DETAILED STEP-BY-STEP Plan for REHABILITATION TRAINING for Morgan the orca.

Prepared for the Free Morgan Foundation (September 2011)

This document has been prepared in consultation with the following people:

- Jeff Foster – More than two decades working with captive cetaceans, including rehabilitations and releases and transports. Field work with wild orca.
- Christopher Porter – Practical experience in training & release of cetaceans.
- Frank Sanchez – More than a decade of experience training & transportation of orca & bottlenose dolphins.
- Dr. Ingrid Visser - More than two decades of field experience working with wild orca, including rescue and transportation. Experience transporting multiple species of cetaceans.
- Terry Hardie – Field research with orca & training of bottlenose dolphins.

The following steps will be taken during the Rehabilitation Training of Morgan the orca. The details begin from Day One of Morgan when Morgan's custody is transferred to the Free Morgan Foundation. This Rehabilitation Training includes the exact steps, techniques, and people involved in each step of the process.

Phase 1. Preparations for transport from *Dolphinarium Harderwijk*

Stretcher

The details regarding the orca-specific stretcher are given in the *Morgan Transport Plan*.

Stretcher & Lifting Preparation

To test that there are no unforeseen complications before transportation (which involves a logistics that cannot be easily rescheduled), a test run of the stretcher should be conducted before actual transportation is conducted.

The crane will be in place in the same manner as if the transportation was to actually occur. The water level in Morgan's pool will be lowered to the level so that Morgan is not able to move around easily, but is not completely prone on the bottom of the pool. This will allow personnel to 'walk' Morgan over the stretcher which has been positioned on the tank floor.

The lifting poles are then inserted through the pockets of the stretcher, manually lifted and cables secured. These cables are then attached to the crane. There will be at least one rope attached to each corner of the stretcher, at the same points where the crane cables are attached. These ropes are used to manoeuvre the stretcher while it is being manoeuvered with the crane. They prevent the stretcher from spinning when in mid-air. They are also of assistance when removing the stretcher when Morgan is lowered back into the water.

Instructions to the crane operator will come from only one designated person in the pool. The crane operator should be very clear who this individual is and be instructed to ignore instructions from any non-designated individual. The designated person and the crane driver will have conversed prior to the test and to the final move, to ensure that both is aware of any signals to be given and the possible threats. A second-in-command will be

present during this dialogue. Other personnel will be instructed to not give any directions to the crane driver.

The crane will then lift Morgan slightly to ensure that she is positioned correctly. This will also to ensure that her pectoral fins have been correctly positioned into the pectoral cut-outs on the stretcher. If repositioning is required, the crane is lowered to the point Morgan can be moved in the water to be correctly aligned and the lift re-attempted. For the test, Morgan should be lifted just above the surface of the water and all the rigging re-checked. Once the position is verified and all riggings are secure, Morgan will be lifted above the height of the water in the pool. As soon as she is lifted from the pool, the water level should start to be returned to the normal level. Scuba-divers will also be prepared at this point to be in the water for Morgan's return (to deal with any unforeseen complications e.g., rope entanglement, etc, so they can cut away rope or the stretcher if necessary or to assist Morgan). The dive team will be comprised only of personnel with appropriate qualifications.

Although this is only a test, Morgan will then be lowered into the cradle (shipping container). Once in the container, any final adjustments can be made to the securing points. This test lowering allows the transport container to be checked (including securing points) as well as the stretcher.

Once all the checks have been made and the water level returned to normal in Morgan's tank, Morgan will be lifted out of the cradle and lowered back into the tank, so she is at the point where she is neutrally buoyant.

If Morgan starts to move too much whilst being lowered into the water, but still suspended in the stretcher, she should be raised until she reduces her movements. Once stable she will be lowered into a water depth that will allow Morgan to float. At this point the crane cables form the crane are lowered immediately and the ropes used to 'open' the stretcher so Morgan can swim free. If required the Scuba divers can assist Morgan. Once Morgan is clear of the stretcher, the crane will lift the empty stretcher out.

Shipping container (cradle)

A cetacean-specific shipping container (termed a 'cradle'), (see Figure 1), will be supplied or built to Morgan's size specifications (see separate document: *Morgan Transport Plan* for details). Total weight including Morgan and water/ice combination is expected to be approximately 16000kgs.

