could be not sufficient to train a wild caught killer whale to catch live fish.

On 1996 Rick O'Barry (former trainer of flipper and nowadays a prominent anticaptivity activist) illegally released two dolphins (Luther and Buck) from Sugarloaf sanctuary, approximately six miles off the coast of Key West, Florida. The day after the dolphins were released, Luther appeared in a congested Key West marina with deep lacerations, approaching people, and begging for food. Buck, found two weeks after his release over 40 miles away, had similar deep lacerations and was emaciated. The two dolphins were collected from the wild off the coast of Mississippi during the 1980's, and were in captivity for almost 10 years. They were initially in the U.S. Navy's marine mammal program, and were transferred to the Sugarloaf Dolphin Sanctuary in 1994 as part of a project that intended to return them to the wild. O'Barry was found guilty of violating the Marine Mammal Protection Act for releasing two captive dolphins off the Florida coast that were not prepared to survive in the wild and sustained life-threatening injuries. In this case it was totally clear that both animals were unable to catch live prey after several years in a sanctuary, even though they were born in the wild.

In the case of cetaceans bred in facilities there is no experience in rehabilitation to catch live prey. Thus it can not be foreseen if it would even be possible, how much time it can take, or if all the individuals would be able to adapt. Thus, the spontaneous catch of live fish by cetaceans in sanctuaries is highly unlikely, especially for animals that have spent several years in monitored environments.

As catching live prey is not a spontaneous behaviour in captive bred cetaceans, predatory behaviours are unlikely to happen in a sanctuary while they are feed adequately. Hence, in order to induce or favour this predatory behaviours the management of the sanctuary should reduce the amount of food supplied to the animals to make them hungry. It is hard to estimate the amount of time cetaceans bred under human care must be kept hungry in the sanctuary, giving the fact that for Keiko, Luther and Buck (all of them wild caught animals) several years were not enough to re-educate their predatory behaviour. Obviously this is not a desirable situation in the long term, as the stress derived from the lack of food will definitively affect the welfare of the animals. Thus, forcing captive bred cetaceans to catch their own preys could seriously diminish their welfare.

Cetaceans catching their own fish is not only highly unlikely, is also undesirable, as the possibilities to control the behaviour of the animals with operant conditioning will be dramatically diminished. That means the trainers will lose the access to the animals, but also the veterinarians as



The open sea can't be considered a complex environment

Plastic and other debris appear regularly in the stomach contents of stranded cetaceans.

[91] Longhurst, A., Sathyendranath, S., Platt, T., & Caverhill, C. (1995). An estimate of global primary production in the ocean from satellite radiometer data. Journal of Plankton Research, 17(6), 1245–1271. https://doi.org/10.1093/plankt/17.6.1245



they will not be able to sample blood, urine, saliva, or faeces. In case of a pathology the veterinarians would also be unable to administrate drugs to the animals to alleviate the pathological process. The trainer wouldn't even be able to perform the daily tooth care procedures, increasing the risk of painful dental pathol- ogies. As the animals would be out of trainer control it wouldn't be possible to recall them in case of severe storms, oil spills, red tides or any other dangerous event. Thus, the natural feeding of cetaceans in a sanctuary would reduce or even eliminate the capacity to give a proper veterinarian care and also to keep the animals safe.

Finally, a small area (sanctuary) overpopulated with apex predators does not seem to be the preferred place for preys, hence it does not seem reasonable to expect fish entering the sanctuary in a rate that can sustain a big group of cetaceans. A group of 6 adult orcas would need roughly 110 tons of fish entering the sanctuary every year, as the primary production of a 1 square kilometre sanctuary produces less than 1% of this amount of fish biomass [91]. The supplementation with live fish in the sanctuary is a possibility, but it is hard to calculate the amount of live fish that has to be added daily to the sanctuary taking into account that they can just escape through the net. Thus, keeping a group of cetaceans feeding on live prey in a sanctuary is highly unlikely as it would imply enormous logistic work to provide several tons of live fish daily.

