



CONSERVE WILDLIFE

FOUNDATION OF NEW JERSEY

GREAT BAY TERRAPIN PROJECT – 2022 REPORT SC2022033



CHJOWX was observed swimming near our turtle garden on June 8, 2022. She was marked on June 29, 2016 .34 miles to the SE on Great Bay Blvd.

The 2022 nesting season for northern diamondback terrapins began during the first week of June. This was on the tail end of an astronomical high tide (new moon 5/30). Our road surveys began on May 30 and that first week a total of 40 terrapins were observed. The following week, 233 were observed, which marked the first wave of nesting adult females. Overall, our surveys recorded a total number of 799 terrapins in our project area. Of those, a total of 32 were found deceased.

The first two roadkills were observed on June 5 and recorded in the early afternoon. Both observations were documented with photos by volunteer Jim Clarke (pg 2). They show adult

females who were hit hours earlier with yellow yolk stains on asphalt. One looks like she was previously captured and marked. Overall, observed roadkills were reduced in 2022.

The majority of terrapins were documented on or near roads in our S. Ocean County project area, with 727 on Great Bay Blvd. Of those, 3.44% were found dead, which is half of the ten year average (6%). It is hard to understand why the roadkill rate was lower, but we know that public awareness has grown over the past few years, so outreach efforts appear to be paying off. This season long success is in large part due to our devoted legion of volunteers who dedicate much time to ensuring the survival of adult female terrapins on roads.



Two roadkills observed on June 5, 2022. Photos by Jim Clarke.

Terrapins encountered on Great Bay Blvd. from 2012 to 2022. 2005 is provided as a reference from previous research conducted on road occurrence by S. Egger.

Year	2005	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
# Live Terrapins	547	1027	913	342	801	737	708	694	417	857	406	702
# Dead Terrapins	53	36	38	35	34	46	24	57	48	83*	43	25
Total	600	1063	951	377*	835	783	732	757	465	857	449	727

PURPOSE OF STUDY

*Since beginning in 2010, the purpose of this project has been to document the presence of adult female Northern diamondback terrapins (*Malaclemys terrapin terrapin*) on roads in Barnegat Bay, Great Bay, and Absecon Bay watersheds (S Ocean, SE Burlington and N Atlantic Counties) with Great Bay Blvd. as our core project area. Using the data collected, we highlighted roadkill “hot spots” or sections of roads where many adult female terrapins were hit by car. We then worked with local municipalities and county/state government to raise awareness for encountering terrapins on roads by asking them to install large, high visibility X-ING signs in these areas.*

Our primary goal is to reduce road kills of adult female terrapins. A secondary goal is to educate the public about the importance of terrapins within the coastal ecosystem. Our final goal is to identify and enhance nesting habitat for adult females to nest.

Each year Conserve Wildlife Foundation of NJ (CWF) recruits volunteers (NJDEP Fish & Wildlife-Wildlife Conservation Corps) and student interns to assist with seasonal road patrols/surveys to document the occurrence of terrapins on roads within our project area. These surveys are conducted during the summer months from late May to mid-July. During this time we also try to raise awareness by alerting drivers through online social media and physical roadside caution

signs. Lastly, we work closely with local, county and state road management agencies to address areas where significant roadkills occur.

To help better understand how the road impacts the local population, in 2016 we began to mark adults encountered on Great Bay Blvd. using volunteer student research interns. The interns who work on this project essentially lead fieldwork and have played an integral role in ensuring the success of the project. They have helped mark around 1000 adult female terrapins over seven years on Great Bay Blvd.



CWF Biologist, Christine Healy holds an adult female terrapin while 2022 volunteer interns Jada and Ella record data.

Road surveys are conducted during the terrapin nesting season, from late May through July. While driving, the volunteer surveyor or research intern (subpermittee) watches for terrapins in the roadway. If it is safe to exit the vehicle and one is encountered, they stop/pull over their vehicle and record data on their observation. If it is not safe, then observations are marked using a GPS and data sheet and the survey continues (usually the case for busy highways Garden State Parkway, Route 72, Route 30).

