Protocol for Transportation of Manatees

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2014

Parc national de la Guadeloupe

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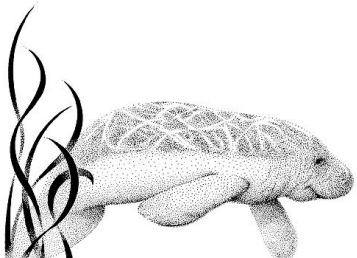


i. INTRODUCTION

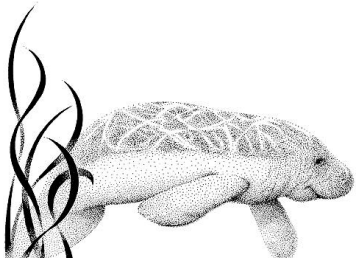
Exchanging manatees between aquariums, from rescue areas to rehabilitation centers, and from facilities to release areas necessitate their transportation. Wild animals in general go through high levels of stress quit often during restraint, capture, confinement, loading, unloading and the transportation process, as well as when adapting to the new environment they have been moved to. The manatee's health and well-being should be the highest priority during transport. Safe, humane, ethical and professional protocols of manatees need to be developed.

This document provides compiles guidelines created by aquariums, zoos, personal experts experience and official documents, in order to facilitate protocols to transport manatees. Manatees require very specialized handling and these guidelines are only general principles that can be applied to their transportation. The handling and transportation must only be undertaken by those shippers and carriers that can fulfill all the specialized needs of the species[1].

ii. CONSIDERATIONS PRIOR THE TRANSPORT

2.1. Permits – Liaison with agencies

The recipient facility should arrange for all requisite permissions and liaise with the proper agencies/departments for transport of manatees (CITES, import, export permissions, custom department, etc). The donor should assist the recipient by providing necessary documentation, such as the donor/recipient agreement[2]. It is necessary that the veterinarian of the recipient may visit the donor aquarium/park/ rehabilitation centers, and a mutual agreement must be arrived at regarding the animals to be transported[2].



2.2. Selection of candidates

Selection of manatees is critical in any planned operation involved transportation[2].

i. Only manatees in good health should be transported[3,4]. Preferably it should not have any medical history that is suspect. Geriatric, sick, injured or deformed animals should be avoided in planned transport[2].

ii. Only adults and sub-adults should be transported. Infant animals incapable of feeding themselves should not be shipped unless prior arrangements have been made to feed the infant during transport if the travel will take longer than the calf's normal feeding period[4].

iii. Animals obviously in advanced stages of pregnancy (last half of pregnancy) or animals that have recently given birth should not be shipped[4].

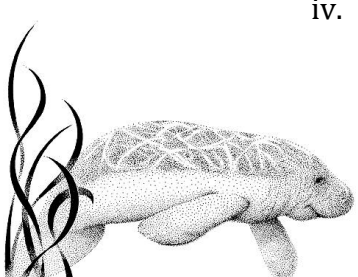
2.3. Preparation of candidates

i. Prior to transport, the manatee selected should be appropriately marked according to the species (by microchips or PPT). In some cases, natural markings can also be used for identification, and photographic documents showing the natural identification of each animal should be maintained. Details of the site and type of marking should be recorded and made available to the recipient facility[4].

ii. The identified animal(s) should be subjected to health screening[3] so as to ensure their fitness for transportation and to avoid transmission of diseases to animals in the recipient aquarium[2]. The IUCN guidelines and health screening prior to translocation of wild animals should form the basis of such interventions[5].

iii. If required, animals may be vaccinated and dewormed well in advance to transportation, at least three weeks before the action[2].

iv. Under the veterinarian consideration, manatees should fast 18-36 hours before transport.



v. Body weight and morphometric features should be estimated by a specialist[2]. This is especially important to design the containers, and to verify that the weight of the animals is according with the vehicle/aircraft capacity.

vi. A health certificate should be issued by the veterinarian of the donor aquarium in a standard format with all health related details[2].

vii. Transport and changes in the environment are temporary stressful events for manatees. Therefore, it is recommended monitoring the hematological and biochemical parameters before and after translocation to evaluate the potential effects of handling stressors in the animals[6].

