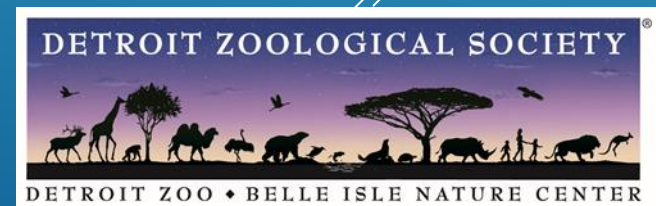


# Transporting Penguins Near and Far

Tom Schneider, Penguin TAG Chair  
Curator of Birds, Detroit Zoo  
tschneider@dzo.org




Gayle Sirpenski, Mystic Aquarium  
Steve Olson, Association of Zoos & Aquariums



# ABSTRACT:

Shipping penguins present additional challenges due to the temperature requirements, especially for the colder weather species. Special crates are utilized so they can maintain proper temperatures, even for short trips by vehicles. It is particularly challenging sending penguins across the country, and this presentation will discuss the different shipping methods that have been used for successful transfers of both temperate and the colder weather penguin species.



- Land
- Air
- Eggs



- Temperate species
- Cold weather species
- Polar species

Contact your  
SSP Coordinator

Population Analysis &  
Breeding and Transfer Plan

Macaroni Penguin (*Eudyptes chrysolophus*)  
AZA Species Survival Plan®  
Green Program



AZA Species Survival Plan® Coordinator & Studbook Keeper  
Jessica Jozwiak, Detroit Zoo  
([jjozwiak@dzs.org](mailto:jjozwiak@dzs.org))

AZA Population Advisor  
Sara Sullivan, Population Management Center, Lincoln Park Zoo  
([ssullivan@lpzoo.org](mailto:ssullivan@lpzoo.org))

1 November 2016

PMC

Population Management Center

Lincoln Park  
Zoo

ASSOCIATION  
OF ZOOS &  
AQUARIUMS

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AQUARIUMS



**PENGUIN  
(Spheniscidae)  
CARE MANUAL**

CREATED BY THE  
**PENGUIN TAXON  
ADVISORY GROUP**  
IN ASSOCIATION WITH THE  
**AZA ANIMAL WELFARE  
COMMITTEE**

## Chapter Three

- Transport Container
  - Divide containers
  - Proper substrate
  - Cover windows with a breathable material
  - Use BlueIcel under matting



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## Chapter Three

- Transport Container



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## Chapter Three

- Transport Container
- Develop transport plan
  - Identify point person
  - At least one penguin person
  - Back-up institutions



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## Chapter Three

- Transport Container
- Develop transport plan
- Modes of transportation

### Vehicle

- Length of drive
- Climate controlled truck

### Airlines

- DASH or VIP service
- Fed-Ex

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## Chapter Three

- Transport Container
- Develop transport plan
- Modes of transportation
- Equipment needed
  - Thermometer
  - Medical Kit
  - Cooler with additional ice
  - Tools
  - Spray bottles

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## Chapter Three

- Transport Container
- Develop transport plan
- Modes of transportation
- Equipment needed
- When to ship
  - Cool weather
  - Not within 6 weeks of molt

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## Chapter Three

- Transport Container
- Develop transport plan
- Modes of transportation
- Equipment needed
- When to ship
- Food and water

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COMMITTEE**

## Chapter Three

- Transport Container
- Develop transport plan
- Modes of transportation
- Equipment needed
- When to ship
- Food and water
- Substrate

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**COMMITTEE**

## Chapter Three

- Transport Container
- Develop transport plan
- Modes of transportation
- Equipment needed
- When to ship
- Food and water
- Substrate
- Temperature requirements
  - Temperate – 40 to 60 F
  - Cold weather – 25 to 50 F

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(Spheniscidae)  
**CARE MANUAL**

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**COMMITTEE**

## Chapter Three

- Transport Container
- Develop transport plan
- Modes of transportation
- Equipment needed
- When to ship
- Food and water
- Substrate
- Temperature requirements
- Monitoring

# Ground Transportation

- Proper vehicle
  - Crates
  - Map route
  - Meeting place
  - Contact zoos along way
  - Qualified staff
  - Remote monitoring
  - Medical kit
  - Extra supplies; ice, thermometers,
- 



## PENGUIN TRANSPORT PLAN

**Date of transport:** 12/12/2017

**Animal:** *Spheniscus demersus*, Green/Silver Sd0503-38, Stud book # 2558

**Origination:** Mystic Aquarium, Mystic, CT, USA

**Destination:** Fort Wayne Zoo, Fort Wayne, IN, USA

**Approximate Duration:** Depart MA to Clearfield, PA: 4:00am (7hr 5min)  
Rendezvous: 20min  
Depart Clearfield, PA to Fort Wayne Zoo: (6hr 4min)  
Arrive Fort Wayne Zoo: 5:24pm  
**Total Time: 13hr 29min**

**Details:**

**Description of transport container:** Green/Silver will be transported in a transport crate and will remain in the crate for the duration of the transport. The crate measures 24"L x 15"W x 14"H. Dri-dek matting will be placed on top of fully contained ice gel packs to maintain cool temperatures and to keep the penguin out of excrement during the transport.