*Instead of being surrounded by sterile concrete tank walls, the whales will live in a dynamic, complex physical world that has a natural sandy shore and is home to many kinds of plants and animals with whom they can interact. (Naomi Rose, Whale Sanctuary Project, 2019)*

Despite most people thinking that marine sanctuaries would just imply potential benefits to cetaceans, there are also several potential risks that need to be analysed and taken into account in the design and planning of a sea pen.

The most prominent risk is related with the environmental hazards that can impact the sea pen. First of all are the storms that can very easily destroy any structure in shallow waters. The integrity of the submerged structure must be checked daily to guarantee that the mooring, the buoys, the nets, and the rest of the structure are capable to resist the waves generated by the usual storms in the area. The bigger the surface of the net, the stronger the structural stress produced by tide currents, high waves and storm surges. A daily cleaning procedure of the nets must be put in place, as the fouling of algae and invertebrate would easily clog the net, increasing the drag dramatically and, consequently, stressing the whole structure.

The nets used to avoid the escape of cetaceans from the sanctuary can easily become a deadly hazard for them in case of a break up. Cetaceans can be quickly entangled in drifting nets, and a shallow bay would make things worst. There is a record of over a hundred dolphins trapped in a pelagic coastal net in Portugal, that were drowned in the surfing zone despite the desperate efforts of the people witnessing the situation from the beach. Thus the structural integrity of the nets in the sanctuary is critical, any defect in its maintenance would pose a severe risk to the cetaceans. Even if the nets support the wave energy without breaking, shallow waters is not the best place to be during a storm (as any sailor knows). The water dynamics on a sallow bay during a severe storm is so intense that even cetaceans can not cope with it. Hence, the sanctuary should have contingency plans and an alternative inland facility (pool) with a life support system (filtration, clorination, etc.) ready to hold all the cetaceans in the Sanctuary in case of a severe storm. This place should be designed to hold all the cetaceans of the Sanctuary for several weeks, just in case a storm damages the structure of the nets and moorings.

Keiko's sanctuary in Klettsvik Bay (on the right) was close to a city and to an industrial harbor, something that usually is not displayed at the pictures.

[60] Alexiadou, P., Foskolos, I., & Frantzis, A. (2019). Ingestion of macroplastics by odontocetes of the Greek Seas, Eastern Mediterannean: often deadly! Marine Pollution Bulletin, 146, 67–75. https://doi.org/10.1016/J.MARPOLBUL.2019.05.055

[64] Hernández, M., Robinson, I., Aguilar, A., González, L. M., López-Jurado, L. F., Reyero, M. I., … Costas, E. (1998, May). Did algal toxins cause monk seal mortality? [5]. Nature. Nature Publishing Group. https://doi.org/10.1038/29906



If the sanctuary is close to populated areas, roads or landfills, a wind storm or a water runoff provoked by heavy rain can also drag thousands of trash items into the sea, which can be ingested easily by the cetaceans. Plastic items in the stomach of cetaceans are a raising concern in may coastal areas, as they become a common finding in the necropsies of whales and dolphins (per example, 60% of the sperm whales stranded in Greece had plastic in their stomachs[60]). Thus, the sanctuary should have a cleaning protocol to frequently survey its whole surface, detecting and removing any item susceptible to be ingested by the cetaceans.

Potentially, any coastal area can suffer an oil spill or major pollution event caused by a ship wreck. This risk is obviously higher in areas of intense vessel traffic (especially tankers, but any ship carrying dangerous substances), oil platforms, oil pipelines, etc. Hence the sanctuary must be planned far from the ship traffic areas, submarine oil fields or pipelines. But it must also have contingency plans and inland pools ready to hold the all the cetaceans until the water is safe for the animals.