2.4. Trip arrangements

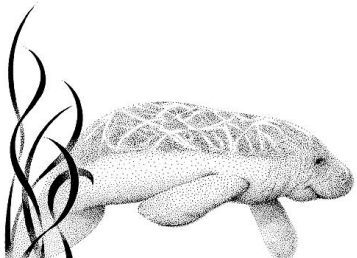
i. The mode and type of transport on the different phases of the process should be identified, a reconnaissance carried out well in advance, and preparation should be accordingly made.

ii. Reputed and experienced companies/firms/NGOs that are experienced in transporting animals should be selected and engaged. No compromise should be made in this regard[2].

iii. The transport vehicle should be insured, and all the vehicle-related documents should be checked[2].

iv. To select the airplane, be sure that the inside dimensions and the doors of the airplane are appropriate to easily manipulate the containers to use.

v. A complete record of the weather and climatic conditions should be maintained prior to initiating transport. Extreme climatic conditions should be avoided while transporting the animals. In case transportation should be planned during the summer or in tropical weathers, it should be carried out strictly during the cooler hours of the day, preferably the early morning or late evening. Abrupt changes in weather conditions should be anticipated and provided for[2].



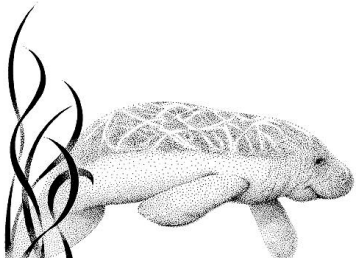
vi. All possible precautions should be taken in advance to ensure that animals are not subjected to low temperatures or to draughts. This would necessitate planning their movement with due regard to the climatic conditions natural to them, and to the conditions prevailing at their final destination, and also those that will be encountered during transport. Particular attention should be paid to get the adequate facilities and documents at any intermediate stops at airports, etc[4].

vii. A backup and support vehicle will be always available on call. An agreement should be signed between the carrier company and the consigner so that an alternate vehicle will be arranged as early as possible in case of any breakdown or other emergencies that may arise en route[2].

viii. Any transport greater than two hours duration requires a transport plan approved by the attending veterinarian[4]. A detailed discussion should be held between donor, recipient, Transport Company and the identified escort team. Additionally, responsibilities and tasks should be allotted. [2].

ix. Transportation logistics and time schedule should be carefully discussed[3]. Stops in route should be pre-planned and identified well in advance to minimize the duration of transport. Information of other facilities available en route should be provided to the personnel of the vehicle[2]. The driver/pilot/team undertaking the transportation should familiarize themselves with the rout that will be taken. In case of long travel with several hours of flight duration and with more than one stop, should be pre-planned put the animals in a resting pool for several hours before to continue with the travel. This also offers an opportunity to check some parameters to evaluate general condition of the manatees, and to clean the containers.

x. The estimated time of arrival should be notified in advance to the consignee, and also the route of the consignment[4]. Adequate



arrangements for its prompt collection at the final destination, and for any necessary movement at transit points, should be made in advance[4]. Any delay in collection should be anticipated, and advance arrangements should be made for the housing and feeding of the animals[4].

xi. The vehicle should be disinfected properly prior to transport[2]. When containers are to be re-used they should be also thoroughly cleaned and disinfected before and after use[4].

xii. A checking list of material and equipment must be elaborated and reviewed.