The majority of surveys are conducted during the day from 0700 – 1700 hours using a motor vehicle. Our primary road is Great Bay Blvd. (where notching occurs by our interns) but also includes other local municipal roads that transect saltmarsh habitat, including Route 72, E. Bay Ave., Cedar Run Dock Rd, West Creek Dock Rd., Parkertown Dock Rd., S. Green St., Radio Rd., Route 9 (Burlington & Atlantic Counties), and Route 30 (Route 30 was not covered this year).

	<i>Live</i>	<i>Dead/ Injured</i>	<i>Total</i>
Great Bay Blvd	702	25	727
Other roads	65	7	72
Total:	767	32	799

In general, surveys are timed to occur during the day and around high tide, when female terrapins are more actively searching for suitable nest sites. When a terrapin is encountered, data is collected and the terrapin is either allowed to continue what it was doing (volunteer surveyor) or captured by hand (research intern) to be further analyzed. Our

surveyors record the date, time and condition of the animal. In 2022, the majority of observations (94%) were recorded using the iNaturalist app, where the date, time and location of the sighting are automatically generated. A photo can also be added to the observation and if a photo of the carapace is added, it can help determine the identity, if notched.

Observations/sightings recorded using iNaturalist must be added to our “**Great Bay Terrapin Project**” for them to be included in our project. We previously utilized shared equipment, including a clipboard with paper data sheets and a Garmin GPS, but since Covid, many of our volunteers have preferred to use iNaturalist.



Female northern diamondback terrapins on Great Bay Blvd. June 13, 2022.

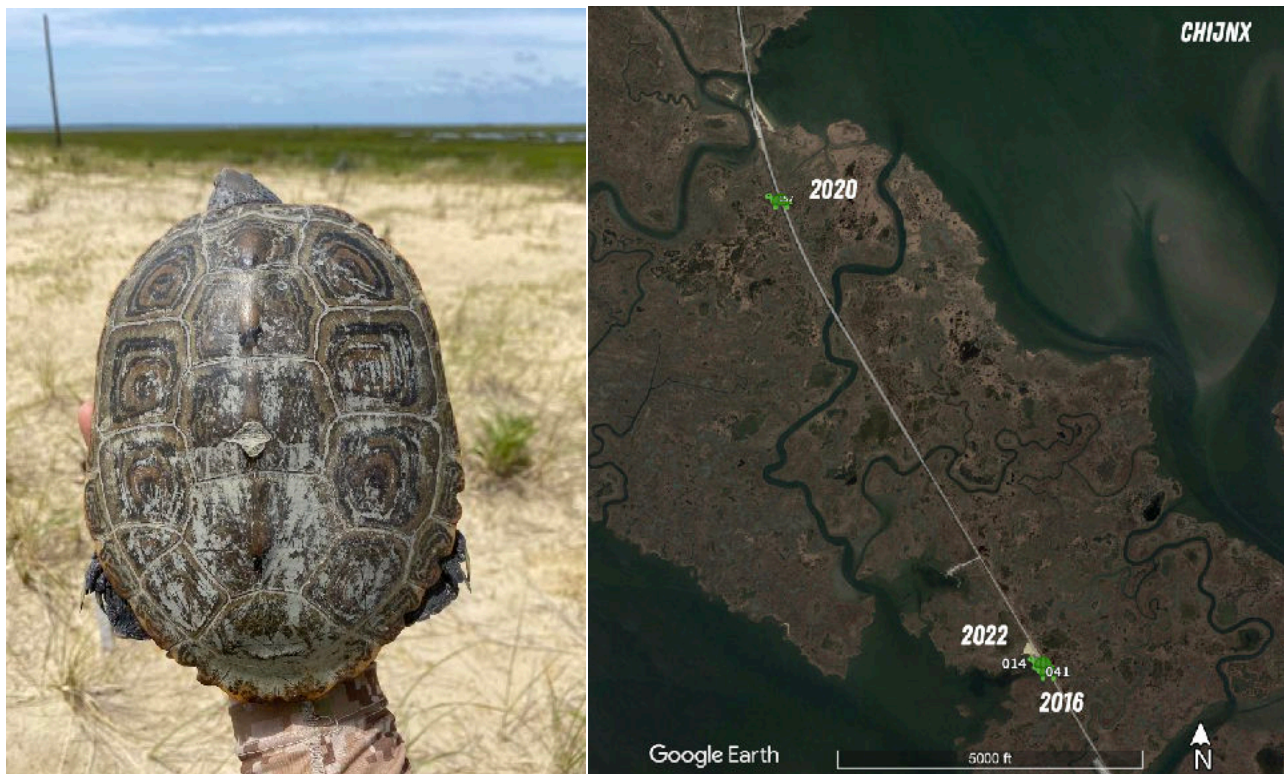
Once an observation has been recorded the terrapin is placed in the direction they are heading and out of harms way. Nesting terrapins are not disturbed. We stress to all of our volunteers to never put their own life in jeopardy when trying to save a terrapin from being hit by car.

