



NOAA FISHERIES

Greater Atlantic Region Policy Series 22-01

Protocol for Pilots Transporting Sea Turtles



Photo courtesy of Turtles Fly Too.

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KEYWORDS

Endangered Species, Protected Species, Sea Turtle, Rehabilitation, Stranding, Aviation, Transport, Pilot

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Background

NOAA Fisheries Greater Atlantic Regional Fisheries Office (GARFO) and NOAA Fisheries Southeast Regional Office (SERO) collaborated to develop a standardized approach to transporting sea turtles by flight. This protocol will ensure consistency in best practices for all flights and increase efficiency during transportation planning. Given the recent increase in the use of aviation for more timely transport of sea turtles, this standardized protocol will be provided to pilots ahead of transport, minimizing questions and providing an easy reference throughout the transport event. This standardized approach was informed by: a) GARFO staff experience with sea turtle transport needs and requirements; b) SERO staff experience with transport flights and aviation needs; and c) Turtles Fly Too experience with general aviation.

Sea turtle transport flights can encounter challenges such as unexpected deviations from the flight path, delays, or unexpected stops for prolonged periods. This protocol provides pilots with a better understanding of their responsibilities, expectations before and during transport, and problem solving. It also serves as a best practices guide for other agencies and organizations wanting to explore transportation of sea turtles by aircraft. In addition, this protocol can be adapted to support transportation of other protected species beyond sea turtles.

Although this protocol provides useful guidance, it has limitations and does not address all technical, legal, and policy challenges related to sea turtle transport under GARFO's and/or SERO's jurisdiction(s). As more information is obtained from the transport flights, new regulations or research, or as new best practices are developed, it is anticipated this protocol would be updated to reflect the best available science and information.

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Chapter 1. Introduction

1.1 Sea Turtles

All six species of sea turtles in U.S. waters are federally protected under the Endangered Species Act (ESA; Figure 1.1.1). NOAA Fisheries and U.S. Fish and Wildlife Service share jurisdiction over sea turtles as these species spend time on land and at sea. The two agencies work closely together and have a memorandum of understanding describing jurisdictional responsibilities concerning sea turtles. Both agencies also coordinate with state governments to conserve sea turtles. In the Greater Atlantic Region, NOAA Fisheries coordinates the stranding network and rehabilitation facilities, including transport between facilities and releases. Other regions have different organizational structure.



Figure 1.1.1 Six species of sea turtles found in U.S. waters: Kemp's ridley (top left), green (top middle), loggerhead (top right), leatherback (bottom left), olive ridley (bottom middle), hawksbill (bottom right).

Credit: NOAA Fisheries, U.S. Fish and Wildlife Service

Like all reptiles, sea turtles are cold-blooded, meaning the surrounding environment controls their internal body temperature. When sea turtles are in cold waters, their bodies can

reach dangerously low internal temperatures, leading to a condition called cold stunning¹ (similar to hypothermia in humans). Most often, cold stunning occurs when there is a rapid weather change or a sea turtle's migration to warmer water is delayed. Cold-stunned sea turtles have reduced heart and respiratory rates, suppressed immune systems, and abnormal eating and behavior. They often strand², washing up on shore or floating at the water's surface for a prolonged period of time. Cold stunning is often fatal for sea turtles unless they are rescued and provided with medical care.

Kemp's ridley, green, and loggerhead sea turtles, cold stun along the Atlantic and Gulf of Mexico coasts of the United States. The largest cold stun events typically occur in Massachusetts, Florida, and Texas, although they also occur in other Atlantic coast locations. Winter cold stunning events result in the highest number of stranded sea turtles needing care at one time. Other causes include illness, ingestion of marine debris, fisheries interactions, watercraft injuries, and occur throughout the year. Sea turtles in need of rehabilitation must be transported to an authorized facility to receive medical attention with the hope of eventually releasing them back to the wild. If a sea turtle is deemed non-releasable, it needs to be placed in a permanent facility, which sometimes requires transportation.

1.2 Need for Transport

Rescuing, rehabilitating, transporting, and releasing cold-stunned sea turtles is a complex, collaborative operation (Figure 1.2.1, Appendix A). There is limited sea turtle rehabilitation

¹Cold stunning is a condition in which sea turtles become very weak and inactive from exposure to cold temperatures. It generally occurs when water temperatures fall below 50°F (10°C) where sea turtles are present. Cold-stunned turtles become lethargic and are eventually unable to swim causing them to float at the surface. Wind and/or tides may wash them ashore. If temperatures remain low or turtles are not rescued, they can develop secondary health problems or die.

² Stranded sea turtles are defined as any ocean turtle found on land or in the water that is dead, injured, or exhibits any indication of ill health or abnormal behavior.

capacity throughout the country and animals may need to be transferred between facilities. During periods of high stranding numbers, local facilities may reach capacity, requiring sea turtles to be transported longer distances. With anticipated changes in weather and climate increasing the magnitude of cold stun events over time, the need for transporting sea turtles farther distances to find rehabilitation space will also increase. Before the use of flights for transport, sea turtles were subject to long ground transports involving multiple facility employees—reducing animal caretaker capacity at the originating facility, sometimes for days. After the largest Massachusetts cold stun event on record in 2014, a non-profit, non-governmental organization named Turtles Fly Too formed to help meet the increased transportation need. Turtles Fly Too facilitates the inclusion of general aviation in sea turtle rescue and rehabilitation efforts. They enlist pilots from across the country to donate their expertise, aircraft, fuel, and labor to fly protected species to rehabilitation facilities, release beaches, or permanent holding facilities. Using flights instead of ground transport shortens travel time, reduces stress on the animals, and conserves staff resources. Turtles Fly Too is currently the main partner contacted to help with cold stun flight transports due to their sea turtle transport knowledge and large roster of member pilots. However, NOAA Fisheries has used other conservation aviation organizations in the past and is open to other organizations who meet the qualifications to be considered for transports.

