Moving Birds In-Huevo
(The perfect shipping container)

Sherry Branch, SeaWorld Orlando

The beginnings of egg transports

Early imports of waterfowl eggs came from Iceland through Canada from wild eggs and were simply put in padded cases and shipped – what you received on the other end depended on the circumstances of the shipment and many arrived non-viable.

Waterfowl eggs through Canada

- 1950's and 1960's
- Fresh waterfowl eggs shipped cold from Iceland
- Air freight
- In padded egg cases
- Success: hit or miss

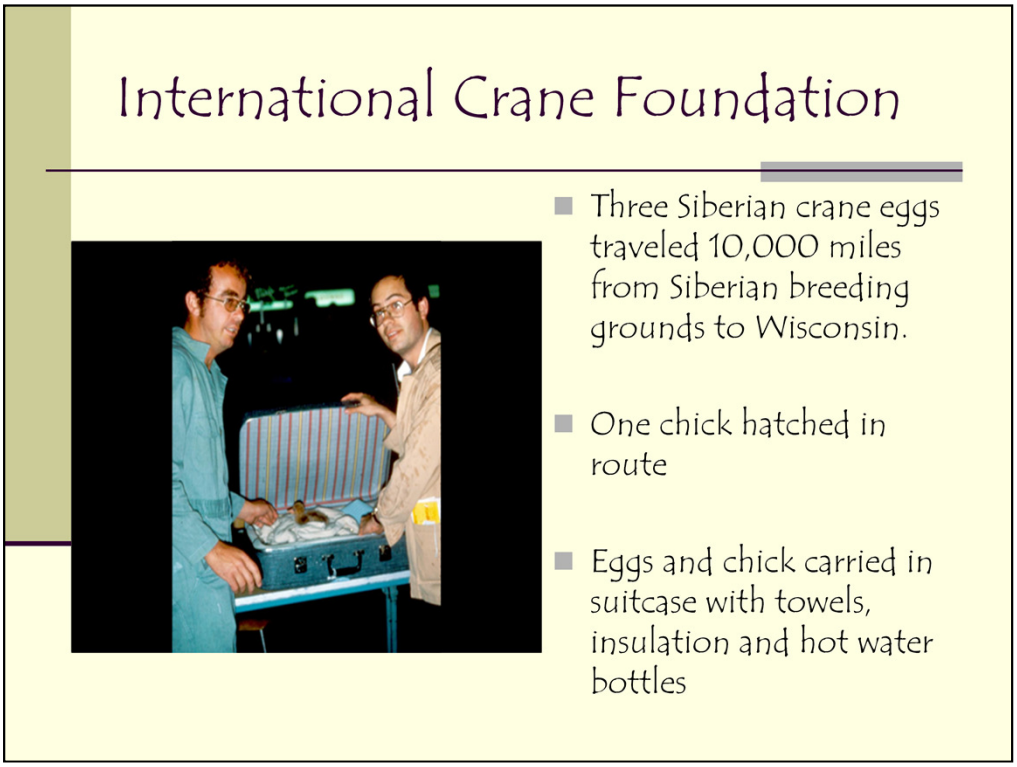
Early imports of waterfowl eggs came from Iceland through Canada from wild eggs and were simply put in padded cases and shipped – what you received on the other end depended on the circumstances of the shipment and many arrived non-viable.

Crane eggs in 1963 – FWS Endangered Species Research Program

- Glenn Smart & Ernie Kuyt (Canadian)
- Hand carried incubator - a black suitcase with cut out Styrofoam inserts.
- Carried 10 eggs with hot water bottles as heat source
- From Loxahatchee, Fl. to Patuxant Research Center