**Mode of transportation:** Green/Silver will be loaded into his transport crate at approximately 3:30am on 12/12/2017 at Mystic Aquarium and will depart at approximately 4:00am to be transported by air conditioned transit van to the McDonalds located at 14659 Clearfield Shawville Hwy, Clearfield PA 16830, arriving by 11:00am. Mystic Aquarium's Senior Penguin Trainer Josh Davis will rendezvous with Fort Wayne Zoo's Registrar Jen Diehl RVT and Fort Wayne Zoo's Aquatics Keeper Mitch Overmyer for approximately 20 minutes. During the rendezvous Green/Silver will be transferred to Fort Wayne Zoo's staff. Green/Silver will then depart Clearfield, PA by 11:20am and will then be transported to the Fort Wayne Zoo in Fort Wayne, IN, via an air conditioned vehicle. Travel time from Clearfield, PA to the Fort Wayne Zoo should be approximately 6 hours and 4 minutes. In the event that Jill Diehl RVT is unable to participate in the transport Fort Wayne Zoo's Aquatics Keep Caitlin Collins will take her place.

**Monitoring animals:** The penguin will be monitored constantly throughout the land transport for signs of overheating and stress. Josh Davis, Senior Trainer of Penguins at Mystic Aquarium, will be transporting this penguin from Mystic, CT to Clearfield, PA. He will be accompanied by Mary Ellen Hagen, a Mystic Aquarium volunteer. Jen Diehl RVT, Registrar of Fort Wayne Zoo and Mitch Overmyer, Aquatics Keeper of Fort Wayne Zoo, will pick Green/Silver up from Clearfield, PA and will be transporting him to the Fort Wayne Zoo. In the event that Jill Diehl RVT is unable to participate in the transport Fort Wayne Zoo's Aquatics Keep Caitlin Collins will take her place.

Temperature monitoring: A thermometer will be mounted to the transport container and attendants will monitor during entire transport.

- o Ideal temperatures: 60 – 65° F

**Health Assessment:** The Attending Veterinarian will perform a physical examination within 10 days of the transport and will provide a health certificate for travel. All pre-shipment diagnostic results and medical records will be forwarded to the receiving veterinarian prior to transport. Upon arrival, Dr. Kami Fox will examine the penguin. Registrar, Jen Diehl RVT will contact Mystic to let them know the bird has arrived safely. Fort Wayne Zoo staff will provide updates 24 hours after arrival, and when Green/Silver eats for the first time since arriving.


**Phone tree communication:** A phone list identifying primary contacts at origination and destination points, veterinarians, and other contacts as deemed necessary for complete communication through out the transport and in case of emergency will be attached to the transport container.

**Mystic Aquarium (860)572-5955**

Larry Rivarde, Senior VP Zoological Operations and Business Management (504) 329-2332 (cell)  
Dr. Allison Tuttle, DVM, Diplomate ACZM, VP Biological Programs (860)514-6410 (cell)  
Dr. Jennifer Flower DVM, MS, Diplomate ACZM, Chief Veterinarian (216) 406-8535 (cell)  
Dr. Barb Mangold DVM, Associate Veterinarian (203) 240-8642 (cell)  
Dr. Melissa Joblon DVM, Veterinary Intern (860) 514-6658 (cell)  
Laurie Macha, Curator of Marine Mammals and Birds (860) 625-1111 (cell)  
Tracy Camp, Asst. Supervisor of Penguins (860)-334-1393 (cell)  
Josh Davis, Senior Trainer of Penguins (860)-608-9270 (cell)

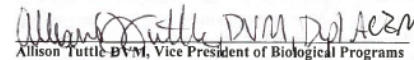
**Fort Wayne Zoo**

Dr. Joe Smith DVM, Director of Animal Programs (260) 427-6246 (cell)  
Dr. Kami Fox DVM, Fort Wayne Zoo Veterinarian (970) 443-8260 (cell)  
Shelley Scherer, Area Curator (260) 341-3010 (cell)  
Jen Diehl RVT, Registrar (260) 573-1137 (cell) (260) 582-6474 (backup cell)  
Mitch Overmyer, Aquatics Keeper (317) 385-0817 (cell)  
Caitlin Collins, Aquatics Keeper (334) 398-2482 (cell)



Larry Rivarde, Sr. Vice President of Zoological Operations  
and Business Management

Date 12.6.17

  
Allison Tuttle, DVM, Dip ACZM  
Allison Tuttle, DVM, Vice President of Biological Programs

Date 12/4/17

  
Laurie Macha, Curator of Marine Mammals and Birds

Date 12/4/17

# Ground Transport – Kennel Crates

Kennel crate – Used for small species;  
1-2 individuals per crate depending on  
species/compatibility.