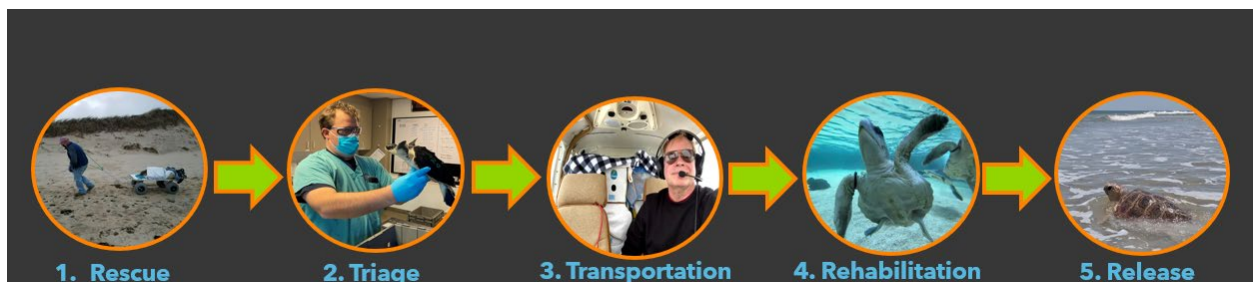


Figure 1.2.1 Five steps in the journey of cold-stunned turtles from rescue to release.

Credit: [NOAA Fisheries Story Map](#)

Rehabilitated sea turtles are released in waters with the appropriate temperature and habitat for each species. During the winter or spring, release locations are in the Southeast United States or the Gulf of Mexico. In the summer and fall, when water temperatures have warmed along the Atlantic coast, sea turtles are released, when possible, in the same area where they stranded. If the rehabilitation facility is not located on the coast or near an appropriate release site, sea turtles must be transported, sometimes long distances, for release. Flights are an invaluable resource in these circumstances.

In 2020, COVID-19 intensified the need for transport flights. Due to the pandemic, facilities had limited staffing and financial resources, reducing their ability to admit sea turtles and participate in ground transports to other states. Through the support of dozens of partner organizations (Appendix A), collaboration between government agencies, and the invaluable contribution of Turtles Fly Too, transport by flight became the norm rather than the exception. Aviation now plays a crucial role in the successful rescue of cold-stunned sea turtles.

Chapter 2. Pre-Flight

2.1 Pilot's Role

When NOAA Fisheries determines a sea turtle flight transport is needed, a request is submitted to a conservation aviation organization, such as Turtles Fly Too. The request includes the time of transport, origin, destination, number and weight of sea turtles and transport containers, as well as dimensions of the containers. The conservation aviation organization searches their database to select an appropriate aircraft for the transport and contacts the owners and/or pilot(s) to determine their availability. Once an appropriate, available aircraft is identified, NOAA Fisheries works with the pilot(s) and the conservation aviation organization on transport logistics.

2.1.1 Sea Turtle Transport Containers

Sea turtles are transported in a variety of containers outfitted with padding on the inside. These containers are provided by the rehabilitation facility. Sea turtles are not transported in water and typically do not require animal care specialists to accompany them. Sea turtles are typically not fed the day before transport to minimize defecation and regurgitation during flight. During Massachusetts cold stun events, most smaller sea turtles are transported in sturdy cardboard banana boxes with measurements of 19.5" x 15.5" x 9" (Figure 2.1.1.1). Larger sea turtles require sturdier containers, typically plastic totes (Figure 2.1.1.2) or the bottom half of dog crates with flat lids (Figure 2.1.1.3). Dimensions, weight, and number of all sea turtle transport containers are provided by NOAA Fisheries for planning and weight/balance considerations. The pilot(s) must confirm that the containers will fit through the cargo or passenger door, as well as inside the fuselage with all space considerations (e.g. seats, cargo,

passengers, etc.) taken into account. For safety reasons, only banana boxes can be lifted over seats during loading to the back seat or into the cargo area. Larger crates must fit through the cargo or barn-style door (Figure 2.1.1.4). Accommodating all of the containers may require removal of some or all of the seats (Figure 2.1.1.5), superfluous bags and/or cargo. These changes must be made prior to arrival at the origination airport and/or scheduled loading time. It is also important to recognize additional factors such as that aircraft floors may not all be flat. Additional provisions, such as padding or boards, may need to be made to ensure containers are properly supported when placed on the floor. Extra space needs to be left open, allowing for adequate heat flow within the cargo and/or passenger area. If the number and size of containers takes up the entire free space in the plane, it will leave no extra space for airflow and there will be a high probability of inconsistent or inappropriate temperature during flight. Sea turtles must be maintained within a specific temperature range to ensure they do not become stressed or even re-cold stun. NOAA Fisheries will provide the temperature range on the transport plan.



Figure 2.1.1.1 Banana boxes used for transport. Boxes can hold one or two small sea turtles. Photos courtesy of Turtles Fly Too.



Figure 2.1.1.2 Plastic totes used to transport larger sea turtles.

Note: Totes have lids that will be closed during transport.