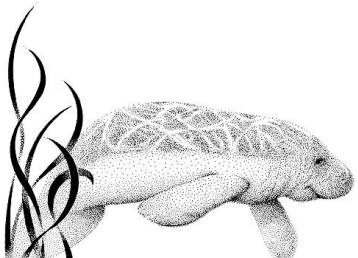
1.1. Facility at recipient aquarium/park/ rehabilitation centers

i. The recipient facility should ensure the availability of appropriate enclosures following the international guidelines. If no enclosure exists, a new enclosure should be constructed well before the arrival of the animals[2].

ii. The recipient facility should provide with enough advance in time all the legal documentation to construct the pools and to keep manatees[2].

iii. If an existing enclosure is already present, it should not be overcrowed due to the addition of new animals. A separate enclosure should be made available for the new animals[2].

iv. The recipient aquarium/park/rehabilitation center should arrange well in advance at least one full time keeper for the manatee (s) to be received. If the recipient institution has no experience in managing manatees, the designated keepers should be sent well in advance to the donor institution to familiarize themselves with the husbandry, care, feeding, treatment and daily routines related to the care of manatees in captivity[2].



1.2. Financial considerations

The following needs to be considered in terms of the financial outlay when planning the acquisition of new animals:

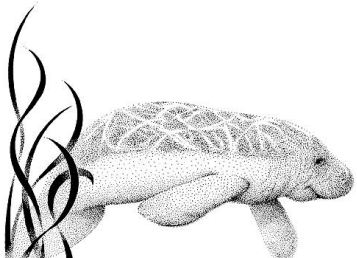
i. Enough funding to provide additional manpower for the care of the new animals
ii. Full funding for the transportation from the donor facility, including unexpected situations.
iii. Provision of adequate funds for the upkeep and veterinary care of the animals.

III. TRANSIT

3.1. Containers

Animals have to be confined in containers during transport for easy handling and to minimize the chances of injury to the animals[2]. Manatees are easily transported out of water on soft, closed cell foam in an top opened, waterlight container[7]. The container should have the following characteristics:

i. **Size**. The dimensions of the container should allow the animal to rest comfortably but should not provide space for turning[2]. If possible, some extra-space to allow the presence of the veterinary is recommendable. It must be of sufficient large to ensure that there is adequate clearance from the animal's flippers[4]. It should be slightly larger in length and width than the manatee, to enable the animal to make normal postural adjustments[7]. A minimal clearance of 20 cm (8 in) should be available at the front and rear of the animal and between the sides of the animal and the stretcher poles or side of the container[1]. A depth of 130cm is adequate for adult Caribbean



manatee container. For calves it could be lower. In case of transport by air, containers should be observe the regulations of fabrication in concordance with the size and weight specified for the aircraft and, for the cargo vehicles in the airports. Observe the cargo-aircraft regulation prior to the container construction.

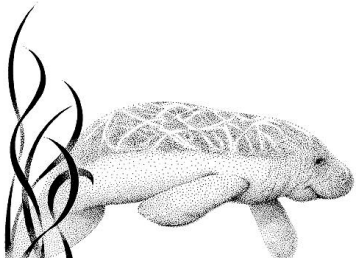
ii. **Shape**. The container should be rectangular in shape[2].

iii. **Materials**. It must be strong enough to house the animal and to withstand the handling involved during transport. The material must be durable, nontoxic, and cannot be chewed and/or swallowed[8]. It can be constructed of suitable corrosion proof metal, fiber-glassed Divincell, marine plywood or heavy duty plastic of sufficient strength[7],[4], aluminum, steel and other framing materials, canvas, foam rubber, closed-cell foam, plastics, PVC and/or wood[1].

iv. **Interiors**. As far as possible, containers should not be painted inside, and the surface should be smooth[2]. The interiors of the container must be free from any protrusions or hazardous openings that could be injurious to the manatee[8]. For easy cleaning the container must have drainage.

v. **Ventilation**. The container should be well ventilated. It should have projecting rims or other devices placed on any ends and sides of the enclosures that have a ventilation openings so that there is a minimum air circulation space of 8 centimeters between the enclosure and any adjacent cargo or conveyance wall[8].

vi. **Handholds**. To be equipped with adequate handholds or other devices on the exterior of the enclosures to enable them to be lifted without unnecessary tilting and to ensure that the persons handling the enclosures will not come in contact with the manatee contained inside[8]. If the container with the manatee results too heavy, it should be moved only by a cargo vehicle and specialized personal