Morgan will not have to be trained to enter the cradle as she will be lifted by crane and lowered into it.

Figure 1. *Keiko* the orca from the movie 'Free Willy' being loaded into a cargo plane.

Phase 2. Transportation from *Dolphinarium Harderwijk* to Sea Pen in Norway

A separate document *Morgan Transport Plan* details this Phase.

On arrival at the sea pen, Morgan will be lowered into the sea pen in the same way she was returned to her tank for the test in Phase 1, this document. After she is released in the sea pen, a trainer will be available to feed her at a platform if she is interested.

Phase 3. Acclimatisation to the Sea-Pen

Given that Morgan had a very regimented life-style whilst in captivity in the *Dolfinarium Harderwijk*, she will be given time to gradually acclimatise from this regime to a more flexible, varied and stimulating training period, in anticipation of Phase43.

It is not possible to ascertain exactly how long this Phase will take with Morgan, as it will depend on how quickly she can recover from the damage inflicted during her time in the *Dolfinarium Harderwijk*. However it is anticipated that this would be no longer than four weeks and may be possibly completed in a little as one week.

Phase 4. Re-establishment of behaviours required for survival in the wild

There are a number of behaviours which will be "trained" using standard accepted *operant conditioning* techniques (as opposed to habituation). During this Phase, the number of trainers working with Morgan will be kept to a minimum and one supervisor will be assigned to oversee that all aspects of the training adhere to strict guidelines. These guidelines include:

- Very specific rules for what are acceptable levels of established behaviours
- Establishment before any session as to what behaviours are to be worked on, what the goals of each session are, and expected results
- Documentation after each session of exactly what was trained and the exact responses to the cues

The supervisor will perform or directly supervise (i.e., be present) anyone working with Morgan to ensure an absolute consistency in what gets reinforced and what doesn't. Only after the supervisor is confident in an individual trainers ability to adhere strictly to given guidelines, will the trainer be allowed to work with Morgan without the supervisor. However, at least one other trainer must be present when no supervisor is present. During "no supervisor" sessions, new or "in progress" training cannot be continued. The reasoning behind this strict trainer regime is to ensure that Morgan's behaviour progresses consistently and does not regress.

The following behaviours will be trained (not necessarily in this order):

- Training Morgan to hunt and consume her own food
- Training re-call signal
- Desensitization for application of satellite and radio tags
- General fitness training, to ensure Morgan can 'keep up' with wild orca
- Husbandry training to monitor her health

Phase 4 – Extinguishing of human contact & irrelevant behaviours

INTRO: The acceptance that a series of behaviour qualification processes must occur within the framework of Morgan's reintroduction, whereby these progress to a level of a self-sustaining life, in her normal home range and habitat, is critical to understand and to ensure that this Rehabilitation is successful. The establishment of the behavioural controls will allow a separation from the biological factors and human-induced factors. This means that we can establish a list of expected criteria that can serve as a physical behavioural checklist of Morgan's suitability for release, that is separate and unconditional to her natural social conditions such as pod and home range locations. This additionally will allow us to separate the release arguments into fundamental behavioural aspects.

The areas of classification for this behavioural criteria are;

1. Return to live feeding schedule
2. Disassociation of humans being part of the food gathering cycle
3. Limited direction control to initiate foraging initiations as well as contingency logistic guarantee
4. Reinitiating a "self-driven" activity based stimulus control for food delivery

Through the clear establishment of a mandatory set of criteria of the preceding list we can guarantee that the process is completely secure against outside influences such as; political/industry pressure, principle driven success, or other influences of a non-behavioural nature.

THEORY: Three intricate behaviour defined processes influence the acclimation goals / processes. Each process will be secured and initiated upon reversing the artificial occurring sources of Morgan's primary need of food. The redirection of the actions back to naturally occurring stimulus that lead to a instinctual positive conclusion of food delivery. All three processes each contain the same overall occurring steps of completion.

The Steps:

1) The Signals

Prior to any behaviour occurring there is usually an event that occurs to stimulate it. For example before answering the telephone, the telephone needs to ring. This is considered a stimulus discriminative since the event is selective to a certain task.

2) The Actions

After a subject receives these signals a selected behaviour will occur; in our example the phone will now be answered. Now the behaviour that will follow the "signal" is determined by the history of the consequence of the behaviour.