Photos courtesy of Turtles Fly Too.



Figure 2.1.1.3 Crates used to transport larger sea turtles.

Note: crates have a solid lid that will be affixed to the crate during transport.

Photos courtesy of Turtles Fly Too, Warren Brown.



Figure 2.1.1.4 Fitting banana boxes or larger containers through the baggage and cargo doors. Photos courtesy of Turtles Fly Too, Jim Rose, Robert Kasuboski.



Figure 2.1.1.5 Planes with some seats removed for transporting sea turtles.
 Photos courtesy of Turtles Fly Too, Ed Filangeri.

2.1.2 Weight and Balance Considerations

To reduce the time the sea turtles are out of the water, transports must be started with the

maximum amount of fuel safely possible to eliminate or reduce fuel stops. Fuel stops must be limited to one. If more than one fuel stop is needed, a larger aircraft or multiple smaller aircraft may be needed. In this case, NOAA Fisheries will discuss options with the pilot(s) and the conservation aviation organization. Center of gravity calculations are computed for all flights to determine best placement for transport containers. Larger turtles can have a more noticeable effect on aircraft performance. NOAA Fisheries communicates the total weight of the sea turtles in their containers. The pilot in command must confirm the available payload for the flight considering fuel, pilot(s) and passenger(s) weights, and any other items on board that need to be taken in to consideration in order to determine if there is enough available payload for the sea turtles and transport containers or if weight needs to be reduced in some capacity to accommodate the sea turtles.

Banana boxes are estimated to weigh 10 lbs, whether they contain one larger sea turtle or two smaller sea turtles. The weight of plastic containers with sea turtles varies widely (Table 2.1.2.1) and is provided by NOAA Fisheries during planning.

Table 2.1.2.1 Example of container size and weight with sea turtle that is provided by NOAA Fisheries.

Sea Turtle ID	Container size			Weight with sea turtle (lb)
	Length (in)	Width (in)	Height (in)	
886	19.5	15.5	9	10
975	24.25	19.5	13	29
979	24.25	19.5	13	29
985	24.25	19.5	13	42
999	24.25	19.5	13	38
1000	24.25	19.5	13	37
1084	24.25	19.5	13	44
1086	24.25	19.5	13	34
			Total weight	263

2.1.3 Air Circulation Considerations

If a plane has heating vents in limited locations and there is a concern about maintaining heat in the rear of the plane, there are mitigation measures that have proven successful. For instance, some pilots have used a space heater in the back of the plane or have attached thermal hose (e.g. dryer vent hose) to the heat vents to redirect the heat to the back of the plane (Figure 2.1.3.1). NOAA Fisheries, the conservation aviation organization, and the pilot collaboratively determine the most appropriate mitigation measures prior to transport day. Some origination airports have hoses available for this purpose.



Figure 2.3.1 Dryer hose on vent and running through the fuselage to the back of the plane to transfer heat.

Credit: Ken Andrews.

2.1.4 Compassion Flight

The conservation aviation organization collaborates with Air Care Alliance to register their pilots and obtain [compassion flight numbers](#) (CMF) for sea turtle transport flights (Figure 2.1.4.1). A compassion flight number allows for priority take-offs and more direct routes, when possible, to reduce flight time and stress to the sea turtles. However, not all pilots are able to change their transponder call sign to match an issued Air Care Alliance compassion call sign,

which is required by the Federal Aviation Administration (FAA). The FAA requires that the transponder call sign always match the call sign listed on the flight plan. If the pilot is unable to change the call sign in their transponder, the following steps are taken:

- If filing with a flight briefer, the pilot states that the flight is a compassion flight and asks for direct routing. In the remarks section (Box 11 [Remarks] on the domestic flight planning form and Box 18 [Other Information] on the International Civil Aviation Organization [ICAO] form), ask that the plane's actual tail number and the Organization flying for are both listed. Example, "N123AB flying for Turtles Fly Too as CMF1234".
- If filing electronically, the pilot enters a direct routing request. In the remarks section (Box 11 [Remarks] on the domestic flight planning form and Box 18 [Other Information] on the ICAO form), list the plane's actual tail number, compassion number, and the Organization flying for. Example, "N123AB flying for Turtles Fly Too as CMF1234".
- The pilot then informs the controller of the cargo before take-off of the need for the most direct routing possible if the flight plan direct routing request was not approved. The pilot then confirms the enroute controller has this information and has access to the flight plan notes with the compassion call sign if routing is changed.
- In the future, the pilot may want to consider selecting equipment with a pilot adjustable call sign.