3.2. Transport vehicle considerations

i. Transport of sirenians is less complex than that of cetaceans, pinnipeds or sea otters, because they actually require and tolerate warmer temperatures. Transport appears to be best accomplished using a temperature – controlled (24 to 26°C; 64 to 73°F) vehicle[7].

ii. In the case of land transportation, there should be always two drivers for each vehicle so that there need not be an excessive numbers of stops during the journey. However, there should be no rush to cover the distance[2].

iii. The interiors of animal cargo spaces must be kept clean[8]. The animal cargo space must be constructed and maintained in a manner that will prevent the ingress of engine exhaust fumes and gases in excess of that ordinarily contained in the passenger compartments.

iv. Adequate lighting must be available to allow proper inspection of the animals at any time[8].

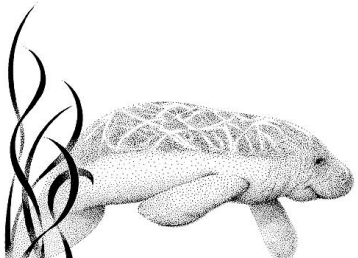


Figure 1. Containers used to translocate Amazonian manatees, *Trichechus inunguis*, by hydro-plane in Peru (Photos courtesy Sarah Landeo, ACOBIA). Notice that to transport adult Caribbean manatees, a cargo vehicle must be required.

3.3. Human resources and behavior during the transit

i. A licensed veterinarian, employee and/or attendant of the donor must accompany the manatee during all transportation periods, to ensure the good health and well-being, to determine whether veterinary care is necessary, and to provide any medical aid as soon as it is needed[4]. In special cases, the veterinarians of both donor and recipient aquarium may accompany the animals during transportation[2]. No attendant will be responsible more than two animals during any one specific transport[1].

ii. If a veterinarian does not accompany the animal, communication with the veterinarian must be constantly maintained[8]. If several manatees are being transported, it would be necessary for more than one trained attendant to accompany them[4].

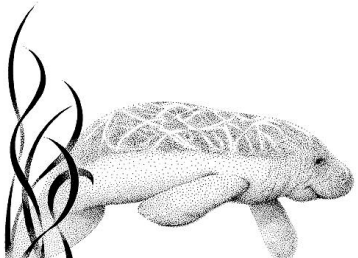
iii. Sufficient number of assistants is necessary during all the transport process in order to check on the manatee state and record annotations on his health or behavior.

iv. The personnel should carry emergency lights, batteries, drinking water, food, medical kits, etc[2].

v. The names, phone numbers and responsibilities of each member of the escort crew should be discussed and clear for everyone.

vi. A key component of safety for the personal involved in the transportation is common-sense personal hygiene. Investigators should wash their hands as often as possible and should wash their field clothes and any other materials that come in contact with manatees or body fluids[9].

vii. Although completely legal and humane, the transportation may be misunderstood by the public. Therefore, researchers should be discreet in all activities that may affect the sensibilities of the public. In general, taking time to explain the activity to interested or concerned individuals is a valuable practice[9]. The personnel should be wearing in uniform with proper dress code[2]. The vehicle (in case



of land transportation), should also have advertisements of the nature of the transportation.

3.4. Care in transit

i. Identification and weight measurements of the animals to be transported should be done prior to loading[2].

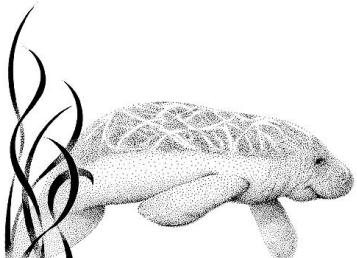
ii. Adult manatees do not require feeding during transport because of their slow metabolic rates. Fasting prior to transport produces a negligible change in waste output. Any solid stool passed during transport must be removed in a sanitary manner. Arrangements have been made to feed the infant during transport if the travel will take longer than the calf's normal feeding period[4]. Appropriate hydration may be necessary[1].

iii. Sedation is not recommended. It should be administered only in exceptional circumstances and on the advice of a person experienced in the handling and care of these animals. It should be administered only under the supervision of an authorized qualified veterinarian, and details of the sedation given should accompany the animal[4].

