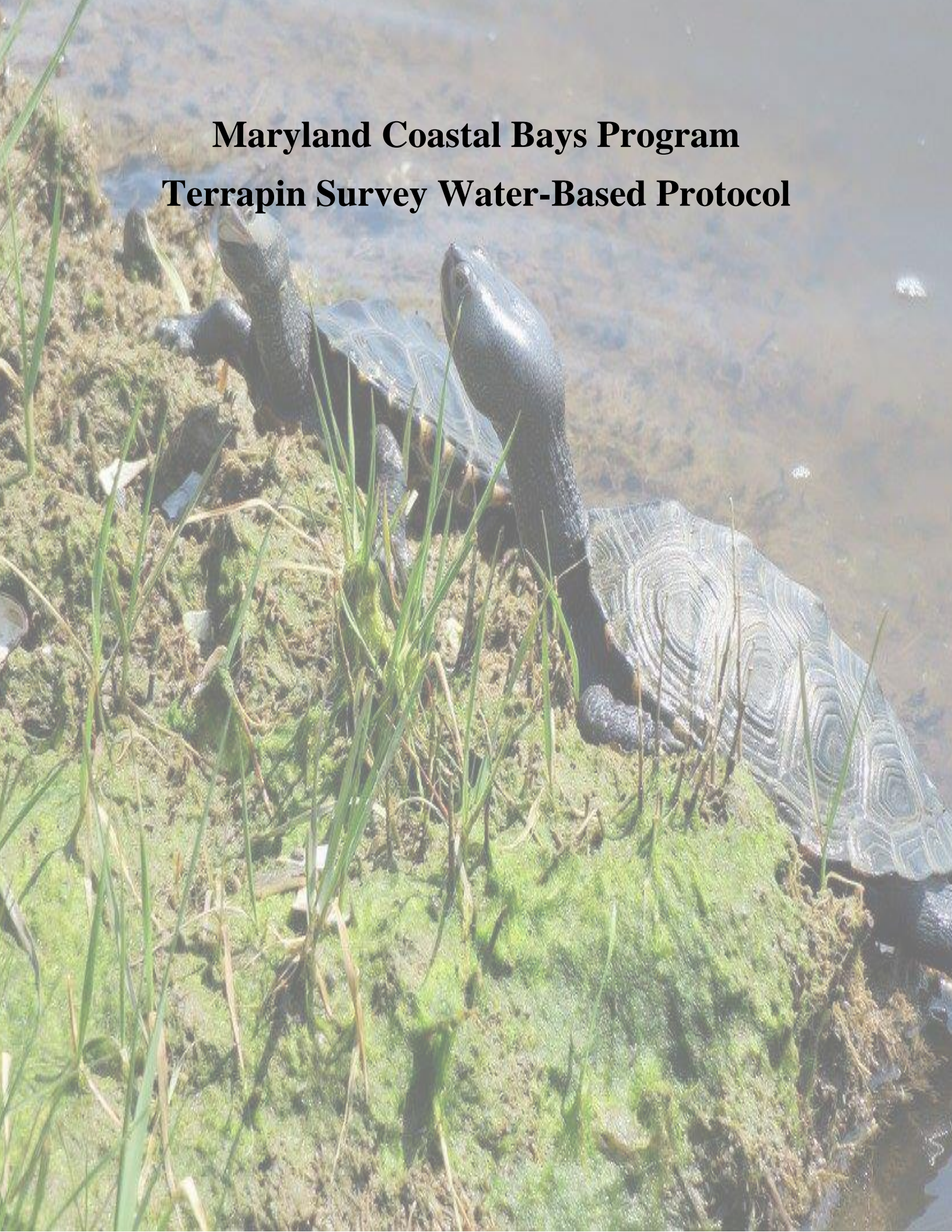


**Maryland Coastal Bays Program**  
**Terrapin Survey Water-Based Protocol**





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**Maryland Coastal Bays Program**  
**Terrapin Survey Water-Based Protocol**  
**May 30<sup>th</sup> to June 10<sup>th</sup>, 2023**

**Water-Based Survey Design:**

In order to ensure that terrapin abundance can be tracked over the long term, MCBP has created designated routes based on the data from previous years' surveys. Citizen scientists are able to complete a survey of a route at any point during the survey time period. The designated routes consist of two route types: a one-way survey or a survey loop with an "outbound" paddle and a separate "return" paddle.

**Survey Timeframe:**

The Terrapin Survey will take place from May 30<sup>th</sup> – June 10<sup>th</sup>

The Terrapin Survey occurs over the 12-day period after Memorial Day. This time period is when terrapins are highly active and are aggregating in clusters after emerging from hibernation.

**Weather and Survey Conditions:**

**Tide:** It is recommended to survey within 2 hours of low tide for the best chance of observing terrapins. Record the tidal stage on the datasheet so we know what tide data was collected on. There are several resources for determining tidal stage. Phone apps such as [Tides Near Me](#) or websites such as <https://www.saltwatertides.com/dynamic.dir/marylandsites.html> are good resources.

