“Morgan” the orca can and should be rehabilitated.

With additional notes on why a transfer to another ‘captive orca facility’ is inappropriate and release is preferred.

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Cover: Morgan, the young captive orca, watching a young boy, at *Dolfinarium Harderwijk*.
photo © Dr. Ingrid N. Visser, June 2011

Executive Summary.

It is our joint professional opinion that Morgan is a prime candidate for rehabilitation and release as she is in a state of mental fitness that indicates she is alert, highly motivated and willing to learn.

However, Morgans physical fitness needs to be improved, as the tank she is currently in is too small and too shallow for appropriate training. Additionally, she requires more mental stimulation as she is exhibiting signs of boredom and stereotypic behaviour, which are likely to increase in the impoverished conditions she is being held in.

It is pivotal to understanding the situation for Morgan, to consider the following: "*Boredom is not a luxury problem…. There are indications that [it] affects the brain and ….. an animal's resistance to stress and increase its chance of becoming physically ill*." (Wemelsfelder 2005 p86 in: *Animal Boredom: Understanding the Tedium of Confined Lives. Mental Health and Well-Being in Animals*).

We also draw attention to the following quote from this report:
"*If the true goal of capturing Morgan was to give her the opportunity of a good and meaningful life, then keeping her in the current facility, or transferring her to another captive orca facility, where she will be subjected to the daily deeming round of tricks in return for her food and/or be forced into a breeding program, is not appropriate.*"

We have come to the unfortunate conclusion that Morgan is being retained in captivity and not being released due to her intrinsic and/or fiscal value. Due to this her welfare is being severely compromised.

Executive Recommendations.

1. Morgan is moved immediately from the impoverished and inappropriate conditions she is currently being held in;
2. Morgan is **NOT** transferred to another captive orca facility, as they are not only sadly lacking in appropriate conditions for keeping wide-ranging species such as orca, but they also are *for*-profit and Morgan will be exploited for breeding and/or entertainment purposes;
3. Morgan is moved to a sea-pen where natural (or at a minimum, semi-natural) conditions prevail;
4. Morgan is immediately provided with appropriate mental and physical 'enrichment' to meet animal welfare standards;
5. Morgan is rehabilitated for potential release into the wild to re-join the population of orca from which she came.

Contents

Figure 1. Morgan, the young captive orca, at *Dolfinarium Harderwijk*. Note the stream of bubbles produced whilst she vocalised as she observed the public. photo © Dr. Ingrid N. Visser, June 2011.

List of Illustrations

All photos © Dr. Ingrid N. Visser, June 2011, unless stated and not to be used without written permission.

Key Facts

1. **Morgans statistics**
   Capture Date: 23 June 2010
   Capture length: 3.5 m
   Capture weight: 430 kg
   Capture age: estimated to be between 1-4 years old
   Current length: (as of June 2011): 3.65 m
   Current weight: (as of June 2011) 1,100 kg
   Current age: estimated to be between 2-5 years old

2. **Wild female orca statistics**
   Reach lengths of up to: 8.5 m
   Reach weights of up to: 4,000 kg
   Age up to: 90 years of age
   Neonate (newly born) length: 2-2.5 m
   Neonate weight: approximately 200 kg

3. **Captive female orca statistics**
   Maximum size published: 6.15 m
   Maximum age published: 28 (although "Lolita" is reputed to be at least 40 years old, we could find no scientific publication to establish this and it must be considered that she was taken into captivity from the wild, so age is only an estimation).

4. **Size of Morgans Tank at *Dolfinarium Harderwijk***
   Width: 7.72 m
   Length: 20.42 m
   Water depth: less than 3 m (estimated from photos herein)

5. **Size of largest captive orca facility in the world (*SeaWorld*, Florida)**
   Width: 22.9 m
   Length: 51.8 m
   Water depth: 10.4 m

6. **Size of proposed rehabilitation site at *Deltapark Neeltje Jans***
   Width: 252 m
   Length: 300 m
   Water depth: average ~ 5 m (low tide) and ~ 10 m (high tide).

Brief Background and Context of this Report.

Morgan was captured from the Wadden Sea (Netherlands) on the 23 June 2010, by the *Dolfinarium Harderwijk*. She was in a severely emaciated state and required intensive care by the aquarium staff and "SOS Dolfijn" van Elk (2010).

The *Dolfinarium Harderwijk* is to be commended on the excellent manner in which they have nursed Morgan back to health. However, at their own admission (and as common sense shows) they no longer have the facilities to cater for Morgan's increasing size and her physical and mental well-being. Given that as a female, Morgan could easily reach 7 m (or even up to 8.5 m) and 3,100-4000 kg (Dahlheim & Heyning 1999; Ford, 2002; Heyning & Dahlheim, 1988; Matkin & Leatherwood, 1986; Trites & Pauly, 1998), it is imperative that she is removed from this extremely small tank.

Since her capture from the wild, there have been a number of interested parties who wish to see that Morgan is given the opportunity to once again be free, as this was the original intent of her capture. There have been mixed reactions to the Release Plan offered by the Free Morgan Expert Board (www.freemorgan.nl), not the least of which is the facility which currently holds her (*Dolfinarium Harderwijk*), stating that Morgan is now not a suitable candidate for release. However, we present here our observations and draw attention to certain factors that should be considered in respect of Morgans rehabilitation and release.

Figure 2. Google-earth view of Morgan's tank at the *Dolfinarium Harderwijk*. Dimensions are shown in meters (*i.e.,* 7.72 m wide and 20.42 m long) and were measured with the Google-earth tools. Of note is that Morgan, in June 2011, was 3.65 m long, therefore the width of the tank is only 2.1 times her length and at it's longest the tank is only 5.59 times her length. The depth of water is estimated to be less than 3 m (see Figure 17 for details). All of these dimensions are woefully short of what should be considered minimum welfare standards, not withstanding the meeting of basic biological requirements. photos © Google Earth, accessed June 2011.

Observation Details

Observation Timeframes

Morgan, a killer whale or orca (*Orcinus orca*) of between 2-5 years of age (based on her size), was observed 20-24 June 2011, by the authors of this report, whilst she was being held at the *Dolfinarium Harderwijk*. The observations described here were all made from the public viewing area and made on the following dates: 20-24 June (Visser) 21-24 June (Hardie) and between the hours of 1330-1600 hrs (official public viewing hours) plus one session on 22 June (1045-1120 hrs) when both authors were accompanied by the Head Trainer, Steve Hearn into this same public viewing area.

Definitions: Stereotypic Behaviour & Environmental Enrichment

When viewing any animal, it is important to view the animal as a 'whole' and in the context of its environment. From this it can be observed how the animal reacts to its surroundings and, from either a trainers or scientists point of view, this can be a strong indication of the general state of the animal. Environments which unduly confine an animal can produce abnormal repetitive behaviours which are termed 'stereotypic' – (*e.g.,* see Clubb & Mason (2007) and references therein). A classical example of stereotypic behaviour is commonly observed in large captive animals such as polar bears or tigers, which will 'pace' back and forth within the confines of their cage. Other stereotypic behaviours may involve fixated attention on certain objects, licking or chewing on others or even self-mutilation (such as feather plucking in captive parrots).

Likewise, environments that provide limited variability for an animal (often referred to as 'sterile' environments) provide little or no mental stimulation for the animal. Again these types of environments often result in the captive animal(s) exhibiting stereotypic behaviour which may also manifest itself as apathy/lethargic type behaviours (*e.g.,* excessive amounts of sleeping or lying around).

In terms of the welfare of any animal in captivity, in this day and age, there should be no reason to see stereotypic behaviours manifest themselves. Therefore we should accept a level of "*zero tolerance*" of stereotypic behaviour (Mason et al. 2007). To help combat stereotypic behavioural issues, facilities which hold animals attempt to increase their mental and physical stimulation through a process termed 'environmental enrichment', where items (or mental challenges) are introduced to the animal to reduce boredom. Therefore environmental enrichment is also mental enrichment, resulting in behavioural enrichment (and the extinguishing of stereotypic behaviours).

Clubb & Mason (2007) write the following, which summarizes the situation; "*For many captive wild species, poor conception rates, high infant mortality rates, and/or poor adult survivorship are major impediments to attaining self-sustaining populations. Given that these animals receive veterinary care and are free from predation, drought and starvation, this is surprising and suggests a role of chronic, husbandry-related stress. Furthermore, abnormal, repetitive behaviours like pacing are rather prevalent; these likely reflect inadequate environments, are perceived negatively by the public, and could even indicate psychological changes that would impede reintroduction success.*"

Behaviour, 'Toys', Mental Stimulation (Environmental Enrichment)

Morgan's behaviour fluctuated wildly – from where she appeared alert and motivated, to unmitigated boredom from her unstimulating environment. She exhibited stereotypic behaviours and classic signs of boredom for confined animals (as outlined by Wemelsfelder, 2005).

The tank Morgan has been contained in for over one year is particularly small and provides extremely limited and certainly unvarying, physical conditions. Taking into account the following by Špinka & Wemelsfelder (2011), it is pivotal to the health of Morgan that she is moved out of this concrete tank (and not just into another larger concrete tank); "*If we can accept that through active engagement with their environment animals experience meaning and enjoyment in what they do, then there seems to be no reason why chronic disruption of such engagement should not be experienced as debilitating, boring, or even depressingly dull*."

Figure 3. Morgan attempting to initiate 'speed swimming', in a tank which is only approximately 5.6 times the length of her own body (3.65 m). Orca have the highest swimming velocity of four species of cetaceans (measured in captivity), *i.e.,* 7.91 ms^{-1} = 28.44 km/h (Fish, 1998) and there is no way that Morgan can begin to attain such speeds in such a confined space.
photo © Dr. Ingrid N. Visser, June 2011.

Morgan received minimal human contact whilst we observed her (typically for no longer than 20 minutes during any one session) and, that which she did receive, was focused primarily during feeding /training sessions. In the past, restriction of human contact has been a form of punishment for marine mammals in captivity (*e.g.,* "[to punish a marine mammal]….. *In traditional operant conditioning, for example food deprivation was often used to motivate the animals, whereas in other cases, animals were placed in social isolation and received limited human contact because of aberrant behavior*." (Brando, 2010).

Van Elk (2010) who is a veterinarian working for the *Dolfinarium Harderwijk, prepared information to be presented to seven experts for their opinion regarding the suitability of Morgan for Release. In the* section entitled "**Morgan's case specific information", he writes**; 'being a very juvenile killer whale, needs social contact and activity for her psychological well being.", yet this facet has clearly not been addressed.

Although Morgan may be receiving additional 'face time' with trainers during other non-public viewing times, the critical points to keep in mind are that "*…institutions may provide various forms of exercise and entertainment but crucially, the individual is not free to choose how, where, and when to act. He or she can respond with more or less enthusiasm to proposed activities, but true creative autonomy is not an option. As a consequence, the environment, though offering variable stimulation, may still be experienced as dull and 'subjectively monotonous'* " (Wemelsfelder 2005). While this quote is in reference to human situations, it has a direct reflection on any dolphinarium or similar captive situation (Wemelsfelder 2005).

Attempts have been made by the staff of the *Dolfinarium Harderwijk* to provide Morgan with environmental enrichment through mental stimulation with 'toys', however it was apparent that she quickly became disinterested in the limited number (two) of 'toys' presented to her, or left in her tank. We are aware that the 'toys' must be 'orca-proof' in that Morgan can safely be left with them – thereby restricting the available items, however we are only aware of these two which have been presented to Morgan and were informed by Steve Hearn (head trainer *Dolfinarium Harderwijk*) that these were her only two toys.

We are aware that inappropriate items can be detrimental to Morgans health (*e.g.,* Hare, et al. 2008; Duncan, 1997, Duncan, 1998; Schetini de Azevedoa et al., 2007), however one scientific paper notes that between 1985 to 2004, 744 scientific articles could be found on environmental enrichment (Schetini de Azevedoa et al., 2007). Additionally a simple search on the internet found more than 40 companies specializing in providing articles for environmental enrichment for animals. Although we are aware, again, that not all items will be suitable for Morgan, working within the frameworks outlined above we find it hard to accept that only two toys are currently presented to Morgan.

Five staff of the *Dolfinaruim Harderwijk* are members of the International Marine Animal Trainers' Association (IMATA), which hosts forums for members to discuss aspects of marine animal care (such as environmental enrichment). Additionally the IMATA states, on their website, that IMATA "*hopes to establish a community of members aspiring to attain the objectives of the Association and committed to its code of professional ethics. IMATA is dedicated to providing and advancing the most professional, effective, and humane care of marine animals in all habitats*." We would envisage that environmental enrichment falls within this definition.

Figure 4. Morgan blowing bubbles in an attempt to entertain herself in an environment with no environmental enrichment. photos © Dr. Ingrid N. Visser, June 2011

Many zoological institutions have implemented formal enrichment programs and dedicated personnel to enrichment efforts (*e.g.,* see Duncan, 1997), yet it appears, from an outsiders perspective, that if any such program is in place at the *Dolfinaruim Harderwijk*, that Morgan is not a recipient of such benefits.

Other than the limited human contact, the two 'toys' and a hose (see below), Morgan was provided with little, if any, environmental enrichment in the form of mental stimulation during our observations.

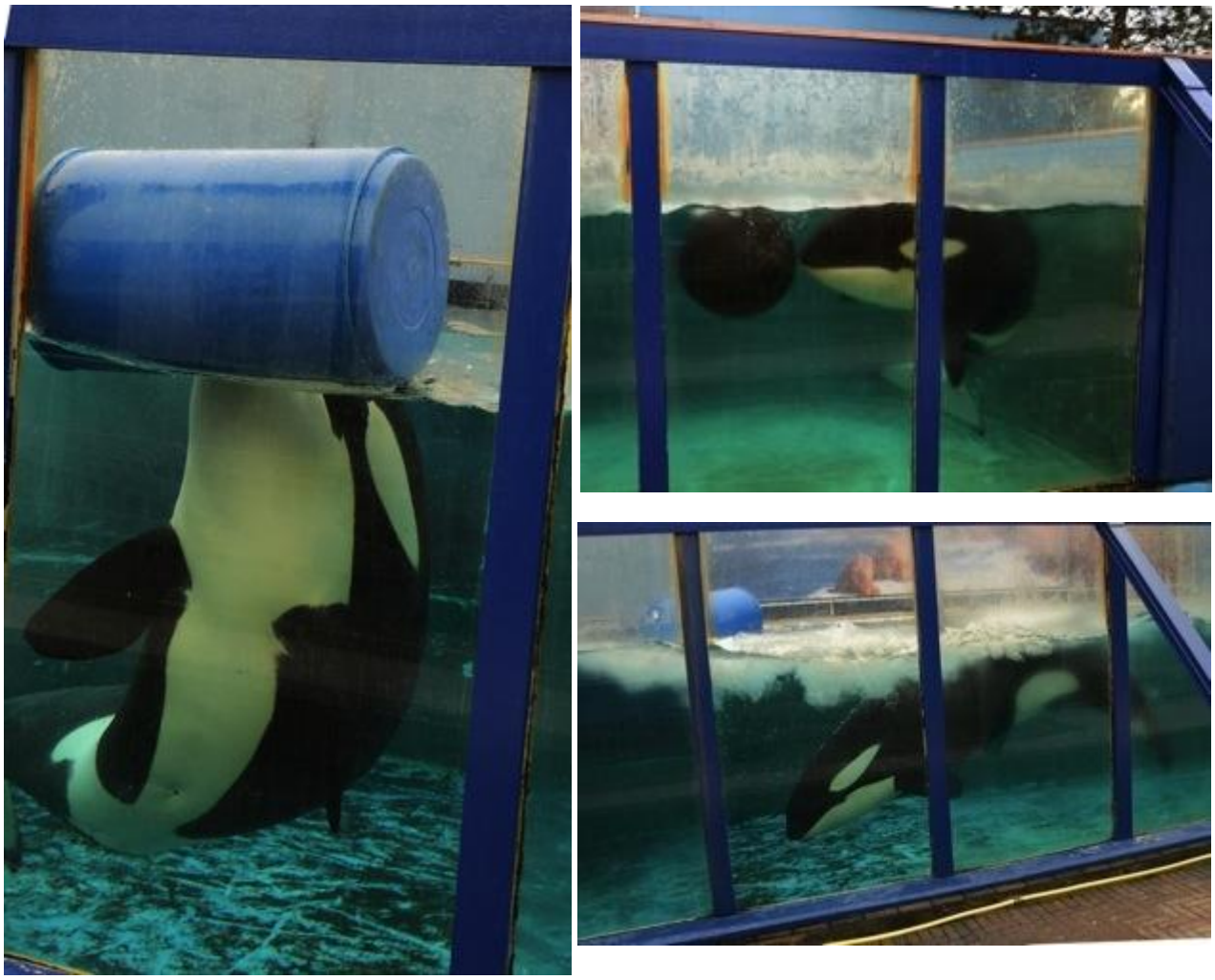

Figure 5. Morgan with her two 'toys' – a drum (left) and a ball (top right). In the bottom right picture, only minutes after the drum was placed in the pool, Morgan no longer attempts to play with it as the drum can be see abandoned at the back of the tank. photos © Dr. Ingrid N. Visser, June 2011.

Excessive Vocalisations, Stereotypical Behaviours, Orientation to dolphins

Whilst we filmed and observed Morgan, she often loudly vocalised, both at the surface and underwater. Although it is difficult to scientifically ascertain the nature of these calls (*i.e.,* what motivates her to call in such a manner) from our restricted observations and from a general behavioural standpoint, it would not be inappropriate to suggest that much of this was 'frustration' orientated vocalisation. This can be assumed based on the simple observation that as a trainer(s) departed, Morgan would often call out excessively, loudly and repeatedly, whilst visually orientating towards the location that the trainer(s) had departed to. This type of vocalisation may also have been 'attention seeking' – in that Morgan was attempting to initiate contact (or re-establish it), as this human contact provided the only mental relief to her stagnant environment. This attempting to initiate contact was also seen when Morgan would orientate towards certain members of the public who drew her attention.

Vocalisation by Morgan could be heard clearly above the water and through the panels in the front of her tank. The volume and manner which Morgan exhibited these vocalisations had never been witnessed by either author before, including when observing lone orca at other captive orca facilities and in the wild.