iv. The animal should be placed in a suitable canvas sling and lowered onto a very deep, damp foam mattress placed in the container.. The sling should be left loose under the animal during transport[4]. Especial care has to be taken on the flips, which must be located in comfortable and natural position[10].

v. Care should be taken to avoid subjecting the animal to extreme ambient temperatures and prolonged exposure to direct sunlight[1]. The skin should be constantly sprayed with water to avoid skin desiccation and overheating[11]. Mechanical hand-sprayer should be available to keep the animal's skin moistened and cool[4].

vi. The animal will be placed in a space with sufficient air supply. If feasible, animals should be transported in a transverse position; if this is not practicable, then they should travel in a head-first position[4].



vii. Containers should be secured to the aircraft, to avoid any possible movement, and should at all times be maintained in a horizontal position[4]. During air transport, standard nylon aircraft tie-down straps are used over the open tops of the containers to avoid any vertical movement of the animals that may be caused by air turbulence[7]. Padded restraining belts, if used, should be firmly but not forcibly, fastened over the animal to prevent sudden movements or rolling. Vertical bars within the container may also be configured to prevent the animal from rolling[1].

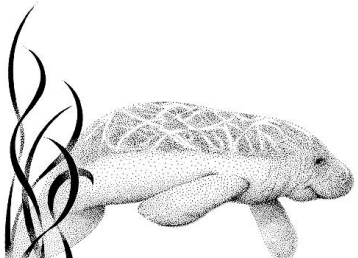
viii. Human contact with the animals should be minimized to avoid cross-infection.

ix. The animals should be monitored through the transportation, and, if need be, appropriate treatment/management should be administered.

x. Emergency veterinary drugs and equipment should be carried during transportation to meet any eventuality. Quick and prompt veterinary consultations and treatment should be extended to animals that get injured or diseased in transit.

The manatees should be checked frequently[9]. During all the operation vital signs have to be monitored. Routine surveillance of the animal's basic bio-medical health parameters (such as heart rate, respiration and oral temperature) should be periodically monitored during transport[1].

i. *Respiration*. The number of respiration has to be noted manually[12]. Average rested animal respiration should be around one breath every minute with a range of 3-15 per five minutes[12]. Normally, a healthy manatee can breathe between 2-4 minutes (adult) or 1- 2 minutes (calf)[13]. To stimulate the breathing, water can be pour over the closed nasal passages. To stimulate the breathing, water can be pour over the closed nasal passages. Describe if the inspiration and expiration are deep or shallow, and document the odor of the expiration (no



odor, sweet/sour or foul). A stethoscope can be used to listen to each lung along the dorsum while the animal is taking a breath, although it can be difficult in large animals[10].

ii. *Heart rate and capillary refill*. Using an electrocardiography (ECG) monitor or a stethoscope, check the heart for palpitations, trills, or arrhythmias and evident murmur sounds. The stethoscope bell is inserted under the manatee's axilla and placed ventrally, close to the midline beneath the sternum[12]. A single heart beat is defined as an atrial and ventricular contraction. The normal heart rate is 51-66 bpm for adults and 61-75 bpm for calves[14]. Capillary refill time will give an indication of blood circulation and can be determined by pressing a finger against the upper inner lip pad, then removing and noting capillary refill time when the blanched tissue returns to normal color[10]. Notice if the gum color is pink or pale, and whether the tissue appears cyanotic (bluish) or icteric (yellowish)[10].

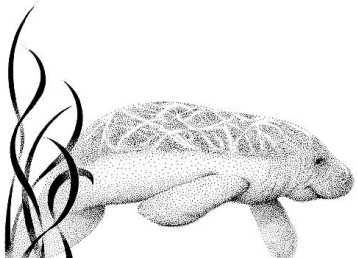
iii. *Temperature*. Temperature can be monitored with a flexible oral probe placed as far as possible into the posterior of the mouth between the outer cheek teeth and the gum. Oral temperature range between 29 and 36°C[10,12]. Rectal fermentation is unreliable due to the fermentation process that causes dynamic temperature fluctuations[10].

