



Recommendations Regarding Snapping Turtle

NJDEP Fish and Wildlife, Bureau of Freshwater Fisheries and Endangered & Nongame Species Program



Tortoises Sold in the Markets of Philadelphia.—The taste for “stewed terrapin” and “snapper soup” has become so general in Philadelphia, that the United States are now ransacked for the means of supplying it. Within a few years the species sold were the “terrapin,” *Malacoclemmys palustris*; the “red-belly,” *Chelopus insculptus*; the “slider,” *Chrysemys rugosa*; and the “snapper,” *Chelydra serpentina*. Now large invoices of turtles are sent from Mobile, New Orleans, and St. Louis, which include the following species: *Chrysemys bellii*, *C. elegans*, *C. concinna*, and *C. troostii*; *Malacoclemmys geographica*, and *M. leseurii*; total, exclusive of sea turtles, ten species. All are abundant in the market except the *C. bellii*.—E. D. COPE.

Turtle Life History

- Turtles are bet-hedgers
 - Long reproductive life offsets high rate of egg/nest predation (~75%) and juvenile mortality (~50% in 1-yr olds)
 - High adult survival rates (~ 95%) in stable populations
- Delayed sexual maturity (12-16 yrs age)
- Unable to respond to egg/nest mortality with increased clutch size or frequency
- 18-yr Michigan snapping turtle study of a stable population
 - Population would double in 2,000 yrs
 - Increase in adult mortality by 10% would half the population in 10 years



































































Colteaux & Johnson (2018)

Table 2. Snapping turtle (*Chelydra serpentina*) demographic rates used in the creation of mixed age/stage population matrices. Parameter values shown were taken either from the literature, with reference cited, or from the mark-recapture portion of this study where noted. Mean demographic values were used in matrix construction when a parameter has more than one referenced value.



Parameter	Value	Study Location	Source
Nest survival	0.23	Michigan, United States	Congdon et al. 1994
	0.157	Quebec, Canada	Robinson and Bider 1988
	0.22	Michigan, United States	Congdon et al. 1987
	0.056	New York, United States	<u>Petokas</u> and Alexander 1980
	0.245	South Dakota, United States	Hammer 1969
Hatchling survival	0.17	Michigan, United States	Congdon et al. 1994
	0.47	Michigan, United States	Congdon et al. 1995
	0.09	Michigan, United States	Congdon et al. 1999
Juvenile survival	0.77	Michigan, United States	Congdon et al. 1994
Adult survival	0.97	West Virginia, United States	Flaherty et al. 2008
	0.966	Ontario, Canada	Galbraith and Brooks 1987
	0.963	Wisconsin, United States	Paisley et al. 2009
	0.939	Minnesota, United States	Paisley et al. 2010
	0.93	Michigan, United States	Congdon et al. 1994
	0.929	Ontario, Canada	Galbraith and Brooks 1987
	0.91	Virginia, United States	<u>Colteaux</u> and Johnson 2017 (current study)
	0.88	Michigan, United States	Congdon et al. 1994

General comparison of reproductive potential among big-game species in Ontario


Year	Snapping Turtle	Black Bear	Moose	White-tailed Deer
0				
1				
2				 
3			 	 
4			 	 
5			             	       
6		 		
17	 	  x7  x18 = 25	 x303  x151  x227 = 681	 x629  x283 = 912

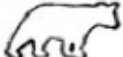
Note this chart does not take mortality into consideration.


This chart was developed by the OMNR Black Bear Technical Team in 2005 based on an original idea by George Kolenosky.

Snapping Turtle column was added by the Ontario Multi-Species Turtle Recovery Team in 2008.

Please note that up to 1400 eggs need to be laid by a snapping turtle before one offspring reaches maturity. This may not occur until year 50.