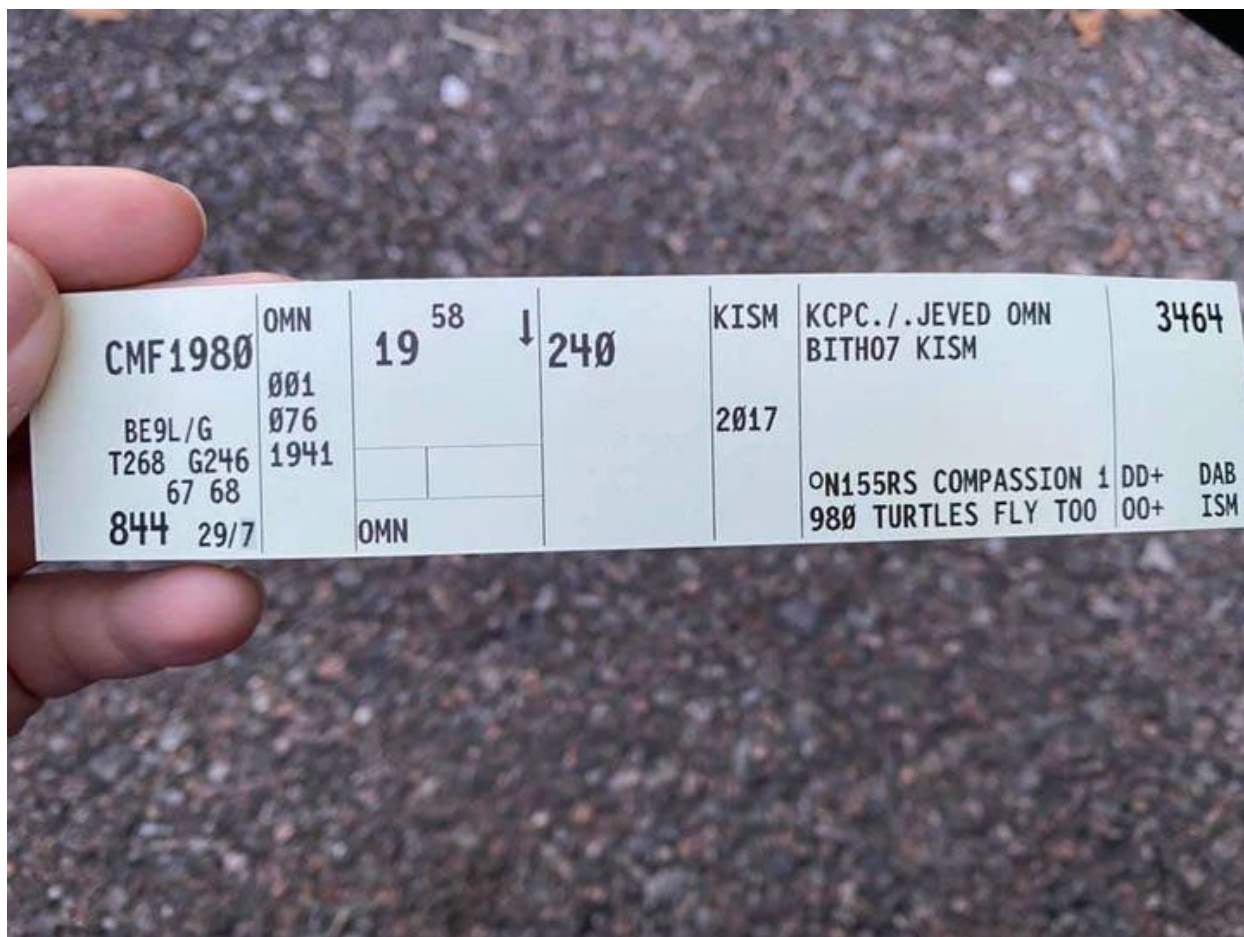


Figure 2.1.4.1 What air traffic control sees when a compassion flight number is used and a flight plan is filed.

Photo courtesy of Kelli O'Donnell.

2.1.5 Flight Tracking

When planning a sea turtle flight route, the pilot(s) should file under instrument flight rules or, if under visual flight rules, request flight following for safety. In both cases, the pilot(s) choose the most direct route to each stop, including the fuel stop, while taking into account weather and other operational restrictions. For the safety of the sea turtles and coordination needs, NOAA Fisheries and the conservation aviation organization need access to tracking the tail number/CMF Number (Figure 2.1.5.1). Tracking the flight ensures that animal care specialists on the ground are in position to receive sea turtles as soon as they land. While not

preferred, alternate tracking options such as satellite tracking can be used for aircraft that are blocked from traditional tracking and cannot fly with a compass call sign. Aircraft with this situation must communicate this to NOAA Fisheries and the conservation aviation organization prior to takeoff so a communication plan between all can be identified.