Crates have layer of ice packs  
covered with turf or dry-dek/towels



# Ground Transport – Barrels Inside Ice-packed Horse Trough Method

Refuge barrels with holes drilled around upper sides and lid.

Place in horse trough packed with ice.

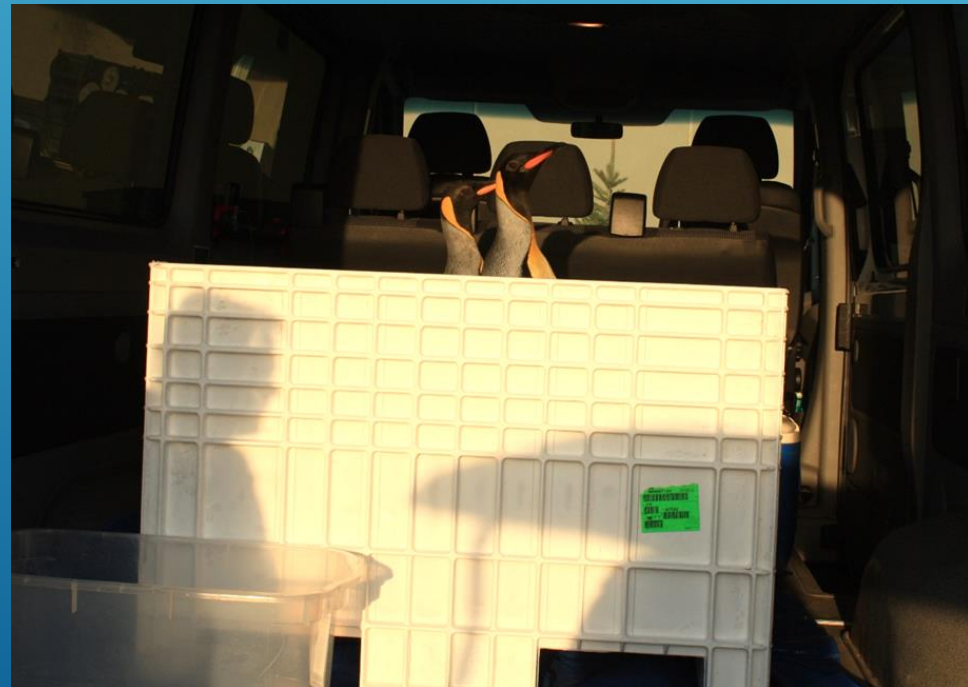
Use remote-sensing thermometer and remote camera



# Ground Transport – Open Crates

Bulk crate without top extension and lid.

Used to transport 2 kings or multiple smaller species.



# Ground Transport – Wooden Crates

Wooden crate with mesh sides and top used for single king penguin.

Use turf on top of ice packs.