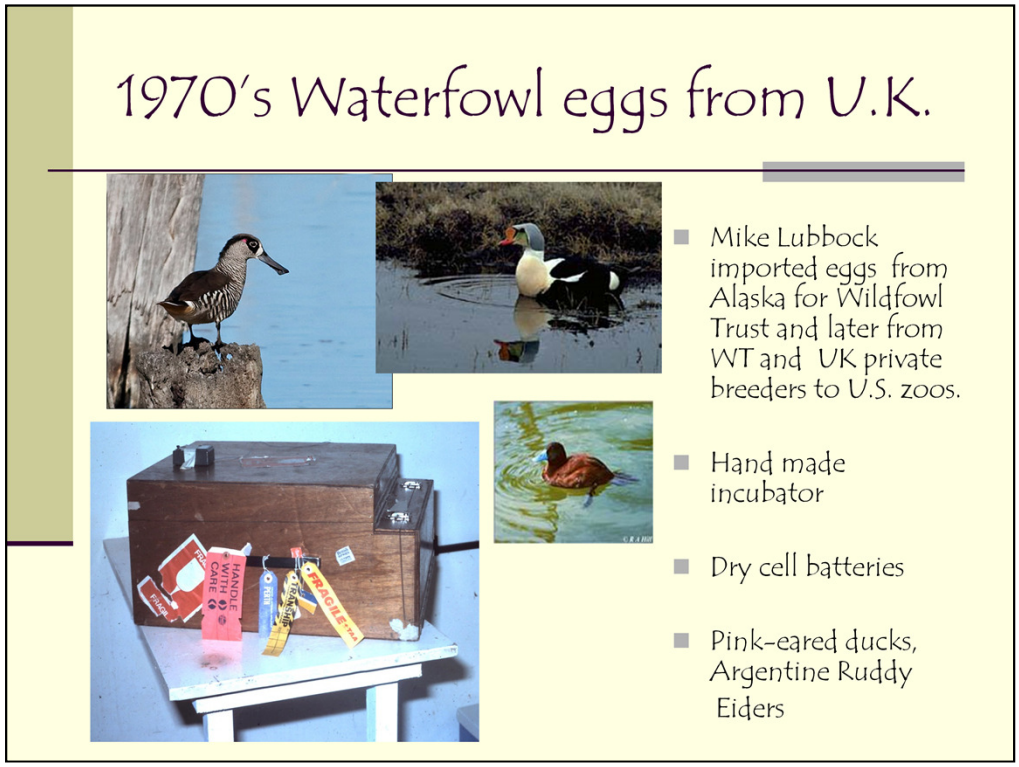
Ernie Kuyt was originally from the Netherlands and ended up in Canada working for the Canadian Wildlife Service. He was the first to create a program for Whooping cranes, banding chicks and fostering one of the two eggs under Sandhill cranes. This program proved unsuccessful and was finally abandoned in 1991. This is the actual incubator that he and Glenn carried the first 10 crane eggs in to Patuxant Wildlife Research Center.

In 1967 biologists from Patuxent Wildlife Research Center began a captive program to increase the numbers of Whooping cranes and eggs were collected in the wild and transported to Patuxent. This USGS program continues today.



In the early 1970s, there were fewer than 10 Siberian Cranes in captivity worldwide. They had never reproduced in captivity. Adopting a different approach, captive populations of Siberian Cranes were established from eggs collected from wild Siberian Cranes in Eastern Siberia through collaboration between the International Crane Foundation [ICF] in the USA and Oka State Nature Reserve in Russia. The first captive breeding was achieved at ICF in 1981.

In 1974, another program started with Eurasian crane eggs. It is now a well established program with over 200 birds and introduction projects in West Asia. ICF also coordinated the transfer of white-naped crane and red-crowned crane eggs in the 80's and 90's.



Mike Lubbock who owns and manages Sylvan Heights Waterfowl Park and Eco-Center, began his career at the Wildfowl Trust. He used this incubator to move waterfowl eggs form Alaska to the UK. Once he migrated to the USA, he followed suit supplying U.S. waterfowl breeders with eggs. The little hand made incubator traveled far and worked well, maintaining egg viability in some very rare waterfowl.