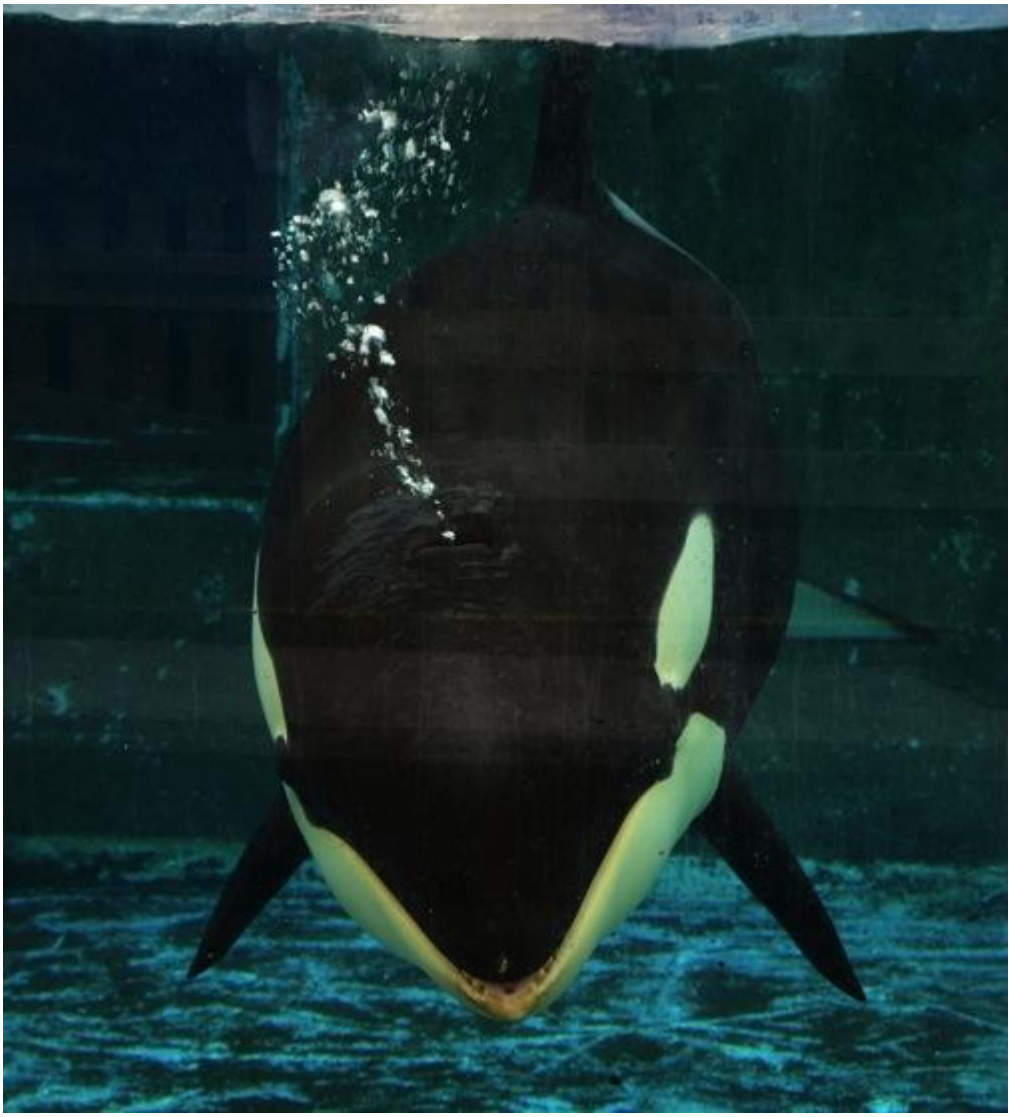

Figure 6. Morgan orientating towards the photographer and vocalising (note stream of bubbles from her blowhole as she whistles). photo © Dr. Ingrid N. Visser, June 2011.

Additionally, Morgan would also frequently vocalise at (and orientate towards) bottlenose dolphins (*Tursiops truncatus*) held in an adjacent tank. The tanks were separated by two mesh gates, which prevented any physical contact between Morgan and the dolphins. As there was a separation between the gates of at least one meter, it was not even possible for Morgan to press against the mesh to receive limited physical contact with the dolphins.

Despite these gates and despite the fact that Morgan has been held captive next to these animals for over one year, she consistently orientated towards the dolphins and their enclosure. During preparation for dolphin shows, or during training sessions with the dolphins, Morgan was not lured away from her position in front of the gates.

During one session (21 June 2011) Morgan was observed to be orientated towards the bottlenose dolphin tank for two hours without any major shift in her attention. During another session on the following day, the dolphins were 'stationed' at the mesh gate for seconds at a time, as required by their trainers. During this session Morgan became increasingly vocal and appeared agitated and highly motivated to gain access to the dolphins and/or trainers (who's training whistles could be clearly heard by the authors, so no doubt were also audible to Morgan – the same training whistles which are used for Morgans training sessions).

Figure 7. Morgan (head visible, top left) orientated towards two bottlenose dolphins held in an adjacent tank. Two mesh gates separate Morgan from the dolphins, preventing even inquisitive touching through the mesh. photo © Dr. Ingrid N. Visser, June 2011.

Morgan would also frequently orientate towards the 'grill' from the filtering system at the bottom of the tank. Orientation to the grill (and the mesh on the gates) have resulted in damage to Morgans rostrum, as she continually rubs against the substrate(s). "*As animals stay longer in their cages, they begin to direct their attention to inadequate substrates. They may lick, suck, or chew the floors and bars of their cages*…." (Wemelsfelder 2005, p84). Again, these types of behaviours are indicative of stereotypic displays and indicate that the animal is bored and has been provided with limited physical and/or mental stimulation.

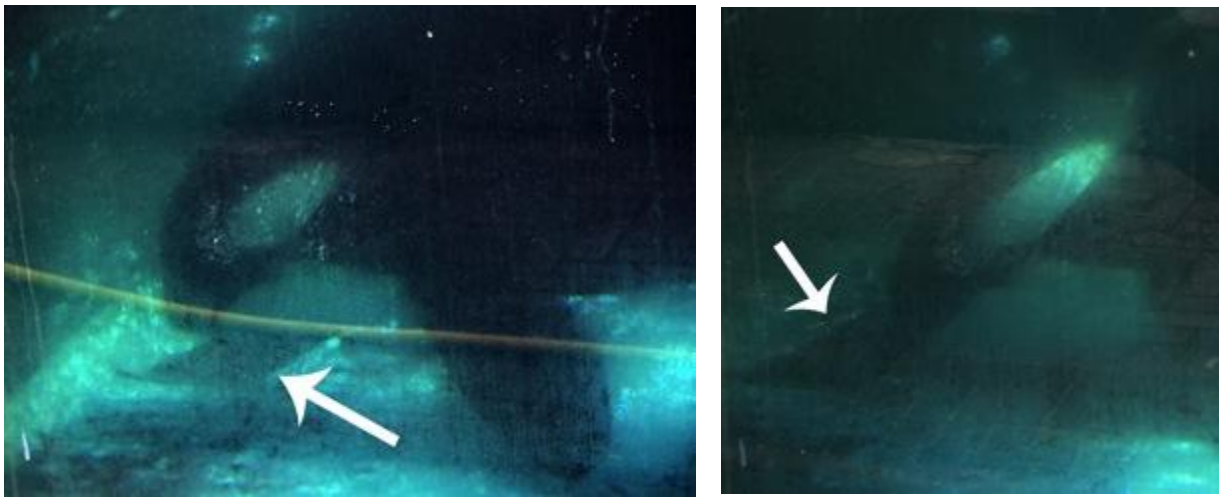

Figure 8. Morgan consistently orientating towards the filtration grill at the bottom of her tank (dark rectangle feature indicated by arrow). This behaviour was manifested repeatedly over the four day period she was observed by the authors. Note: Only limited visibility was possible whilst this behaviour was observed and photographed through the left opaque panel. This opaque panel also resulted in reflective images (such as the yellow hose, left). photos © Dr. Ingrid N. Visser, June 2011.

Morgan was also observed to spend inordinate amounts of time upside-down. Although swimming upside down is a natural position for wild orca to occasionally exhibit, it is unclear why Morgan is positioning herself upside down so much. Orca do have binocular vision which is facilitated by the orientation of their head and it may be that Morgan is attempting to view items of interest to her (*e.g.,* clouds). However, no matter the goal of this upside-down swimming, once again such a behaviour is (at the very least) beginning to manifest itself as stereotypical, if not already established as such.

It is possible that the staff of the *Dolfinarium Harderwijk* may not be aware of these stereotypical behaviours as "*When looking for those symptoms, it is important that we know an animal's biological background and understand how it prefers to spend its time under more natural conditions*." (Wemelsfelder 2005, p86).

We would like to note that both authors, who have extensive experience with orca in the wild, including in-water observations, immediately noted (independently and each within minutes of first observing Morgan) that she was exhibiting stereotypical behaviours. Hardie, additionally, has experience working in the captive dolphin industry and with this training was able to identify these stereotypic behaviours.

Although herein, we express our opinions regarding our observations of the stereotypic behaviour we observed displayed by Morgan, we are not attempting to lay blame on any one individual from *Dolfinarium Harderwijk*. Rather we wish to draw attention to these behavioural anomalies for the Governing body who will decide the fate of Morgan.

When deciding her fate, it should be kept in mind, that if this behaviour was not noticed (and if it had, appropriate action should have been taken to prevent boredom and therefore stereotypic behaviour), then it is apparent that appropriate training is required for those staff who conduct animal care to enable them to identify such stereotypical behaviour and why it manifests itself.

Tellingly, Wemelsfelder (2005, p85) notes; "*By the time the animal begins to develop a fixation on inadequate substrates, the situation has become severe.*"

Figure 9. Morgan swimming upside-down, exhibiting one of her stereotypic behaviours. photo © Dr. Ingrid N. Visser, June 2011.

Figure 10. Morgan swimming upside-down, with her eye clearly open.
photo © Dr. Ingrid N. Visser, June 2011.

Physical Contact, Spindle Neurons, Visual Stimulation, Environmental Enrichment

During our observations it was clear that Morgan was severely deprived of physical contact with anything other than inanimate objects (*e.g.,* a ball). Unfortunately, she was also only provided with negligible 'hands-on' time with her trainer(s), lasting, at best, minutes. During sessions with trainers she was occasionally 'scrubbed' with a broom, but again, this physical contact lasted, at best, minutes. Given the extreme tactile (physical contact) nature of these animals and their intense social lives, both in captivity and in the wild, this scarcity of physical contact is tantamount to sensory deprivation.

Simple solutions could be provided to enhance environmental enrichment, such as items which Morgan could rub against when under supervision (*e.g.,* a cotton mop) or items which she should be able to freely interact with, such as seaweed for her to glide through. Obviously pivotal to such a social creature is increased physical contact with other creatures (such as the bottlenose dolphins held in the facility or at the very least, her trainers).

Of paramount concern is this dearth of contact time with trainers. It is actually unforgivable that such a social creature is starved of attention. Although the head trainer (*i.e.,* Steve Hearn) is to be commended on his attempts to engage Morgan in stimulating situations (*e.g.,* see pictures), there appeared to be an overall lack of available time to devote to Morgan.

Figure 11. Head trainer, Steve Hearn, actively engaging Morgan in various activities.
photos © Dr. Ingrid N. Visser, June 2011.

Conversations were overheard or comments made directly to the authors, in which the following quotes were heard; "Morgan is like a small child – constantly demanding attention, but she has to learn that she isn't the only one here"; "We do not have enough trainers to have just one devoted to looking after Morgan"; "No trainer has been set aside

to spend time specifically with Morgan as we never planned to keep her and don't have the time to devote to her".

Although we understand that Morgan is a young orca, requiring special attention, if the *Dolfinarium Harderwijk* was not able to fully commit to her well being, then Morgan should have been handed over to a competent facility long ago, or help requested from within the captive marine mammal industry, or from experienced orca researchers. We are aware of at least two marine mammal trainers (both with experience working with captive orca), who had offered to assist the *Dolfinarium Harderwijk* assessing and working with Morgan, but neither of trainers have been contacted in response to their offers.

Of course, it may not be politically correct or considered appropriate to suggest the following, but it must be considered (as it cannot be ruled out); that the staff at the *Dolfinaruim Harderwijk* are totally aware that the lack of mental stimulation (through such avenues as environmental enrichment) will incite more stereotypic behaviours in Morgan and she may be terminally classified as unsuitable for rehabilitation and release given that "*…..abnormal, repetitive behaviours….. could even indicate psychological changes that would impede reintroduction success*" (Clubb & Mason 2007).

Crucial to the understanding the extreme deprivation Morgan has been subjected to, are the recent findings that orca brains contain *Von Economo* or 'spindle' neurons (Hof & van der Gucht, 2007). These cells have been found in higher primates (including humans, see details below) and in elephants (Hakeem et al. 2009). In humans the regions containing these same cells are involved in high-level cognitive processing, such as feelings of empathy (Singer et al., 2004), guilt (Shin et al., 2000), embarrassment (Berthoz et al., 2002), and pain (Craig et al., 1996; Rainville et al., 1997).

Spindle neurons have also been noted to be involved in human-orientated behaviours such as judgment, social knowledge and consciousness of visceral feelings (Craig, 2003, 2004, 2009). Revealingly, humans with diseased regions containing these 'spindle' exhibit disruptive social functioning and self awareness. Orca, not only have these same neurons, but have also been shown to exhibit self awareness and self recognition (Delfour & Marten, 2001). Animals which are self aware can learn that different outcomes can be produced or influenced by their behaviour. Additionally, orca are recognised as showing distinctive cultural variations between various populations (*e.g.,* Visser 2000; Whitehead 1998).

Figure 12. Morgan watching *Dolfinaruim Harderwijk* staff as they converse.
photo © Dr. Ingrid N. Visser, June 2011.

Yet, despite all this evidence that these animals are lucid, sentient beings, Morgan has been held for over one year, in the same impoverished concrete tank, which is effectively a featureless box. Repeatedly, calls from concerned citizens, conservation groups, orca scientists and groups specifically formed due to the situation Morgan is in (*e.g.,* the Free Morgan Group and the Orca Coalition), have been made for Morgan to be moved to a sea-pen with a semi-natural environment to aid in her mental and physical stimulation and welfare. However, despite the Netherlands having internationally recognised high animal welfare standards, (*e.g.,* Ruis & Pinxterhuis 2008 and references therein), Morgan remains at the *Dolfinarium Harderwijk*, where she has not been provided with even basic visual stimuli within the tank. More than 10 years ago, self recognition was documented in orca through viewing themselves in a mirror (Delfour, & Marten 2001). Therefore, even a simple addition of a mirror would have allowed Morgan the basic value of mental stimulation associated with self-inspection.

The only real potential visual stimuli for Morgan (*i.e.,* something which changes and/or is dynamic) are the views through 13 panels, which border the public viewing side of her tank. However, unfortunately, twelve of these panels are opaque, severely restricting Morgans potential vision to the outside world. One panel is considerably clearer than the others, but still has significant deficiency in clarity. Morgan occasionally orientates towards this clearer panel (certainly more frequently than towards the opaque panels) and when she does so, her behaviour typically stimulates the viewers in the public area (when present) towards more animated behaviour – providing Morgan with some limited visual stimulus.

Figure 13. Morgan swims along the 13 panels in front of the public viewing area. The white of her eye-patch is currently within the 'clearer' of the panels. photo © Dr. Ingrid N. Visser, June 2011.

Oral Stereotypic Behaviour (Tongue Manipulation), Hose Orientation

By positioning ourselves in front of the clearer panel when Morgan also did so, it was possible to observe her opening her mouth and exhibiting yet another stereotypic behaviour – tongue manipulation. 'Tongue rolling' – manipulating her tongue into a tube as well as 'tongue folding', attempting to turn her tongue into an inverted position were both observed. *"*[confined] *animals may perform behaviors that appear to have no substrate at all, such as air-chewing, tongue-rolling……. These behaviors are likely to develop into compulsive habits that are difficult, if not impossible, to break. This may lead to self-mutilation ….. . As a rule, such behaviors are not observed in natural or semi-natural conditions and are sometimes addressed as a confinement 'vice', as if it were the animals fault.*" (Wemelsfelder 2005, p84). Once again these observations point to the fact that it is

critical that Morgan is moved from a 'featureless' concrete tank, into a semi-natural environment such as *Deltapark Neeltje Jans*.

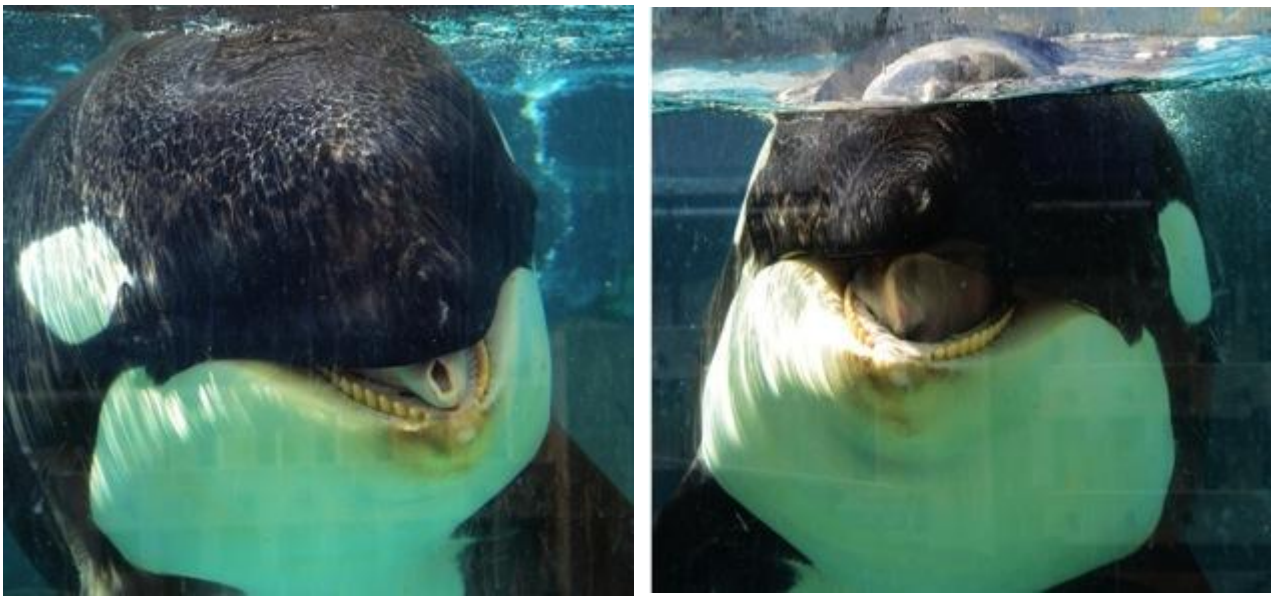

Figure 14. Morgan exhibiting oral stereotypic behaviour in the form of tongue manipulation. Rolling the tongue into a tube (left) and folding or twisting the tongue into an inverted position (right). photos © Dr. Ingrid N. Visser, June 2011.

There is a hose spraying water into the tank, which is on a timer and is set to run intermittently. Morgan appeared to orientate to this hose every time it was turned on indicating that she has not tired of this particular type of stimulation. Similar stimulation could be provided by multiple hoses, turning on in rapid random sequence (encouraging her to swim from one to another), underwater jets etc. This would be a simple way to improve the environmental enrichment of the tank.

Figure 15. Morgan positioning herself below the spraying hose (the poor quality of the photo is a facet of the lack of clarity when looking through the 'clear' panel). photo © Dr. Ingrid N. Visser, June 2011.

Alertness, Novel Items (further Environmental Enrichment)

Presented with novel (or infrequently observed) stimulus, Morgan was attentive and her attention could be held for an extended period. This clearly indicates that she remains in a mental state of alertness that would facilitate training her for release into the wild.

However, it should be kept in mind that "*With very little to absorb the animals' interest, time ticks by and the animals can either try to fill that time or wait for it to pass. But filling time is not the same as having fun,* ***so animals that appear to be active could still be very bored***." (Wemelsfelder 2005, p85). (Our emphasis).

The effectiveness of any novel object(s) as enrichment devices depends on a number of factors. For example, the literature on habituation (whereby an animal (or human), when repeatedly exposed to a stimulus, decreases their response to it) predicts that an object that is always in an animal's environment will be less interesting than a similar object that is available only on an intermittent basis (*e.g.,* see Kuczaj et al (2002) and references therein). Therefore, varying not only the novelty of any particular item (*i.e.*, not always presenting the same object), but also varying the timeframe (*e.g.,* randomly alternating it with other objects) and duration for which the item is present will help to increase the effectiveness of the item.

Although it may seem common sense to increase the environmental enrichment for captive animals, there are also a number of scientific studies which suggest that improving an animal's environment also benefits the animal(s) indirectly through health benefits etc (*e.g.,* see Kuczaj et al (2002) and references therein).