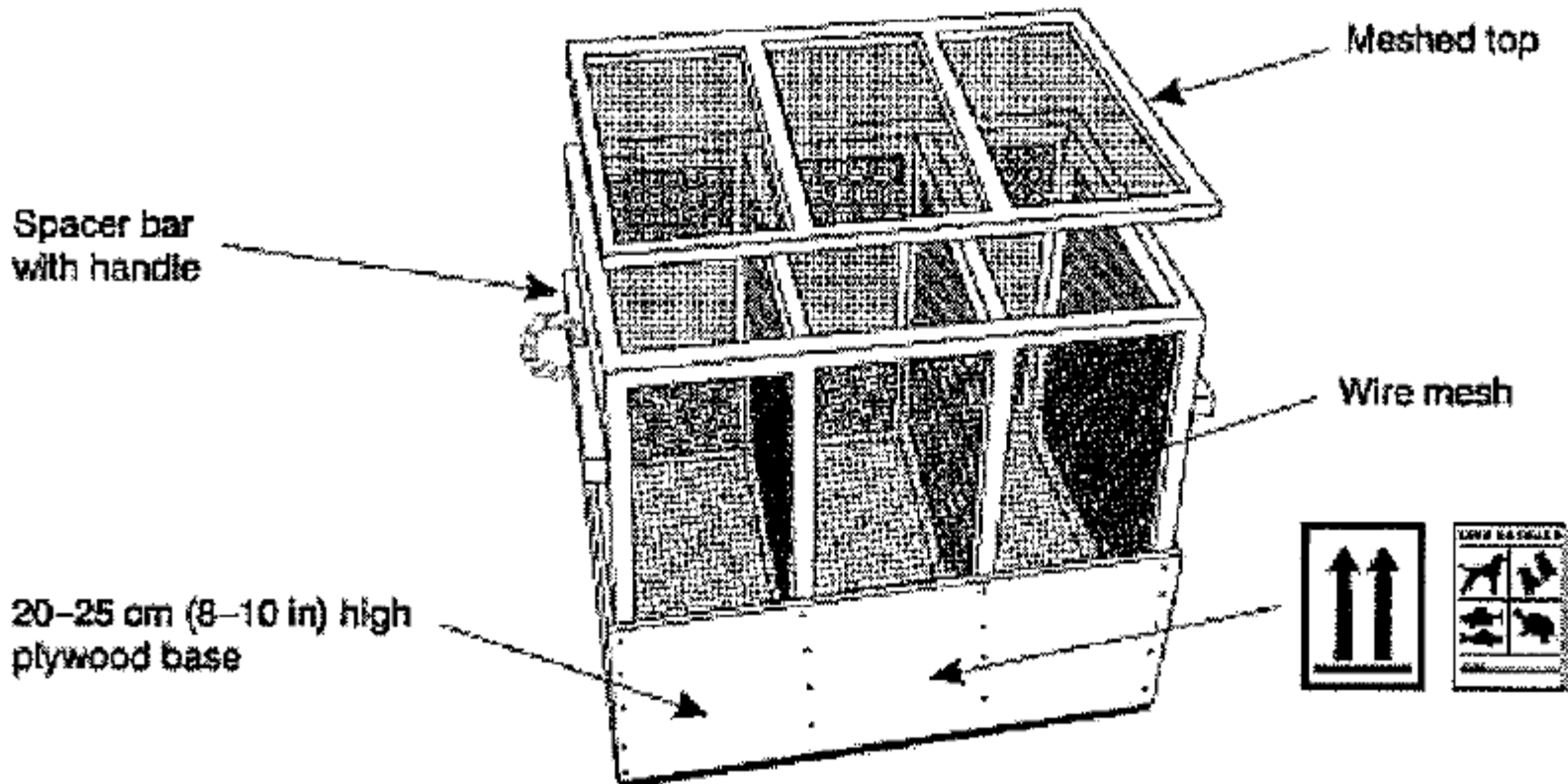


# Air Transportation





## IATA LAR/CR#22



International Air  
Transport Association

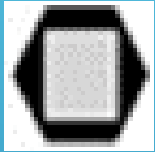


[www.iata.org](http://www.iata.org)

## IATA LAR/CR#22

- 2007 – Steve Olson before IATA board, but not successful.
- Sept 2010 - Frank Kohn, CITES Policy Specialist (Live Animal Transport) for USFWS discusses with Gayle Sirpenski that he was aware of inconsistencies with air transports involving penguins being shipped in pet carriers.
- December 2010 – Survey sent to AZA institutions
- Spring/summer 2011 – Gayle and Frank clarified text and content
- Oct 2011 – Steve and Frank presented draft at IATA Live Animal & Perishables Board (LAPB) meeting in Montreal
- • Feb/Mar 2012 – Final edits made and submitted for April IATA meeting.
- • Oct 2012 - Revised CR#22 published in the 39th edition of the IATA LAR.





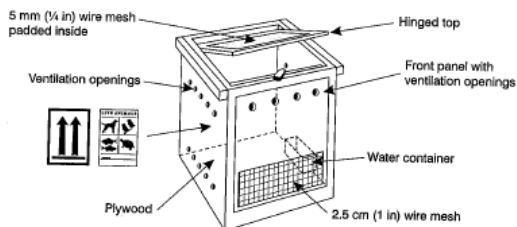
- **Materials:** Added additional carrier construction materials (fixed wall plastic high density polyethylene (HDPE) containers, fiberglass, composite or synthetic materials, shade cloth, plastic mesh, burlap)
- **Frame:** Added prefabricated plastic “tote” container molded from a single piece of plastic as the preferred transport container (larger species).
- **Sides:** Table inserted showing height extension recommendations for shipping “tote” containers and use of wire or plastic mesh to cover top. Added text noting that mesh used must be small enough so beaks will not be able to pass through. When transported by rigid plastic pet container, the front and sides, and all other openings or grates, must be covered with mesh.
- **Flooring:** Text added noting that containers must be covered with suitable bedding such as rubber matting and should be placed over ice packs to maintain cool temperatures. Natural ice may be used in plastic totes. If a wooden container is used, natural ice can be used only if the bottom of the container is leak-proof or the ice is contained in a leak-proof bag. Temperate penguin species (e.g. Galapagos, Africa, Humboldt, Magellanic, and Little Blue) also require cooling material placed under the matting or mesh.
- **Stocking Density:** Allows birds to be transported in groups vs. single bird/compartment. Table added to suggest proper stocking density by species and size. For pet carriers, no more than 2 compatible birds per carrier.
- **Roof:** Use plastic mesh or shade cloth for protection.
- **Feed/Water containers:** Food and water are not necessary but for longer duration transports or unexpected shipment delays, food may be offered when access to the animal is available but food and water should be removed from the container prior to continuation of the transport.



## Live Animals Regulations

- the door grill and ventilation openings must be covered with a fine mesh to prevent any part of the bird(s) protruding. A light curtain must cover the door and ventilation openings to reduce the amount of light within the container;
- a suitable container for feeding small pieces of fish must be fixed inside the container with a means of refilling from the outside;
- labelling must conform to IATA standards for Live Animals;
- if a container has wheels, they must be removed or rendered inoperable.