 = young of the year

 = sexually immature

 = sexually mature



JD Kleopfer (Virginia DWR) holding 57-pound Virginia state record (2024)



Chris Meehan (Monmouth U.) holding 51-pound New Jersey turtle

Scientific Community Recommendations

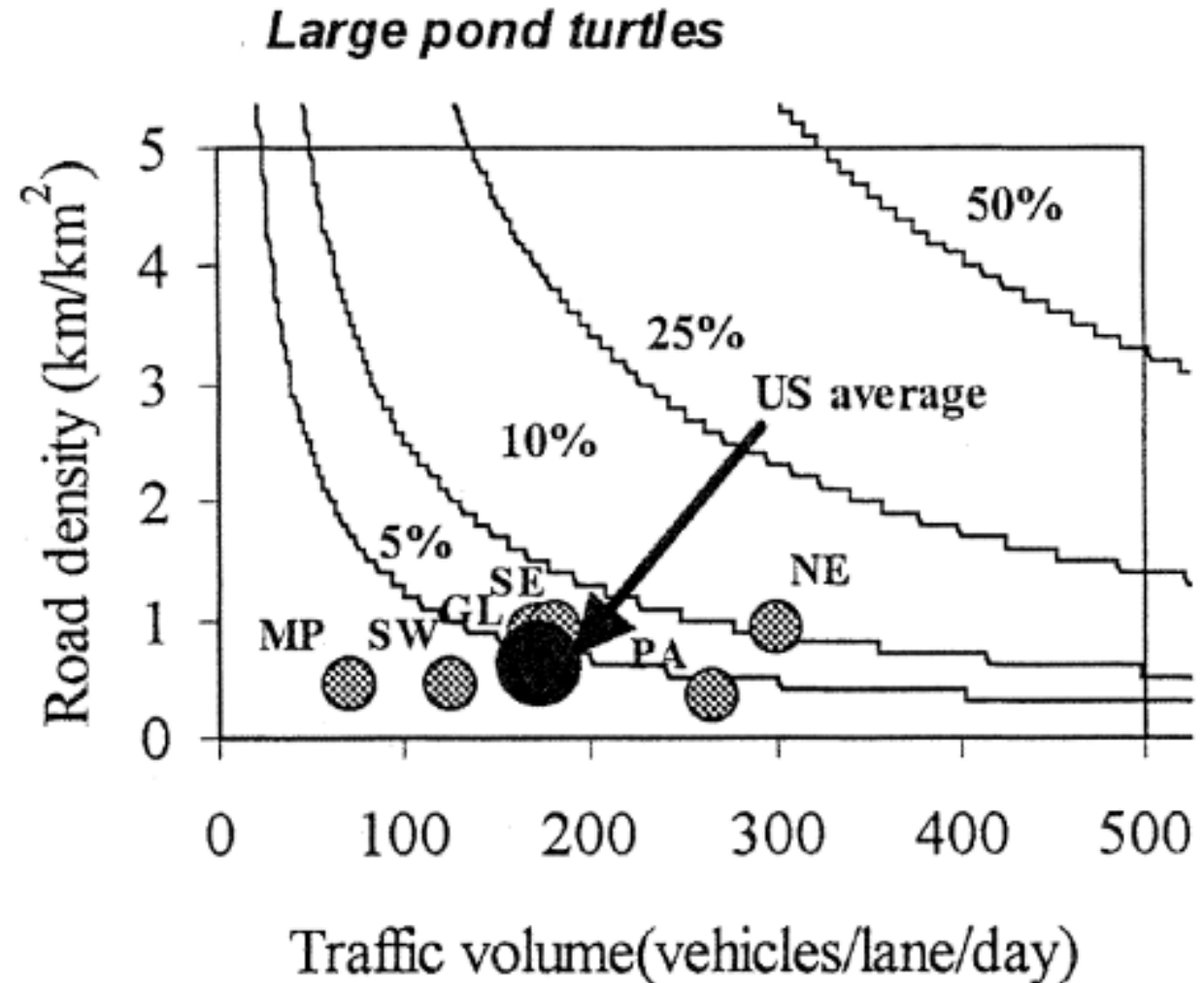
- Several researchers have advised that increases in adult snapping turtle mortality limit the sustainability of those populations:
 - Brooks et al. 1988
 - Congdon et al. 1994
 - Cunnington and Brooks 1996
 - Gibbs and Amato 2000
 - Zimmer-Shaffer et al. 2014
- Or moratoriums for one generational cycle (7 years) for waterbodies that have demonstrated, prolonged harvest (along with modifications to regs).
 - Colteaux & Johnson 2018