Some contamination events are less predictable or even can not be forecasted at all, like the toxic algal blooms. These events have proven to be deadly for marine mammals. In 1997 half of the Critically Endangered monk seal population in the Atlantic Ocean was wiped off by a toxic "red tide" caused by a dinoflagellate bloom [64]. This event would be even more dangerous for the cetaceans in the sanctuary if they catch their own prey.

There are also some pitfalls related with the exposure to the natural environmental conditions, like the sun radiation. Cetaceans are known to have sensitive skin that is easily damaged, and it can be also affected by sun, including sunburn. Ingrid Visser (Free Morgan Foundation) has expressed her concern because some cetacean facilities do not provide enough shade in some of their pools (like the medical pools). Consequently, they should be seriously concerned about the lack of shadow in all the surface of the marine sanctuaries, which will expose the animals to the sun all day long. To prevent long exposures to the sun the sanctuaries must build shading structures like canopies, which are not considered in any of the plans made public so far.

The cetaceans are naturally protected from the sun radiation because they use to dive frequently, and the UV radiation is rapidly absorbed by the water. Unfortunately, as previously discussed a significant increase in diving frequency and the mean depth can not be expected to change from just a small increase in the depth of some areas in the facility.

### *People will be able to visit the whales in the sanctuary at regularly scheduled times (Whale Sanctuary Project, 2019)*

As the sanctuary will have a long shoreline, it can become difficult to control the access of crowds to the area were the cetaceans are confined. The experience with stranded cetaceans is that curiosity drives hundreds of people that try to get access to the animals, many times not following the advice of the authorities and having unprotected contact with the animals. There are several risks associated with the uncontrolled public access, ranging from irregular feeding of the animals to ingestion of foreign objects accidentally or voluntarily thrown into the water, to pathogen transmission between humans and cetaceans. In order to control the public access to the Sanctuary a 24/7 warden scheme should be put in place, with sufficient staff to control all the coastline. The possibility of private boats
approaching the fence of the sanctuary must also be taken into consideration. Thus some kind of surveillance boat must also be available 24/7.

Forcing the cetaceans not to reproduce in sanctuaries will impede them to display natural behaviors like nursing.

[92] Orca Network (2017) Proposal to retire the Orca "Lolita" to her native habitat in the Pacific Northwest. http://orcanetwork.org/Main/index.php?categories_file=Retirement



*In sanctuaries you don't breed. It's the last thing you wanna do (Lori Marino, Whale Sanctuary Project, 2017)*

Breeding is not an option in a Sanctuary. Preventing the animals to breed permanently is a welfare issue in itself. As cetaceans can not be castrated with surgery it means copulation has to be avoided by separating sexes. The permanent sex segregation in a highly social species diminishes the welfare of the animals, creates stress and reduces social activity. Contraceptive hormone treatments can also be used to avoid unwanted pregnancies while allowing animals to display their sexual behaviour freely. But unfortunately these treatments are known to produce permanent effects in the dolphins and whales: irregular cycles, pathological Corpus Luteum, and they have also been related with cancer in prolonged treatments.

Furthermore, preventing the reproduction of the animals also impedes them to display many natural behaviours, like giving birth, maternal care, nursing the calves, etc. Not being able to display these behaviours could affect the welfare of the cetaceans in the long term.

*A rough guesstimate of the Sanctuary's cost would be in the region of $20 million. And then there's the long-term care of the animals, which we'll be looking to cover through endowments, sustaining donations, and other revenue-generating opportunities like educational materials and programs (Whale Sanctuary Project, 2019)*