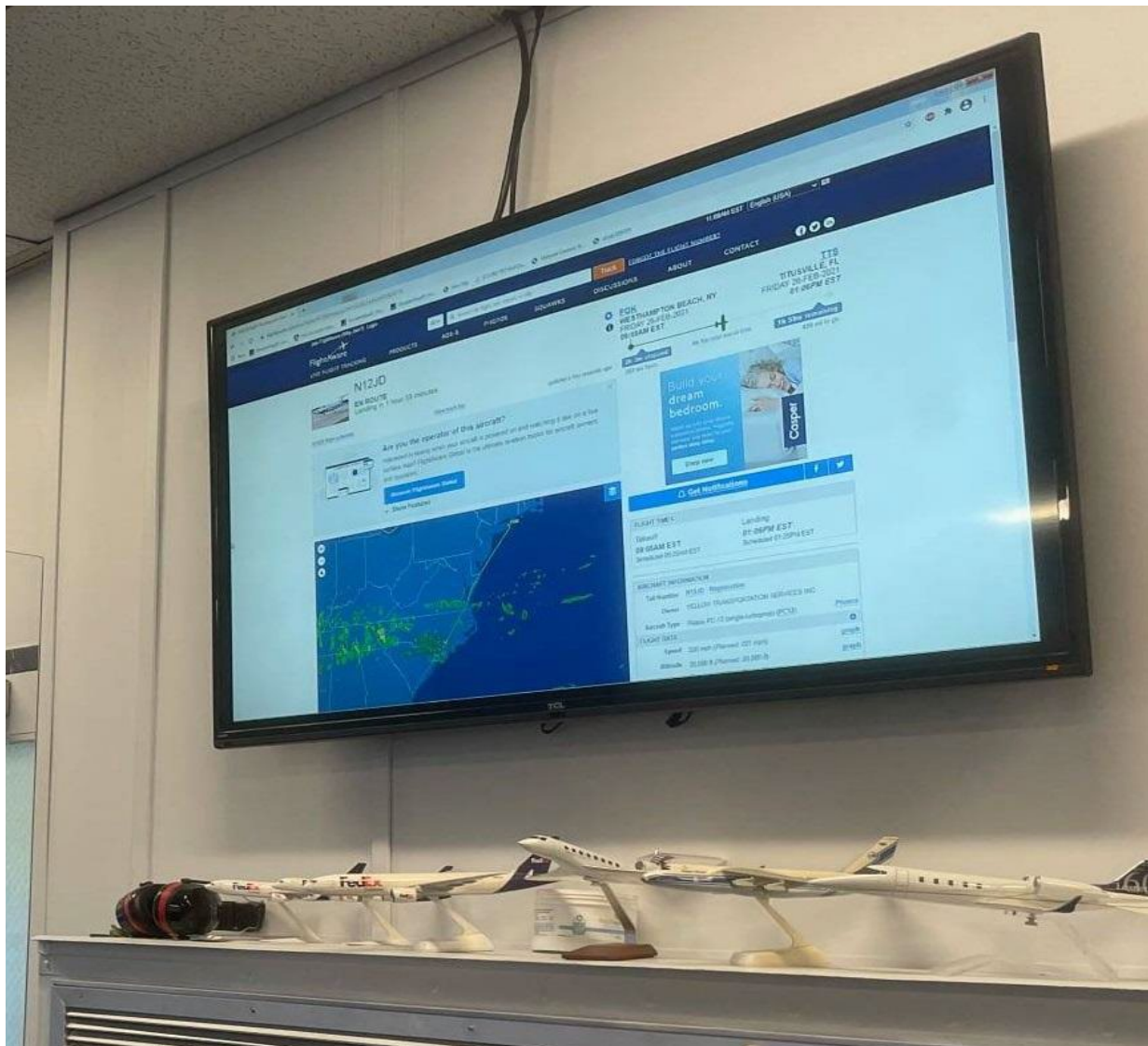


Figure 2.1.5.1 Tracking a transport flight on Flight Aware™.
Credit: Kelli O'Donnell.

2.1.6 Transport Plan

At least one day before transport, NOAA Fisheries emails a Transport Plan (Figure

2.1.6.1) to the pilot(s), originating and receiving facilities, and all other staff involved. This plan contains and confirms important information concerning the sea turtles and pilot(s) safety, details about the sea turtles and containers, destinations, box markings to differentiate between facilities, approximate timeline, departure and arrival airports along with any fuel stops, and all transport team contacts. Transport coordinators add the pilot(s) to a text group so required updates can be made, including wheels up and landing notifications.

**Sea Turtle Transport Plan
November 14, 2020
New England Aquarium to Gulf World Marine Park**

Summary

We are transporting 17 Kemp's ridley sea turtles from the New England Aquarium (NEAQ) in Quincy, MA to Gulf World Marine Park (GW) in Panama City, FL. During transport, turtles will be loaded into 8-10 banana boxes. **Turtles should be kept between 68 °F and 75 °F throughout the transport.** Turtles Fly Too has coordinated this flight and Ed Filangeri is the Turtles Fly Too team pilot and Doug Tolle is our co-pilot for this mission. Thank you Ed and Doug! Please refer to the transport reminders and Covid-19 safety protocol sent with this plan.

Transport Details

Departure Airport:

Marshfield Municipal Airport (KGHG)

FBO: Shoreline Aviation, 93 Old Colony Rd, Marshfield, MA, (781) 834-4928

Fuel Stop:

Raleigh-Durham International Airport (KRDU)

FBO: Signature Flight Support, (919) 840-2200

Arrival Airport:

Northwest Florida Beaches International Airport (KECP):30

FBO: Sheltair Aviation, 5325 Johnny Reaver Rd, Panama City Beach, FL, (850) 233-4717

Timeline

7:30am	Plane arrives at KGHG and begins fueling
7:45am	Turtles arrive at KGHG and begin loading
8:00am	Wheels up
12:30pm	Plane arrives at KRDU
3:30pm	Plane arrives at KECP

Contacts

Pilot: Ed Filangeri, [REDACTED]

NEAQ: Adam Kennedy, [REDACTED]

GW: Lauren Albrittain, [REDACTED]

NOAA: Kate Sampson, [REDACTED]

Tracking

The flight can be tracked on Flight Aware (<https://flightaware.com/>) using the number assigned to this flight by the Air Care Alliance: CMF1361 or by his tail number: N92EJ. **Adam- please text Kate and Leslie with wheels up time.**

Figure 2.1.6.1 Example of a transport plan.

Credit: NOAA Fisheries, Turtles Fly Too.

2.2 Transport Day

On the day of transport, the pilot(s) and animal care specialists work together during loading to ensure that all aviation, human, and sea turtle safety concerns are addressed. The pilot(s) may help physically load the sea turtles. However, these are wild animals that can bite and may have bacteria on their shells, therefore, all must keep fingers away from sea turtle mouths and either wear gloves or wash or sanitize hands after handling boxes. **Note: people under 18 may not carry a sea turtle container on their own. They may only assist an adult with carrying and/or loading.** At this time, the pilot(s) confirms that ingress and egress safety paths are maintained and that heavier turtles are loaded so that they do not exceed any aircraft center of gravity limitations.