3) The Results

If the consequence to the action is continually positive than that action will continue, but if the consequence to the behaviour is continually negative than the action will tend to decrease.

The use and application of these steps is dependent on the process being utilized.

The Processes:

Operant Conditioning simply states that each action or reaction occurs based on the consequences to its behaviour. If something good happens after an action occurs that action will typically repeat itself. If something negative occurs then that action will typically decrease. It also states that signals can trigger these actions to occur.

1. **Classical Conditioning** is driven by more instinctual series of stimulus (signals) that illicit a predetermined natural execution of an action. i.e., *Dog* – Salivating is initiated by the introduction of food. *Pig* -Foraging behaviour of rooting is initiated through the presence of a stimulus that initiated a set primary result (food).
2. **Operant Conditioning** simply states that each action or reaction occurs based on the consequences to its behaviour. If something good happens after an action occurs, that action should repeat itself. If something negative occurs, then that action should decrease. It also states that signals can trigger these actions to occur.
3. **Habituation** is the natural acceptance of outside influences (stimulus) through the subconscious process of becoming accustomed (some cases ignoring the stimulus, e.g.,. regularly occurring traffic noises in the city) to a set of signals that illicit no set action. This is often through the acceptance of a fixed result with no influence to organism's primary need.

APPLICATION:

(i) **Return to live feeding schedule** - re-establishment of naturally occurring feeding behaviour.

History:

Pre-Capture - Morgan was fully weaned and had established natural food foraging ability in her past. An unidentified issue arose whereby this natural behaviour was disturbed to the point where an immune compromise occurred and human intervention was provided, including the administration of medication. Her age determines that to the point of her sickness had survived by natural foraging.

Post- Capture - Morgan displayed natural classic condition of an identified food source through her rapid acceptance of hand-feeding of dead prey (of a version of naturally occurring prey). She has also shown clear abilities to recognition food and at the same time the ignoring physical non-food structures. (*i.e.,* balls, feed/pool equipment).

Objective:

Pre-Release - Morgan displays complete dependence on foraging being accomplished through the stimulus of live food. A return to her natural classic conditioned response to pair live fish as a source of the primary need.

Post-Release - Morgan returns to her previously successful and established complete dependence on foraging. Evidence is supported through witnessing foraging behaviour as

an individual as well as in association with wild orca during foraging. Additionally, faecal matter will be collected where possible and analysis conducted on remains (such as fish scales) to ascertain species of prey captured.

Process:
Morgan has clearly identified that she understands and accepts food species being fed by the *Dolphinarium* staff. Her quick acceptance of dead herring should not be viewed as surprising, based on the scientific observations of stunned and dead herring being present as a result of 'carousel-feeding' by the orca foraging on the Northern Atlantic herring runs.

Morgan's proven habituation and subsequent ignoring, of foreign objects, in her tank, confirms that she is able to discern non-food items such as the floats introduced to her tank habitat. A return to a mixed degree of food vitality will confirm Morgan's already proven distinction of food and non-food items.

Proven trials of live food being delivered in a suitable environment (non-chlorinated saltwater sea-pen) will create confidence in her return to pre-rescue foraging patterns. Scatter and direct live food introduction in large contained natural seawater pens will induce 'searching' behaviour. Fish which are 'skipped' across the surface will produce 'surface active' noises similar to live fish jumping at the surface, thereby encouraging active investigation and inducing closer proximity to potential prey. Morgan's daily requirements of food will be delivered through scattered feeding technique. This is to replicate as closely as possible the feeding activity of her past and encourage physical activity.

Whilst still at the *Dolfinarium*, stunned live food prey could be mixed in with current regular (dead) food sessions at the *Dolphinarium*. It is anticipated that Morgan will accept stunned live food as quickly as she accepted dead fish upon her rescue. However, it has been illustrated that captive cetaceans, upon being held in captivity to extended periods (as has now been the case for Morgan), will become habituated to dead food and will need to be reintroduced to live prey gradually.

As the live food is more commonly accepted the sea-pen habitat will be stocked with live food. Then, as Morgan is observed to initiate foraging activities orientated towards the live prey, a gradual reduction in the volume of dead fish will begun. An underwater sweep of the sea-pen to monitor food wastage will allow her food intake to be monitored.