The assistants will be required to fulfill several key tasks, under the veterinarian direction[8] :

i. Keeping the skin moist or preventing the dying of the skin by intermittent spraying of water.

ii. Assuring that the pectoral flippers are allowed freedom of movement at all the time

iii. Making adjustments in the position of the manatee when necessary



iv. Keeping the animal cooled and /or warmed sufficiently to prevent heating, hypothermia, or temperature related stress

v. Calming the manatee to avoid struggling, thrashing, and other unnecessary activity that may cause overheating or physical trauma.

vi. Checking vital signs.

3.5. Record-keeping considerations

i. Copies of the studbook and breeding records of the manatees being transported should accompany the animals to indicate the pedigree and to prevent inbreeding[2].

ii. Copies of the animal report including all details of health, breeding and animal temperament, medical history sheets should be sent to the recipient zoo along with the animals[2].

4. CONSIDERATIONS AFTER THE TRANSPORT

i. The manatees should be housed in stress-free environments[2].

ii. A quarantine and health check-up should be carried out according to veterinary protocols and the relevant guidelines[2].

iii. Animals that have become sick or that have been injured during transport should receive veterinary treatment as soon as possible[4]

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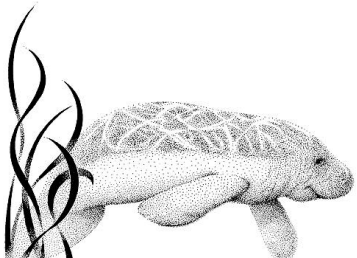

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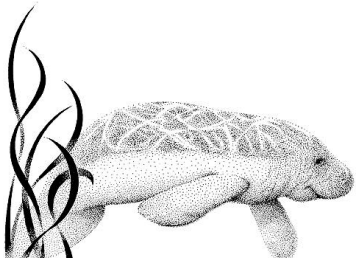


Convention on International Trade in Endangered Species of Wild Fauna and Flora

Signed at Washington, D.C., on 3 March 1973

Amended at Bonn, on 22 June 1979

Article III
Regulation of Trade in Specimens of Species Included in Appendix I

1. All trade in specimens of species included in Appendix I shall be in accordance with the provisions of this Article.

2. The export of any specimen of a species included in Appendix I shall require the prior grant and presentation of an export permit. An export permit shall only be granted when the following conditions have been met:

(a) a Scientific Authority of the State of export has advised that such export will not be detrimental to the survival of that species;

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

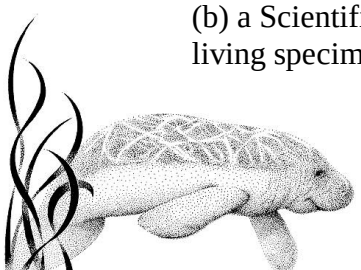
(c) a Management Authority of the State of export is satisfied that any living specimen will be so prepared and shipped as to minimize the risk of injury, damage to health or cruel treatment; and

(d) a Management Authority of the State of export is satisfied that an import permit has been granted for the specimen.

3. The import of any specimen of a species included in Appendix I shall require the prior grant and presentation of an import permit and either an export permit or a re-export certificate. An import permit shall only be granted when the following conditions have been met:

(a) a Scientific Authority of the State of import has advised that the import will be for purposes which are not detrimental to the survival of the species involved;

(b) a Scientific Authority of the State of import is satisfied that the proposed recipient of a living specimen is suitably equipped to house and care for it; and



(c) a Management Authority of the State of import is satisfied that the specimen is not to be used for primarily commercial purposes.