Other potential risks associated to the marine Sanctuaries is the financial security. Financial problems are not uncommon in sanctuaries for other species (primates) or refugees (cats and dogs) which request regular donations to sustain their operations. It must be taken into account that the maintenance of a marine sanctuary implies a big financial burden, with lots of staff just for cleaning, security, underwater maintenance, etc. Not to mention the trainers, keepers, veterinarian staff, food, medicines, etc. The maintenance of an adult killer whale in a modern zoological facility has been calculated to be around 600.000 $ per year. Clearly the Sanctuary will not have to spend money in filtration or water impulsion, but the maintenance of the underwater structure could be even more expensive in the long term. The projects that have been published calculate an initial investment of 20 million dollars, and a running costs of several million per year [92]. Taking into account that one of the most successful organizations so far, the Whale Sanctuary Project, has struggled to collect 400.000 $ in one year (that were spent just to search for a place where to build the Sanctuary). It does not seem to be reasonable to meet the financial needs of building and running a cetacean sanctuary in the long term. Taking into account the average life span of the killer whales under human care, just taking care of the animals in a Sanctuary for six killer whales would mean over a 100 million dollars in the next three decades. Adding maintenance costs, security staff, cleaning staff, etc., the costs can easily double.

If a sanctuary does not have a strong financial security, in some years it can file for bankruptcy, and that would imply a great risk for the animals that will have to be reallocated. On the other hand if a sanctuary can not cope with their financial compromises, the competent governmental authorities should take care of the costs in order to help the animals. Any government authorising the building of a sanctuary should take into account the potential financial risk to their tax payers.

The excess of organic matter in the bottom of the sanctuaries could produce hydrogen sulfide, which could promote harmful algae blooms (HABs).

It does not seem too clever to establish a sanctuary for cetaceans (highly sensitive to underwater noise) in the entrance to an industrial harbor. Big cruise ships pass often very close to the Vestmannaeyjar beluga Sanctuary in Iceland.

[70] Armstrong, D. P., & Seddon, P. J. (2008). Directions in reintroduction biology. Trends in ecology & evolution, 23(1), 20-25.

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*The various phases of the sanctuary licensing are in progress, which will ensure the land and marine areas are fit for use by 2020. These are being submitted for approval to the relevant authorities (Archipelagos, Aegean Marine Life Sancturary, 2019)*

Finally the effects of the sanctuary in the environment must also be taken into consideration. There are several environmental risks related to with holding cetaceans in a sea pen which should be taken into account in an environmental impact assessment before the authorization to build the facility is issued.

The most dangerous effect to be considered is the genetic contamination of the wild cetacean populations in case of an accidental (or intentional) escape of animals from the sanctuary. It is important to understand that captive bred cetaceans have totally exotic genetics compared with their wild counterparts. European dolphins are originally from Cuba and the Caribbean, thus it is an artificial mixture of genes totally different from the Mediterranean or the Northeast Atlantic populations. If these genes would be accidentally introduced in a wild population they will contaminate the genetics of the European dolphins, and could cause deleterious effects by impoverishing the adaptation to the local environment.

In the case of the killer whales the situation is even worse, as the actual population under human care is an hybrid made from Pacific Ocean and Atlantic Ocean populations which, despite being the same species, haven't been in contact for thousands of years. The accidental (or intentional) release of captive bred killer whales in the ocean would put the wild populations at risk of genetic contamination.

This kind of genetic contamination can be a real hazard for the wild cetacean populations, and the most prestigious biodiversity conservation organizations, like the International Union for Nature Conservation (IUCN), have specific regulations to avoid this problem [70]. Hence, transferring cetaceans bred under human care to a sanctuary where they are susceptible of an accidental or voluntary release would be against the basic regulations of the IUCN. In this situation the use of sea pens or sanctuaries to hold cetaceans bred in zoological institutions is highly unlikely to be authorized by any country.

Despite that the accidental escape of animals can be considered a rare event, the release of pathogens is much more likely. In fact it is impossible to avoid the pathogen release, as there are no filtration systems as it has been clearly shown in salmon farms [93]. Hence, the pathogens can simply spread in the wild populations of cetaceans or other marine organisms. As the captive bred cetaceans have been treated with antibiotics and other veterinarian medicines, the potential release of a drug resistant pathogen is real. The spread of a resistant pathogen in the wild populations of cetaceans would imply a risk for the biodiversity conservation. In the same way the pathogens brought by the Europeans to America in the sixteen century decimated the native American populations, the drug resistant pathogens from the cetaceans under human care could severely impact the wild cetaceans.