More detailed surveys are done by our student research interns. Their surveys are only conducted on Great Bay Blvd. and at a much slower pace. In addition to collecting data that

our volunteers collect, they also take measurements and mark terrapins, if unmarked. Terrapins are weighed and examined to determine if they are gravid. Their body condition is noted and their shells are examined. They are scanned for PIT tags and previous notch codes. If the terrapin is unmarked, then a seven letter code is assigned and filed into their marginal scutes with a half round file. Codes are provided to us by Dr. John Wnek with MATES/Project Terrapin. A PIT tag is injected into the rear abdominal cavity of the terrapin before release. Data is recorded on a paper data-sheet and the terrapin is usually released in less than 15 minutes from when it was captured.

RESULTS AND SUMMARY

Last year project staff and volunteers recorded a total of 799 terrapins. The majority were adult females (98%). A total of 32 were found dead. On Great Bay Blvd. 214 terrapins captured by our research interns were unmarked and 34 were old/new recaptures. The average carapace



Female terrapin CHIJNX in hand after being captured on Great Bay Blvd. on June 7, 2022 (L) and encounters on Great Bay Blvd. 2016-2022.

length, width and height was 174.3mm, 134.1mm, and 71.4mm. The average plastron length was 157.4mm. The average weight was 938 grams. 180 were gravid at the time of capture. The smallest female encountered was 152mm and weighed 520g and the largest was 205mm and weighed 1468g. A total of eight terrapins were 200mm or greater and weighed an average of 1361g. The average age of adult terrapins (where the annuli was pronounced) was 10. Of the 34 recaptures, we encountered one marked in 2005 (CHIJNX) and 2016 (CHIJPX); two from 2017 (HNOQVW, CHKNVW), three from 2018 (HNQVWX, IJNOPQ, IJKOQX), four from 2019 (ACMOPV, CJKMQW, BCJMNP, BHKMPX) and 2020 (AJKMPQ, AJMNWX, AKMOQX, ALMOPW); five from 2021 (BCIMOPX, BCIJKVW, BCHMNOV, BCHKMXV, BCIJOPW) and four from earlier this year (BCKQVWX*, BCKNOPW, HILNOPV, HILNOQW). There were another ten

which we had no data (BCLOPVW, CJMOVW, CHIKNQV, HJKNPQW, BCHJMPW, CHIKMNV, BCHJMOQ, CHIKVX, CIJKNX, AJMQVWX) and forwarded to Dr. John Wnek for identification. The oldest adult who was encountered this year was CHIJNX (985-120028783731). This female was first encountered in 2016 as a new recapture. We don't have the original data, but she was originally marked (pit tagged) in June 2005, likely by Stephanie Egger. **recaptured twice this year*

Observations of terrapins on Great Bay Blvd. were recorded from the intersection of Hunter Drive to the southern tip of the peninsula. Higher concentrations of nesting were observed near locations with higher elevations and more suitable habitat, which is similar to previous observations. The creation of this road has undoubtedly helped provide more suitable habitat for terrapins at the expense of increased roadkills and exposure to predation.

Roadkills were observed on all sections of Great Blvd Blvd. with higher concentrations towards the northern portion of the road and bridges, where there is more traffic and terrapin activity. Road surveys in the surrounding area highlighted roadkills on Osborne Island in Little Egg Harbor and Route 9 in Bass River Township. As seen on the enclosed maps, not all of the locations associated with observations recorded on iNaturalist are 100% accurate.