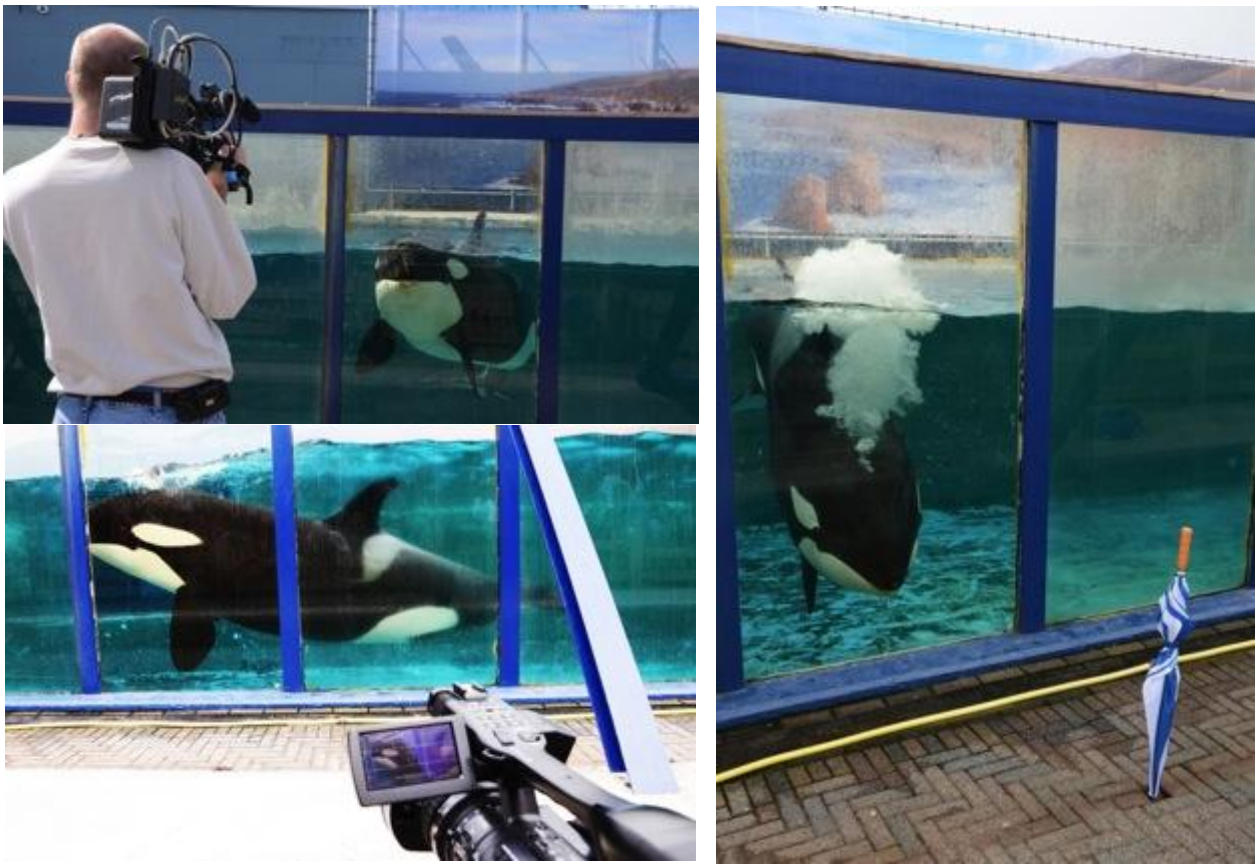

Figure 16. Morgan interested in novel objects (left, large video cameras), (right, upright, folded umbrella) photos © Dr. Ingrid N. Visser, June 2011.

Physical condition, Damage to Rostrum, Teeth

It was difficult to ascertain Morgan's physical condition, as we did not examine her, other than through observations from the public viewing area. However it is clear, even from this observational position, that she requires extensive training to build muscle tone (*e.g.,* it is possible see her ventral areas are flaccid and move freely from side to side (*i.e.,* wobble) as she gently moves her flukes). This is obviously due to the fact that she has severely limited conditions under which her fitness can develop (*e.g.,* the tank is so shallow that Morgan, when positioned with her rostrum on the floor of tank, has her caudal peduncle and tail flukes clearly out of the water). The interpretive guides positioned in front of Morgan's tank had informed us that (as of June 2011) she was 3.52 m long, therefore the tank is clearly less than 3 m deep.

It was possible to photograph the damage to the rostrum (snout) of Morgan when she orientated towards the viewing area. It can be seen that there is an open wound on the tip of her rostrum, that at some stage has either been larger, or, this current (open) wound has manifested itself on top of a previous wound in the same location.

On the anterior tip of the mandibles a similar (healed) wound is visible. Photographs on display at both the entrance to the public viewing area of Morgan (authors personal observations) and on the *Dolfinarium Harderwijk's* website show this wound to be open at some stage whilst she was held in captivity). These types of wounds are not typically found on wild orca and are a direct result of her continual orientation and pressing against the mesh, grill and concrete structures within her tank. There is an additional wound in the area between the branches mandibles (*i.e.,* chin area) which appears healed (see Figure 16), but for which the origin cannot be ascertained.

We were informed by Steve Hearn (head trainer, *Dolfinarium Harderwijk*) that Morgans teeth were regularly photographed to monitor their progression. Young orca have naturally weak teeth (the teeth remain hollow for a substantial portion of their youth), therefore it is important that such individuals are not permitted to chew on hard substrates such as concrete. It is not possible to ascertain from a few days observation, if the wearing we photographed, on Morgans front teeth, was a result of her orientation towards hard substances, as outlined above. Given the likelihood that Morgan will damage her teeth if she continues to chew on concrete etc from boredom it is vitally important that she is provided with environmental enrichment and immediately moved from this tank.

Captive orca typically damage their teeth through chewing concrete etc. When these teeth become so damaged that they present a health risk for the animal the teeth are drilled out (Jett & Ventre, 2011). When this occurs "*This breakage leaves the pulp of some teeth exposed. If left alone, the decaying pulp forms a cavity that leads to food plugging. The reaction of the orca's immune system to this plugging is to create inflammation and eventually a focus for systemic infection. Because of the relative youth of most captive whales, the roots of many of their teeth are immature, which makes a root canal procedure impossible. Instead, using a variable speed drill, trainers drill holes through the pulp and into the jaw via an endodontic procedure called a modified "pulpotomy." This is an uncomfortable husbandry procedure for the whales, which have been observed refusing to participate by sinking down into the water, shuddering, or splitting from their keepers. After "tooth drilling" is complete, trainers must irrigate (flush) the bored out teeth two-three times each day, for the rest of the orca's life, to prevent abscess, bacteremia, and sepsis. In the medical field it is known that poor dentition can lead to a host of diseases including valvular heart disease, gingivitis, pneumonia, stroke, and heart attack. These open bore holes represent a direct route for pathogens to enter the blood stream where they can then be deposited into the*

tissue of various organs throughout the body, such as the heart or kidney" (*e.g.,* see Jett & Ventre, 2011 and photograph therein).

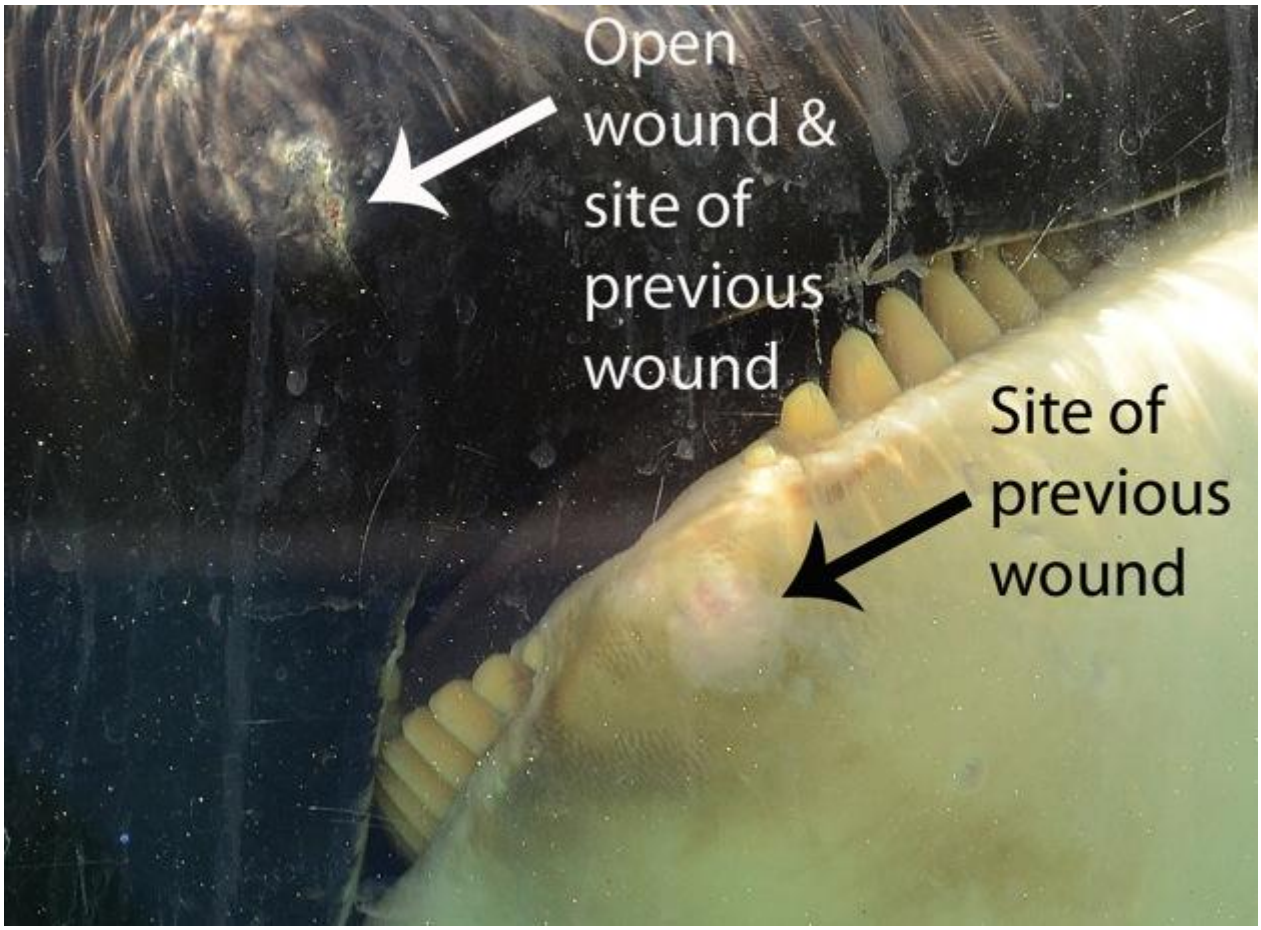

Figure 17. Previous and current wounds on Morgans rostrum. See also Figure 12 and 16 for further examples. Also, apparent wearing of front teeth is visible. photo © Dr. Ingrid N. Visser, June 2011.

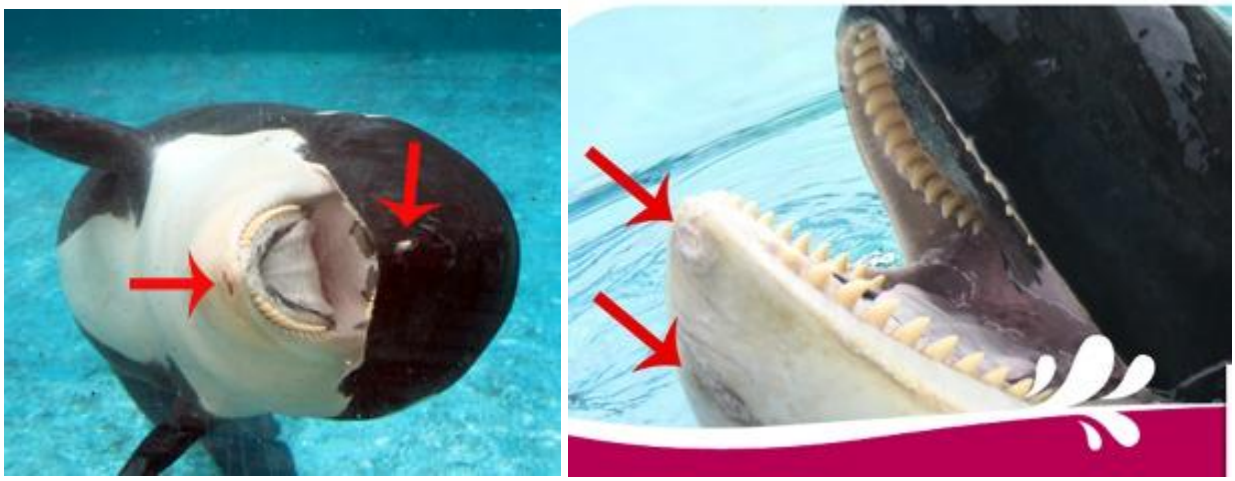

Figure 18. Raw damage to Morgan's mandibles and the healed area between the mandibles (chin), as well as to the tip of her rostrum. These images were extracted from the *Dolphinarium Harderwijk* website, under the special section on Morgan and are noted to be under their copyright © *Dolfinarium Harderwijk* B.V. 2011. Accessed June 2011. http://www.dolfinarium.nl/nl/dolfinarium/dieren_en_doen/ontdek_alle_dieren/dieren_morgan.html

Impoverished Conditions, Welfare

It is imperative that Morgan's captive conditions are considered in light of the fact that animal welfare is no longer viewed solely in terms of functional health and the absence of suffering, but also in terms of positive experiences, or generally a good 'quality of life' (McMillan 2011).

Despite the reprehensible fact that there are no legislative controls over the minimum tank size for a captive orca in the Netherlands, common sense clearly shows that Morgan is lacking a good 'quality of life' based on the impoverished and exceptionally small tank she is held in. This lack of environmental enrichment is not lost on all members of the public as some were overheard to comment with quotes such as "I can't believe they keep her in such disgusting conditions", "surely it can't be good for her in that tiny tank with nothing to do all day" and "surely she should have something to do or even look at".

Moreover, her lack of social contact with other cetaceans (whales, dolphins, porpoises) as well as the extremely limited social contact she has with her trainers is inexcusable. These deficits provide her with limited (if any) mental and physical stimulations.

Continued confinement in such conditions is cruel and torturous for any animal, let alone an individual from a species that has been demonstrably shown to have intelligence and self awareness (*e.g.* Delfour & Marten, 2001).

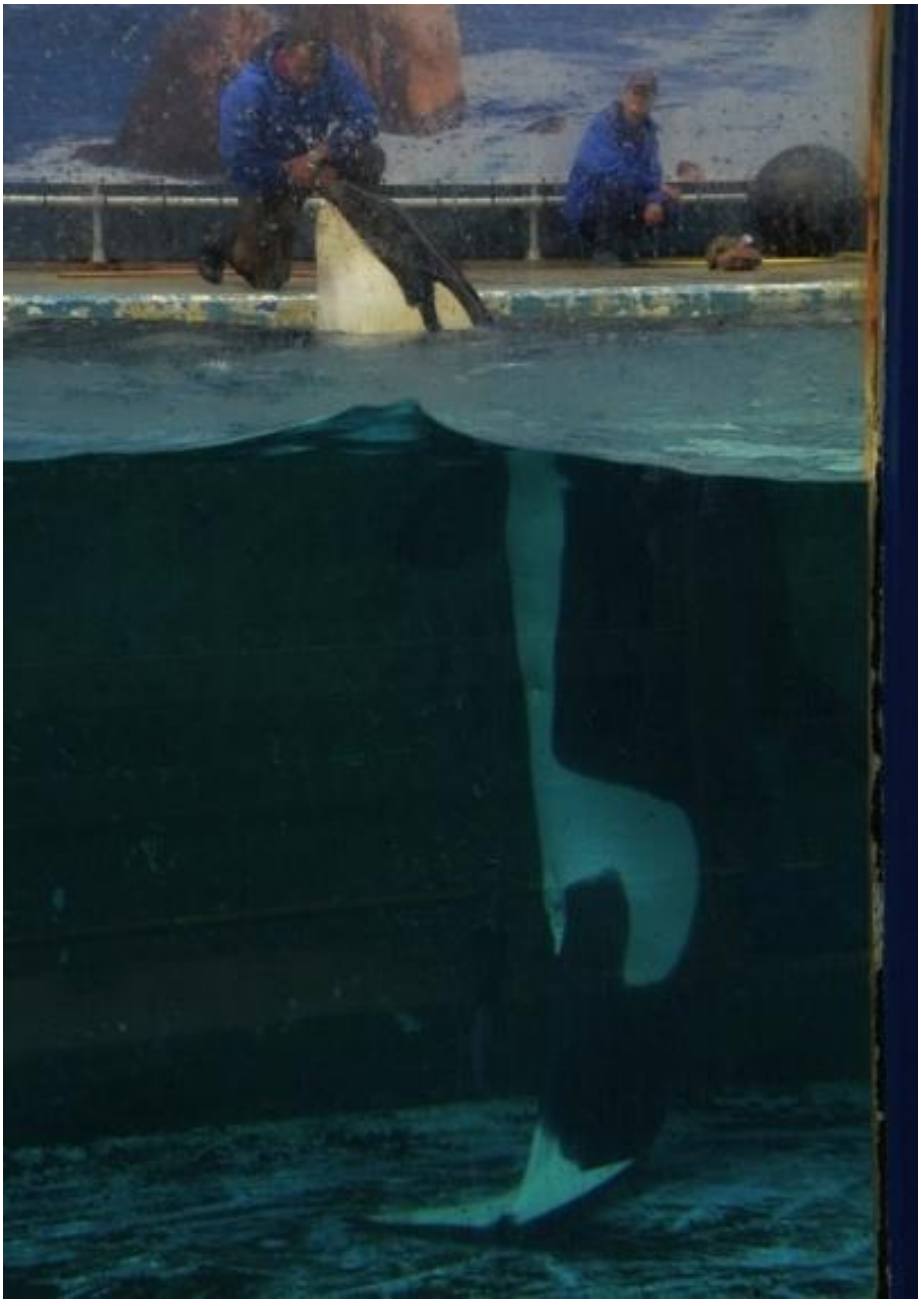

Figure 19. Morgan with her head out of the water and tail flukes on the bottom. As Morgan was 3.65 m long (data supplied by *Dolfinarium Harderwijk* staff) the water depth can be estimated at less than 3 m. This photo clearly showing that the water is not sufficiently deep enough for her.
photo © Dr. Ingrid N. Visser, June 2011.

To add to the lack of mental stimulation for Morgan, there is a total lack of ability to forage (all her food is provided to her and all her food is dead). She has no physical interactions with other cetaceans, most tellingly, with conspecifics (*i.e.*, other orca) and has effectively been held in solitary confinement for over one year.

Figure 20. Morgan with a dead fish in her mouth. Since her arrival over a year ago, she has only been fed dead food items (squid and fish). photo © Dr. Ingrid N. Visser, June 2011.

These issues all need to be urgently addressed, with the pivotal factor being that she is moved, not to another captive orca facility, but rather to a semi-natural sea-pen. *"...captive animals live in barren environments that give them very little opportunity to engage actively with meeting the needs of their own life."* (Špinka & Wemelsfelder, 2011). By moving Morgan to the proposed *Deltapark Neeltje Jans* (or similar) location, not only would a larger environment be provided, but one that is physically (and therefore mentally) stimulating and one that would be more humane.

Semi-natural Sea-Pen, Rehabilitation, Release

Our suggestion, which we continue to endorse, is outlined in the Free Morgan Release Plan; *i.e.,* that Morgan is immediately moved to a sea-pen, such as that proposed at *Deltapark Neeltje Jans* in anticipation of rehabilitation and release. Such a facility will provide opportunities for her mental and physical well being to be addressed and meanwhile

rehabilitation can begin. The issues outlined above (lack of mental stimulation, lack of physical fitness) can be rectified easily within such a facility.