2.2.1 Loading Sea Turtles

Animal care specialists bring the sea turtles to the origination airport to help load, considering all sea turtle comfort and safety issues (Figure 2.2.1.1). Due to the extremely cold temperatures that can be present at the origination airport, it may be preferable to tow the aircraft into a hangar for loading. NOAA Fisheries, airport staff, and animal care specialists will make the determination whether or not this should be done. When possible, the pilot(s) should bring a portable tow bar with them as not all airports have tow bars to fit all aircraft. Transport containers can be stacked two or even three high, as long as they are secured in an upright position and will not slide or tip over during flight (Figure 2.2.1.2). The location of transport containers in relation to heating vents and windows is important for maintaining appropriate temperature.



Figure 2.2.1.1 Animal care specialists meeting pilots at origination location(s).
Photos courtesy of Turtles Fly Too, Shoreline Aviation.



Figure 2.2.1.2 Securing transport containers.
Photos courtesy of Turtles Fly Too.

2.2.1.1 Air Circulation

All sea turtle transport containers have ventilation holes to allow air exchange for the sea turtle. Ventilation must be kept in mind during loading so that at least some of these holes are exposed to open air. Animal care specialists will oversee this aspect of loading. Attention should be given to air vent locations to avoid hot or cold spots from forming on containers. For cold-stunned sea turtles, heat should be allowed to flow freely throughout the cargo and/or passenger area; for this reason, there will most often be empty space in the plane to allow airflow. This additional space is accounted for during the pre-flight planning phase. If using a space heater, sea turtle transport containers must not be directly adjacent to the heater. There must be a thermal buffer zone between the heater and any sea turtles. NOAA Fisheries and the animal care

specialists will work with the pilot to determine where space is needed. The pilot(s) should supervise loading to ensure that adequate and legal emergency ingress and egress paths are maintained with the aircraft as applicable. For further temperature considerations, see Sections 2.1.3 and 3.2.1.

Often, animal care specialists loading sea turtles will add blankets or other insulating material between the fuselage and the containers to ensure the cold of the plane's exterior is not transferred to the sea turtles (Figure 2.2.1.1.1). These materials must be considered in the context of heat flow and ventilation.



Figure 2.2.1.1.1 Containers covered with light towels or marathon blankets to maintain heat. In addition, insulating material can be added between the fuselage and the sea turtle containers to maintain heat.

Credit: Jim Rose, Jessica Tingley.

2.2.1.2 Facility Box Markings

If sea turtles are going to multiple facilities, boxes will be specifically marked per facility (Figure 2.2.1.2.1). This information will be outlined in the transport plan. To make delivery go more smoothly, animal care specialists work with the pilot(s) to keep facility containers together and load them in appropriate order for the order of stops, assuming there are no aircraft center of

gravity loading requirements. For instance, the sea turtles being unloaded at the first stop should be closest to the door.



Figure 2.2.1.1.2 Facility markings on boxes.
Credit: Terry Carbonell, Jessica Tingley.

2.2.2 Permits

Since all sea turtles are federally-protected species, a U.S Fish and Wildlife Service permit issued to the origination facility(ies), as well as any required state permit(s), must accompany the sea turtles at all times during transport. NOAA Fisheries and/or the origination facility(ies) provide the pilot in command with a copy of all necessary permits.

Chapter 3. During Flight

3.1 Pilot's Role

The pilot's role during a sea turtle transport is to safely operate the plane and minimize stress for the sea turtles during flight. To accomplish the latter, it is important that they:

- Maintain the proper cabin temperature as specified in the transport plan. (This is achieved by taking regular temperature recordings with the provided thermometer(s) and adjusting the heat or window coverings as appropriate).
- Decrease any noise as much as possible.
- Minimize handling of sea turtle transport containers.
- Leave sea turtles in their containers with the towel or blanket over the top.
- Minimize transport duration.

Sea turtles do not require any supportive care during flight. Animal care specialists prepare their transport containers prior to loading and there is no need to open the container during flight. Sea turtles often will move inside their boxes; this is normal and expected. The primary concern, especially for cold-stunned sea turtles, is to monitor cabin temperature and adjust window shading or the heating system, as appropriate. The plane will likely feel hot to the pilot(s) and passenger(s), so it is recommended that they dress in layers to maintain comfort during flight. The pilot(s) should minimize time spent on the ground during fuel or rest stops, as the heat on the plane will not operate while it is not running. In addition, minimizing ground time will assist staff, sometimes from multiple organizations, that must plan when to meet the plane at the destination airport(s) at a specified time. Turtle transports are often multiple hours and arrive at their destinations late in the day. The turtles must then be transported by ground to the

receiving facilities, where many staff and volunteers will spend hours examining and admitting all of the transported turtles. To reduce stress to the turtles and burden to receiving staff, delays should be avoided where possible.

3.1.1 Communication

If the pilot(s) are flying into the origination airport on transport day, they should keep in close contact with NOAA Fisheries and the conservation aviation organization about their progress so that all parties know the working timeline. As described previously, transport coordinators add the pilot(s) to a text group so required updates can be made to all parties at the same time. Coordinators text the group throughout the transport day, providing updates on progress and estimated time of arrival. The group text is only used for necessary updates, such as wheels up time, landed time, any unscheduled stops for fuel, mechanical issues, etc., or other important updates. All parties refrain from comments, or other unnecessary text traffic, to limit the number of messages on transport day. Even in cases where the flight is tracked with Flight Aware™, additional updates regarding estimated time of arrival from the pilot(s) during the transport flight, if possible, are appreciated.