A small amount (less than 1 kg) of dead fish will still be administered directly to Morgan as these fish will contain vitamins and health supplements and any necessary medication.

Duration:
This process can begin immediately in the *Dolfinarium*. Alternatively it can being as soon as Morgan is settled into the sea-pen. Live food will become the initiating stimulus for her classical conditioned eating response to forage and she will be allowed to feed to meet her hunger satisfaction. Process behaviourally proven within four weeks of initiation.

Equipment Required:
Live food prey, underwater camera points of capture, diver support apparatus.

Number of Personnel Required:
Care givers for irregular feed schedule (2)
Water quality technician (1)
Per feed-Video footage Observers (3)
Food intake observers (6)

Proven Success:
Morgan self-initiates all food foraging activities through the presence of live feed.

(ii) Disassociation of humans' as part of the food gathering cycle - removal of human initiated feeding.

History:
Pre- Capture - Humans were not part of Morgan's natural foraging process, pre capture.
Post- Capture – Post capture of brought periodic (and regular) delivery of food by humans. Initially in the form of dead fish, this has been extended to include dead squid.

However, it should be noted that presence of people as not necessarily being automaticly associated with food. This because Morgan has been habituated through the public access to her tank area. The arrival of the trainer (i.e., food) has now became something anticipated and easily discerned from other human activities.

Objective:
Pre-Release - As human presence is able to be discerned by Morgan through the clear distinction of training staff and the general public, the further removal of the trainer's involvement in food delivery is more readily to be attained. Trainer's presence will be associated with the same disregard as the arrival of the general public.
Post-Release - Humans are not part of her natural foraging process.

Process:
Currently Morgan discerns and understands that not all humans are associated with food delivery. She recognizes the situation and delivery techniques of a limited amount of training staff. Clear identification of current pre-cursors to actual arrival of trainer driven food delivery will be analyzed and listed. Actions such as entry/exit into Morgan's habitat, utilization of buckets and physical objects currently associated with food will firstly limited and then removed from delivery schedule.

Live prey will no longer be significantly paired with human arrival, positioning or introduction. Human presence will no longer be associated with food delivery and thus Morgan's temporary dependence on trainer initiated processes will revert back to her natural foraging instincts.

Duration:
Again the process is able to be initiated immediately upon the introduction of live prey. The process simply needs to be followed for the natural process of association to be achieved.

Within three weeks of strict adherence to non-human initiation of food introduction, habituation will be secured and proven trials of disassociation of human presence secured.

Equipment Required:
Clear established process protocol to ensure that humans are not indirectly associated with the initiation of food delivery.
Personnel Required:
None directly – although human presence will still be required to conduct husbandry checks.
Proven Success:
Morgan ignores and demonstrates no foraging activities during the introduction of human contact.

(iii) Limited Directional Control - to initiate foraging activities and contingency logistical guarantees.

History:
Pre- Capture - Morgan only exhibited instinctual avoidance behaviour and responded to physical objects that were of an unnatural origin. It appears that when she was approached she did not avoid or detour her swimming pattern during the rescue which utilized a net.

Post- Capture - Morgan is conditioned through physical moves from her natural habitat to a sling, then to a transport unit, then to a carrier truck, then to a mobile crane and finally to her unnatural holding tank. During this complete process humans initiate decisions. Unlearning this 'capture syndrome' is imperative to ensure disassociation with humans.

Objective:
Pre-Release – Part of the training process involves Morgan being guided through a 'rescue gate' channel in the sea-pen. This 'rescue-gate' ensures that any outside influences can be accommodated through the reintroduction phases. Whether it be physical, climate or of a political nature Morgan may have to be recalled. Such a set secured 'recall' situations would be conditioned in her gate transfers training. A home base to 'wild side' transfers would increase time and distance associated with the recall, facilitating the release program.

Post-Release – Morgan's behaviour would be modified so that a more independent and self-directed response on her behalf will deliver more guaranteed food delivery opportunities. This would eliminate and extinguish the reason or initiation to cross back to 'home base'. This would ensure that the sense of independence and self-control supersedes any pre-conditioned human responses of the past.