### EXAMPLE:



#### Note:

Water container must be provided.

### 2. PREPARATIONS BEFORE DISPATCH (see Chapter 5)

It is advisable that shippers must ensure that wild birds have been held after capture for approximately thirty days before dispatch to overcome the stress of capture and allow them to become accustomed to confinement and their new diet. It is of the utmost importance that all birds be given, under close supervision, an opportunity to drink an ample supply of water before departure.

On no account must excess birds be loaded to ensure against mortality.

### 3. FEEDING AND WATERING GUIDE (for emergency use only)

Birds do not usually require additional feeding or watering during 24 hours following the time of dispatch.

If feeding is required due to an unforeseen delay, fresh fish no larger than a herring, approximately 20 cm (8 in) must be provided for auks and pelicans. Small pieces of fresh fish are suitable for the other species. The shipper's instructions must be followed.

### 4. GENERAL CARE AND LOADING (see Chapters 5 and 10)

Birds are very nervous by nature and containers must be handled carefully. The container must not be jolted and unnecessary tilting must be avoided. Birds must be provided with water at the time of departure, transfer, layover and at destination.

Birds will not feed in the dark and must be stowed in at least dim light sufficient for them to see their food.



## Container Requirements

### CONTAINER REQUIREMENT 22

The illustrations shown in this Container Requirement are examples only. Containers that conform to the principle of written guidelines for the species but look slightly different will still meet the IATA standards.

Applicable to:  
Penguin species

STATE VARIATIONS: CAG-01, GBG-01/02/04/06

OPERATOR VARIATIONS: DL-08, QF-01

#### 1. CONTAINER CONSTRUCTION

##### Principles of Design

The following principles of design must be met in addition to the General Container Requirements outlined at the beginning of this chapter.

##### Materials

Wood, 4-6 mm (1/8-1/4 in) plywood, fixed wall plastic (high density polyethylene (HDPE) containers, fiberglass, composite or synthetic materials, wire mesh, shade cloth, plastic mesh, burlap and rope.

##### Size

The species of penguin being shipped, its normal habits and necessary freedom of movement will determine the size and type of container that is most appropriate.

Each container must allow the bird room to stand in an upright position with a head clearance of 15 cm (6 in) after the bedding or flooring has been put in, and lie down comfortably.

##### Frame

A prefabricated plastic "tote" container is a square- or rectangular-shaped box molded from a single piece of plastic and is the preferred transport container. However, if wood is used a solid frame of 3 x 3 cm (1 1/5 x 1 1/5 in) smoothed wood, either screwed or nailed and glued with a non-toxic glue.

##### Sides

Plastic totes can be easily modified to extend the height using wood studs or synthetic/composite material and plastic mesh. The table below provides recommendations for height extension measurements.

Species	Shipping Container	Crate Modifications
Emperor King	Large Tote	Extension of 46-76 cm (18-30 in)
All Other Penguin Species	Large or Small Tote	Extension of 46 cm (18 in)

If extensions are not used on the totes, wire or plastic mesh can be used to cover the top of the tote. This will allow for air circulation and the ability to observe the birds.

If a wooden container is used a 3 or 6 mm (1/8 or 1/4 in) plywood base with a height of 20-25 cm (8-10 in) with wire or plastic mesh to the top of the container frame. The mesh used must be small enough so that the beak will not be able to pass through.

Any internal partitions must be made of, or be covered with, wire or plastic mesh of a size that prevents any protrusion of any part of the bird from one compartment to the next.

The interior of the container must have no sharp protruberances on which the bird can injure itself. When transported by rigid plastic pet container, the front and sides, and all other openings or grates, must be covered with mesh or similar material so that the penguin is unable to stick its beak out of the container.

Since penguins are capable of biting no part of the beak may protrude from any part of the container where anyone handling it might be injured.

A warning notice indicating that the animals bite such as "THESE BIRDS BITE" or some variation thereof must be clearly displayed on the container.

##### Handling Spacer Bars/Handles

If wooden containers are used, spacers and handles must be provided as shown in the illustration on all four sides of the container. Handles must be attached to the spacer bars on two sides of the container. Handles are not needed on plastic totes as this container will be moved with a fork lift/pallet jack and will be transported in cargo aircraft.

##### Floor

Floors of all types of containers must be covered with suitable material such as rubber matting. Slatted rubber mesh or similar material should be placed over blue-gel ice packs or some other type of fully contained ice gel packs to maintain cool temperatures. Natural ice may also be used in plastic totes. If a wooden container is used, natural ice can be used only if the bottom of the container is leak-proof or the ice is contained in a leak-proof bag or container. Temperate penguin species (e.g. Galapagos, Africa, Humboldt, Magellanic, and Little Blue) also require cooling material placed under the matting or mesh.