3.1.2 Problem Solving

In the event of an emergency landing, mechanical issue, or other unforeseen circumstance, the pilot(s) must communicate as soon as it is safe to do so to NOAA Fisheries. NOAA Fisheries then contacts the conservation aviation organization. Together they determine how to proceed if an emergency requires the aircraft to make an unscheduled stop, have a prolonged delay, or is unable to continue the flight. The pilot(s) must maintain close communication with NOAA Fisheries to facilitate the secure transfer of sea turtles to a safe location if they are unable to continue a flight.

3.2 Sea Turtle Needs

3.2.1 Cabin Temperature

Sea turtles must be transported in a climate-controlled environment and protected from extremes of heat and cold. Climate-controlled does not necessarily mean the requirement of an A/C or heating unit, as there can be other ways to regulate cabin temperature for the sea turtles. This can be achieved by opening windows or doors (when possible), redirecting vents, surrounding sea turtles with heat trapping blankets, etc. In general, the best range of temperatures for sea turtle transport is between 70° F and 80° F. For cold-stunned sea turtles, a specific cabin temperature range is provided by NOAA Fisheries prior to transport as it may differ slightly from the “best range” above. The pilot(s) must attempt to maintain this temperature range in the cabin. Cold-stunned sea turtles are very sick and under severe stress. A thermometer and/or heat gun (Figure 3.2.1.1) is provided by NOAA Fisheries, or animal care specialists, at the origination airport. Readings should be taken every 15 minutes, if possible, to confirm cabin temperature remains in optimal range as stated on the transport plan. Attention should also be given to the location of vents so that appropriate heat flow can be maintained around the sea turtles. Time on the ground with engines off when temperature cannot be accurately maintained should be minimized (see Section 2.2.1). Rapid rises in temperature (>5° F per hour) during transport should be avoided to the maximum extent practicable. Special attention should be paid to sun coming in windows during flight, as this can raise the outside temperature of boxes by 15-20° F. As maintaining cabin temperature regulation is of the utmost importance, window shades will need to be drawn or, for aircraft without window shades, the pilot(s) will make provisions in their pre-flight planning to have something covering the window(s) prior to the flight.

Cold-stunned sea turtle containers may include one or two reptile heat packs attached to the interior top. The temperature gun, if used, should be aimed at the side of the box rather than the top where the heat pack is located. Containers are also covered with a light blanket or towel to protect the sea turtle from cold extremes. These blankets or towels must always remain in place to maintain proper temperatures within the containers, as well as to minimize noise and visual stimuli that could cause stress to the sea turtle.



Figure 3.2.1.1 Using a heat gun and a thermometer to check cabin temperature.
Photos courtesy of Turtles Fly Too.

3.2.2 Cabin Altitude

Currently there are little data on the effects of altitude on sea turtles. For that reason, NOAA Fisheries asks that aircraft remain at or below 10,000 feet altitude or maintain a cabin pressure of 10,000 feet or less.

Chapter 4. Post-Flight

4.1 Pilot's Role

Sea turtles will be met by animal care specialists at the receiving location(s) to help unload and safely take possession of the sea turtles. If returning to the origination airport, the pilot(s) may be asked to transport thermometers, sea turtle transport containers, or other equipment on the return trip. If the pilot is not returning to the origination airport, transport containers and other equipment will be left with the receiving facility. Any copies of permits may be discarded.



Figure 4.1.1 Animal care specialists meeting pilots at destination(s).

Credit: Kelli O'Donnell, Clearwater Marine Aquarium.

4.1.1 Communication

Once all sea turtles have been offloaded, the pilot(s) have completed their part of the mission. Transport coordinators will confirm by group text that the transport trip has been completed and the sea turtles have arrived safely at their rehabilitation location.

Chapter 5. Additional Information

5.1 Press

There may be media coverage of the transport at the origination or destination airports (Figure 5.1.1). Interviews, photographs, or videos should not delay loading or unloading of sea turtles. The pilot(s) may be asked to transport a member of the media with the sea turtles to take in-flight photographs; however, the pilot(s) has complete discretion over whether they include media personnel on the flight. Sea turtles should not be uncovered or handled for the purposes of photographs or video. Pilots who do not wish to have their tail numbers shown in photographs should let the conservation aviation organization and NOAA Fisheries know in advance.



Figure 5.1.1 Media presence during loading and unloading of aircraft.
Credit: New England Aquarium, Kelli O'Donnell.

5.2 Social Media

NOAA Fisheries and the conservation aviation organizations encourage pilots to take all the photos they want to document their experience. However, pilots and passengers should delay posting their photos on social media until approved by the conservation aviation organization and NOAA Fisheries. Some facilities plan large press announcements and request those be

released prior to other social media postings. In addition, during release flights, it is preferred for social media posts to occur after the turtles are successfully released to limit crowds on the beach.

Appendix A. Map and List of Rehabilitation and Conservation Aviation Organizations

The below map of rehabilitation facility locations shows the extensive network of organizations that collaborate to rehabilitate and release sea turtles. The following facilities and conservation aviation organizations list will be updated on a continuing basis throughout the year. After the publishing of this document, facilities and conservation aviation organizations listed below may not be all inclusive and/or may reflect organizations that are not currently participating. However, this provides a list for the pilot(s) reference.