The exception would be interactions with other cetaceans. However, it is hoped that the 'at sea swims' Morgan will be trained for (*i.e.,* she will be trained to accompany a specific boat and will be guided out to sea on a daily basis, with the durations of the 'at sea swims' increased as her ability allows), will provide her, not only with increased physical fitness and mental stimulation, but also with opportunities for foraging as well as encounters with other cetaceans and ultimately return to freedom with other orca.

If the true goal of capturing Morgan was to give her the opportunity of a good and meaningful life, then keeping her in the current facility, or transferring her to another captive orca facility, where she will be subjected to the daily deeming round of tricks in return for her food and/or be forced into a breeding program, is not appropriate.

Therefore the only course to now be taken is to, at the very least, ***attempt*** to rehabilitate Morgan and release her into the wild. Although arguments could be made that there are risks associated with such an attempt, common sense shows that successful precedents have been set in the past. Perhaps more relevantly, in the case of Morgan, contingency plans have been outlined (see Free Morgan Release Plan for more details). However, it must also be kept in mind that there are risks associated with moving Morgan to a captive orca facility.

The Protocol for the protection and welfare of animals (Treaty of Amsterdam, Amending the Treaty on European Union, the Treaties establishing the European Communities and Related Acts *Official Journal C 340, 10 November 1997)*
States the following;
"…ensure improved protection and respect for the welfare of animals as sentient beings"

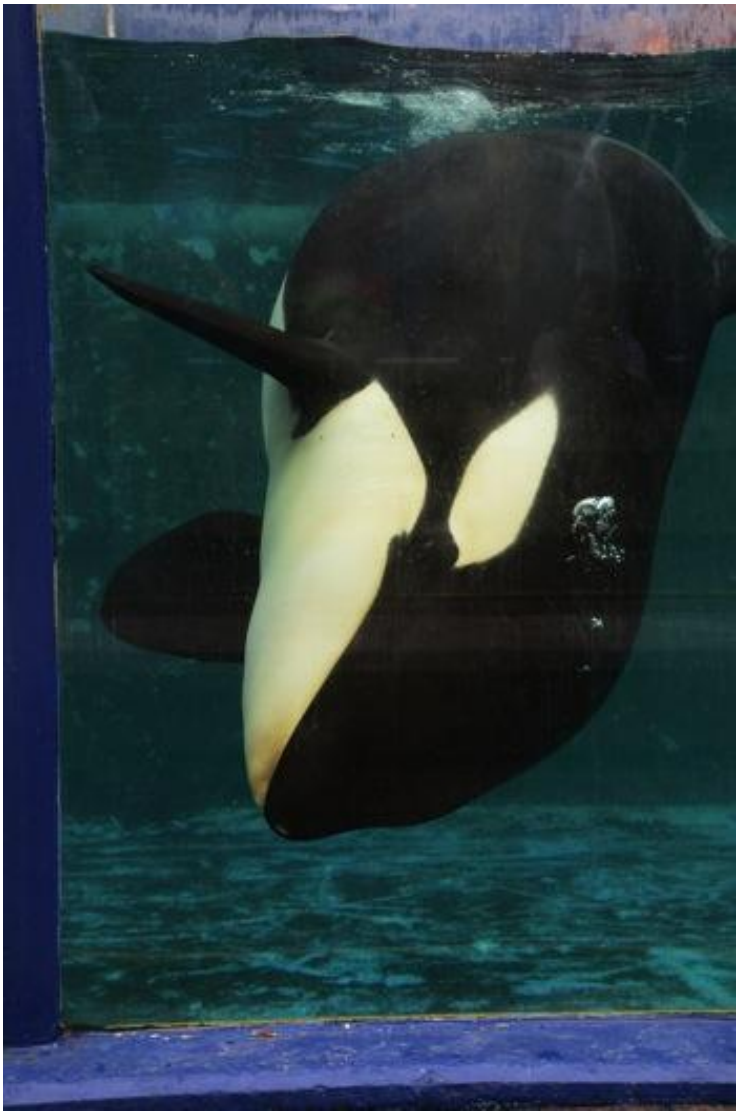

Figure 21. Morgan orientating onto her side to attract the attention of members of the public.
photo © Dr. Ingrid N. Visser, June 2011

Why transferring Morgan to a facility holding other captive orca is inappropriate.

Importantly, as background information, it should be noted that there are a number of underlying factors that may not be immediately apparent to those who are unfamiliar with the captive orca industry. A very poignant and comprehensive report was compiled by Williams (2001), entitled "*Captive orcas. "Dying to entertain you". The full story*." The report was prepared for the Whale and Dolphin Conservation Society, a well respected and international educational and conservation group pertaining specifically to cetaceans.

To provide a better understanding of the full scope of the situation for which Morgan has been currently slated (*i.e.,* transfer to another facility holding captive orca) the Williams (2001) report is a **must-read and no decision regarding Morgan's welfare should be conducted without prior analysis of it**.

Herein, we present details that either are new since the William's report, or that will help to clarify the situation and also point out issues pertaining to Morgan in particular.

Captive Orca Information

1. LIMITED BREEDING FEMALES.

   There are limited breeding females available within the captive orca population and of those, many are either from the same breeding stock (*e.g.,* Icelandic, Southern Resident, Japanese) or are actually closely related. Although artificial insemination has been relatively successful to try and avoid in-breeding, the addition of a female (*e.g.,* Morgan) who is presumably from different genetic stock (to those already held in captivity) is paramount to the breeding programs within these facilities. She would provide much-needed 'new blood' to prevent a population (or genetic) bottleneck in the captive orca population.

   Given that it is highly likely that Morgan will also be forced into a breeding program it should be noted that female orca in captivity give birth at a much younger age than in the wild (and therefore she would be exposed to the associated risks) and that there is a low survival rate of captive offspring (see below for details). To graphically illustrate the types of issues breeding programs of orca in captivity have, one male orca (known as 'Taku') produced a calf ('Nalani') with his mother ('Kalina'), (Jett & Ventre, 2011).

   Marine mammal captive facilities typically portray breeding as indicating that the animals are 'happy', 'content' and 'healthy', however it is a strong biological function of any animal to procreate. The analogy could be given in that humans in extreme conditions of physical degradation and mental stress such as is often found in refugee camps, are still known to conceive and give birth, despite undesirable conditions (*e.g.,* Shrimpton et al. 2009).

2. TRANSFER BETWEEN FACILITIES.

   Within the captive orca population, individuals are occasionally transferred between facilities – as 'on loan' and/or 'breeding stock'. Therefore, subsequent to any initial transfer of Morgan it is entirely possible that she will subsequently be moved to yet another facility(ies).

   For instance, one female orca was captured in the wild in Iceland (and following standard practises, presumably held in a facility in Iceland until transport was arranged) then shipped to Windsor Safari Park, London, UK. After that date she

was transported to Sea World of Florida, Orlando, USA and then she was moved to Sea World of Ohio, Aurora, USA (Kastelein et al., 2000).

Another female, born into captivity at *SeaWorld*, Florida, USA was moved to Ohio (SAA) on February 12, 1990. She was then transferred from Ohio to California (USA) on October 13, 1990. She was next transferred from California to Texas (USA) on May 30, 1991. Her next transfer was from Texas to Florida on October 29, 1994 resulting in transfers in as many years (Jett & Ventre, 2011).

It is of particular note that the *Dolfinarium Harderwijk* has facilitated transfer of orca to other facilities before – a female for 'breeding loan' (Kastelein & Vaughan 1989; PBS Frontline[1]), which also resulted in the *Dolfinarium Harderwijk* receiving two other cetaceans as 'trade' for the female orca. Additionally, other orca were apparently 'laundered' through the Netherlands, which were taken from the wild in Iceland, installed in the *Dolfinarium Harderwijk* for a limited time-frame and then transferred to a facility in the USA, as USA law did not permit orca to be captured from the wild[2].

Such transfers can be extremely stressful for the animals and injuries have been noted, whereby, for example stress, exertion or capture can cause spinal malformations (*e.g.,* see Berghan & Visser 2000). Such malformations are known as exertional rhabdomyolysis and are considered 'a potentially fatal condition associated with the capture or transportation of wildlife' (Colgrove, 1978).

3. REDUCED LIFE-SPAN IN CAPTIVITY, COMPARED TO WILD (& solitary confinement).

Although disputed vehemently by the captive orca industry, the life span of orca in captivity is unequivocally and substantially reduced, compared to their life span in the wild. Annual mortality rates of 4–6% in captivity, compared with 2–3% in the wild result in an expected lifespan of half to two-thirds of that occurring in the wild (Mason, 2010). Woodley et al., (1997) calculated an annual survival rate for captive orca and found that it was significantly lower than that for wild orca, although they state that their results are tentative due to the lack of data. Tellingly they also state the following; "*Although survivorship is germane to the controversy over the capture and maintenance of cetaceans in captivity, unequivocal conclusions regarding the relative survival rates of capture of captive and free-ranging cetaceans will not end the debate, given that it is largely an ethical, rather than scientific, conflict.*"

The following ages are cited in published manuscripts, for wild orca; 59 years for one female, (Amano et al. 2011); 50 years for both males and females (Trites & Pauly, 1998); 50–60 years (males), 80–90 years (females) (Ford, 2002); up to 90 years for females and 50 years for males (Hickie et al. 2007).

Yet limited data has been published on the ages and/or lifespans of captive orca. It is unclear why so little data is available, given the total access to the animals. However, the International Zoo Yearbook gives some data from 1990, where the maximum age of a captive orca is 28 years (Asper et al. 1990). Significantly the median survival age (as of 1990) is 21 years (sample size n = 39) (Asper et al. 1990, page 187, Table 3). Jett & Ventre (2011) calculated the mean duration of captivity (MDC) to be *less than nine years – i.e.*, orca die, on average, in less than nine years when held in captivity.

Life expectancy of cetaceans in captivity is often skewed when results are published. For example Small & DeMaster (1995), in their scientific paper entitled

[1] http://www.pbs.org/wgbh/pages/frontline/shows/whales/seaworld/gudrun/

[2] See documentary http://www.omroepgelderland.nl/web/nieuwsartikel/253631/1977-jonge-orkas-naar-Dolfinarium-in-Harderwijk.htm

"Survival of five species of captive marine mammals", specifically exclude any animals in their calculations who fall within an 'acclimatization period' and explain this as follows "*The stress involved in the capture and transfer of wild marine mammals into captivity requires that an acclimation period be considered when estimating survival. In addition, the probability of mortality is relatively high for newborn animals in captivity, and this potential bias must be taken into consideration. For the results presented herein, we arbitrarily choose an acclimation period of 3 d, primarily to exclude stillborn deaths and mortalities resulting from complications at birth*." – therefore any animals who die during capture, immediately after capture or during (or immediately after) childbirth (including the newborn, whether alive or dead) are not included in their calculations – giving a false impression of survival rates of dolphins in captivity.

In 2004 there were more than 45 orca in captivity worldwide, at 12 facilities. Of these, at least six individuals were the only orca at the facility listed (Lück & Jiang, 2007). Other individual orca within the remaining 39, should however, considered as 'solitary' individuals (although held within multi-animal parks) as they are kept in solitary confinement (*e.g.* Tillikum the male orca responsible for the death of a trainer in February 2010). Since the Lück & Jiang (2007) publication some individuals listed have died, whilst others have been born.

4. RECENT DEATHS.

A roll-call of recent deaths (2004-2011, *i.e.,* data subsequent to the Lück & Jiang (2007) anaylsis) lists 20 individuals, the oldest of whom was estimated to be only 28 years old and the youngest only three days. Of note is that appendix does not include still-born calves.

Ridgeway (1979) noted that captive female orca appear to have a higher rate of mortality than males. Within in North America, causes of death for captive orca (determined by necropsy) included mediastinal abscesses, pyometra, pneumonia, influenza, salmonellosis, nephritis, Chediak-Higashi syndrome, fungus infection, ruptured aorta, cerebral hemorrhage and a perforated post-pyloric ulcer (Ridgway, 1979), drowning (& bacteria) (Griffin and Goldsberny, 1968; Klontz, 1970) as well as injuries as the result of aggression between orca (Jett & Ventre, 2011). Aggression is typically understated and often not reported to the media, however there are extensive lists available on the internet (*e.g.,* see Orca Agression [3] for some examples).

5. FINANCIAL & INTRINSIC VALUE.

Although there may not necessarily be a direct financial benefit to the *Dolfinarium Harderwijk* for the transfer of Morgan to another facility, such a transfer will almost certainly result in indirect, significant benefit(s) for the *Dolfinarium Harderwijk.* In the past, as noted above, the *Dolfinarium Harderwijk* received two other cetaceans as 'trade' for a female orca (PBS Frontline[4]).

We are aware that it is not the role of this report to speculate what these benefit(s) may be, but it is imperative that the Governing body that decides the outcome of Morgan's fate is aware of such implications and how they will (directly or indirectly) influence the *Dolfinarium Harderwijk's* position.

[3] http://webspace.webring.com/people/sl/little_orca/OrcaAgression.html

[4] http://www.pbs.org/wgbh/pages/frontline/shows/whales/seaworld/gudrun/

Furthermore, facilities which hold captive orca are businesses, with an incredibly strong fiscal interest in the animals. Vancouver Aquarium, Canada, indicated total revenues of almost $US 11.2 million and the theme parks of Anheuser Busch (which include Sea World) generated revenue of $US 1.1 billion in 2005 (Lück & Jiang, 2007, and references therein).

Any orca in captivity is naturally worth a lot of money (although we could not establish the exact fiscal value of an orca, despite contacting facilities such as *SeaWorld*, USA – who declined to supply this information based on 'privacy' and 'corporate sensitivity' reasons). However, we did locate a newspaper article[5] (26 February, 2010) that cites an orca to be valued at upwards of US$10 million. This same article contains the following quote "*SeaWorld operations are built around Shamu* [a named orca] *and the orca. So quantitatively they mean literally hundreds of millions of dollars to that company*..." said Dennis Speigel, president of International Theme Park Services, a consulting firm. Therefore, they have a vested interest in such animals and stand to make a substantial financial gain from holding them.

To illustrate such a point, the authors have been informed (from a source who wished to remain anonymous), that the number of visitors at the *Dolfinarium Harderwijk* has increased by 20,000 specifically during the period that Morgan has been held (*i.e.,* in one year). Whilst we observed Morgan during the four days in June 2011, we estimated that more than 300 people per day came to view her whilst they were at the *Dolfinarium Harderwijk*, some of which told us directly that they had come specifically to see Morgan. "*For visitors attending facilities where marine mammals are kept, orca are the most popular species among visitors. …… and it is indeed not uncommon that more than 500 visitors attend each of the several daily shows at marine parks*" (Wright & Kelsey, 1990 as cited in Lück & Jiang, 2007,).

With these five aspects in mind, there is an obvious conflict of interest in the *Dolfinarium Harderwijk* commissioning the report on Morgans suitability for release, as they have clear incentives to keep Morgan with the captive orca population.

Without such aspects in mind it might be unclear, with the *Dolfinarium Harderwijk's* commendable work in rehabilitation and release work of other cetaceans (notably harbour porpoises), why they should be so adverse to a similar program involving Morgan. It could also be unexplainable in light of the cooperative nature under which the Free Morgan Rehabilitation and Release Plan was prepared and that this Plan was presented to the *Dolfinarium Harderwijk*. However, perhaps the five aspects outlined above establish the reasoning for the apparent different motives, with regards to this individual animal.

Notwithstanding all of these points, by even *attempting* to rehabilitate and release Morgan a precedent will be set regarding orca in need of help, which may have long-term and far reaching detrimental implications to the captivity industry (*i.e.,* if the release of Morgan is attempted, or furthermore actually successful, other orca in need of help may be considered for release). Conversely, if Morgan is condemned to a life in captivity without an attempt at rehabilitation and release a precedent will be set for any orca, which may require help, to be automatically institutionalised into captivity.

[5] http://www.nctimes.com/news/national/article_c45d0f5e-825e-5deb-9065-dbe4edbb82b5.html#ixzz1RFJzIAty

Orca in Captivity; Education versus Entertainment

Today, many zoos and aquariums claim that their primary function is to conserve species and educate people about conservation and threatened species. Zoos no longer want to be menageries, but instead show animals in enclosures resembling their natural habitats. Yet little is taught about natural behaviours, ecology, demographics or population distribution at marine parks and oceanaria (Rose & Farinato, 1995).

For visitors to marine parks, entertainment is the prevalent motivation for attendance (Wright & Kelsey, 1990). In Western society, the word 'entertainment' is closely associated with recreation, whilst 'education' with work or school environments.

Typically the information portrayed by a facility holding captive orca is 'sanitized' and staff are prompted with the facilities appropriate responses (*e.g.,* see Jeff & Ventre, 2011). The information becomes an exercise in public relations, rather than public education.

Dr. Lori Marino states[6] that "…..*the educational claims made by the captivity industry have absolutely no foundation. There's no compelling evidence, at all, that visiting dolphin shows and seeing dolphin and whale displays is educational. I've done a lot of research in this area and I've published peer-reviewed papers that show this so-called "educational claim" is not supported by any evidence. …. In addition, I've done a lot of research on the information on AZA* [Association of Zoos & Aquariums] *websites, or websites of AZA facilities, and a lot of the information is factually incorrect. So I would ask you, how can it be educational if it is wrong?* ***The public should not confuse entertainment with education.***" [our emphasis].

Most notably in the context of this report, are the messages being delivering regarding Morgan. For instance, although aimed primarily at children and ingeniously camouflaged as if written by Morgan herself, messages appear in both a 'blog' and a 'facebook' type page about Morgan. Often rhetoric in nature, they also mislead the public with false information. The comments are strongly-biased towards pro-captivity.

Extracts from these follow; (Original Dutch version: **www.vriendenvanmorgan.nl)**

"Morgan, het vrolijke orka-kleutermeisje woont in het Dolfinarium in Harderwijk. Daar is ze liefdevol opgevangen en wordt ze heel goed verzorgd. Ze wordt er zelfs voor een wisse dood behoed!
Als Vriend van Morgan voel je je begaan met haar wel en wee. Zo kunnen alle vrienden samen er aan bijdragen dat Morgan een superleuk leven heeft.
Morgan is slim, ze verdient de vriendschap van **alle Nederlanders**. Ze mag beslist niet de angst hebben dat sommige mensen haar gedwongen willen vrijlaten. Dat zou haar dood betekenen!"

Translation (all by Hella Martens) from Friends of Morgan website blog:

Morgan, the happy orca toddler girl lives in the Dolphinarium in Harderwijk. There she is lovingly accommodated and very well taken care of. She is even being protected from (a certain?) death.
As a friend of Morgan you feel concerned about her well-being. This way, all friends together can contribute to Morgan having a super fun life.
Morgan is smart, she deserves the friendship of **all Dutch people**.
She should definitely not be scared that some people want to force her release. That would mean her death!

Translation (all by Hella Martens) Hyves (Dutch version of Facebook) posts.

15 May at 09:55

6 http://animal.discovery.com/tv/blood-dolphins/dolphins/opposition-dolphins-captivity.html

Original: "Morgan heeft de zon weer op haar hoofd en geniet van een heerlijke dag! Hoe kan het ook anders met zo'n liefdevolle verzorging!"

Translation: Morgan has the sun shining on her face again and is enjoying a wonderful day! How can it be any different with such loving care!

20 May at 08:59

Original: "De zon schijnt weer heerlijk op mijn Orka bolletje. Heb het naar mijn zin!!!"

Translation: The sun is shining nicely on my little Orca head again. I'm having a good time!!!

02 June at 10:27

Original: "Hallo vrienden, ik zie dat er steeds meer mensen bijkomen en dat vind ik erg leuk!! Ook Bleker steunt mijn verzorgers van het Dolfinarium! Gelukkig maar, anders zou ik misschien ergens in een zee ronddrijven en daar heb ik helemaal geen zin in! Vanmiddag zie ik weer allerlei mensen die ik dan nog eens lekker nat kan spetteren!"