##### Perches

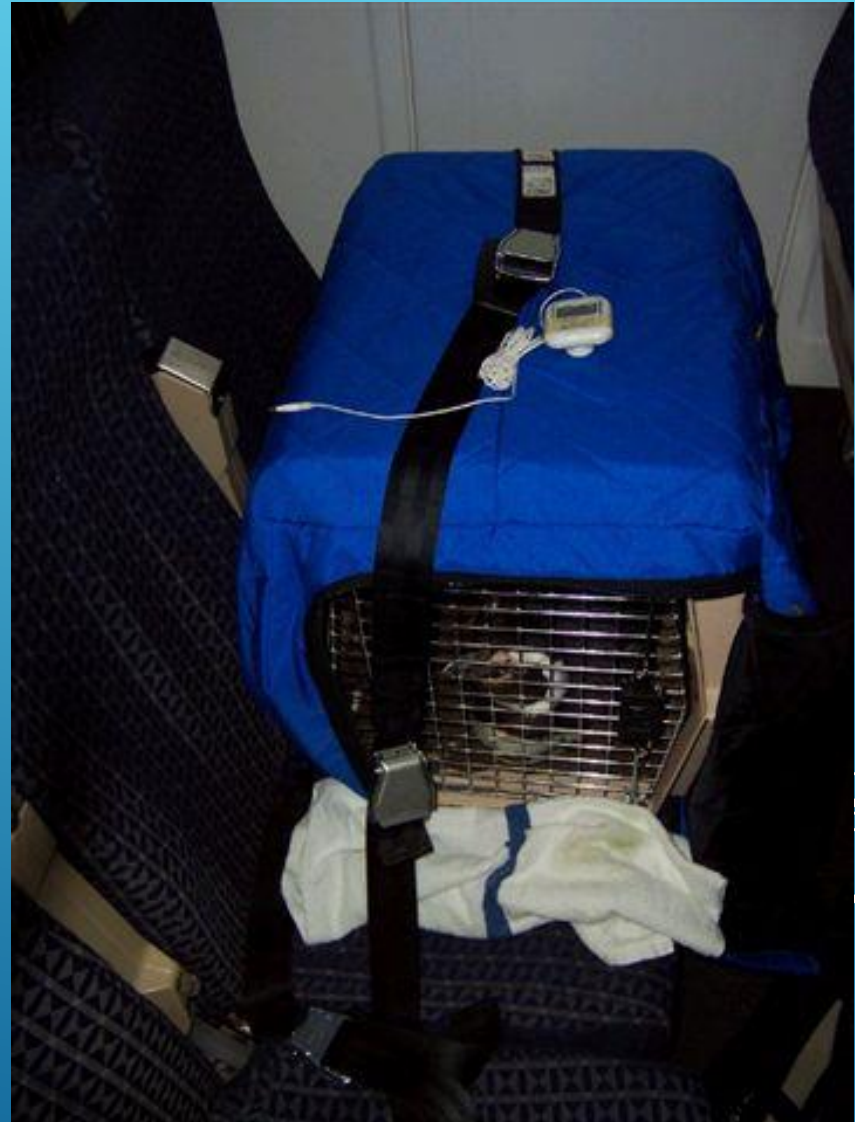
Not required.

##### Stocking Density

Penguins are colonial and may be transported in groups when using totes. The table lists suggested maximum densities by species and size.

## Temperate Penguin Shipment

- Normal animal shipment
- Direct Flight
- Schedule in advance
- VIP or DASH
- Layover back-up



## Cold Weather Penguin Shipment

- Not normal shipment
- Normally airlines will not cool down animal storage area
- Use Fed-Ex



# FedEx Transport - Scheduling and Attendant Security Clearance

Allow a minimum of 2 months for scheduling and attendant security clearance.

Completion of several forms, a valid diver's license and passport, background check, and ink on paper fingerprinting required.

Advise both FedEx ramp offices of shipment and for further instructions.

## Attendant / Groom / Courier Requirements For FedEx Express Aviation Security

FedEx Express requires that all grooms / animal attendants submit the following information to the FedEx Express Aviation Security group before they will be allowed to fly as a jumpseater on any schedule FedEx Express flight.

### **For U.S. Citizen only**

1. A complete Seven to Ten Year work history (see the attached form)
  - a. If there is a gap of 12 months or more where the individual was not employed, they will need to explain why they were not employed.
  - b. And verification of that.
2. A complete Ten Year Nation Wide criminal history
  - a. State search only **will not be** accepted.