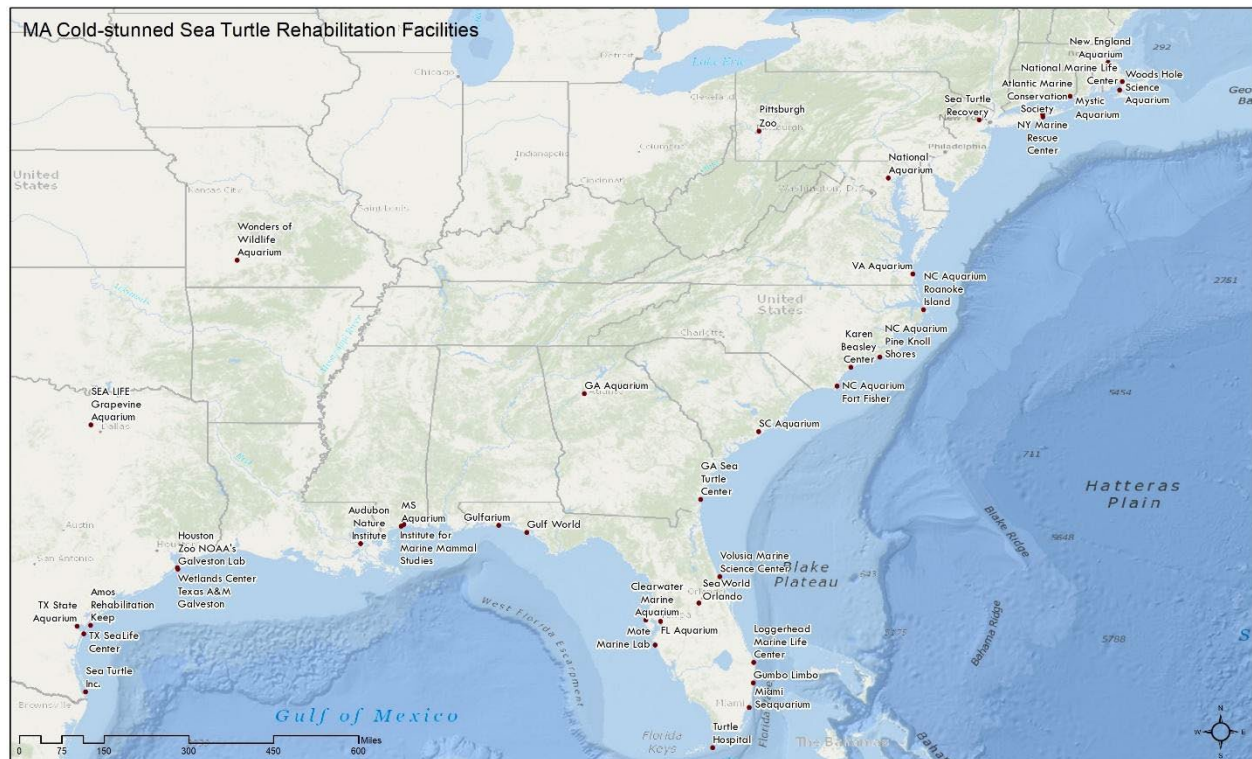


Figure A.1 Current partner rehabilitation facilities used for cold stunned sea turtle recovery in the U.S.

Rehabilitation Facilities by State

Massachusetts

[Mass Audubon Wellfleet Bay Wildlife Sanctuary](#)

[National Marine Life Center](#)

[New England Aquarium](#)

[Woods Hole Science Aquarium](#)

Connecticut

[Mystic Aquarium](#)

New York

[Atlantic Marine Conservation Society](#)

[New York Marine Rescue Center](#)

Pennsylvania

[Pittsburgh Zoo & PPG Aquarium](#)

New Jersey

[Sea Turtle Recovery](#)

Maryland

[National Aquarium](#)

Virginia

[Virginia Aquarium & Marine Science Center](#)

North Carolina

[Karen Beasley Sea Turtle Rescue & Rehabilitation Center](#)

[North Carolina Aquarium at Fort Fisher](#)

[North Carolina Aquarium at Pine Knoll Shores](#)

[North Carolina Aquarium at Roanoke Island](#)

South Carolina

[South Carolina Aquarium](#)

Georgia

[Georgia Aquarium](#)

[Georgia Sea Turtle Center](#)

Florida

[Clearwater Marine Aquarium](#)

[Gulfarium Marine Adventure Park](#)

[Gulf World Marine Park](#)

[Gumbo Limbo Nature Center](#)

[Loggerhead Marinelife Center](#)

[Marine Science Center](#)

[Miami Seaquarium](#)

[Mote Marine Laboratory & Aquarium](#)

[SeaWorld Orlando](#)

[The Florida Aquarium](#)

[The Turtle Hospital](#)

Mississippi

[Institute for Marine Mammal Studies](#)

[Mississippi Aquarium](#)

Louisiana

[Audubon Aquarium of the Americas](#)

Texas

[AMOS Rehabilitation KEEP](#)

[Houston Zoo at NOAA's Galveston Lab](#)

[Sea Life Grapevine Aquarium](#)

[Sea Turtle, Inc.](#)

[Texas Sealife Center](#)

[Texas State Aquarium](#)

[The Gulf Center for Sea Turtle Research at Texas A&M University Wetlands Facility](#)

Missouri

[Wonders of Wildlife National Museum & Aquarium](#)

Conservation Aviation Organizations

[Turtles Fly Too](#)

[LightHawk](#)