**Weather:** The optimal weather conditions will include clear skies and warm water temperatures (70°F +). If you have a thermometer available, record air and water temperatures. Warmer temperatures mean more surface basking behavior. Record all weather observations, including cloud cover, on the datasheet. Significantly more terrapins are observed with water temperatures of >70°F. **Calm days with little wind and low cloud cover (lots of sun) are best for spotting terrapins.**

**Water:** There should be little wind or chop on the water. This is variable depending on where you are; please do not go in hazardous conditions or if high winds are forecasted. Some routes may still be possible to be surveyed in windy conditions. Estimate wind speed (mph) and direction on the datasheet. Observing terrapins becomes more difficult in choppy water. **Observing in conditions with wind speeds less than 10 miles per hour are ideal.**

**Boat Type:** Smaller vessels such as canoes or kayaks are recommended for most designated routes; however, motorboats may still be used depending on the survey route. Note the type of boat used and check the box on the datasheet.

**Speed:** Travel at 0-6 knots; if you come upon any terrapin aggregations, it would be appropriate to stop the boat and count them, rather than flush them all underwater.

## **Recording Data:**

Ideally, water-based teams using a motorboat will consist of a boat driver plus one or more observers, and one scribe. Please note on datasheet who is acting in each capacity; it is OK if all on board act as observers but please note that on datasheet. It is best if there are a minimum of three people on a team for motorboat surveys. If kayaking, try to have a team of at least two, with one observer and one scribe.

Survey the route and take GPS locations (smart phones are acceptable for use; see resources for GPS phone apps) for each terrapin or terrapin grouping seen. The number of terrapins seen per GPS point will be recorded. Binoculars can and should be used, but the GPS point should be taken as close as possible to the terrapin's actual location. Aggregations are counted but reported as a single GPS point with the number of terrapins at this point preserved.

If no terrapins are seen for 10 minutes, a GPS point will be taken but indicated as a “**waypoint**”. This is to help track your travel if there are no datapoints for terrapins - remember the absence of terrapins is just as important as presence! Waypoints are very important so we can map your boat routes; this is especially important for determining areas where terrapins are **NOT** seen. We can begin to better understand what is influencing where these aggregations occur if we also know where you have surveyed and not observed terrapins.

Take the latitude and longitude (**NAD 83m Decimal Degrees; ex. 38.285467, -75.154463**) of each terrapin aggregation and individual terrapin. Please get latitude and longitudes for **start and stop points**, every **terrapin sighting**, and **waypoints**. Please label these as “Waypoint”, “Start”, or “Stop” under the # Terps column or in the comments field on the sheet.

All observers will look for terrapins. When a terrapin is spotted, the scribe will take the GPS point and record it on a datasheet. Any motorboat-based survey should be performed at the slowest speed possible.

Record number of terrapins on surface and on creek banks on all sides of boat. Binoculars and digital cameras could be used as tools to verify you are counting terrapins and not other objects (sticks, feathers, etc.). If you can also get a photograph of terrapins and your survey team that would be great!

## **Remember to count terrapins by category on the datasheet:**

- Adult Females (larger and broader heads)
- Adult Males/Juveniles (smaller heads)
- Undetermined (if you're not sure)

**Only mark a turtle as male or female if you are certain.** It is ok to mark turtles as undetermined! Also remember to tally the total number of terrapins observed in the appropriate box.

If surveying multiple routes, please use a separate datasheet for each new survey route.

Record all shoreline habitats present opposite where terrapin aggregations (or singles) are observed. Check the appropriate box(s) on the datasheet. If needed add comments in that field.

**Legend:**

- MA=marsh
- BE=beach
- FO=forest
- AG=agricultural lands
- DE=developed

In the comments, please note if the shoreline is rip-rapped, bulk-headed, living-shoreline, etc.

Please note any other comments either in the section on “Overall Comments” or in the lower margin of the datasheet.



### **Resources for recording Latitude and Longitude:**

Any app may be used to record location information as long as coordinates are reported in decimal degrees; ex. 38.285467, -75.154463.

#### **iOS Devices:**

- <https://apps.apple.com/us/app/coordinates-calculateconvert/id494286614>

#### **Android Devices:**

- <https://play.google.com/store/apps/details?id=com.latitudelongitude.gpscoordinates>

#### **Windows Devices:**

- <http://www.windowsphone.com/en-us/store/app/gps-calculator/4e06928ade12-e011-9264-00237de2db9e>

#### **Google Maps GPS Coordinates website:**

- <http://www.gps-coordinates.net> (Can be used by someone who doesn't want to install an app but still has GPS enabled. Be sure to allow location services the first time you visit the website if it asks.)

#### **Submitting Your Data:**

Please send your datasheets to [kphillips@mdcoastalbays.org](mailto:kphillips@mdcoastalbays.org) or mail to Maryland Coastal Bays Program, Attn: Sandi Smith, 8219 Stephen Decatur Highway, Berlin, MD 21811. You may also drop off the datasheets at the office; please be sure to call 410-213-2297 to arrange a time for drop off.

Clear photos or scans of datasheets are perfectly fine to submit via email.

#### **Questions and Concerns:**

Please contact Sandi Smith at [sandis@mdcoastalbays.org](mailto:sandis@mdcoastalbays.org) or 410-213-2297 x 106 with any questions. For any questions while surveying on site, please call or text (preferred) her cell phone at 443-783-5293.

**If you are unable to print datasheets and protocols, please contact Sandi Smith to receive printed copies.**



**Thank you for volunteering in this valuable citizen science survey!**