Sea World Penguin Egg Collecting trips

The original decade of research in the Antarctic and the five years of collecting eggs, established the successful SeaWorld penguin colonies which have since provided penguins globally to zoos and aquariums. Only one egg was collected from the smaller species that lay two but usually only raise one chick. King penguin eggs were collected later in the season *from* eggs/chicks that would not have normally survived due to the weather.

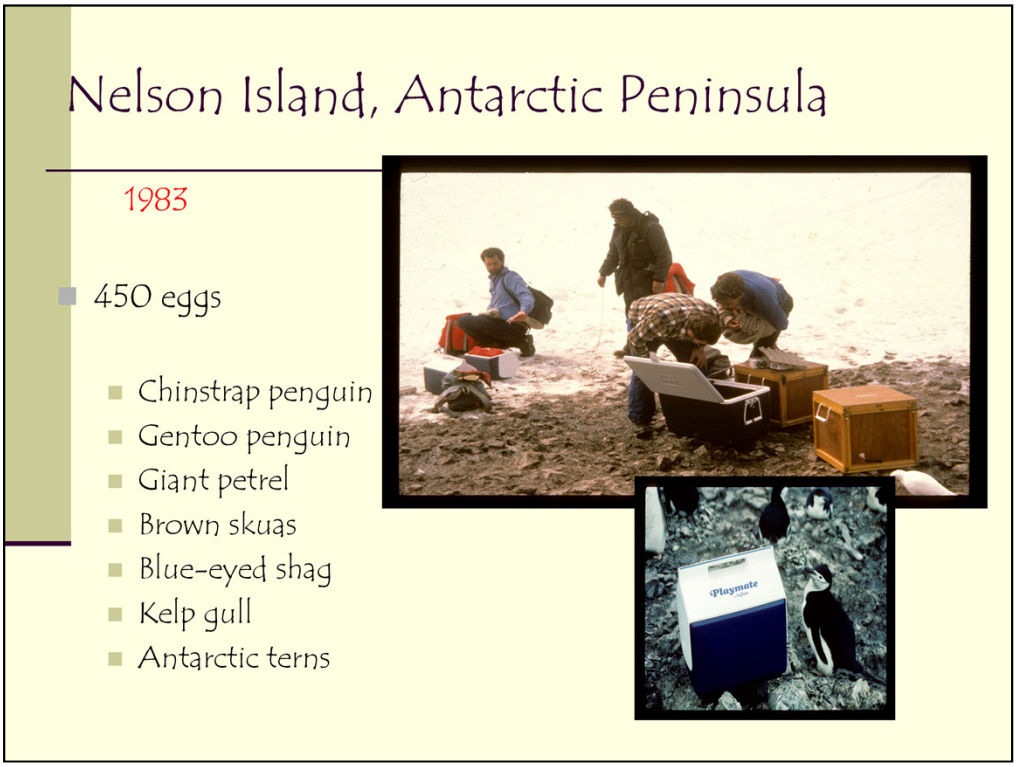
All of the SeaWorld egg collecting trips took place in the sub-Antarctic islands between 1983 – 1987. A total of 2,550 eggs were collected from 20 species of birds.

First portable incubator used for penguin eggs

Overall project

- 70% hatch rate
- 83% that hatched were successfully raised

All Antarctic trips were coordinated by Frank Todd, Corporate Curator of Birds for SeaWorld out of San Diego. The SeaWorld biologists literally filled the portable incubators with eggs. The incubators ran with heating coils and the eggs were layered and stacked on boards installed inside the box. The overall successful hatch and weaning rates were remarkable for new science.



The original penguin project was coordinated by the National Science Foundation with the intent of establishing a successful penguin population in captivity. Emperors and Adelies were the first birds brought in as adults/chicks. Later, it was determined that collecting eggs would be a lot easier.

Isla Noir & Isla Magdalena, Chile

1984

- 500 eggs
  - Magellanic penguin
  - Macaroni penguin
  - Rockhopper penguin
  - Steamer duck
  - Buff-necked ibis
  - Dolphin gulls
  - Kelp gulls
  - Oystercatchers

This was the temporary quarantine facility at SeaWorld in San Diego. It was a USDA approved facility and staff showered in and out and were not allowed on SeaWorld property after they had worked this area. Over 2,500 imported eggs were incubated in this facility.