There is also a potential impact in the bottom of the sea pen related with the organic load from the excrements of the cetaceans concentrated in a small area. A group of 6 killer whales can produce over 54 tons of excrements per year, which could accumulate in areas with poor water circulation. The over saturation of detritus in the sea floor can lead to anoxic conditions, that can be aggravated by oceanographic conditions in coastal zones (strong thermocline, high temperatures, etc.). When oxygen is depleted in a basin, bacteria first turn to the second-best electron acceptor, which in sea water, is nitrate. Denitrification occurs, and the nitrate will be consumed rather rapidly. After reducing some other minor elements, the bacteria will turn to reducing sulfate. This results in the by-product of hydrogen sulfide (H2S), a chemical toxic to most biota. When all the electron acceptors have been depleted anaerobic conditions appear. This condition can kill the sediment fauna, and produce toxic effects to fauna even fishkills. Thus, holding an unnatural biomass of cetaceans for long periods of time in a sanctuary can lead to oxygen depletion that would have negative effects in the local ecosystem.


Aerial view of the marine sanctuary proposed in San Juan Island (Vancouver).

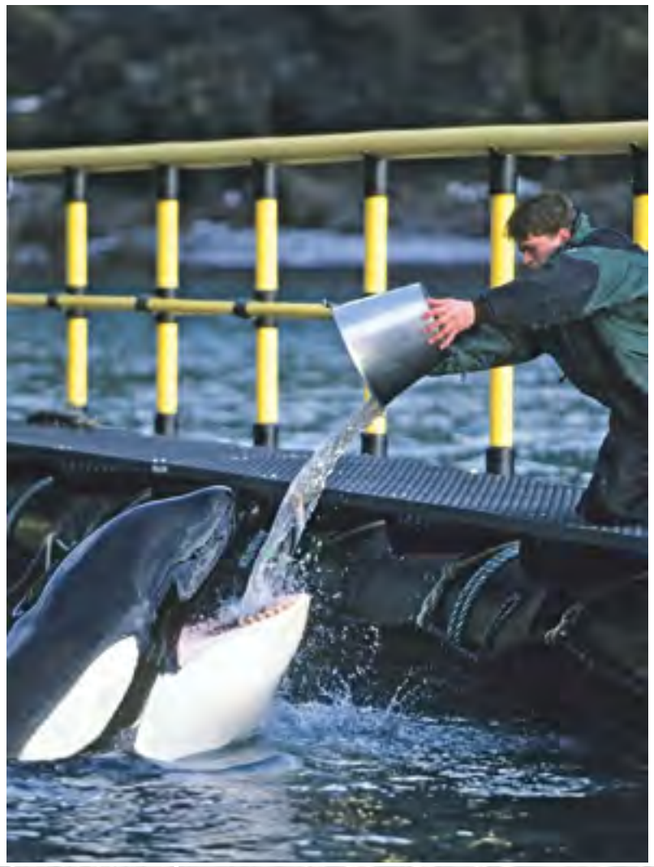
*A sanctuary will be a cove some 300 times the size of the actual orca pools (Bill Neal, 2019)*