Translation: Hello friends, I notice more people joining and I really like that. Also Bleker* is supporting my caretakers of the Dolfinarium! I 'm happy about that, otherwise I would be floating around somewhere in the ocean and I do not feel like that at all! This afternoon I will be seeing lots of people again that I can splash.

* Bleker is the State Secretary for Economic Affairs, Agriculture and Innovation

25 June 2011 at 13:54

Original: "Hoor ik weer van die rare dingen! Schijnen ze in de tweede kamer vragen over mij te hebben gesteld? Waarom ik nog in het Dolfinarium zit, hoe lang ik daar nog blijf, dat ik ergens anders naar toe moet! Wat een onzin!

Zoals ik al eerder heb gezegd; met mij gaat het hier hartstikke goed. Laten ze nou in de Tweede Kamer echt belangrijke zaken bespreken. Zoals het stopzetten van de subsidie aan theatergezelschappen bijvoorbeeld. Dat is pas onrecht. Lieve mensen: mij wordt geen onrecht aangedaan. Ik zie mijn verzorgers iedere dag en ze zijn ongelovelijk aardig en zorgzaam voor mij."

Translation: I'm hearing these weird things again. Apparently the "House of Representatives" has been asking questions about me? Why I am still based at the Dolfinariun, how much longer I will still be staying there, and that I should be moved somewhere else! What a bunch of nonsense!

As I have said before, I am doing perfectly well in here. Let the "House of Representatives" start discussing more important things, such as cutting funds on theatre companies for example. That is what I call injustice. Dear people: I'm not being mistreated (wronged?). I see my caretakers every day and they are incredibly nice and caring to me.

Captive Orca in the Context of Morgan

Given that it is highly likely that Morgan, if transferred to another facility holding captive orca, will be forced into a breeding program, the following points should be noted;

1. Female orca in captivity give birth at a much younger age than in the wild, *e.g.,* eight years in captivity (Duffield et al. 1995) *cf.* wild populations (10-15 years, Amano et al (2011); 11 years, Ford et al, 1994), 14.1-14.9 years, Olesiuk et al., 1990, 2005) Therefore Morgan would be exposed to the risks associated with child-birth in a

young mother. Orca have been known to die during the birthing process in captivity, yet no such deaths have been recorded in the wild.

2. There is a low survival rate of the offspring born into captive situations with many foetuses still-born (*e.g.,* Kastelein et al. 2009). Small and DeMasters (1995) state: "…*the probability of mortality is relatively high for newborn animals in captivity*".

3. Marine mammal captive facilities typically portray breeding as indicating that the animals are 'happy', 'content' and 'healthy', however it is a strong and driving biological function (of any animal) to procreate. The analogy could be given for humans, where in the extreme conditions of physical degradation and mental stress such as is often found in refugee camps, or those conditions to which rape victims are subjected, females are still known to conceive and give birth (*e.g.,* Shrimpton et al. 2009), despite undesirable mental and physical conditions.

Recently the *Dolfinarium Harderwijk* has begun to use the term '*adoptive family*' when referring to moving Morgan to another facility which holds captive orca. Immediately, it should be noted that the term '*adoptive family'* is deliberately misleading. Orca currently held captive in facilities around the world are not necessarily true families, as they are human constructed pseudo-families (false families) which in reality are actually artificial social groupings (Williams, 2001). The animals within these groups often share no ancestral, cultural or communication similarities. These pseudo-families are manipulated by humans, as it is they, not the orca, who decide whom will mate with whom and, generally, this is done through artificial insemination. For this procedure the sperm is collected manually from the male orca (human's masturbate the male orca) and thenceforth the sperm is manually inserted into the female orca (who is monitored daily for her 'cycle'). This manual insertion brings health risks to the female, through introduction of bacteria into the reproductive system.

It is false to presume that a captive pseudo-family to which Morgan was transferred into would 'adopt' her. Rather, these orca would actually, in fact, be forced by physical proximity to cohabitate with her. In the real sense of the 'adoption' process an individual (or family) assumes the parenting for another and, in so doing, permanently transfers all rights and responsibilities from the original parent(s). Neither event (parenting or responsibility), will be performed by any pseudo-family of orca, rather it would only be the human trainers who would care for and feed her.

Therefore, it is obvious this terminology has been instigated by the *Dolfinarium Harderwijk* to portray a positive impression of transferring Morgan to another captive facility which houses orca. Unfortunately the obvious alternative of offering Morgan the chance of rehabilitation and release to meet with a wild orca group has gone unheeded by the *Dolfinarium Harderwijk.* In such a situation, the possibility of true 'adoption' could eventuate. There have been various sightings of orca in the North Sea, the section of the Atlantic Ocean between Great Britain and Scandinavia, since Morgan's capture (*i.e.,* in the last year)[7], yet to our knowledge there were no attempts made to collect DNA from these animals to try and establish if they were in any way related to Morgan.

Additionally, it is significant and meaningful to understand that within captive orca populations there is often a very rigid, strongly maintained and well-established hierarchy.

[7] http://www.expatica.com/nl/news/dutch-news/rare-sighting-of-orcas-in-north-sea_143357.html

There are many instances where captive orca have rejected 'newcomers' forced into their groups by 'transfers' such as the one suggested for Morgan. These rejections have included physical altercations, which have resulted in the injury and/or deaths of individual orca. Although often glossed over by the captive industry (due to obvious bad implications of injury and/or death), there is nonetheless a very real risk for Morgan, should she be transferred to a captive orca population that has no control over the situation forced on them.

Captive Orca Facilities

Notwithstanding all the relevant points above, it is of no less significance to keep in mind that NO captive orca facility in the world has;

1. A holding, or display, or performance tank which begins to approximate that of a natural (or even semi-natural) environment. In contrast the tanks are usually straight walled and flat bottomed to aid in cleaning (although some have various levels and depths). These underwater man-made 'boxes' produce acoustic reverberation environments and the animals quickly learn all features of and, within, the tank. The orca, which in the wild would generally vocalize and echolocate extensively, no longer utilize these senses. The echoes may irritate the animals or it may simply be a fact that complete and total familiarity of the tank leads to an almost total extinguishing of their use. Additionally, orca in captivity typically swim around with their eyes closed (authors personal observations).

2. Sufficient space to allow even limited exodus. Individual orca are known to travel large distances in the wild (*e.g.,* 2,660 km, Goley & Straley (1994); 4,435 km, Dahlheim et al. (2008); with one well marked individual travelling over a minimum distance of 15,600 km in six years, Visser (1999)). Additionally individual orca are known to travel substantial distances within short timeframes (*e.g.,* 71.8 km in 24 hours (the orca known as 'Keiko', from *Free Willy*), Simon et al. (2009); 124 km in 17 hours, Lowry et al. (1987); 111 km in 24 hr, Visser (1999); 160 km in 24 hr, Baird (2000); 3,267 km within 77 days, Dahlheim et al. (2008).

One orca from the Norwegian population, which Morgan is purported to be from, is known to have travelled 700 km from it's previous sighting a year earlier (Lyrholm, 1988). Of course, Morgan herself, has apparently travelled from the Norway region into the Wadden Sea, a distance (depending on exact locations used for measurement) of approximately 1,200 km.

Such movements by wild orca should be taken into consideration in respect of transferring Morgan to another captive orca facility, as the largest captive orca tank in the world is only 22.9m x 51.8m (this being the largest pool in a seven-pool complex). It is maintained at *SeaWorld*, Orlando, Florida, USA and although may at first appear 'large', it actually houses seven orca. Currently, in terms of world-wide statistics, Morgan is the orca held in the smallest tank (*i.e.,* 7.72 x 20.42m). The next smallest is held in an only slightly larger tank of only 10.7m x 24.4m, (a lone adult female orca, held at Miami Seaquarium, Florida, USA). **In contrast the proposed site of Deltapark Neeltje Jans has an area of 252m x 300m that can be netted off and used for the rehabilitation of Morgan.**

It must also be kept in mind that *"... infighting amongst captive orcas is exacerbated by virtue of having no place to run, as confinement fails to provide spatial escape options that natural settings offer. As a result, social strife is common in captivity, including aggression, in which whales are cut, raked, and rammed, usually by members higher on*

the social ladder. In one particularly brutal example, Kandu V, a female orca at Sea World of California (SWC), bled to death after 11.9 years (4332 days) in captivity when an artery was severed at the upper jaw. The wound was self-inflicted as she collided with another whale in a display of dominance. Over the next 45 minutes, and in view of the public, she slowly bled out, spouting blood from her blowhole until she died." (Jett & Ventre, 2011).

3. Provides water of sufficient depth to allow the animals to experience their natural diving capabilities. Orca are known to be able to dive to at least 264 m (Baird et al. 2005), but it is highly likely that they can dive much deeper. Diving to depth is not restricted to older animals, as a three year old male orca has been recorded diving to 148 m and a three year old female to 135 m (Baird et al. 2005). The maximum depth of any captive orca facility tank in the world, is 10.4m (found in the show pool at *SeaWorld*, Orlando, Florida, USA). The minimum depth (not including the current facility Morgan is held in, at less than 3m) is similar for two facilities holding orca; one the at the Miami Seaquarium, USA (the center portion of the tank at 6.1m, sloping up to 3.7m along the edges) and the other at Mundo Marino, Argentina (6 m, with a ledge around the side of the tank at less than 1m). **In contrast the proposed site of Deltapark Neeltje Jans has an area which has an average water depth of ~ 5 m at low tide, and ~ 10 meters at high tide.**

Orca in captivity are known to languish at the surface and may get sunburnt (*e.g.,* Jett & Ventre, 2011) or be exposed to mosquitos and the pathogens they carry which can result in death (*e.g.,* Buck, et al., 1993). Of note is that Morgan's tank provides abosolutely no shade from the sun and the potentially harmful UV rays. The water clarity and the extreme shallow nature of the tank prevents Morgan from even submerging to a depth where she could potentially be protected.

Furthermore, as far as we are aware, only two facilities (Marineland Antibes, France & Loro Parque, Spain) currently provides natural sea water for the orca (a third, at Taiji, Japan kept a lone orca in a small cove for over 24 years, but shortly after transferring her to a 'standard' facility she died). At all other facilities the water is treated through various chemical processes such as chlorination. Chlorination is a widely used method within the captive marine mammal industry for disinfecting water that cetaceans are held in. It uses a chemical process that oxidizes (and therefore, kills) 99.9% of bacteria in the water. "Free" chlorine is typically kept around 0.6 parts per million in the water. Whilst it is an effective way of limiting bacteria in the water, it can also irritate the eyes and skin of the animals living in it, especially if rising above 1 part per million.

Although most cetaceans can tolerate the lower levels of chlorine in the water for extended periods, however, since it creates (in the ideal circumstance) a sterile environment, this can generally lead to weakened immune systems in these animals. Naturally a weakened immune system makes them more susceptible to bacterial infections. If the delicate balance of water chlorination becomes unbalanced (*e.g.,* too much or too little free chlorine), or the animals are introduced to new bacteria through other means (*e.g.,* through human contact, contaminated food, etc) the animals are particularly susceptible. One of the authors (Hardie), whilst working at a captive cetacean facility observed first hand such issues with dolphins (*Turisops truncatus*), resulting in the death of at least one dolphin.

Cetaceans are extremely sensitive to certain land-borne bacteria, such as erysipelas (an acute streptococcus bacterial infection of the deep epidermis with lymphatic spread), which is often fatal. This bacteria is extremely common in livestock and pinnipeds and can

therefore be spread to cetaceans. Chlorination of the water attempts to control this and other potential bacteria. There are also other factors involved in managing chlorine in large "closed-loop" / recirculating (*i.e.,* tank) filtration systems, such as dealing with "combined chlorine" (chlorine that has reacted with an organic contaminates) in the water, which are outside of the scope of this document.

As far as we are aware, no captive orca facility allows any orca to capture their own food. All food provided to orca is dead, yet in the wild they are carnivores who do not scavenge. The volume of food as well as the type of food, is strictly controlled by the trainers/veterinarians/owners, *e.g.,* captive orca are fed herring *cf* to perhaps their natural diet of salmon or seal). We are aware of the health implications of overfeeding a captive cetacean, yet there are no reports of over-weight cetaceans in the wild.

Additionally, as far as we can ascertain, all facilities require their orca to 'perform' shows in return for food. If the animals do not perform, they are given a reduced volume of food as they have to 'earn their keep' by providing entertainment for the visitors.

To our knowledge all captive orca facilities require the orca to perform shows that are accompanied each and every time (in many case more than once daily) by excessively loud music. Orca are known to be acoustically sensitive, yet are subjected to, and can not avoid, noise levels that may be debilitating and at the very least frustrating to them.

Furthermore, captive orca facilities are typically established to provide maximum viewing potential for the human visitors. Therefore the tanks are characteristically painted a vibrant blue, which reflects light. This induces the captive orca, with their sensitive eyes, to classically swim with their eyes shut. Pointedly missing are any references to the 'wild' world of the open ocean – there are no 'seascapes' painted on the walls, no fish, turtles or other sealife depicted, just bare blue walls.

Not only are the tanks blue, but they are usually built with underwater viewing windows, limiting the locations to few (if any) areas where the orca can avoid inspection by humans. More significantly, commonly there is no area where an individual orca can escape unwanted attentions of conspecifics or trainers. Although most facilities have multiple interconnected tanks and tout that these are freely available to the animals, in reality these areas are usually gated off and access is strictly controlled. The main 'show tank' is generally off-limits during extended periods of time during the day and in many facilities the animals are 'housed' in small confined tanks overnight. Many are kept in solitary confinement for extended periods of their lives, despite other orca being held at the same facility.

Although it can be argued that captive animals are 'well provided for' and do not have to deal with the everyday challenges or stress such as avoiding predators or the weather or finding food, substantial scientific evidence is accumulating that 'well provided for' is not enough to produce a life that is fitting for a sentient being (*e.g.,* see Špinka & Wemelsfelder, 2011 and references therein). Rather, the alternative, *i.e.,* to provide challenges for these animals, is imperative. Such challenges are what motivates an animal to have positive mental and physical stimulation and engage actively with the environment. Significantly, a range of captive animals has been tested and they all show a preference for such engagement (*e.g.,* see Harlow, 1950, Langbein et al. 2009; Wood-Gush and Vestergaard, 1991). Captive orca are not provided with such an opportunity to actively engage with challenges.

No humane zoological parks, safari parks or any other similar captive animal situation in the Western world are legally permitted to keep animals in stark and depraved situations such as those found in captive orca facilities. Reasonably, these other types of captive animal facilities are now expected, and in most countries legally mandated, to provide minimum standards which far outweigh those found in 'dolphinariums' such as those where orca are held captive. These standards include, but are not limited to 'natural-like' or 'semi-natural' enclosures with enhanced environmental enrichment, such as vegetation, varied feeding times, natural food, varied food, areas to avoid contact, cohesive social groups, large enclosures and enclosures with dynamic features such as a stream, trees, rocks etc. Yet the stark, empty 'blue box' scenario is the only type of facility which the *Dolfinarium Harderwijk* wishes Morgan to be transferred to.

It is entirely possible that the transfer of Morgan will be suggested as appropriate under the auspices of promoting 'education' and 'conservation'. However, the Governing body who will decide the fate of Morgan should consider the recent report by Marino et al. (2010) which sharply called into question the validity of a study (conducted by the American Zoo and Aquarium Association). Modern-day zoos and aquariums market themselves as places of education and conservation, yet Marino et al. (2010) concluded that there remains no compelling evidence for the claim that such institutions promote attitude change, education, or interest in conservation in visitors. Likewise, the capture of Morgan and her subsequent confinement in captivity does nothing towards conservation and has extremely limited (if any) educational value.

Therefore, although the Dolfinarium Harderwijk has suggested that Morgan be transferred to a facility holding other captive orca, the authors and the other members of the Free Morgan Expert Board, ***strongly*** *recommend that this is not a suitable solution. This is especially true in light of the very real feasibility of Morgan being rehabilitated and released into the wild to join other free ranging orca.*

Figure 22. Morgan attempting to gain visual attention at the only 'clear' panel as the last visitors leave for the day. photo © Dr. Ingrid N. Visser, June 2011.

Clarification of Points regarding the Suitability of Morgan for Rehabilitation and Release.

Points have been raised about the suitability of Morgan with respect to rehabilitated and eventual release back into the wild. These points and their counter opinions are outlined in the following section.

- ***Morgan is not able to 'cope' with a return to the wild.***

As indicated above, we strongly believe that Morgan is a prime candidate for rehabilitation and release. She appears alert, highly motivated and although not physically fit, in good physical health.

Again, it should be noted that the *Dolfinarium Harderwijk* is to be commended in their role. Additionally, it should be pointed out that the *Dolfinarium Harderwijk* was not excluded from the Free Morgan Expert Board rehabilitation and release plan, but rather encouraged to remain involved and we reiterate that we would welcome their expertise to facilitate the rehabilitation and release of Morgan.

For full details of the Release and Rehabilitation Plan (henceforth referred to as 'The Plan') please see www.freemorgan.nl, but for clarification we outline the salient points here.

The Plan included a number of phases, each with contingency plans. It incorporated a 'soft-release' where Morgan would first be moved to a sea-pen (*i.e.,* natural sea water instead of the chlorinated water she is currently held in) and care for her would continue. Her care would be extended dramatically to include significantly more mental stimulation.

The process of rehabilitation would also, should her health allow, involve taking Morgan out into the open sea to increase her fitness and reacquaint her with the area from which she was captured. During all this time she would be provided with food whilst she continued to readapt to the wild (somewhat like a 'half-way house' for people who are in the process of reintegrating into society).

The Plan called for Morgan to be taught to forage for live fish, dive for extended periods and to increase her physical fitness. She would then be taught to disassociate her "artificial feeding conditioning" behaviour from feeding (a common description of this would be the familiar term 'begging'). This begging behaviour was instigated by the trainers at *Dolfinarium Harderwijk* whilst she was held in captivity. It is a classical behaviour for captive orca, but is never seen in the wild.

Figure 23. Morgan exhibiting "artificial feeding conditioning" behaviour, commonly known as 'begging' (photo is blurry as it is taken through an opaque panel). photo © Dr. Ingrid N. Visser, June 2011.

All these processes are standard techniques for rehabilitating cetaceans for their return to the wild and although they may take time, they are all feasible and we cannot emphasise enough what a prime candidate Morgan is to undergo such training.

SPECIAL NOTE: Should it become necessary, Morgan can be cared for long-term (or indefinitely) in such a semi-natural facility. Although *DeltaPark Neeltje Jans* is currently proposed as the sea-pen site, if this option was not appropriate for long-term care, alternative facilities could be investigated. Although long-term care in a sea-pen is not an ideal situation, from the point of view of ultimate rehabilitation and release back into the wild, it is **far** superior to her confinement in the small concrete tank, with chlorinated water, she is currently held in and is also far superior to any other captive orca facility.

- ***We don't know Morgans family and therefore we can't find her family, hence she can't be returned to the wild.***

Despite efforts by the *Dolfinarium Harderwijk* and researchers at St. Andrews University, by investigating Morgan's DNA and comparing it to other individuals in the North East Atlantic orca population, it is not known exactly which group Morgan eventuated from.

Without this knowledge, therefore, it is unknown if her family group is still alive. If alive, their approximate location cannot be established. These are all arguments used against her rehabilitation and release. It cannot be emphasised enough that as very little is known about the social structure of the North East Atlantic orca population.

Orca have been stranded on the Netherlands coast before (26 individuals between the years 1783-1995, four of which were immature females) (Kompanje,1995). Additionally, in 1832 an orca of unknown sex was sighted in the Wadden Sea and killed (Kompanje,1995). Although orca sightings and strandings are not historically frequent along the Netherlands coast, more recently sightings have been increasing in number (see above) and it cannot be ruled out that these individuals are part of Morgans family.