Falkland Islands and Nelson Island

1985

- 200 eggs
  - Rockhopper penguin
  - Gentoo penguin

1986

- 700 eggs
  - Chinstrap penguin
  - Gentoo penguin
  - Adelie penguin
  - Brown skuas
  - Giant petrels
  - Cape petrels
  - Blue-eyed shags
  - Kelp guls
  - Sheath-bills

Eggs were incubated in Petersime incubators and often, the chicks would start hatching during the transport back to San Diego. Hundreds of eggs hatched at the same time and volunteers as well as paid staff worked around the clock feeding the birds.

Falkland Islands 1987 and 1988

1987

- 400 eggs
  - Gentoo
  - Rockhoppers
  - Magellanic
  - King shag
  - Kelp geese

1988

- 300 King penguin eggs

1987/88 marked the last egg collection by SeaWorld and the founder king penguins can be seen in all three SeaWorld parks today. All species from all egg collecting trips are breeding today.

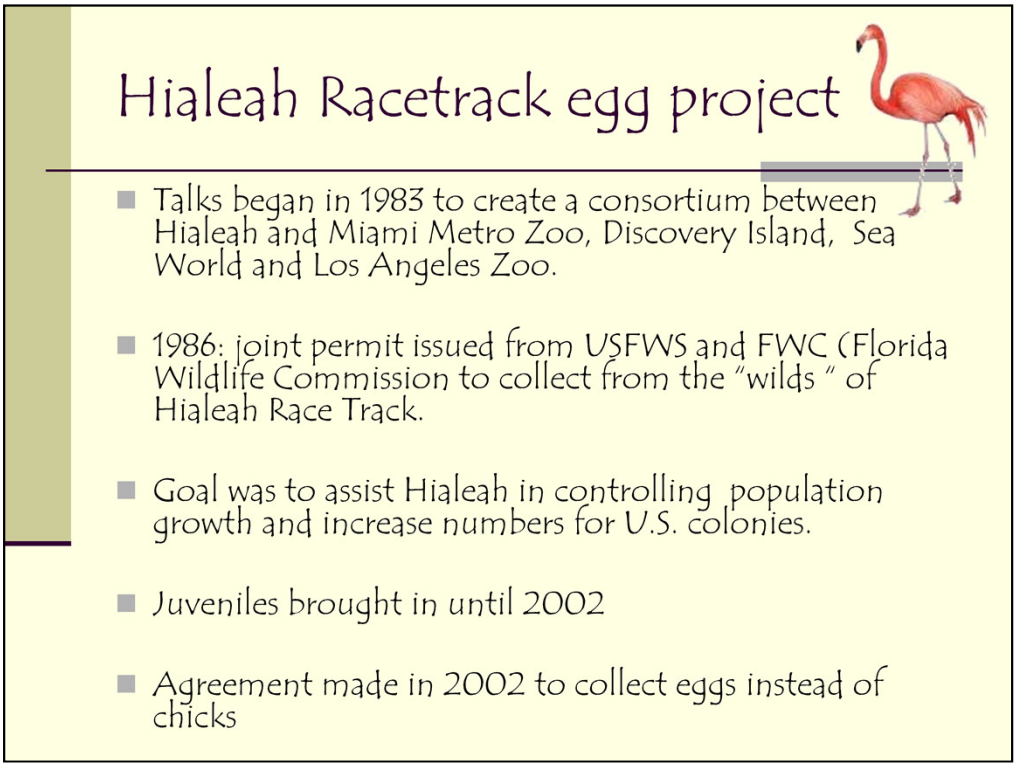
Flamingo Egg Collecting Trip

The original Hialeah flock came in as birds from Cuba to add color to the Racetrack and because the owner loved flamingos.