Process:
A unique media 'recall tone' would be created to condition Morgan to a 'safe feed', self-initiated, food foraging cycle. This cycle would be initiated firstly at a 33% daily food delivery pattern. Therefore, upon delivery of the third food cycle introduced to her habitat, the recall tone will precede the arrival of set food source. This recall tone would be expanded around all points of the 'home base' as well as erratic positioning to the 'wild side' being conditioned as self-exploratory. A series of A to B's (on a completely variable set

schedule) will be scheduled in a decreasing ratio of executions in order to balance a phase-out extinction of the effectiveness of recall established through the A to B's, paired with the tone recall signal.

Duration:
Normal acceptance and comprehension of free food source A to B's is typically less than one week. Distance and discriminated similar toning techniques will be used and enhanced to distance and variable phased timing.
Equipment Required:
Underwater recall tone generator. Underwater recording apparatus (video and audio) to measure the effectiveness of the response time. Multi-position platforms that can facilitate the A to B's series (e.g., boats or anchored platforms that consisted of recall tone generators and food delivery system).

Personnel Required:
Regular food delivery crew. Service engineers for sound generators and recording devices. Observation crew (volunteers such as students and researchers).

Proven Success:
Morgan will be able, at the early phases, to be 'guided' between two specific points which pass a secured gate channel (used for political and animal welfare situations). Initially 100% success is expected for 33% food trials. Eventually the amount of trials would be reduced to zero with a 100% expected response. Eventually behaviour initiation is phased out and held for future necessity interests.

(iv) Reinitiating 'self' driven stimulus control - securing Morgan's will and ability to determine her actions.

History:
Pre- Capture - Morgan grew up in a social setting that initiated expected behavioural reactions from herself. Whether this be direct family members or like species the expectations of Morgan to initiate a series of opportunities would be established.

Post- Capture - Humans were now directly associated with expected food hierarchy within her social context. The continual offering of food allowed a quick acceptance of Morgan's understanding of her position within the confines of her holding tank. Instincts of classic conditioning superimposed themselves over the expectations of the rehabilitation crew.

Objective:
Pre-Release - All activities as associated with social positioning and food initiated foraging activities must be initiated and controlled by Morgan's own actions. Regular trainer initiated actions will now be completely extinguished with a cessation of expected food delivery.

Post-Release - Conditioned leadership initiations to determine food delivery will cause Morgan to become an independent driven release. Her responses will now be pre-

determined by Morgan's will and not imposed artificially to meet the confines of current situations.

Process:
Continual observation of self-driven activities for foraging will be allowed to initiate food delivery opportunities. Initially food delivery will be consistent to condition more and more self-solicited behaviour. This process has been proven with rehabilitation of bottlenose dolphins. Allowing Morgan to initiate food delivery sequences will ensure that her independence to explore the natural habitat will continue.

Duration:
Immediately in non-expected training sessions, Morgan will be allowed a majority of her food delivery sequences to occur upon her own independence exploratory initiation of the 'wild' habitat. Expected training sessions to secure Step 3 of Continual Directional Control, will begin a phase out that is equivalent to the reduction of frequency due to maintenance of 100% success rate of A to B's completion which should be completed within three weeks.

Equipment Required:
Underwater recording apparatus (video and audio)

Personnel Required:
Regular feeding and scientific researchers for recording of natural retention of behaviour.

Proven Success:
Morgan explores 'wild' areas on an increasing rate of exploration. Reliance of predetermined maintenance feeding will be replaced with a reduced continuance of the recall tone. Eventually 100% of food delivery is received only upon Morgan's initiation of foraging activity.

SUMMARY OF TIMEFRAMES

TABLE 1. Timeframes of each step. All time frames are given in weeks, except where noted.

PHASE	TIME FRAME (range in weeks)	RUNNING TOTAL (post relocation to Norway)
1. Pre-transport: Introduction of trainers	1-2	0
1. Pre-transport: Introduction to stretcher	1	0
2. Transportation from *Dolphinarium* to Sea Pen	1 day	DAY ONE
3. Acclimatisation to the Sea-Pen	1-4	4
4. Re-establishment of behaviours required for survival		
4 (i). Return to live feeding schedule	4	8
4 (ii). Disassociation of humans' as part of the food provisioning	4	12
4 (iii). Limited Directional Control	1	13
4 (iv). Reinitiating 'self' driven stimulus control	3	16
TOTAL NUMBER OF WEEKS POST RELOCATION TO NORWAY		**16**