Fish in aquaria for aesthetically enhancing public spaces: 
A Singapore case study

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ABSTRACT

The trend of installing aquaria for aesthetically enhancing public spaces (AAEPS) is gaining popularity worldwide, but remains relatively unexplored. The aim of this observational study was to assess the status of public aquaria in Singapore’s public spaces. Seven of the twenty aquarium tanks visited displayed at least one sign of fish disease health problems, and two had plasma televisions installed. Except for one, none of the aquaria exhibited educational signage. Findings suggest there is legitimate concern for the welfare of fish in AAEPS. Using aquariums for aesthetic and entertainment purposes is not fully justified, primarily because animals should not be kept in captivity for the sole purpose of entertainment. With the incorporation of pedagogical principles into the aquarium display design, AAEPS are in a unique position to be used as an informal marine environmental education centre and this opportunity should be exploited.

INTRODUCTION

Fish have been used by humans for millennia, yet welfare developments for aquatic animals lag behind those for terrestrial animals because they are not traditionally considered sentient beings. Recent scientific findings on fish cognition and capacity to perceive pain (e.g. Sneddon et al., 2003) have fuelled the argument that human activities can compromise fish welfare.

Most developments in aquatic animal welfare have drawn upon welfare models established for terrestrial animals. Learning from the major restructuring changes in terrestrial farming, aquaculture has improved husbandry practices (Håstein et al., 2005). Research using fish and other vertebrates is strongly regulated in many countries via guidelines that promote responsible and respectful treatment of experimental animals (DeTolla et al., 1995). Taking reference from the shift in zoos’ emphasis away from animals on display for public entertainment towards education, conservation and research, large-scale public aquaria have taken up educational and conservational roles (Miller et al., 2004).

The emerging trend of utilizing aquaria for aesthetically enhancing public spaces (AAEPS) is a potential welfare issue, but there exists no ‘terrestrial’ equivalent to assess the welfare of fish in AAEPS. Given the lack of published literature, this aim of this observational study is to assess the current status of aquaria in Singapore’s public spaces, focusing on fish welfare and educational potential.

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MATERIALS AND METHODS

Fish were identified to species-level where possible. Plants were recorded only in regard to the general aquarium environment. Here, AAEPS describe any aquaria used to aesthetically enhance public spaces. Large aquaria which the public pay to visit, commercial aquaria and private aquaria were excluded. As there existed no official or centralized list of AAEPS in Singapore, one was compiled based on personal recollection, suggestions from friends and colleagues, and Internet searches.

At each tank, three types of attributes were recorded: tank, fish, and water; its position in the building was also noted. Measurement methods were simple, non-invasive and/or based on subjective visual observations. The indices of physical health problems used were disease state, changes in swimming or behaviour patterns and mortality. Photographs, qualitative notes on aquarium characteristics, and observations of visitors were also taken.

RESULTS

A total of 20 aquarium tanks at 14 locations were surveyed. These 14 locations can be grouped as food centres (n=4), healthcare institutions (n=4) and shopping malls (n=6).

Seven of the 20 AAEPS surveyed contained one or two individual cases of fish health problems such as white spot disease, and/or deviations from optimal tank conditions. There were seven individual cases of white spot disease, and six records of atypical behaviour patterns. In addition to two carcasses, one to two fish individuals were missing on second visits (within 15 days) to two aquaria. Substantial increases in algal growth were also observed on second visits (within two weeks) to the Marina Square Shopping Centre and Suntec City aquaria.

The installation of plasma televisions (TVs) within two shopping malls aquaria (Figure 1), accompanied with relatively loud music, is an example of another potential welfare issue. Except for the Wisma Atria aquarium, none of the tanks provided any signage that may be interpreted as ‘educational’.

Figure 1. Plasma TV installation within the aquarium at Habourfront Centre, with two speakers on either side.
DISCUSSION

The results of this study confirm the widespread installation of AAEPS in Singapore, and the need to examine AAEPS as a potential fish welfare issue. One clear welfare issue for AAEPS is the physical well-being of the fish. Although fish can suffer from diseases even if they are living in optimal conditions, just as they also would in the wild (Huntingford et al., 2006), the white spot detected at four AAEPS might either represent lowered immune resistance due to environmental stresses. The stereotypic behaviours observed, like circling and flashing, could also arise in response to ill health and/or stress. Although these signs of fish health problems do not automatically equate to poor fish welfare, they suggest that more scientific research into fish in AAEPS is required.

The apparent entertainment functions of AAEPS are another area of fish welfare concern, for instance, the installation of plasma TV screens into the background of two aquarium tanks at shopping centres. Advertisements shown on the TVs were audible from at least six meters away, and caused vibrations within the tank. Studies have shown that exposure to loud noises can potentially impact fish (Scholik and Yan, 2001). Conversely, the six aquaria found in healthcare institutions were located adjacent to waiting areas, most likely to provide a calming environment for the patients seated nearby.

The concept of keeping animals in captivity solely for human entertainment has faced serious criticism over the years. In response to the public demand for improved welfare of animals on display, modern zoos and public aquaria have developed three important justifications for keeping wild animals in captivity: conservation, education and research (Miller et al., 2004). Drawing a parallel to AAEPS, it is evident that the desire to aesthetically enhance public spaces and provide public enjoyment does not justify the setting up of aquarium displays without any educational or conservational element. The exception could extend to aquarium installations in healthcare institutions. Just as public aquaria have adapted welfare frameworks employed by zoos, the emerging field of decorative aquaria can adopt similar approaches in terms of research into husbandry management practices, and legislation implementations, specific to AAEPS.

Education is probably the one which is most feasibly implemented by AAEPS. Amongst the locations surveyed, Wisma Atria was the only one to provide photographic guides around the perimeter of the aquarium to inform visitors about the common and scientific names of the fish on display and their behavioural characteristics. However, only seven out of the 16 fish species shown on the fish identification signs were actually present in the aquarium. A feasible approach would be to install signage which identifies the aquatic animals on display and conveys educational and/or conservational messages. Research has demonstrated that public aquaria have great potential to be informal settings for marine environmental education, and that the public is willing to learn about conservation in such a context (Dierking et al., 2002). Families often formed the majority of AAEPS observers, and children were seen exclaiming “Finding Nemo” character names such as “Nemo” and “Dory” upon recognition of the Common Clownfish and Regal Tang respectively. By displaying proper fish identification signage and communicating pro-active conservation messages, it is possible to foster in children positive attitudes towards nature (Ballantyne, 2004).

In conclusion, the findings of this study suggest there is legitimate concern for the welfare of fish in Singaporean AAEPS and that they would benefit from the more established welfare guidelines practised by the public aquaria industry. Using aquariums for the physical
enhancement of public spaces and enjoyment by the public is not fully justified, primarily because animals should not be kept in captivity for the sole purpose of entertainment (Mason, 2000). Nevertheless, this inherent flaw in AAEPS could be compensated for with the incorporation of pedagogical principles into the aquarium display design. Public aquaria are in the unique position to be used as an informal marine environmental education centre to reach large numbers of people; an opportunity that should be exploited.

REFERENCES