Hialeah Racetrack

- 1931 first flamingos brought in from Cuba
- Flock estimated at 600 birds by 1960

The flamingo flock "performed" at the end of the 7th race – racetrack employees would push them around the track until they took flight and circled the entire grandstand of spectators.



The flock at Hialeah Racetrack is considered a wild flock. Mary Healy and Sherry Branch met with the owners in 2002 to arrange the deal that would allow AZA zoos to coordinate with them each year to collect the surplus eggs.

Miami Metro Zoo hosts round up

(Thank you Rachel, Ron, Jeff and Jim)

In order to gather eggs, Rachel Watkins, the registrar at Miami Zoo, submits for permits and provides all of the paper work necessary for other zoos to collect from Hialeah flock. Historically, the Miami curator contacted Sherry Branch from SeaWorld who coordinated the collecting zoos for many years. There has been no collection since 2008 because the birds have not been breeding. One of the reasons we think is because the Racetrack reopened after being shut down over a decade and the flock is being manipulated again during the day.

Oklahoma Zoo collection 2007

Zoos chosen to receive flamingo eggs, would be notified when the eggs were laid so they could prepare. At an appointed time, the Miami staff would collect the eggs from the racetrack and zoos would fly or drive to Miami to collect and then incubate and hand rear the chicks. Eggs were collected in traveling cases with hot water bottles and/or hand warming packets and packed in foam.

These are the AZA accredited zoos that have collected flamingo eggs from Hialeah. The (09) zoos are still waiting..

Each zoo designed their egg carrying case a little differently but all used some type of foam to either pad or insert the eggs. Thermal regulated boxes work well to hold the heat in.

St. Louis Zoo

Hot water bottles or chemical hand warming packs were placed under the eggs to maintain warmth during travel time

Egg crate foam and hot water bottles

Many zoos reported that temperatures in the temporary incubators only fluctuated a few degrees during transport using this process. One advantage of hot water bottles is that you can replace hot water in route if necessary. Note that hot water bottles work best for land transport [airline restrictions on liquids make hot water bottles not possible].

Portable electric/battery incubator

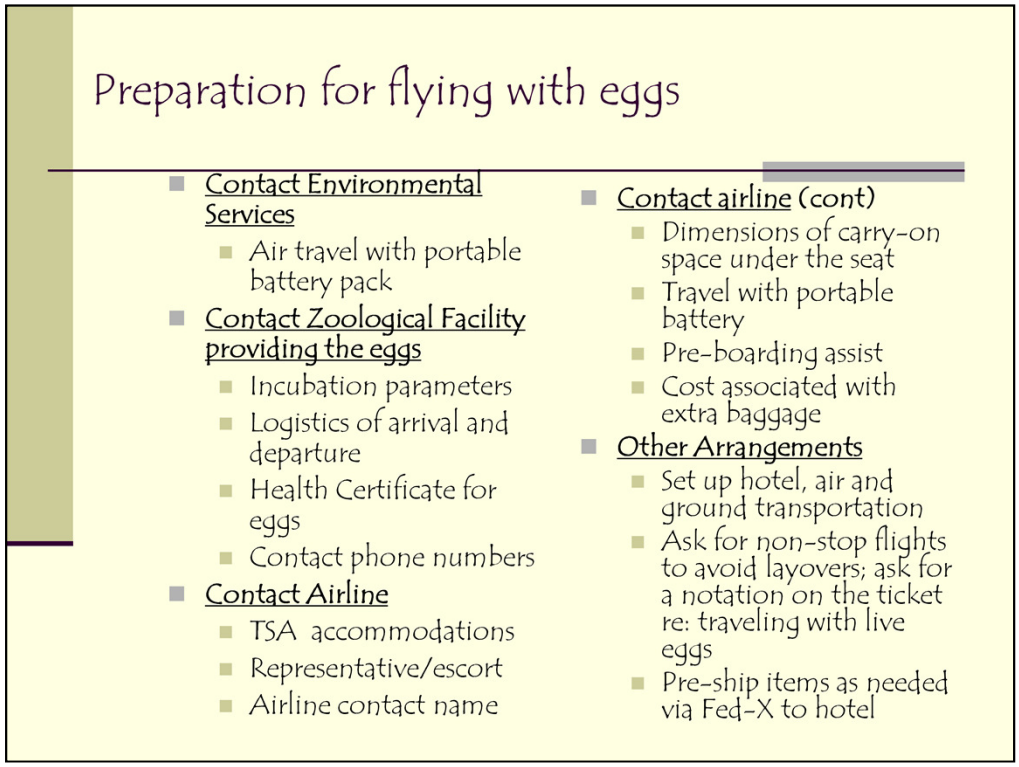
- Small portable incubator with adaptor cords
- battery pack: 12 V battery
  - 8 amp hours
  - Weighs 6 lbs
- Thermometers
- Appropriate substrate
  - Foam
  - Bird seed