This can be obtained through the following internet locations;

- [www.fadv.com](http://www.fadv.com) (First Advantage) 1-800-888-5773
- [www.bluelineinvestigations.net](http://www.bluelineinvestigations.net) 1-901-266-7100
- <http://www.carcogroup.com> 1-800-969-2272, extension 330 (Cynthia Castillo)
- National Info Agency (No website) 1-901-521-6763

-or can be obtained through their local law enforcement office

**\*\*\*We ask that the vendor contact the agency by phone to make sure they will print either the entire SSN OR the last four of the SSN AND at least the month and day of birth.\*\*\***

3. A scanned copy of his/her Drivers license (to be in a JPG or TIFF picture format sent as an e-mail attachment. No faxed copies will be excepted)
4. A scanned copy of his/her Passport (to be in a JPG or TIFF picture format sent as an e-mail attachment. No faxed copies will be accepted) These are expected to be with them at all times while flying with FedEx.
5. A digital photograph (to be in a JPG or TIFF picture format sent as an e-mail attachment and no faxed copies will be accepted. See example below)

### **Foreign National living in the U.S. or aboard**

1. A complete Ten Year work history (See attached data form)
2. A complete Ten Year criminal history (both from the US and the applicants origin country if he has not been in the US more then ten years)
3. A scanned copy of his/her Drivers license (to be in a JPG or TIFF picture format sent as an e-mail attachment. No faxed copies will be excepted)

# FedEx Transport - Scheduling and Attendant Security Clearance

## WAIVER OF LIABILITY FOR LIVE ANIMAL SHIPMENTS

WHEREAS **[CUSTOMER NAME]** FedEx account number **[ACCOUNT NUMBER]** ("Company"), wishes to ship live **[TYPE OF ANIMAL]** via FedEx Express transportation services ("live animal shipment"); and

WHEREAS Company agrees that Federal Express Corporation ("FedEx") will not accept responsibility or liability for any damage or delay of Company's shipments of live animal shipment;

NOW, THEREFORE, Company and FedEx agree as follows:

- A. Company agrees to pay transportation charges, surcharges, handling fees and duties and taxes applicable to said shipments.
- B. **Company agrees to fully comply with all laws or regulatory requirements** applicable to each live animal shipment. Company further agrees to fully indemnify FedEx from any and all costs, expenses, judgments, damages, fines and awards (including without limitation reasonable attorney fees) incurred by FedEx by virtue of Company's failure to comply with such regulations.
- C. Company acknowledges its live animal shipments may encounter extremes in temperature and change in atmospheric pressure and that FedEx does not provide any warranties with respect to the temperatures and pressure encountered during the transportation process.
- E. Company agrees that neither it nor its customers shall file any claim against FedEx for any damage to live animal shipments as a result of any condition encountered during the transportation of such shipments. Company also agrees to fully indemnify FedEx from any and all costs, expenses, judgments, damages, fines and awards (including without limitation reasonable attorney fees) incurred by FedEx as a result of any claim or damage in connection with any live animal shipment
- F. Company agrees to waive any right to receive adjustments, refunds or credits under the Money Back Guarantee Policy as defined in the FedEx Service Guide in effect at the time of shipment.
- G. Company acknowledges that shipments may be delayed in transit. Company agrees that in the event of such a delay, FedEx may in its sole discretion determine that the shipment should be returned to Company. In the event shipments are returned to Company, Company agrees to pay the original applicable transportation charges without regard to the reason for the return of the shipment. Company further recognizes that FedEx has no obligation to monitor the transportation of any shipment or to return it to Company.
- H. FedEx reserves the right to terminate the provision of service pursuant to this Waiver at any time and without notice.

**[CUSTOMER NAME]**

**FEDERAL EXPRESS CORPORATION**

By: \_\_\_\_\_

By: \_\_\_\_\_

Print Name: \_\_\_\_\_

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

("Company")

("FedEx")

Employee # \_\_\_\_\_



## AVIATION SECURITY - BACKGROUND CHECK REQUEST FORM

DATE:

NAME			
PLACE OF BIRTH (city; state or province, country)			
NATIONALITY			
DATE OF BIRTH		DAY	MONTH
		YEAR	
SOCIAL SECURITY #			
PASSPORT #			
PP COUNTRY OF ISSUE & EXPY DATE			
VISA , GREEN CARD, RESIDENT ALIEN, etc.			
VISA COUNTRY OF ISSUE & EXPY DATE			
DL # & EXPY DATE			
DL STATE and COUNTRY OF ISSUE			
CURRENT ADDRESS			
PRIOR ADDRESSES (past 10 years only)			
CURRENT PH. #			
E-MAIL ADDRESS			
HOW MANY TIMES HAVE YOU FLOWN WITH A CARGO CARRIER			
HOW MANY TIMES HAVE YOU FLOWN WITH A CARGO CARRIER INTERNATIONALLY?			

# FedEx Transport - Bulk Shipping Crate

Use for shipping multiples of all species.