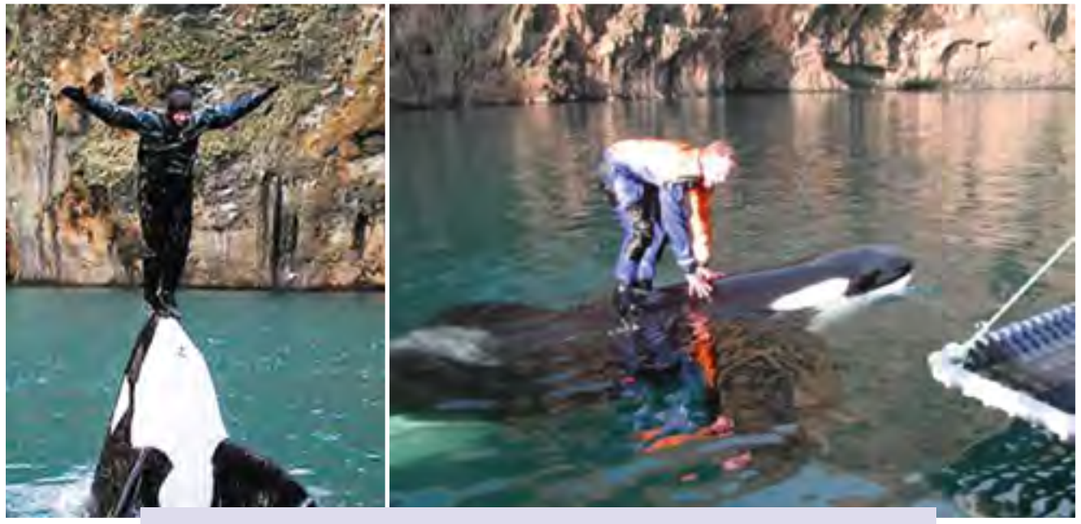
It is strange how Mr. Neil can accurately predict the size of the sanctuary when the Whale Sanctuary Project has been unable to find a suitable place so far. One of the places that was analyzed to become the first whale sanctuary by Lori Marino (Director of the Whale Sanctuary Project) was a seapen proposed by Orca Network in San Juan Island (Vancouver) which has a total surface of 0,01 square kilometres (roughly 5 times a regular zoo facility) [92].

*Sanctuaries will be an opportunity for killer whales to live and thrive again (Bill Neal, 2019)*

After three years of intense searching, and spending over 1.000.000 USD the Whale Sanctuary Project has not been even able to find one single suitable place to establish a Sanctuary. At this point the Whale Sanctuary Project has had problems to get funds just to find a suitable place, which makes it clear they will face enormous problems to finance the building and operation costs of a complex coastal facility. The killer whales already have a place where they live and thrive; there is no need of investing hundreds of millions to establish new facilities that do not guarantee any improvement on their welfare.

[92] Orca Network (2017) Proposal to retire the Orca "Lolita" to her native habitat in the Pacific Northwest. http://orcanetwork.org/Main/index.php?categories_file=Retirement





Keiko continued to be trained while he was at the sanctuary in Iceland.

[55] Simon, M., Hanson, M. B., Murrey, L., Tougaard, J., & Ugarte, F. (2009). From captivity to the wild and back: An attempt to release Keiko the killer whale. Marine Mammal Science, 25(3), 693–705. https://doi.org/10.1111/j.1748-7692.2009.00287.x





*The arguments against the suffering of cetaceans in captivity come from veterinaries and biologists working in zoos and aquariums. (PACMA, 2018)*

It is reasonable that the most experienced professionals on cetacean welfare under human care are the veterinaries and biologists that have been taking care of dolphins and orcas for decades. Nevertheless, they are not the only ones supporting the arguments against the idea that cetaceans suffer under human care, there are also internationally renowned pathologists, and independent veterinary professors from universities around the world. The discussion about animal welfare must be based on scientific facts and technical information, and not on criticism about people. It does not have any sense to support the general statement that keeping orcas in captivity causes the animal to suffer. Animal welfare must be analysed on an individual basis, and using scientific tools. Loro Parque works with international experts in animal welfare to assess the status of the killer whales under our care, and they have clearly stated that there are no concerns on the wellbeing of the orcas. This argument is just an unfounded speculation used by Free Morgan and other organizations to obtain donations.