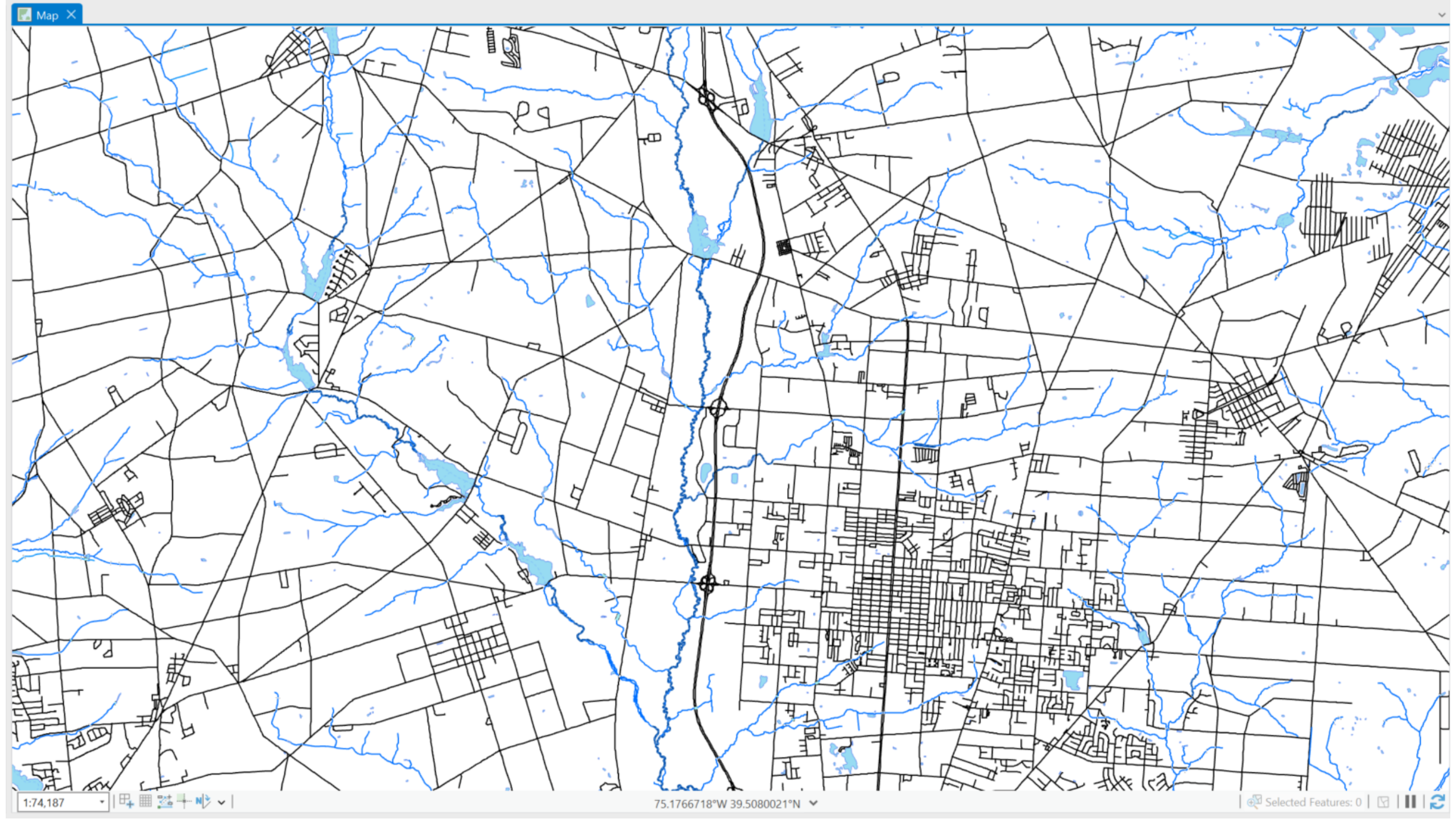


Effects of Roads

- Estimated loss of 10% of large pond turtle population annually due to roads in the northeast.
- Roads in NJ, alone, may reduce snapping turtle populations by 10% or greater.

