THE SOCIAL CONSTRUCTION OF AQUATIC HABITATS

A POSTRSTRUCTURALISTIC PERSPECTIVE ON SPATIAL RELATIONS IN FISH CAGES

GENETICS

Due to the spatially restricted keeping of animals in fish cages, the genetic pool of the kept population is concentrated. Reproduction is limited to this space, which means that a small pool of genetic variations is represented in the following generations, causing lower health and fitness. Escaped farm fishes compete with endemic species at the outer space, which can result in alteration of the natural balance in the ecosystem, they can even become invasive species. Farmed fish can interbreed with wild fish stocks but have altered genetic material. The new generation of wild fish will be genetically mixed with genes from a more uniform farmed stock. This may change the wild stock to the extent that it no longer is able to survive in its original environment.

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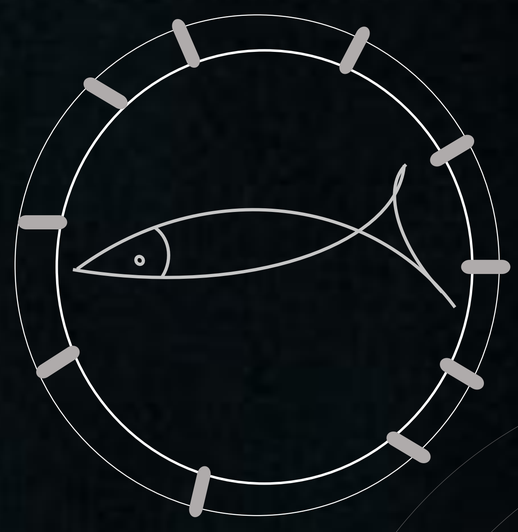
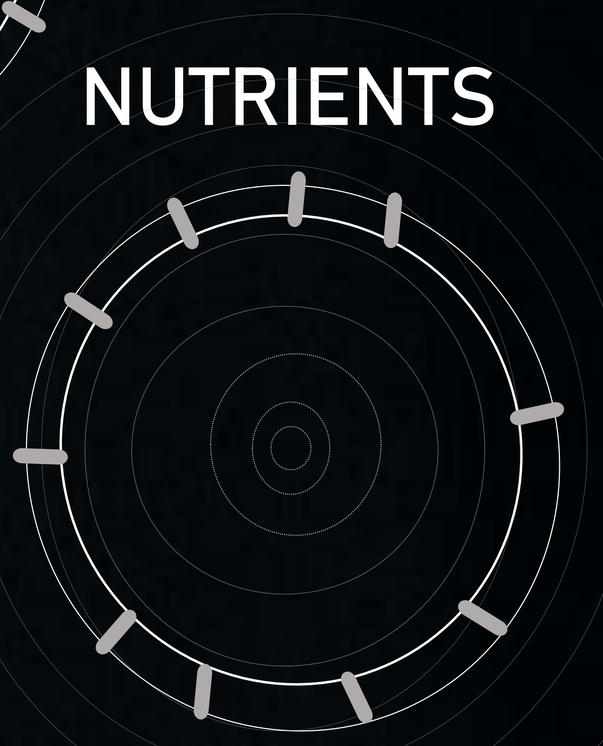
ANIMAL WELFARE



Animal welfare is about the general well-being of an animal, physically and mentally. One criteria, defined by the *Animal Welfare Committee,* is the freedom to express normal behaviour by providing sufficient space. The reason is that aquatic species are living complex emotional and social lives, including a strong preference about the environment in which they live. Fish Cages do not allow natural behaviour like migratory. Also the stocking density has effects on social behaviour. In species where social hierarchies are formed, it can lead to chronic social stress and aggressive behaviour. The anthropogenic impact and the reconstruction of natural habitats effects welfare negatively.

NUTRIENTS

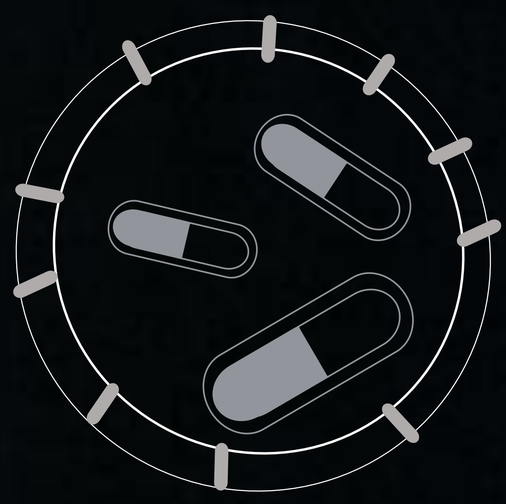


In aquacultures, nutrient accumulation and conversion takes place in very confined space. The addition of food causes a local increase in nutrients. Not all nutrients are absorbed, which can lead to accumulation below culture cages. Chemistry and biology of the sediment change, so do flora and fauna. Additionally open aquaculture systems, allow water to diffuse freely into the environment. Nutrients thus escape into the surrounding water body, with transport strongly influenced by local hydrodynamics. The nutrients nitrate and phosphorus are particularly relevant here. A sharp increase causes local eutrophication, which results in an oxygen-poor environment, which is why biodiversity impoverishes.

CHEMICALS

In farmed fish higher body burden of toxic substances have been found than in wild fish. The usage of several chemicals in aquatic farming are common. Usual is the use of hormones, antimicrobials, antiparasitics, fungicides, medication and antifoulants. General perception is that residues of these chemicals are locally taken up by the aquatic fauna, bioconcentrate and then are passed on through food chains. For fishes the high concentration of chemicals in the space limited environment leads to less resistance towards diseases and thus affecting fisheries and consumers. Problematic is also that chemicals can differ into the outer waterbody, and therefore are effecting ecosystem on a supraregional level.

DESEASES



Immunity to disease in aquatic life also depends on the overall health and well-being. Decisive for the spread of a disease are the housing conditions, the constitution of the animals, the physical and chemical parameters, as well as the pathogen pressure. The probability of a mass outbreak of a disease increases the higher the population density. But not just the farmed population is harmed by diseases unproportional. When single individuals break out, diseases can be transmitted to wild populations, causing aquatic epidemics. To prevent the spread of diseases through aquaculture, antibiotics and vaccinations are administered, and the use of disinfectants also takes place. Health effects also arise for the consumer, as either the consumption of the animal is harmful to health, or even contagious diseases are transmitted to humans.

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