*It is hard to believe that Loro Parque can not re-adapt dolphins and orcas to catch their own prey but they are able to teach them acrobatics. (PACMA, 2018)*

The operant conditioning techniques (training) can hardly be used to teach animals to catch their own prey, as the re-adaptation of an animal to hunt is aimed to force the foraging by reducing the food provided by the trainers. That means a process were the humans are gradually less present, hence this cannot be achieved using traditional training procedures. In orcas there is only one experience of re-adaptation attempt, which was performed with Keiko (the Free Willy character), and cost over 20 million USD. After two years trying to teach Keiko to catch his own fish, when the whale was released, no evidence exists whatsoever that Keiko ever ate on his own. Even gastric samples showed an empty stomach each time he was tested. Keiko repeatedly followed fishing boats and recreational craft and solicited for food from humans. Keiko spent the first two years in Iceland and every winter thereafter in his bay enclosure. In the summer of 2002, there were 23 days between the time Keiko was left alone at sea 60 miles offshore of Iceland to the time he showed up in Halsa, Norway. This is the only time in that five years that Keiko was without the constant daily support and supervision of the release team. During that period there was no eye-witness sighting of Keiko to accredit independent feeding. When Keiko arrived in Norway, he actively sought out human company, swimming to boats and people. To begin with he was very active, though staying near the surface only diving for 0–1 min at a time. After a few days Keiko became inactive staying near a small boat, possibly to avoid the large and steadily increasing crowd of people, now seeking his attention [55].

In the winters of 2000, 2001 and 2002 Keiko nearly died from a recurrent respiratory infection. Had it not been for the cocktail of medications he was supplied by the release team, he never would have survived the first winter in Iceland. Keiko died in December 2003 apparently from pneumonia, approximately 26 yr old [55].

*Dolphins and other marine mammals can transmit diseases to humans.*

While it is true that marine mammals can transmit diseases to humans (and vice versa) it is not often that this happens. There is not a single case of disease transmission from cetaceans to humans in the scientific literature. Much more worrying, for example, are diseases that can be transmitted from pets to humans.

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Nothing is more important to Loro Parque than the love and respect to the animals! Therefore, we are against any form of animal abuse, such as the slaughter of dolphins in Taiji, the Faroe Islands, Peru or Chile, the eradication of whales and seals, the destruction of sharks, the sorting of male chicks as waste, the castration of pigs without anesthesia, the inhuman tradition such as bull-, dogs- or cock fights, the fox hunt, any kind of factory farming or inhuman animal transports.

The modern zoos, like Loro Parque, are the true experts in terms of the animals wellbeing and conservation, so we encourage our visitors to bring love and respect to the animals. We yearly invest more than one million US dollar for the protection of the most endangered species – this year, we have also contributed another 250,000 € to the CanBIO project to which, together with the Government of the Canary Islands, we have already dedicated 1.5 million euros to study the effects of climate change in the Macaronesia area. So far, and including the commitments for 2024, we have managed a global investment of 27.312.000 dollars, to reduce the degree of threat of twelve species of parrots which, thanks to Loro Parque, continue their journey in the wild. In the case of two species, the Yellow-eared Parrot and the Echo Parakeet, we were even able to lower the threat level from "critically endangered" to "vulnerable" and have so saved them from extinction.

That is why we strongly oppose the pathetic attempts of the activists who accuse us of mistreating animals. On the contrary, we are firmly convinced that our animals are in good hands and feel very well here. These activists are the same people who wasted $ 20 million for releasing Keiko (the whale of the movie "Free Willy"), with the sad result that the animal died sick and lonely after a few months. It is these same activists who demand with their ignorance that Morgan, a female orca, who has a serious hearing impairment that makes it impossible for her to survive in nature, is released. This is further proof that their only interest is to collect donations from good-natured animal friends through emotional and less objective attacks and to damage modern zoos and thus also the protection of nature and animals.

This has absolutely nothing to do with love and respect for the animal and the environment!

If zoos did not exist today, one would have to invent them.

El "must" de Canarias

LORO PARQUE

ANIMAL EMBASSY