GARDENING FOR TERRAPINS

It appears that more terrapins are finding and utilizing this site. This is the third year that this site has been available for nesting female terrapins. This season we found and protected 195 nests at our Great Bay Turtle Garden. The first evidence of terrapins entering the site was on June 3, where small holes were found from females probing the ground for potential nesting. Then on June 6 we had our first nests, five of which were protected with metal cages. During the first two weeks of June we found and protected 81 nests and 73 during the last two. Then in July we found and protected another 52 nests. This season we used round aluminum tags with 001-300 to identify nests. This was much easier than writing a code on a strip of aluminum, which may fall off the cage.

There were many other “natural” nests which went undetected. They were too difficult to locate for us but many were found by predators, unfortunately. The metal cages that we used worked really well, but some predators, like fox, have learned to dig beneath to expose eggs/young and predate nests. Other predators at the site (and other locations on GBB) include fish crows, raccoons, and herring gulls. Typically we see fish crows predate nests immediate after eggs are laid. Then raccoons follow. Then later in the season we saw a lot of pressure from red fox and herring gulls. The gulls would perch on a tall pole nearby and watch for hatchlings in the garden. We hope to work with NJDEP Fish & Wildlife to control predator activity at this site in the future.



Overall the majority of nests successfully hatched and young were able to disperse locally into the surrounding habitat. Some hatchlings were removed from nests in early September and released in areas around the Turtle Garden to ensure that they were not predated by avian



Female northern diamondback terrapin nesting in turtle garden. June 13, 2022.

predators. Another group of hatchlings were collected and transferred to two Little Egg Harbor School District Elementary Schools for head-starting this winter. This aspect of this project is conducted under Dr. John Wnek's NJDEP SC Permit for Project Terrapin. They will be released in the summer of 2023 by teachers and students where they were found.

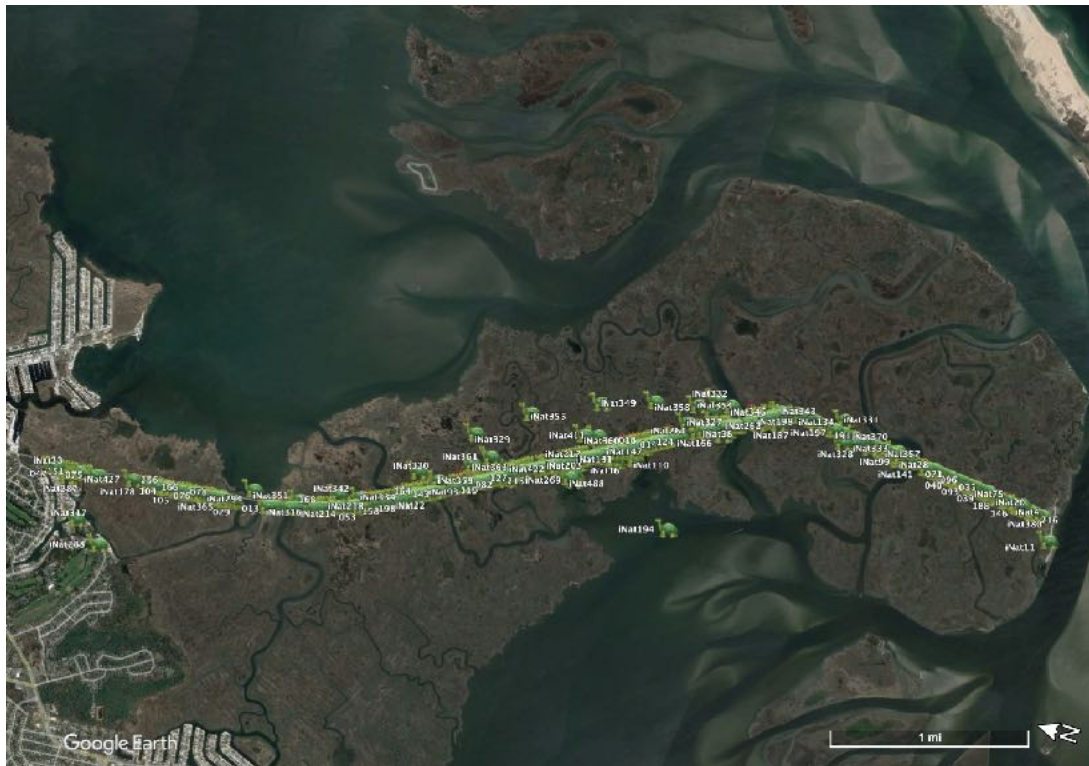
In summary, we observed close to the ten year average of 740 terrapins on Great Bay Blvd. this year. The total number of roadkills was lower than usual, at 3.4% mortality rate. We continue to see more motorists slow down to avoid hitting adult females on roads during the day. During the early morning hours is when most roadkills occur, when visibility is reduced and some terrapins are active. Predation continues to be very prevalent along Great Bay Blvd. and hope to reduce mammalian predation that have big impacts on nest outcomes within Great Bay Blvd. WMA. Thanks to all our volunteers who devote a lot of time to conduct surveys, monitor our turtle garden and raise awareness for terrapins on roads.