Appropriately, great importance is often placed on finding the family or home range of rehabilitated animals (of all species) that are returned to the wild. The advantage for the animal(s) is wide-ranging and can have many spin-offs to assist them in their return to a wild state. This includes the social support and local knowledge (such as places to find food).

Orca are well known for their strong social networks, with some populations having such strong bonds that individuals only join a group by being born into it and only leave by dying, whist others have more of a fluid society with long-term and semi-long term bonds formed.

Fundamental to the argument revolving around Morgans 'requirement' locating her family before she can be released, are the studies done on orca in the Pacific North West, making them among the best studied of cetacean species (Ford, 2002), (*e.g.,* see Baird, & Dill (1995); Bigg, & Wolman (1975); Bigg, et al. (1987); Ford (1982); Ford, et al. (1994); Olesiuk et al. (1990) for some of the many examples). These studies, which are among some of the longest running studies of any cetacean population in the world, are well respected and often used as the 'standard' for comparisons to other orca populations or as models for orca research. They have demonstrated that there are at least some

communities of orca that have social bonds which apparently preclude social acceptance of any non-family members (*i.e.,* 'strangers' are not found in the groups, only family members). For instance, the so-called "Resident" orca travel in long-term stable groups comprised of several maternal lineages (Bigg et al. 1990).

However, conversely, even within such regimented social structure there is evidence that non-family members can be actively integrated. This is illustrated by a young mother orca who had lost her calf and subsequently attempted, with the assistance of other members of her family group, to remove a young calf from it's biological mother (*i.e.,* to 'kidnap' the orca calf from another family) (Dr. A. M van Ginneken, personal communication to Visser).

Additionally, studies conducted on sympatric populations of orca (*i.e.,* orca who live in the same area, at the same time, but are comprised of different populations) have shown dispersal from family groups. Among the so-called 'Transient' orca, all female offspring and all but one male offspring seem to disperse from their maternal groups (social dispersal), but dispersing offspring continue to use their natal range (Baird 1994; Ford, 2002). One Norwegian orca has dispersed to various groups (Stenersen & Similä 2004).

Likewise, studies in other areas of the world have shown that there are fluid fission-fusion type groups of orca, where groups may remain stable for extended periods, but be joined by other individuals (or individuals may leave) *e.g.,* New Zealand where an individual orca may have at least 40 known 'associates' (Visser, 2000) and Argentina where group composition may remain stable between seasons or may fluctuate within a single season (J. M. Copello, Punta Norte Orca Research, personal communication to Visser).

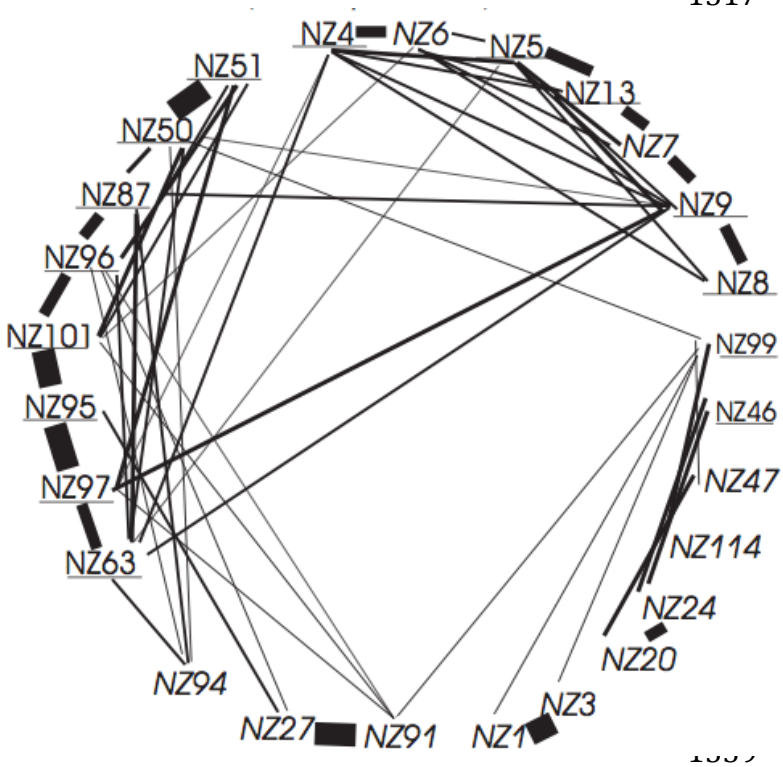

Figure 24. An 'association indices plot' showing the degree to which individual orca within the New Zealand wild orca population mix.

The numbers represent individual orca and the thickness of the lines joining the individuals indicates the amount of time they have been observed together (whereby a thick line denotes more time than a thin line).

An absence of a line joining individuals indicates the animals have not been observed together. Figure extracted from Visser (2000).

Such a fluid fission-fusion type society may be more the norm, rather than the regimented 'born-live-die' integration represented by the 'Resident' orca of the Pacific North West. Regardless of the social structure of the population which Morgan, if given the chance, may integrate into, no young female orca has been released into an 'unknown' population and it

is unclear how she or the other orca will react. This is why various contingency plans have been proposed, including the ability to 'recall' Morgan to the sea-pen, if necessary.

It should not be forgotten that Morgan is apparently from the Norwegian fish-eating orca community (based on DNA analysis and supporting evidence from acoustical matching)[8]. The social structure and occurrence of the Norwegian orca has been studied to some degree (*e.g.,* see Bisther & Vongraven 1995; Ugarte, 2001, Similä, et al., 1996). Two of these studies suggest that the "*groups seem to be social units based at least partly on stable membership*". One study also noted that there was communal care of young, as well as 'alloparenting', where a non-biological adult takes over the role of the parent for varying lengths of time (*i.e.,* 'babysitting') (Bisther & Vongraven 1995) which may bode well for Morgan if she is given the opportunity to re-integrate into the population.

With regards to finding Morgan's family, it should also be noted that Morgan will only be released if she is physically fit. Despite arriving into the Wadden Sea in an emaciated and dehydrated condition, she has been nursed back to remarkable health. The next step will be to train her to peak fitness, where she could easily swim to Norway or surrounds. Wild animals have been well-documented undertaking extensive and arduous journeys to return to their family and/or their home range. Animals can move big distances to return home (*e.g.,* Rogers 1988 and multiple examples on the internet[9]).

Once within acoustical range of orca she may locate her family group, without our assistance. Notwithstanding, she may purposely reject her family (as we do not know why she was alone and she may have been rejected herself) and instead seek another population or group of orca.

Furthermore, as outlined in The Plan, it is possible for Morgan to lead a fulfilling life as a 'solitary' cetacean. She could choose not to socialise with others of her kind as has been observed with some individual cetaceans for centuries (*e.g.,* see Table 1, in Goodwin & Dodds (2008) where 91 individuals 'solitary' cetaceans were recorded between 109AD and 2008, three of which were orca. An additional two orca from New Zealand can be added to this list (Visser, unpublished data). In Canada a solitary orca, who became the feature of a documentary ("*Saving Luna*"), remained solitary for approximately five years (between 2001-2006, Goodwin & Dodds (2008) without feeding or husbandry from humans. He remained highly motivated to interact with humans (personal observations, authors) as well as other animals (*e.g.,* dogs). He may have remained solitary and continued to independently feed himself, indefinitely, if he had not been killed by a boat strike. In the Pacific Northwest lone orca are observed (Ford, 2002; Baird and Stacey, 1989).

Alternatively, Morgan may seek the company of other cetaceans of different species (such as the bottlenose dolphins she has been constantly orientating toward whilst at *Dolfinarium Harderwijk*). Such mixed species groups are not uncommon and involve a wide range of cetacean species (*e.g.,* see Psarakos & Herzing, et al. (2003); Herzing & Johnson (1997); Baraff & Asmutis-Silvia (1998); Baird (1998); Jefferson et al. (2006) for just a few examples). Orca are no exception to such mixed-species groupings, with records existing for mixing (in a non-predatory manner) with at least 26 different species of cetaceans (Jefferson et al 1991).

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[8] "Research on Morgan by Project NAKID". www.northatlantickillerwhales.com/index.asp?pageid=276423 (accessed 24 June 2011).

[9] http://animals.howstuffworks.com/pets/6-pets-that-traveled-long-distances-to-get-home.htm

If Morgan chooses either a life style accompanying another species, or a solitary one, common sense dictates that this clearly should be her choice and that either option is certainly better than the impoverished situation she is currently kept in, where her solitary state is forced upon her, despite her repeated attempts to join the dolphins in the adjacent tank.

Unfortunately, the message that Morgan can only be released if her family are located first, has been continually portrayed to the unsuspecting public as the main reason she cannot be returned to the wild. For example, whilst both authors were at the *Dolfinarium Harderwijk* the 'interpretive' staff standing in front of Morgan's tank (and verbally giving out information about orca as well as Morgan), were heard a number of times to give erroneous information and to be ill-informed about certain aspects (*e.g.,* that Morgan required her family in order for her to be rehabilitated instead of the correct answer that we just don't know if she requires her family or not in order for her survive in the wild).

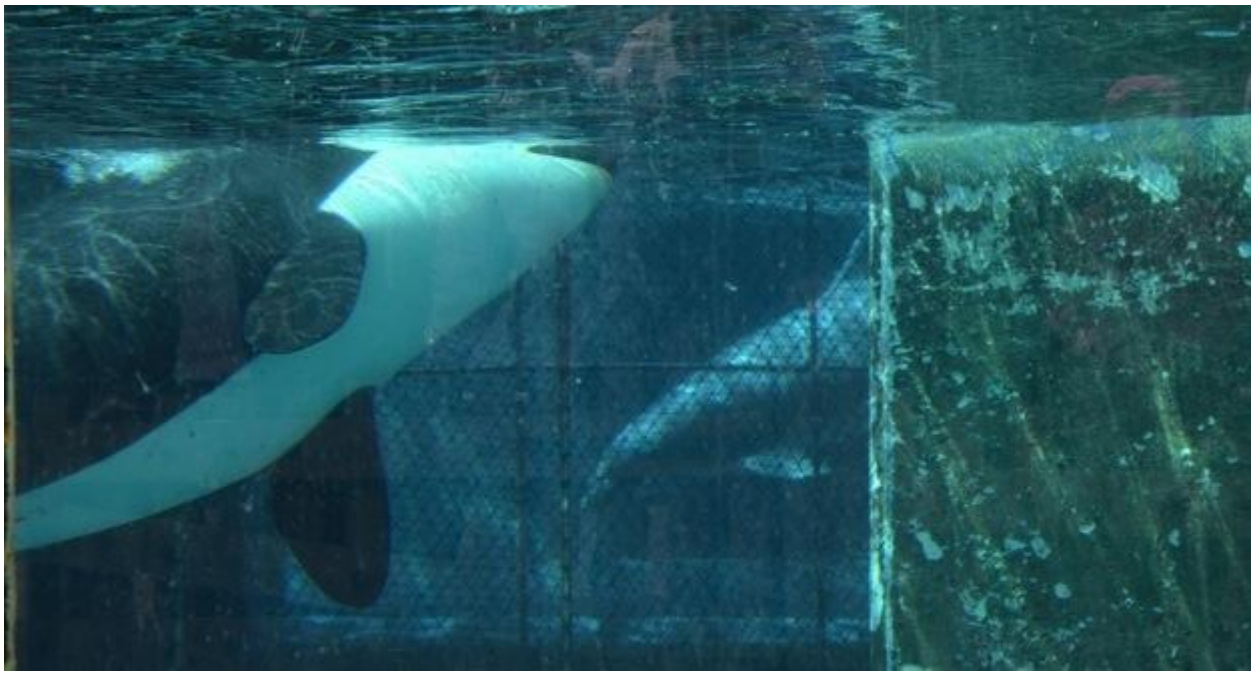

Figure 25. Morgan attempting to gain access to bottlenose dolphins in an adjacent tank, indicating that she still desires to seek out 'company', which bodes well for rehabilitation and release.
photo © Dr. Ingrid N. Visser, June 2011.

When questioned about the possibility of transferring Morgan to a sea-pen they replied with '*I don't know about that*' (two different staff members on separate days, responded with the same answer, suggesting they had previously been prompted to respond to such probing questions in such a way). One staff member seemed genuinely interested in the possibility of releasing Morgan and questioned the authors about conceivable options with regards to the process. This also indicated to us that they had not received the information which had been supplied to the *Dolfinarium Harderwijk* by the Free Morgan group and were not aware that it was available to download at www.freemorgan.nl .

Therefore, in summary, if an attempt is made to use the argument that Morgan cannot be, at the very least, rehabilitated in a semi-natural sea-pen, or better yet rehabilitated and subsequently released in the wild, all because her family can't be found, the argument becomes indistinguishable from a direct attempt to sabotage any such rehabilitation and release. This comment can be made because we know so little about the social structure of the orca population which Morgan comes from and, furthermore we know little about how

Morgan will react (*e.g.,* she may locate her family herself, or decide to remain with dolphins) and she should, at the very least be given the opportunity to try.

- ***Morgan is too young to return to the wild.***

When first captured Morgan was 3.5 m and weighed 430 kg. As of June 2011 she has apparently grown to 3.65 m and weighs 1,100 kg (details supplied by staff member of *Dolfinarium Harderwijk* to authors on 21 June 2011).

It is not possible to establish her exact age, without removing a tooth (and this may also provide inconclusive data as the teeth of young orca maintain rapid growth until the animal is 4 or 5 years old, (Amano et al. 2011)), but estimates place her at between one to four years of age when she was captured, based on her size. At birth, neonate (newly born) orca are approximately 2-2.5 m long and weigh approximately 200 kg (Ford 2002), therefore Morgan was well above the weight of a neonate (despite being severely emaciated) as well as at least 1m longer.

Regardless of her age when first captured, she has now been in captivity for over one year, therefore, by default she is one year older. This makes her at least two years old and she may now be up to five years old. Young orca remain associated with their mother until she produces her next calf (on average every 4–6 years, Olesiuk et al. (1990, 2005), or 3.85 years (Amano et al. 2011)).

The scientists who analysed Morgan's DNA and acoustic repertoire, have suggested that Morgan was too young (when she was first captured), to be released. They stated that she would still have been 'heavily dependent on milk'[1], yet since the first day of her capture she has not been fed milk. Although Morgan was initially rehydrated with a tube, she soon began feeding and has since been taking fish and squid (never milk) (van Elk, 2010)[10].

Regardless of her exact age (*i.e.,* 2-5 years) young killer whales are believed to start taking solid food in the wild as young as 1.5–2 years of age (Haenel 1986) and in captivity from as young as two months of age (Kastelein et al., 2003) and three months of age (Asper et al., 1988). Captive young orca have been recorded as regularly eating fish by 5.5-6 months of age (Kastelein et al., 2003). Although calves in captivity have been shown to continue suckling until *c*. 18 months-two years of age (Kastelein et al., 2003; Asper et al., 1988), we reiterate here that Morgan has been taking only solid food since she was captured.

Morgan's young age offers both advantages and disadvantages to the arguments for her release. Being young she is likely to still have a flexible attitude and therefore an ability to adapt to a return to the wild. It is possible, although in no way known, that as she is a young female with breeding potential, that she may have a higher chance of integration into a social group of orca to which she is not related.

Against her is that she may be too young to know the complete home range of her family, making it harder for her to find them. This last argument, however, can be countered with the 'soft-release' part of The Plan that would allow Morgan to slowly build up her stamina as well as her knowledge of the area, albeit with the option to always return for food.

[10] information supplied by Steve Hearn, head trainer *Dolfinarium Harderwijk*, 22 June 2011.

Human assistance can be provided to locate free ranging orca and guide Morgan towards them. As she will be trained to follow a specific vessel this boat can be in radio contact with various 'spotters' who might sight orca and if some are located the vessel could be driven towards them. Morgan would then be provided with the opportunity to potentially initiate contact with the wild orca.

Keiko, the orca from the movie "*Free Willy*" was approximately 2.5 years of age when he was captured in Iceland and held in captivity. He remained in captivity (at various locations) for more than 19 years (Simon et al., 2009), before an attempt was made to rehabilitate and release him. However, age of the individual is not the issue at stake here, it is the suitability of the candidate which is of paramount importance. We strongly believe that Morgan is a prime candidate for rehabilitation and release back into the wild.

SPECIAL NOTE: Should it become necessary (*e.g.,* if an altercation eventuated in which it appeared that Morgan may become injured), she could be 'recalled' to the vessel and guided away from the orca.

- ***Morgan was found sick and will not be able to survive if released.***

The reason for her ill-health and separation from her family remains unknown. There has been widespread speculation as to the cause(s) and many have been suggested. Clearly, it is outside the scope of this Report to outline a complete list of possible scenarios as to why Morgan was found alone and in ill health. However, to allow the Governing body, which will decide Morgan's fate, to have a more comprehensive understanding of at least some of the possible circumstances that led Morgan to the Netherlands, we outline here that these generally fall into three main categories. (1) Voluntary separation (*e.g.,* Morgan left her family by choice). (2) Accidental separation (*e.g.,* Morgan got separated from her family and/or got 'lost' and subsequently couldn't relocate her family) and (3) Forced separation (*e.g.,* members of Morgans' family drove her out of the group, or perhaps her family group was chased by hunters and Morgan was separated and/or individuals were killed in her group and Morgan fled).

Upon her arrival at *Dolfinarium Harderwijk* the staff began a vigorous inspection of her health (van Elk, 2010). As well, a process of elimination was conducted, to ensure that all aspects of her health were assessed (van Elk, 2010) [2]. Morgan has since been issued with a 'clean bill of health' and therefore her rehabilitation and release is not restricted by any health issues.

Again, the *Dolfinarium Harderwijk* is to be highly commended on their role in nursing Morgan. It is clear to both authors, based on footage and photographs available publicly, that Morgan would not have survived without intervention. The care she has been given by *Dolfinarium Harderwijk* staff was critical to her current good state of health.

SPECIAL NOTE: Under the protocols suggested by the Free Morgan Rehabilitation and Release Plan, Morgan would not be released if there were any health issues. It is paramount to all involved that her health and physical fitness are robust and stable before any attempts were made to release her.

Figure 26. Morgan positioning her head so that she can use binocular vision to view the photographer. photo © Dr. Ingrid N. Visser, June 2011.

- ***If not released, but held in a sea-pen, Morgan would be alone.***

Currently Morgan is held captive in solitary confinement. She has no conspecifics (*i.e.,* animals of the same species) or other cetaceans to physically interact with, despite bottlenose dolphins at the *Dolfinarium Harderwijk* having had past 'experience' of cohabitating with orca at another facility (information supplied by Steve Hearn, head trainer *Dolfinarium Harderwijk*, 22 June 2011).

Although human contact is provided to Morgan, she is left 'alone' for substantial periods of the day (it is estimated that more than 90% of the day Morgan is without human company). Orca, like most cetaceans, are incredibly tactile and it is highly likely that depriving Morgan of physical contact through touch is tantamount to sensory deprivation. Sensory deprivation is considered a psychological method of torture in humans.

One of the arguments postulated by the *Dolfinarium Harderwijk* about Morgan's potential release outlines the strong social bonds this species has; yet they themselves are imposing a complete separation of Morgan from any other cetaceans and extremely limited tactile contact with humans. Morgan has been in these conditions for over a year.

SPECIAL NOTE: Worldwide, there is an increase in the number of cetaceans that have previously been held in captivity, being rehabilitated for ultimate release into the wild (*e.g.,* recent work done with dolphins taken from backyard swimming pools, in Turkey). Although many are very successful, unfortunately, not all individuals are suitable for long-term release (*e.g.,* they may have been injured during their time in captivity, or show signs

of behavioural maladaptation). If Morgan was deemed to be such an individual, then she can be cared for long-term in a semi-natural sea-pen and it should not be ruled out that another cetacean with unsuitable release characteristics (*e.g.,* an injury) could be moved to the sea-pen and accompany Morgan. Again, such long-term care in a semi-natural sea-pen is far superior to the facilities Morgan is currently held in and is, likewise, far superior to facilities where captive orca are held.

