



TURTLE SATELLITE TAGGING

the Process

Based on

“Satellite Tracking Manual-Training Guidelines”

By Marine Turtle Research Program (NOAA), Honolulu

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SPREP 1. Prepare the Turtle Carapace (& Satellite Tag)

- Remove barnacles, algae etc on carapace
 - Wash/rinse carapace thoroughly using fresh water
 - Dry carapace completely using cloth towel
 - Place Satellite Tag (ST) on second scute from the top of carapace so it sits properly. Mark around ST for placement later when attaching.
 - Also mark area around the second scute for sanding
- use a permanent marker for marking





- Do measurements
 - CCL (Curved Carapace Length)
 - CCW (Curved Carapace Width)

Refer to Guide for Measurements



- Sand shell surface, around the second scute from the top where the satellite tag will sit, to ensure a “roughened” surface for good attachment
- Vigorously dust the entire carapace area-the carapace should be free of sanding dust



- Cover the terminals on the Satellite Tag (ST) using a masking tape





2. Mounting the ST on the Carapace

2.1 Mix the Elastomer

- “Pour” 4 oz (118 mls) of elastomer into plastic cup
- Add 5-10 drops of elastomer catalyst randomly over the elastomer (refer to product instruction as different temperatures and humidity would determine the amount of catalyst needed)
- Mix vigorously and thoroughly using a mixing stick for at least 20-30 seconds until mixture is not “runny”





SPREP 2.2 Mount the ST on Turtle

- Remove magnet from ST and stick magnet to somewhere safe
- Spread the elastomer out evenly on the bottom of the ST.



- Mount ST to sit evenly on turtle carapace (on the second central scute and ST antennae end towards the tail of turtle).
- Press the tag firmly against the carapace to form a level platform
 - ensure the elastomer forms a base along the entire length and breath of the ST and elastomer should “ooze” out slightly along all sides of the ST.





- Leave until elastomer “hardens”
(like rubber - about 10 minutes)



- Use a sharp knife and carefully trim off excessive elastomer flush with the edges of the ST



- Take care not to cut into the carapace scutes
- Do not pull the elastomer away from the ST if a clean cut has not been made
- Once excess elastomer is trimmed away, re-sand and dust the area where the elastomer contacted the carapace





SPREP 3. Bonding the ST to the Carapace

3.1 First application

(i) Preparing fibreglass cloth pieces:

- Use wide fibreglass cloth
- Cut out (if not supplied already cut) 4 pieces as shown:
 - 2 to cover the length and height of the ST, and
 - 2 to cover the width and height of the anterior end, and width and up to just below the terminals of the posterior end of the ST.Ensure terminal are not covered by the cloth.
NEVER COVER TERMINALS WITH CLOTH OR RESIN MIXTURE DURING ANY APPLICATION!



- Place fibreglass cloth pieces as shown



SPREP (ii) Mix Polyester Laminating Resin

- Use surgical gloves
- Pour 4 oz (118 ml) of resin into mixing cup
- Add about 30 drops of MEK catalyst randomly over the resin (see note 1 below)
- **Mix vigorously and thoroughly** using a mixing stick for about 60-90 seconds (when you feel it changing)

Notes:

1. You may need to experiment beforehand to determine the amount of catalyst needed in your conditions so that the resin cures in about 10 minutes. Use only 1 experiment and adjust amount: less catalyst for more time to cure and more catalyst for less time to cure.
2. Do not use once the resin begins to “gel”.





SPREP



(iii) Apply the coating

- Use the tip of the brush (still wearing gloves)
- Lightly brush a coat on the ST and carapace where the first pieces of cloth will be applied.
- Place fibreglass cloth in place and Apply the coating by using the tip of the brush to “push” the resin into the cloth until the cloth is no longer white but has a transparent appearance (clear). Work fast & in twos. Do not use broad painting style strokes - it causes cloth to slide around.
- Use brush to pull the resin back up towards the cloth if it is “runny”.





3.2 Second application

- done after first one dries (applies to all subsequent application)

(i) Preparing fibreglass cloth pieces:

- Cut and layout 4 strips of the narrow fibreglass cloth:
 - 3 pieces to cover across the ST with sufficient cover of the carapace on both sides of the ST
 - 1 piece to cross from the anterior to posterior of the ST with sufficient cover of the carapace in front and at the end of the ST (the antennae is slipped through this piece)



(ii) & (iii)

- Mix resin as before and apply as in First Application until cloth looks “clear”



3.3 Third application - done after second application dries

- **Cut out fiberglass cloth strips (pieces):**
 - 2 narrow strips to criss-cross over the ST as shown on top picture and cover sufficient carapace area
 - 2 narrow strips for the anterior end of ST as shown to cover over the anterior end of the ST and cover sufficient carapace area (bottom of top picture)
- **Make “cigar” using fiberglass cloth for placement in front at the base of ST antennae as shown in middle picture**
- **Cut narrow strip to go over the “cigar” and ST as shown in bottom picture. Ensure sufficient length to also cover area on carapace**





Third application cont.

- Prepare identification card
 - Cut out hard card to fit on the ST
 - Write name selected to be given for the Turtle
 - Write date, place and collaborators
- Using slightly more resin, 5 oz (148 ml) and catalyst (40 or more drops), mix thoroughly as before.
- When the resin is mixed, put “cigar” in the mixture and allow it to soak up resin.



Work quickly



Third application cont.

- Lay out ID card as shown in picture on top of ST
- Lay out layer/cloth (as shown on middle picture) over the ID card AND apply resin mixture as before until fibreglass cloth “looks” clear.



- Place the “cigar” directly anterior to antennae as shown



Third application cont.

- Place last strip of fiberglass cloth over “cigar” as shown AND apply resin mixture
- Just as the remaining resin mixture in the cup begins to gel, scoop/ “goop” it on top and anterior side of “cigar” to provide additional protection. This must only be on top of the ST and not on the carapace.





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4. Preparing Turtle for Release

When final coat of resin mixture and cloth has cured properly:

- Remove masking tape cover from switch terminals & lightly sand terminals to free from residue
- Reset ST by re-attaching the magnet to ST as when ST was received
 - Flipper tag the turtle and record



- Obtain tissue sample and store properly
 - From hind flipper & store in DMSO or salt



- **RE-ACTIVATE ST BY REMOVING MAGNET FROM THE ST !!**
- **Record serial number on ST as well as the message on the ID card.**
- **Release the turtle**
 - **Ensure not to bang the ST into anything**
 - **Note the time, place of release (get a GPS reading if possible)**
 - **Ensure all used material from the attachment are properly disposed of**