Gibbs and Shriver 2002





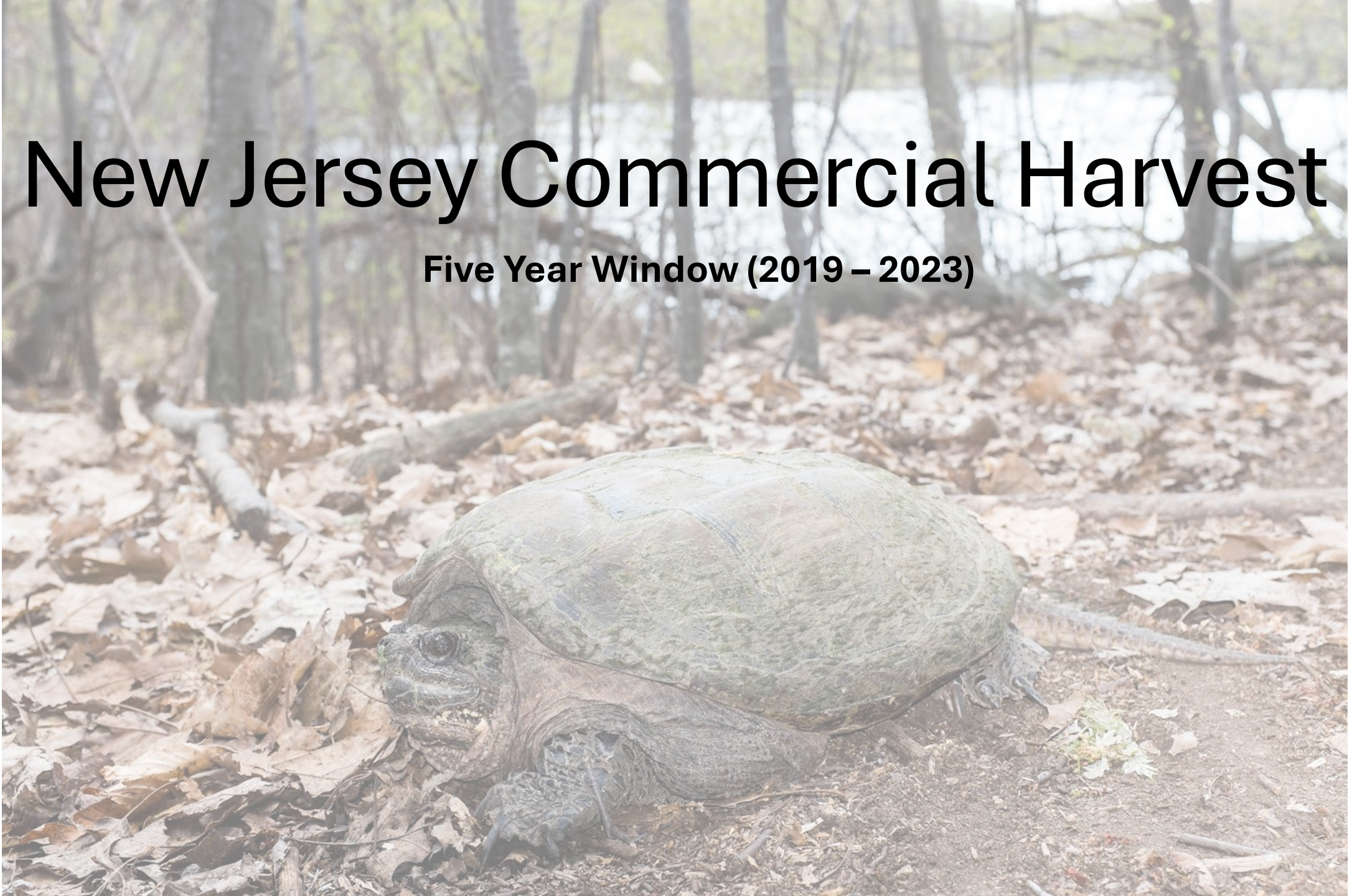
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75.1766718°W 39.5080021°N