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

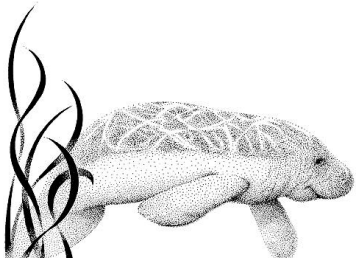
(a) a Management Authority of the State of re-export is satisfied that the specimen was imported into that State in accordance with the provisions of the present Convention;

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

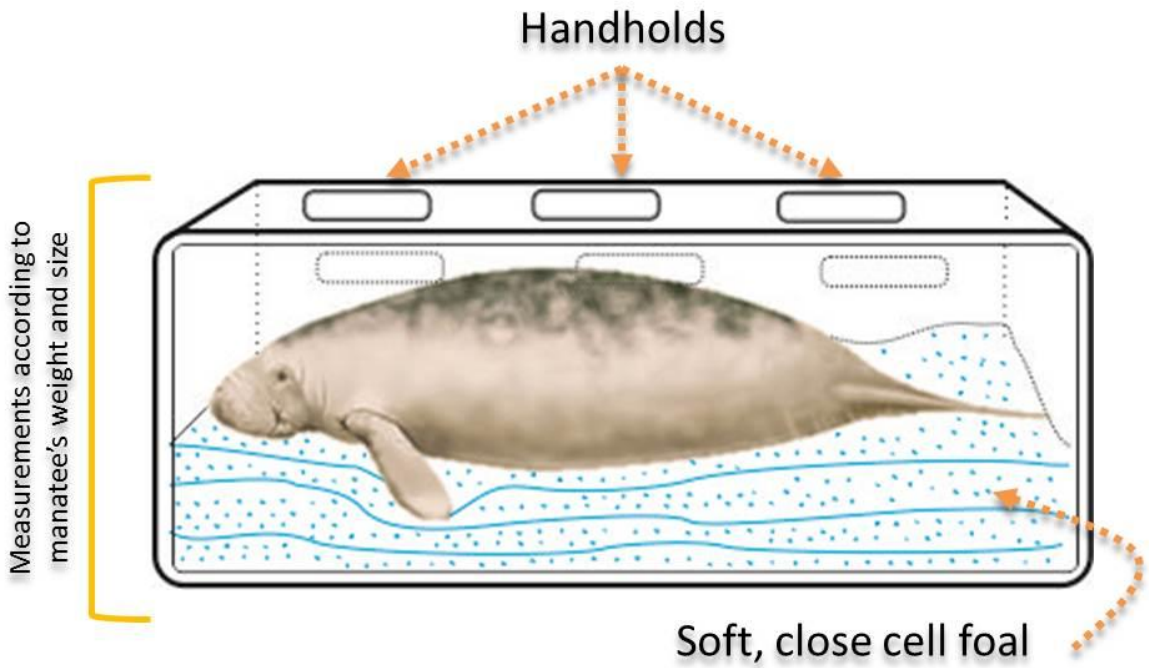
(c) a Management Authority of the State of re-export is satisfied that an import permit has been granted for any living specimen.