Electric brooders are also available on the market and have an outlet that can be plugged into your car power source as well as a portable battery for travel. They are however, more cumbersome to get through TSA [Transportation Security Administration] at the airport.

The Happy Ending

The happy result of egg transport!

When traveling via air, it is very important to be sure that everything is order prior to arriving at the airport with the eggs. Despite your best preparation, many airline staff will never have dealt with egg shipments and will not understand the complexity and delicacy of your cargo.



These are some of the things you need to think about prior to traveling with eggs – consultation with facilities that have done egg transport is highly recommended.

Contact the airport to tell them you're coming, contact the facility you are getting the eggs from to get the details of their current conditions, contact TSA, and get your plan together at your destination to avoid delay with the eggs

Within days of trip

- Gather heat source or charge the battery pack
- Clean and disinfect incubator
  - Add substrate according to protocol
- Test portable incubator two days prior to transfer to assess temperature stability (both on wall circuit, battery and battery in motion, if battery operated)
  - Insert a data logger to log temperature fluctuations

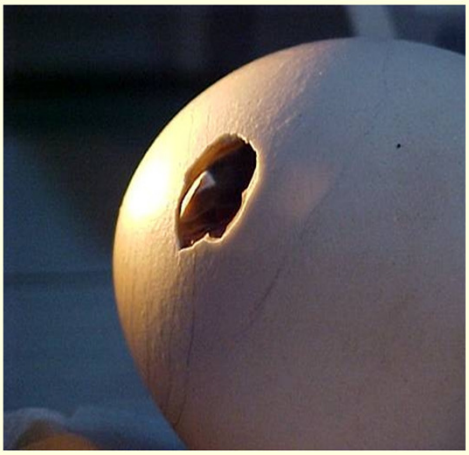
From check-in to the gate

- Allow plenty of time at the airport; the unit must be moved carefully in a crowded airport setting
- Make contact with TSA and airline representatives as pre-arranged
- The agent will visually inspect inside the unit as well as wipe the unit for bomb residue
- The incubator must be turned off during landings and take-offs. [There could be exceptions.]
- Avoid excessive opening of unit when eggs are present

Most important: plan ahead and let airport/airline know you are coming.

Note that fecal material on the eggs can sometimes trigger a positive reaction for bomb making materials!

Egg Travel continues: San Diego Condor projects



Zoos today continue to move birds while still in the egg. The California and Andean condor SSPs have successfully used this tool as have the Penguin, Ratite and Gruiformes TAGs.

Manchurian Crane & Crested Penguins
Cincinnati Zoo and SeaWorld

The Cincinnati Zoo has transported eggs in their work with Manchurian cranes and SeaWorld continues to move penguin eggs around between SeaWorld parks and other zoos and aquariums. Clean bird seed can be used as a medium to hold eggs stable during transport.

Major advances in past 46 years: From **styrofoam** to ~~styro~~**foam**

The photo on the left was the first egg transport box known to have been used back in the early 60's. The photo on the right is the current method used by most zoos. As they say, "if it ain't broken, don't fix it!"

The End.