- ***Attempts have been made to release other captive orca back into the wild and those were not successful, therefore Morgan shouldn't be released.***

Unfortunately, there is a high level of misinformation about previous release attempts involving orca. In order to clarify the issue we present the data here. Although rehabilitation and release has been very successful with other cetaceans (such as the rehabilitations and releases conducted by the *Dolfinarium Harderwijk*), only ONE attempt to release a captive orca back into the wild has been conducted.

This resulted in a partial success for *Keiko* the star of the Free Willy movie. It was considered, only after the fact of the attempt, that he was not a prime candidate for rehabilitation and release (Simon et al., 2009). Issues included, length of time in captivity (decades), extremely poor health due to skin virus, gross underweight body condition, poor social conditioning and limited if any physical fitness. Yet despite these mitigating factors Keiko was eventually (after a two year rehabilitation program) successfully taken on extended at-sea-swims. He initiated contact with wild orca (but an apparent altercation saw him voluntarily return to his 'sea-pen'). He remained at sea, in the open ocean, without human intervention for days to months at a time (Simon et al., 2009). Regrettably, some well-meaning fishermen apparently began feeding him and he then, apparently, followed them back to their home port, where, again, well-meaning where people attempted to care for him. He subsequently died from an unknown disease, presumed to be pneumonia (a common cause of death for captive cetaceans).

Morgan's plight and possible release could also wrongly be likened to the situation that involved *Springer*, a young female orca who was separated from her group. Again, the circumstances under which she was separated from her group have never been ascertained. However, she was successfully returned to her family with a complete re-integration which continues to this day. Of note is that Springer, although taken into captivity for a short rehabilitation period, was only ever kept in a sea-pen (not a concrete tank like Morgan), and was never put on public display. Springer was never taught to 'beg' for food (as Morgan has been trained to do) and all 'training' revolved around her rehabilitation and release.

Likewise, it would be wrong to liken Morgan's situation to that of Luna, a young male orca who became isolated in the Nootka Sound area of Vancouver Island, Canada. In that instance Luna was never taken into captivity of any form and no official attempts were made to rehabilitate him back into the orca society he came from. Luna died when he was presumably run over by a tugboat.

Wells et al. (1998) successfully released two bottlenose dolphins together and made the following recommendations; (1) release more than one animal together in a social functional unit; (2) released animals should be young of age; (3) release short-term captive

animals; (4) keep animals in acclimatizing pen before release; (5) release in native waters; (6) locate sources of live prey for readaptation; (7) study ranging and social association patterns in host community before, during, and after release; and (8) study behaviour of released animals before, during, and after release. All but the first recommendation of Wells et al. (1998) will be feasible for the rehabilitation and release of Morgan.

SPECIAL NOTE: Taking only these orca examples into consideration it could be considered that an attempt to rehabilitate and release Morgan would be ground breaking. However, although for her species it would be an important opportunity to allow Morgan to return to the wild, for cetaceans in general rehabilitation and release has many precedents and the methods employed are well established, with high success rates (*e.g.* see Wells et al 1998).

- ***Morgan has been trained to accept food from humans and now can't live out in the wild because she will keep begging.***

Fortunately for Morgan, although one year in captivity has been an exercise in mental deprivation, she is still obviously highly motivated to learn and is mentally active. Captive animals that have been left to languish for extended periods of time may no longer be suitable for rehabilitation and release. However, both authors were able to observe that Morgan is visually and acoustically orientating towards her environment (albeit inappropriately at times). These are key factors when considering the potential of an animal to 'learn' or 'unlearn' habits.

Captive cetaceans have been successfully trained to no longer beg for food or to associate humans with food and this would be one of the primary focuses of the rehabilitation training of Morgan. She would be shown that 'begging' will no longer provide her with food or attention and this behaviour will therefore naturally extinguish itself.

Through methods of training called 'positive reinforcement', 'operant learning' and 'operant conditioning' behaviours can be shaped (managed) (*e.g.,* see Ramirez, 1999; Turner, 2002). For example, using the behaviour of 'begging' as an illustration, Morgan will come to understand that good things (such as interactions with 'toys', people etc) happen when she doesn't beg and 'nothing' happens when she does. As a result the behaviour will be 'shaped' so that it will be 'extinguished'. It is important to note that Morgan will not be 'punished' for begging – nor actively discouraged (*e.g.,* scolded) as such methods are not acceptable in modern marine mammal training (*e.g.,* see Brando 2010), instead she will find that begging elicits no response at all.

Certain behaviours (such as begging) may take months or longer to extinguish whilst others, such as her current fixation with orientating towards the grill filters at the bottom of her tank, would no longer be part of her repertoire, if she was moved to a semi-natural facility where grill filters are no longer a part of her environment.

Other behaviours, which she has learnt in captivity, such as tongue folding and tongue rolling, which elicit no 'normal' use in juvenile and adult orca (however, tongue folding is used to funnel milk from the mother, in young calves) may no longer be extinguishable as they have become 'comfort' behaviours (similar to sucking a thumb in human children). In the wild they would pose no great threat to Morgan (compared to begging), however, given time and other 'comfort' behaviours (*i.e.,* those behaviours which provide Morgan with 'something to do' – such as the opportunity to swim great distances, dive deep, or forage

naturally for food), her 'captive comfort' behaviours may also naturally extinguish themselves.

Another captive-only behaviour such as 'water-squirting' is not seen in wild orca. However, there would be no great detrimental disadvantage to Morgan to exhibit such a human-induced behaviour. Similar situations have been seen in cetaceans which have been released out into the wild after periods of captivity – and the behaviours have actually been assimilated into the repertoire of the wild population. An example is 'tail walking' – a behaviour previously only seen in captive cetaceans but now seen in a population of dolphins off the Australian coast, subsequent to an individual dolphin from that population being taken into captivity for medical care. The dolphin learnt to tail walk from other captive dolphins and upon release, began to teach it to the wild animals (M. Bosley, personal communication to Visser[11]).

SPECIAL NOTE: Although begging is generally only seen in captive cetaceans, a few populations of wild cetaceans (*e.g.,* bottlenose dolphins in areas such as Florida and Texas, USA as well as Shark Bay and Tangalooma, Australia) have learnt that begging elicits food. In the case of Morgan it may take extended monitoring of people, to prevent Morgan being fed by humans to ensure that she reintegrates fully back into the wild. If she continues to beg once out in the open ocean an extensive public awareness campaign would be required to encourage the public not to feed her.

- ***It is an easier life for Morgan when she is in captivity and she would be 'happier' not having to hunt for food or having to avoid predators.***

Although captive animals (including domestic pets) are often healthier, longer-lived and are more fecund (have more surviving young) than free-living individuals of the same species (known as conspecifics), for some species the **opposite** is true (Mason, 2010).

It has been clearly shown that "*Animals that roam over a large territory in the wild do not take kindly to being confined*." (Clubb & Mason, 2003). Clubb and Mason (2003) also found that those species with wide-ranging life styles in the wild could be predicted to exhibit more stereotypic behaviour and wide-ranging life styles can predict the extent of infant mortality in captivity. They transparently state; "*Our findings indicate that the keeping of naturally wide-ranging carnivores should be either fundamentally improved or phased out*." Such scientifically based studies make it abundantly clear that a species such as orca should not be kept in the fundamentally tiny tanks they are currently housed in, with Morgan, who is in the smallest tank of all captive orca world-wide and is the worst-case example.

Dr. Lori Marino is a neuroscientist and Senior Lecturer in the Department of Psychology and faculty affiliate of the Center for Ethics at Emory University who gave an interview to Discovery Channel (Animal Planet)[12] and stated the following, about facilities holding whales and dolphins]; "…. *modern husbandry techniques are very sophisticated, but this isn't the same as being well-cared for, and it doesn't mitigate the fact that these animals cannot thrive in captivity. Surviving for a certain amount of time is not the same as thriving, and the mortality statistics show this conclusively. Dolphins and whales live only a fraction of their*

[11] Plus see online news item http://news.bbc.co.uk/2/hi/science/nature/7570097.stm

[12] http://animal.discovery.com/tv/blood-dolphins/dolphins/opposition-dolphins-captivity.html

natural life spans in captivity. So if they're being so "well-cared for," what is killing them?"

- ***Morgan is an important Ambassador for her species***

Those trying to protect the captive marine mammal industry often use the argument that the individual animals are 'ambassadors' for their species, allowing people to see them up close and in person (*e.g.,* see the website page entitled "About Dolphins....Ambassadors of the Ocean" which sells 'swim-with-captive-dolphin' programs at Dolphin Discovery Cozumel, Mexico[13]).

The captive marine mammal industry typically states that by bonding through personal experience with the marine mammal a person is more likely to be concerned about the species in the wild and to contribute to conservation programs (additionally, see further comments in following point). However, this has never been proven and is disputed (*e.g.,* see Marino et al., 2010).

By definition an 'ambassador' is someone who is an official envoy; *especially* **:** a diplomatic agent of the highest rank accredited to a foreign government or sovereign as the resident representative of his or her own government or sovereign or appointed for a special and often temporary diplomatic assignment (Websters English Dictionary, online[14]).

In our modern democratic world, ambassadors would typically take their posting by choice. They would also typically be inserted into a life-style of reasonable- to high-quality, frequently socialising amongst the local people and often escorted to banquets or similar extravaganzas. Many, if not all ambassadors relocate to their destination with their family (or are able to return home to visit them). Many ambassadors receive high wages for their commitment to the job.

Figure 27. Morgan as seen through one of the opaque panels. This limits viewing, for both her and the public. photo © Dr. Ingrid N. Visser, June 2011.

13 http://www.cozumelinsider.com/Dolphinsmore?From=Fundraising2009

14 http://www.merriam-webster.com/dictionary/ambassador

However, clearly Morgan has none of these luxuries, but instead has been entrenched into an impoverished tank in which she is unwillingly confined (despite her obvious desire to leave the tank). She is deprived of social contact of conspecifics and even other species of cetaceans and is on severely deprived 'contact' time with her human trainers. She is denied contact with her family, by default. Obviously, Morgan has no need personally for money, however, she is clearly making money for those holding her. It is clear to see that Morgan is hardly an ambassador for her species, nor are the conditions she held in 'ambassadorial', rather, perhaps, they more realistically reflect the conditions a prisoner would be subjected to.

If the role of an ambassador is to also exchange ideas and information about their own country / location, then surely the information that Morgan is portraying in no way reflects what her life would be like in the wild. She has no natural features in the tank, no natural wildlife to interact with and furthermore her behaviour is becoming stereotypic and for a number of aspects is not seen in wild orca. We are not teaching people anything about the individual, the species or its habitat. Again, this hardly reflects the role of an 'ambassador'.

In a less formal sense, the word 'ambassador' is used for high-profile (non-diplomatic) representatives of various entities. These are generally cultural and charitable roles for organisations and the 'ambassadors' are *willing* figureheads used predominantly to attract media attention. Classic examples of this role of an 'ambassador' would be film and pop stars who make appeals to the public at large (*e.g.,* UNESCO Goodwill Ambassadors). Perhaps this is more the roll that Morgan is expected to fulfil?

- ***Why spend time and money on saving one individual orca and not on, say habitat protection or saving human children?***

Although killer whales are fairly abundant and widespread on a global scale, regional populations can be small and highly specialized (Reeves et al. 2003) and the deliberate removal of a potential breeding female from such a population may have long-term and far-reaching conservation implications.

Naturally the argument could be made that had the *Dolfinarium Harderwijk* not rescued Morgan, she would not have survived and therefore would not, by default, have remained in the breeding population anyway. However, they did remove her, they did nurse her and she has now recovered sufficiently, that with rehabilitation in the form of training, she *could* be returned to her population and yet she is willfully being withheld from that population. Also, given that we do not know why Morgan was in ill health, it cannot be ruled out that it was human induced, so with that frame work (and regardless of the ethical standpoint) we should do what we can to help her and return her to the wild.

Although the emphasis for this report is placed on the individual animal (*i.e.,* Morgan) it is important to understand that the decisions already made (and about to be made) regarding Morgan as an individual will also have long-term and far-reaching implications for the population she comes from (*e.g.,* if Morgan is not released she will not be available to breed within her population and she is effectively 'dead' to the wild orca gene pool).

Likewise, critics might raise the issue of the financial cost of rehabilitation and release for a single animal compared to using that same money for species or habitat protection, or for conservation or educational programs. Again, what occurs with Morgan will have long-

term and far-reaching implications for all these aspects. Many people are interested in the welfare and fate of Morgan (*e.g.,* website statistics of the Orca Coalition (www.orkacoalitie.nl) show approximately 1,000 visits per month and the Free Morgan website (www.freemorgan.nl) approximately 1,400 visits per month (details supplied to authors by respective organisations). Likewise the 'facebook' pages for 'Free Morgan' have 1284 friends (as of 13 July 2011) and two twitter accounts (managed by the same person for orkacoalitie and VolgOrka 355 and 1660 followers respectively (as of 11 July 2011) (pers. comm. L. Morsink to Orca Coalition).

It has been shown that humans have a tendency to relate more to an individuals plight or to a situation in which they are stakeholders, than to a 'general' concept and this also reflects how people relate to nature, which in turn influences their behaviour (*e.g.,* see Visser (2000) and references therein). In fact, it is this very same concept (*i.e.,* you only protect what you know and/or understand) which the captive marine mammal industry touts as one of the justifications of keeping these animals in captivity (*e.g.,* the Dolphin Connection, Florida Key, USA, has as their mission statement on their homepage "Our mission is to inspire awareness and positive change for the marine environment through direct contact with marine mammals. We seek to illustrate through personal experience the need for conservation……"[15].)

Perhaps most tellingly in terms of justification is the proportional amount which would be spent on Morgan, in that "*97% of charitable donations go to humans, with the remaining **3% split half and half between pets and the rest of nature***" (Turner, 2010) (our emphasis). Put another way, less than 1.5% of charitable donations goes towards nature and obviously less than this total amount will be spent on rehabilitating and releasing Morgan back into the wild. This is a small price to pay for the freedom of one orca in terms of the conservation message that she will carry and the implications it will have, not only for her as a sentient being and for her community, but also for humanity.

- ***The people who want to free Morgan are just activists.***

Generally, around the world there is a perception that animal welfare organisations occupy an extremist position (*e.g.,* Hughes 2001). This is also often the case for individuals who make a stand against maltreatment of animals (authors personal observations). In contrast, environmental arguments (such as protection of habitats) are more readily absorbed into the mainstream (Hughes 2001) and are often part of the business plans of large corporations (*e.g.,* see the "Wildlife as Cannon Sees It" series inside the back cover of National Geographic Magazines).

In the case of Morgan and the two main driving forces behind the move to release her (*i.e.,* the Free Morgan Group and the Orka Coalitie / Orca Coalition) the individuals are not extremists, but rather well-informed parties who see the wrong in holding a sentient being in impoverished conditions. Furthermore, many are highly educated in the academic world, or in their field of expertise and many have extensive experience working with orca or cetaceans in general (*e.g.,* please see the CVs for the two authors at the end of this report and the CV's for the Expert Panel of the Free Morgan Group, on www.freemorgan.nl).

[15] http://experience.hawkscay.com/dolphin-connection

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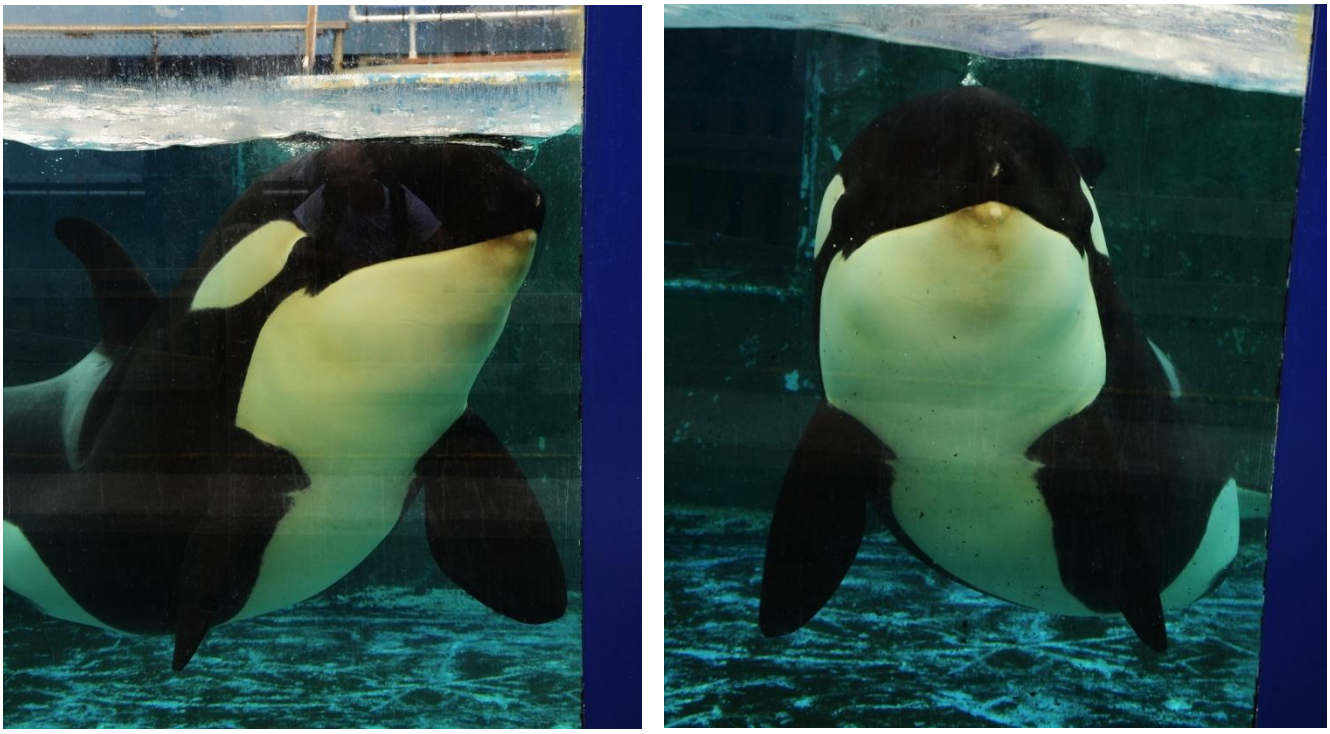

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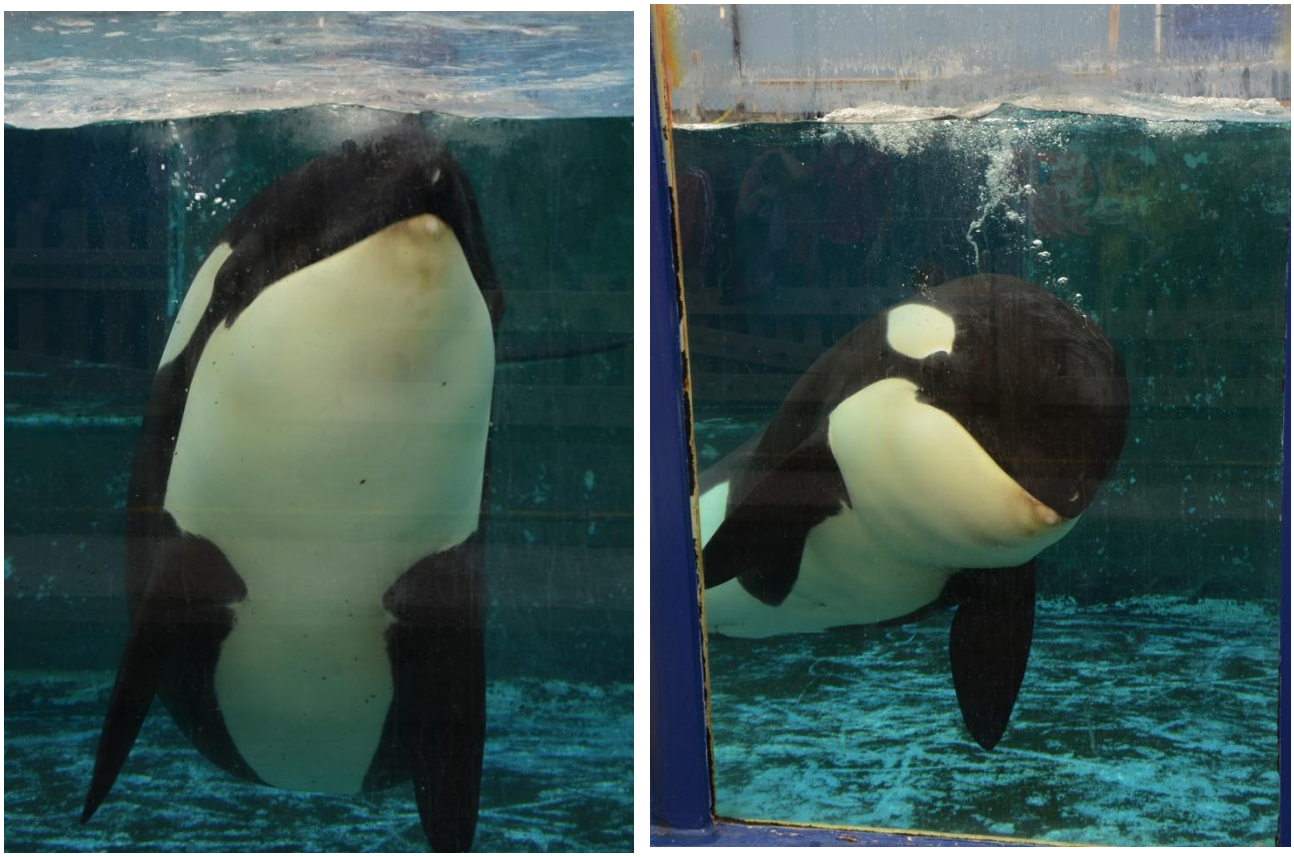

2040
2041 Figure 28. Morgan posturing in front of the camera, as the photographer held different positions Morgan
2042 changed hers – indicating that Morgan is willing to interact and socialise .
2043 photo © Dr. Ingrid N. Visser, June 2011.
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APPENDIX ONE. TWENTY ORCA DEATHS in CAPTIVITY (2004-2011). The oldest animal was an estimated 29 years old, the youngest just three days old. Cause of death was varied, from dying during giving birth to gastric ulcers. This appendix does not include still-born calves.