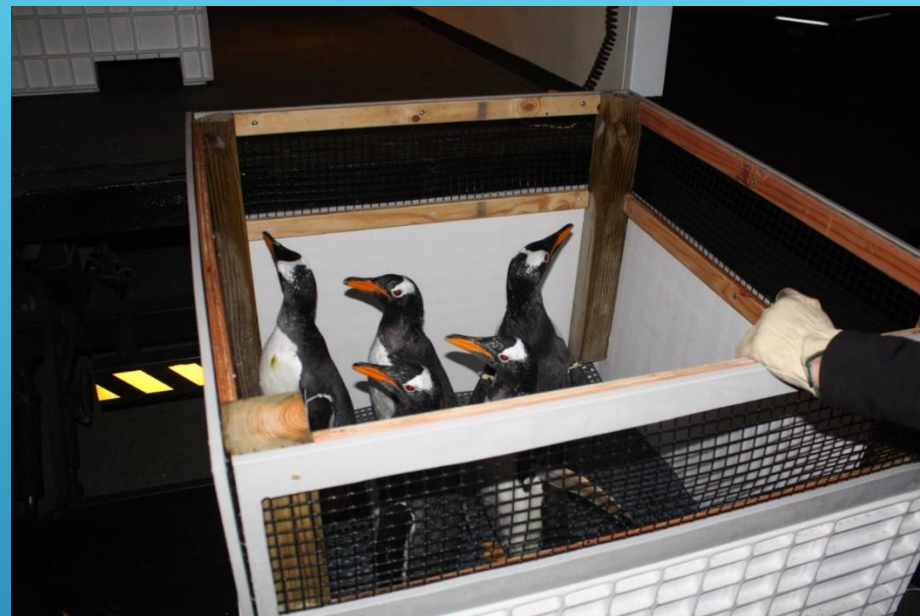
Purchase bulk shipping crates with solid sides, and including a lid, that can be moved with a forklift.

Crates must be modified with a screened area for height and air flow.

Lids can be secured with shipping straps if needed. FedEx will secure all with a cargo net.

Use Dry-dek with turf on top for secure footing and drainage.

Some individuals can also be placed in kennel crates that are strapped around bulk crates.



# Supplies and Other Arrangements

**Pack in separate tote:**

1. **Penguin medical kit** (vet wrap, Quick-stop, gauze, etc.)
2. **Thermometer(s)** and/or thermometer “gun” w/spare batteries
3. **Flashlight** w/spare batteries
4. **Spray bottles** w/water for cooling penguins
6. **Sheets** for covering crates (while in FedEx warehouse)
7. **Cooler filled w/ice packs**
8. **Cable ties / flexible ties**
9. **Large towels**

**Transfer crate(s) for emergencies or separation due to aggression.**

**Portable “air cooler” w/flexible duct attached for channeling air.**

**Air-conditioned truck or van(s) – to and from airport.**

**Paperwork: Health certificate, etc.**

**Identify zoos along the route in case of emergency.**





# FedEx Transport – Loading Crates Onto Refrigerated Truck



# FEDEX TRANSPORT – LOADING CRATES ONTO “COOKIE SHEETS”



# FEDEX TRANSPORT - TARMAC WAITING TO LOAD

Attendant will be allowed onto tarmac to check penguins.



# FedEx Transport - Loading Into Cargo Hold



# FedEx Transport - Inside Cargo Hold

Pilot will cool cargo hold once in flight. Attendant can check penguins during flight. Lights can be left on.



# FedEx Transport - Memphis Warehouse

Warehouse is cooled/ventilated with minimal traffic.

Plan on 2-3 hours between flights.

Crates covered with sheets for privacy and for temperature control during portable “air cooler” use (photo on right).

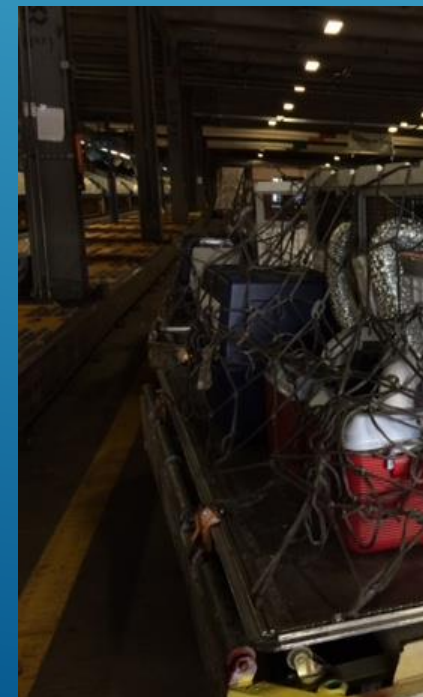


# FedEx Transport - Memphis Warehouse

Warehouse is cooled/ventilated with minimal traffic.

Plan on 2-3 hours between flights.

Crates covered with sheets for privacy and for temperature control during portable “air cooler” use (photo on right).



# FedEx Transport - Off-loading at Final Destination





# FedEx Transport – Loading Into Air-conditioned Vans at Final Destination

Crates loaded into air-conditioned Sprinter vans (2 crates per van).



# Moving Birds In-Huevo (The perfect shipping container)



Sherry Branch, SeaWorld Orlando

# Sea World Egg Collecting trips



- Sub-Antarctic
- 1983 – 1987
- 2,550 eggs collected
- 20 species
- Stocked four Penguin Encounters at four Sea World parks

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