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

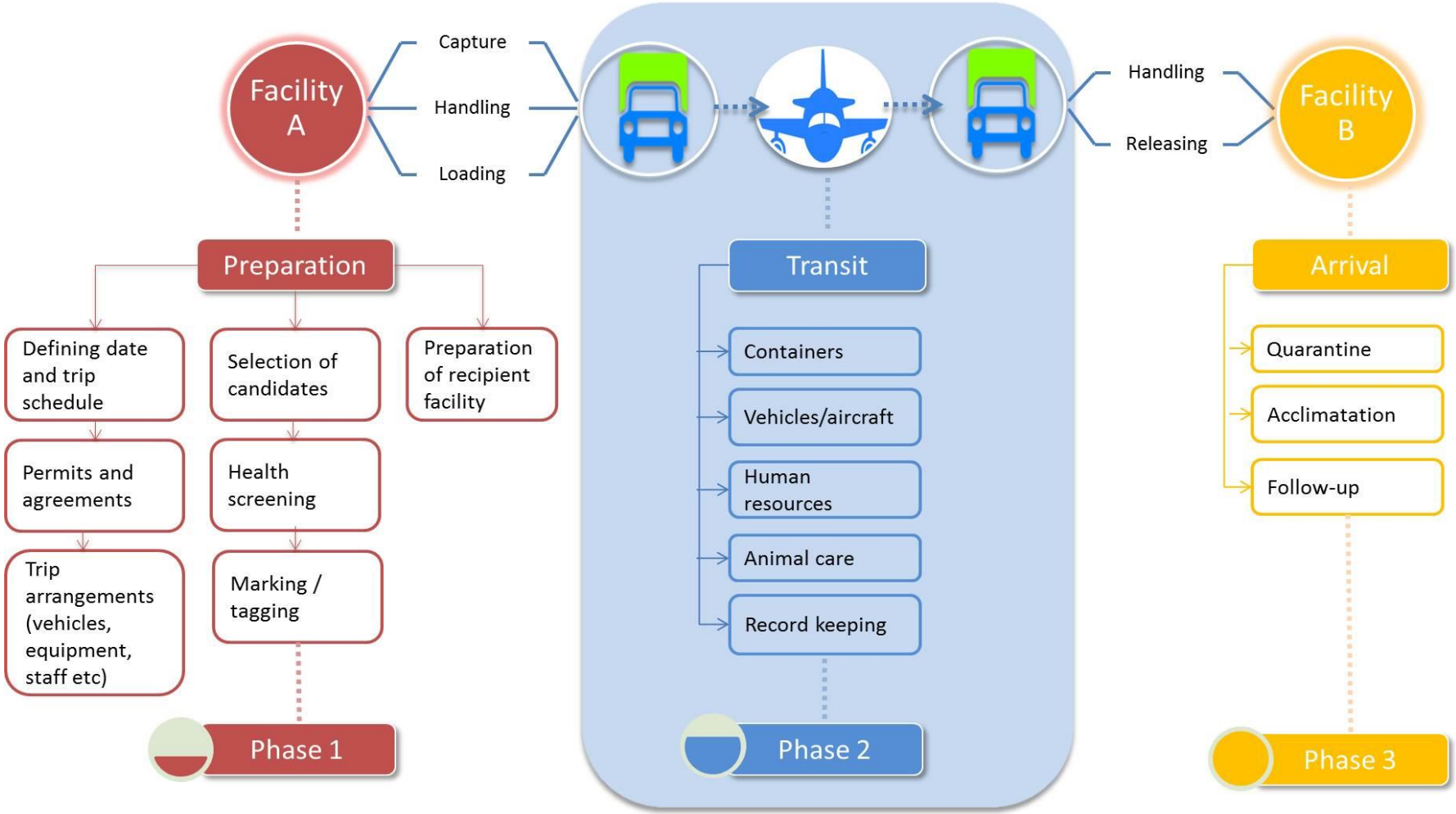
(a) a Scientific Authority of the State of introduction advises that the introduction will not be detrimental to the survival of the species involved;
(b) a Management Authority of the State of introduction is satisfied that the proposed recipient of a living specimen is suitably equipped to house and care for it; and
(c) a Management Authority of the State of introduction is satisfied that the specimen is not to be used for primarily commercial purposes.



Appendix 2. Container design



Appendix 3. Flow diagram



Appendix 4. Crew members

- ❒ General coordinator
- ❒ Representative of donor aquarium
- ❒ Representative of receiver aquarium
- ❒ Veterinarian (Minimum 2)
- ❒ Trainer with more than three years of manatee experience
- ❒ Assistants

Appendix 5. Sample of check-list of basic equipment and material needed during manatee transportation (elements may be added according to the situation)

- ❒ Nets
- ❒ Stretchers
- ❒ Freshwater
- ❒ Water sprayers (2 per manatee)
- ❒ Ice
- ❒ Towels
- ❒ Ropes
- ❒ Sponge
- ❒ Box
- ❒ Containers
- ❒ First-aid kit
- ❒ Pick-up truck
- ❒ Aircraft
- ❒ Flashlights, batteries
- ❒ Radios, batteries
- ❒ Medical assistance for manatees
- ❒ Medical assistance for humans
- ❒ Transportation poles
- ❒ Gloves
- ❒ Freshwater and food for humans
- ❒ Body temperature thermometer
- ❒ Towels