List is in chronological order.

'Splash' (15.5 years old) at *SeaWorld* California, USA (5 April 2004)
Sex: MALE
Duration of Captivity (days): 5,716
Years of Life in Captivity: 16
Reported Cause of Death: Acute Perforating Gastric Ulceration w/ Associated Peritonitis

'Neocia' (12 years old) at Marineland, Niagara Falls, Canada (1 August 2004)
Sex: FEMALE
Duration of Captivity (days): 4,303
Years of Life in Captivity: 12
Reported Cause of Death: Internal Infection

'Ran' (15 years old), at Nanki Shirahama Adventure World, Japan (29 August 2004)
Sex: FEMALE
Duration of Captivity (days): 5,447
Years of Life in Captivity: 15
Reported Cause of Death: Unknown, gave birth to premature calf on 8-26-04

'Kyu' (7.5 years old) at Nanki Shirahama Adventure World, Japan (18 September 2004)
Sex: MALE
Duration of Captivity (days): 2,778
Years of Life in Captivity: 8
Reported Cause of Death: Bacterial Pneumonia

'Hudson' (6 years old) at Marineland, Niagara Falls, Canada (20 October 2004)
Sex: MALE
Duration of Captivity (days): 2,226
Years of Life in Captivity: 6
Reported Cause of Death: Meningitis

'Goro' (19 years old) at Nanki Shirahama Adventure World, Japan (21 January 2005)
Sex: MALE
Duration of Captivity (days): 7,055
Years of Life in Captivity: 20
Reported Cause of Death: Acute Pneumonia

'Kim 2' (23 years old) at Marineland Antibes, France (23 November 2005)
Sex: MALE
Duration of Captivity (days): 8,453
Years of Life in Captivity: 23
Reported Cause of Death: Pneumonia

'Kandu 7' (21 years old) at Marineland, Niagara Falls, Canada (21 December 2005)
(This was the **seventh orca in six years to die at this facility**)
Sex: MALE
Duration of Captivity (days): 7,720
Years of Life in Captivity: 21
Reported Cause of Death: Cancer

'No name' (3 days old), at Sea World Kamogawa, Japan (February 2006)
Sex: Male
Duration of Captivity (days): 3
Years of Life in Captivity: 0
Reported Cause of Death: Unknown

'Sarah' (2 years, 11 months old) at Sea World Kamogawa, Japan (April 2006)
Sex: Female
Duration of Captivity (days): 1,062
Years of Life in Captivity: 3
Reported Cause of Death: Unknown

''Pascuala' (2 months old) at Vallarte Dolphin Adventures, Mexico (June 2007)
Sex: Female
Duration of Captivity (days): 60
Years of Life in Captivity: 0
Reported Cause of Death: Malnutrition, Infection

`Asuka' (approx. 17years old) at Sea Paradise, Japan (September 2007)
Sex: Female
Duration of Captivity (days): 3,874
Years of Life in Captivity: 11
Reported Cause of Death: Unknown

'Halyn' (2 years, 8 months old) at Sea World Texas, USA (June 2008)
Sex: Female
Duration of Captivity (days): 982
Years of Life in Captivity: 3
Reported Cause of Death: Acute Necrotizing Encephalitis

'Nootka V' (estimated 29 years old) at Marineland, Niagara Falls, Canada (August 2008)
Sex: Female
Duration of Captivity (days): 9,569
Years of Life in Captivity: 26
Reported Cause of Death: Unknown

'Ku' (16 years old) at Port of Nagoya Aquarium, Japan (September 2008)
Sex: Female
Duration of Captivity (days): 4,245
Years of Life in Captivity: 12
Reported Cause of Death: Heart Failure

'Sharkan' (estimated. 23 years old) at Marineland, Antibes, France (March 2009)
Sex: Female
Duration of Captivity (days): 7,037
Years of Life in Captivity: 19
Reported Cause of Death: Bacillus Pyocyanique

'Sumar' (12 years, 3 months old) at Sea World of California, USA (July 2010)
Sex: Male
Duration of Captivity (days): 4,496
Years of Life in Captivity: 12
Reported Cause of Death: Acute Intestinal/Mesentric Vol

'Taima' (20 years old) at *SeaWorld* Orlando, USA (June 2010)
(**died due to complications while trying to give birth for the 4th time**)
Sex: FEMALE
Duration of Captivity (days): 7,635
Years of Life in Captivity: 21
Reported Cause of Death: Peracute Uterine Prolape

'Kalina' (25 years old) at *SeaWorld* of California, USA (4 October, 2010)
Sex: FEMALE
Duration of Captivity (days): 9,137
Years of Life in Captivity: 25 years
Reported Cause of Death: Acute bacterial septicemia

'Nami' (estimated 28 years) at Port of Nagoya Public Aquarium, Japan (14 January, 2011)
Sex: FEMALE
Duration of Captivity (days): 9,239
Years of Life in Captivity: 25
Reported Cause of Death: Ulcerative Colitis (complications with stones in stomach)

Details of these orca were sourced from the individual aquariums websites, other sources on the internet (*e.g.* see http://www.wdcs.org/submissions_bin/orcas_in_captivity_trainers_report.pdf) and Lück & Jiang (2007) postscript).

APPENDIX TWO. CV's of Authors

Name	**Dr. Ingrid Natasha Visser**
Contact Details	Orca Research Trust, P.O. Box 1233, Whangarei, New Zealand ph + 64 (0) 9 4343 043 ingrid@orca.org.nz
Place of Birth	Wellington, New Zealand
Date of Birth	20 February 1966
Nationality	New Zealand

RELEVANT EXPERIENCE & QUALIFICATIONS

Experience in Applied Whale Research.

Orca research.

- Conducted first, and still the only study, of orca in the South Pacific, based in New Zealand. This has been on-going since 1992. Please see www.orcaresearch.org
- Compiler of the first Antarctic Killer Whale Identification Catalogue, please see www. orcaresearch.org
- Conducted first study of orca in Papua New Guinea. Please see www.orcaresearch.org
- Co-founder of Punta Norte Orca Research based in Argentina. Please see www.pnor.org
- Co-founder of Whale Rescue, established to assist with rescue of stranded and entangled cetaceans.
- Published various peer-reviewed scientific manuscripts as senior author, one PhD dissertation, and additional manuscripts as co-author (please see separate list).
- Assisted orca researchers in Iceland for two short-term periods (approximately 1 month duration each) in 2000 and 2001. Tasks involved work with "*Keiko*" an orca being prepared for reintroduction into the wild, photo-identification work, matching photographs, acoustic recording, helicopter and boat surveys and biopsy sampling.
- Assisted orca researchers in San Juan Islands, United States of America in 1998. Tasks included photo-identification work, behavioural observations and records, photographic and laboratory work. Results were used in the publication by Visser and Mäkeläinen (2000).
- Contributed photo-identification images to the Russian Far East Killer Whale program.

Other Cetacean research.

Worked in a research capacity with a number of other species of cetaceans. These have included bottlenose, Hector's and common dolphins, humpback, pilot, sperm and beaked whales. Conducted preliminary cetacean surveys in various areas, including Papua New Guinea, Tonga and New Zealand. This research has involved standard cetacean investigative methods & techniques.

Experience in Whale Rescue/Rehabilitation/Animal Husbandry.

- Attended and co-ordinated more than 30 rescues of stranded whales and dolphins (in events involving up to 150 animals and over 200 personnel).
- Previous Whale Rescue Co-ordinator and Instructor for Project Jonah, the largest and most successful whale and dolphin rescue organisation in the world.
- Committee member for Project Jonah for six years.
- Co-founder of Whale Rescue, a non-profit organisation for the rescue of stranded and entangled cetaceans.
- Assisted the Keiko Reintroduction Team in 2001 with 'at-sea' program for Keiko. Tasks at sea included food preparation and cleaning, behavioural observations and video recording, satellite tracking and observation of interactions with wild killer whales.
- Assisted the Keiko Reintroduction Team in 2001 while based at Vestmannajaer, Iceland. Tasks included food preparation and cleaning of facilities, driving boat shuttle, net cleaning, behavioural records, night watch, feeding and basic husbandry of *Keiko* including assisting with morphometrics, attaching and removing satellite tags, dental checks and basic training using a bridge.

EDUCATIONAL RECORD

1992 - 2000 Auckland University (New Zealand)
PhD (Marine Biology)
PhD Thesis; Orca (*Orcinus orca*) in New Zealand waters
please see list of attached published scientific papers

1990 - 1992 Auckland University (New Zealand)
Masters of Science (Zoology)
Masters Thesis; Growth Rates of Commercial Oysters

1987 - 1990 Massey University (New Zealand)
Bachelor of Science (Zoology) & 1st Year Veterinary Science

Pre 1987. Completed High School with University Entrance level gained
(Correspondence School, New Zealand)

PUBLISHING RECORD (non-scientific)

Numerous popular articles for children's and adult magazines, including school magazines, dive magazines and nature magazines
Numerous popular style articles for newspapers
Children's educational book (8-12 year olds) about orca
Children's educational book (5-8 year olds), about orca
Photographs/stories have appeared in National Geographic, New Zealand Geographic, BBC Wildlife, Ranger Rick, Taptoe, DiveLog, and various other magazines and books.
Photographs for educational book (8-12 year olds) about whale strandings.

LIST OF SCIENTIFIC PUBLICATIONS, CONFERENCE PROCEEDINGS & REPORTS
VISSER, I. N. (as of May 2011)

BERGHAN, J. & VISSER, I. N. 2000. Vertebral column malformations in New Zealand delphinids with a review of cases world-wide. *Aquatic Mammals,* 26**,** 17-25.

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VISSER, I. N. 2002. Kimbe Bay Preliminary Cetacean Survey Report. Unpublished report submitted to Walindi Plantation Resort and Mahonia na Dari Conservation and Research Centre, P.O. Box 4, Kimbe, West New Britain, Papua New Guinea.
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Place of Birth	South Africa
Date of Birth	12 January 1976
Nationality	New Zealand

RELEVANT EXPERIENCE & QUALIFICATIONS

Experience in Applied Whale Research.

Orca Research.

Free Willy/Keiko, Iceland

August – September 2001

http://www.orcas.net/g/5

Participated with the rehabilitation and return to the wild of Keiko in Iceland. Spent time with *Keiko*, either in the "bay-pen" (a netted off bay, in the island of Vestmanneyar, Iceland), or out on "ocean walks", where we would monitor *Keiko* from a boat, usually for about a week at a time.

Tasks included preparation of *Keiko's* fish each day, transporting fish from storage location, via boat, to *Keiko's* bay pen, training sessions with *Keiko* several times a day, whilst at the bay-pen and monitoring of *Keiko's* activities in 24 hour shifts, both in the bay pen and at sea.

Orca Observation, Monterey Bay, California

May 2004

http://www.orcas.net/g/6

Briefly worked with Nancy Black on photo identification and behaviour recording of wild orcas in Monterey Bay, CA. The orca were preying on California Grey Whales at this time of year. Photo identification and location of cetacens were the primary tasks.

Loan Orca study (Luna, L98), Vancouver Island, Canada

June 2005

http://www.orcas.net/g/7

The Canadian Department of Fisheries & Oceans (DFO) invited both myself and Dr. Ingrid Visser to do a comparative study on a very interactive loan orca on an inlet on the west coast of Vancouver Island.

We spent time interacting with Luna (L98) and recorded his behaviour. We used the data collected to write up a report for the DFO with an analysis of his behaviour, and potential options for re-uniting him with his family.

Orca Observation, Puget Sound, Washington
(http://www.orcas.net/g/8 & http://www.orcas.net/g/9)
June – July 2005

Worked with Dr Ken Balcolm from the Center for Whale Research on San Juan Island, Washington.

Work included statistical analysis of sighting data, analysis of acoustic data and field work in locating wild orca and photo identification.

Orca Observation, Patagonia, South America
(http://www.orcas.net/g/10)

March 2006

Spent time observing Patagonian sea lions & orcas in Punta Norte. This is the location where the orca come up on the beach to capture the sea lion pups. Photo identification & video data collected were used towards a photo ID catalog for the local orca population. Video filmed there was been used in the internationally screen PBS documentary "Jean-Michel Cousteau Ocean Adventures; Call of the Killer Whale".

Captive Orca Observation, Mundo Marino, South America
March 2006

Observation of lone adult male captive orca at Mundo Marino, Argentina. Photographs and videography of this individual as well as the bottlenose dolphins (*Tursiops* sp.) were used for report prepared by Dr Ingrid N. Visser and myself and submitted to the Whale and Dolphin Conservation Society.

Orca Research, New Zealand
(http://www.orcas.net/g/11)

1996 – 2008

Worked with Dr. Ingrid Visser on researching the wild orca population in New Zealand waters. *Inter alia*, tasks were photo identification, acoustic, video and behavioural analysis. We were also able to successfully deploy the first "Crittercam" (National Geographic's camera system which uses a suction cup to attach the camera to the side of an orca) on New Zealand orca. Photographs, data and video has been used extensively for the Orca Research Trust database, scientific publications, popular publications, childrens books etc. Additionally, video shot by myself was used internationally in the PBS documentary "Jean-Michel Cousteau Ocean Adventures, Call of the Killer Whale."

Other Cetacean Work.

Connyland, Switzerland,

February 2008 – November 2008 (http://www.orcas.net/g/1)

Worked full time as an animal trainer assistant. Worked with Patagonia sealions (*Otaria flavescens)* and Atlantic bottlenose dolphins (*tursiops truncatus).* Observed and assisted in feeding preparation, cleaning, maintaining current behaviours and training new behaviours using operant conditioning. Additional tasks included doing shows for the public with the dolphins (including doing behaviours in the water with the dolphins) and

assisting in water quality (water tests and filtration maintenance). Assisted in training husbandry techniques (see details below) Built computer temperature analysis system for recording pool temperatures. Assisted in reproduction study with bottlenose dolphins

Connyland, Switzerland,

February 2009 – August 2009 (http://www.orcas.net/g/2)

Full time as an animal trainer assistant. Continued with tasks from previous year. Primary person responsible for water quality and filtration, including repairs to filtration (including rebuilding of the prefilter and pump system for one pool, as damaged during a flood). Continued with assisting in maintaining existing behaviours, husbandry roles and training new behaviours, primarily with the bottlenose dolphins.

Experience in Whale Rescue/Rehabilitation/Animal Husbandry.

1995.

- Trained as Project Jonah Marine Mammal Medic (recognised training by the New Zealand Government, in order to attend and assist at whale and dolphin rescues).

14-15 June 1997.

- Involved in the rescue and release of a stranded wild orca in New Zealand. Collected data on respiration rates, behaviour and methodology of rescue. This animal was subsequently resighted a number of times and the data used in the scientific article:

  Visser, I. N. and D. C. Fertl (2000). Stranding, resighting and boat strike of a killer whale (*Orcinus orca*) off New Zealand. *Aquatic Mammals* **26**(3): 232-240.

February 2008 – November 2008 (Connyland, Switzerland).

- Captive marine mammal work in the following areas:
- Patagonia sealions (*Otaria flavescens)* and Atlantic bottlenose dolphins (*tursiops truncatus).* Assisted in training husbandry techniques, including designing and building a continuous suction system for voluntary urine collection from bottlenose dolphins enabling sterile collection of urine with no invasive techniques (*e.g.,* catheters).
- Assisted in the care of a chronically sick female bottlenose dolphin, including force feeding of fish, voluntary & forced stomach tubing for water administration and catheter use for urine collection.
- Significant experience with catheter insertion (approximately 30 times).
- Trained in blood collection from the tail flukes of bottlenose dolphins, using butterfly needles and vacutainers.
- Assisted in reproduction study with bottlenose dolphins

February 2009 – August 2009 (Connyland, Switzerland).

- Helped perfect techniques in reproduction study for ground-breaking results, currently in the process of being published.
- Continued with tasks as listed above for February 2008.

Other Relevant Experience.

- International Marine Animal Trainers' Association (IMATA), member since 2009
- Built networked database system for recording medical, behavioural and feeding information for captive marine mammals.
- Built computer temperature analysis system for recording pool temperatures for captive marine mammals.
- SCUBA (PADI) certified, with additional experience in cleaning underwater, and repairing marine mammal tanks underwater.
- Extremely skilled with computers (previous career path was in computer software engineering).
- Significant experience with still photography, specialising in marine mammals (photos published in books, magazines and newspapers).
- Videography (worked part time as professional cameraman, audio engineer and technical director at KTEH [Owned by KQED] USA. Video footage broadcast internationally, *e.g.,* by KTEH and KQED and Jean Michel Cousteau's Ocean Futures.
- October 2007, Invited as Guest Presenter with Dr Ingrid N. Visser to the inaugral Animal Borne Imaging Symposium. Presented "Attaching Crittercam to New Zealand orca."
- In 2005 & 2006 obtained training as an Emergency Medical technician and gained the nationally recognized NREMT (Nationally Registry of Emergency Medical Technicians).