Prepared by:

Ben Wurst
Senior Wildlife Biologist
Conserve Wildlife Foundation of NJ
2 Preservation Place
Princeton, NJ 08540
ben.wurst@conservewildlifenj.org

** Note: Raw data submitted to NJDEP Fish & Wildlife
Exotic Wildlife Permits Unit and ENSP.*

MAPS:



Terrapin observations on Great Bay Blvd, Little Egg Harbor, Ocean County.



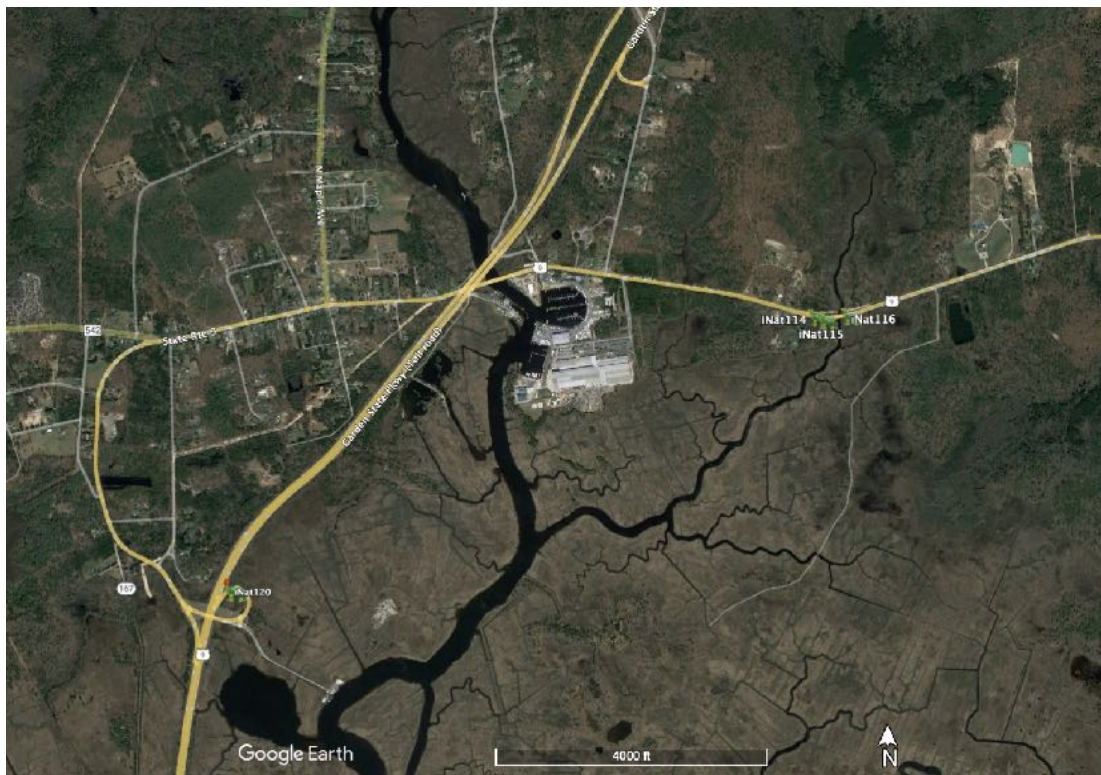
Terrapin roadkills on Great Bay Blvd., Little Egg Harbor Twp., Ocean County.



Terrapin observations in Stafford Township, Ocean County.



Terrapin road observations in West Creek, Ocean County.



Terrapin road observations in Bass River Twp. Burlington County.