Selected Features: 0

New Jersey Commercial Harvest

Five Year Window (2019 – 2023)



Year	Number of Permits (May Include Indiv. with Multiple Permits)	Number Harvesters Reporting Take (Including 0)	Harvesters Reporting at Least 1 Turtle	Turtles Harvested
2009	70	56	25	3154
2010	63	63	33	4551
2011	76	76	36	5819
2012	83	83	39	5270
2013	83	83	32	4155
2014	77	66	21	2337
2015	47	47	17	1637
2016	17	17	7	1701
2017	17	17	7	1940
2018	17	n/a	n/a	521
2019	14	9	9	957
2020	10	8	4	269
2021	5	3	1	80
2022	8	7	6	449
2023	9	7	1	430
2024	5	Pending	Pending	Pending

33,270 Turtles in 15 Years

	Total Reported					
	2019	2020	2021	2022	2023	Totals
Name						
Permittee1	110	NP	NP	NP	NP	110
Permittee2	0	0	0	NP	NP	0
Permittee3	0	NP	NP	NP	NP	0
Permittee4	1	3	0	3	0	7
Permittee5	0	0	NP	0	0	0
Permittee6	7	NP	NP	12	0	19
Permittee7	376	6	NP	20	0	402
Permittee8	15	42	NP	NP	NP	57
Permittee9	65	0	NP	76	0	141
Permittee10	229	0	NP	89	0	318
Permittee11	15	NP	NP	NP	NP	15
Permittee12	0	NP	NP	NP	NP	0
Permittee13	139	218	80	249	430	1116
NP = No Permit Issued						

	Year Total Reported (Less Than 10/Water/Year Excluded)					
	2019	2020	2021	2022	2023	Totals
Waterbody (n=31)						
Assiscunk Creek	0	0	14	0	0	14
Assunpink Lake	58	0	0	0	0	58
Belchers Creek	37	0	0	0	0	37
Black Creek	16	0	0	0	0	16
Blacks Creek	0	0	0	12	0	12
Cohansey River (above Rt 49 bridge)	0	0	0	0	33	33
Cranbury Brook	0	0	0	89	0	89
Crosswicks Creek						132
D&R Canal						99
Davison's Mill Pond						61
Fenwick Creek (above						15
Great Egg Harbor River						16
Hyper Humus						109
Mantua Creek					96	188
Manumuskin River					7	85
Maurice River (above Rt. 527 bridge)					15	240
Mercer Lake	38	0	0	0	0	38
Millstone River	0	0	0	0	71	71
Mirror Lake	72	0	0	0	0	72
Mullica River	0	0	0	15	0	15
Musconetcong River	0	0	0	20	0	20
Paulinskill River	93	0	0	0	0	93
Rancocas Creek	0	40	0	79	0	119
Rockaway River	28	0	0	0	0	28
South River (above Rt. 527 bridge)	42	0	0	0	0	42
Sunset Dr. Pond	110	0	0	0	0	110
Swartzwood Lake	41	0	0	0	0	41
Timber Creek	0	35	0	61	0	96
Vernon Valley Lake	0	42	0	0	0	42
Wallkill River	52	0	0	0	0	52
Woodbury Creek	0	16	0	16	12	44

Summarized harvest data for 31 waterbodies over 5-year window:

Waterbodies excluded when less than 10 turtles were taken in any one-year period

Colteaux & Johnson (2018)

Table 6. Mean population estimates, by site, for three snapping turtle (*Chelydra serpentina*) populations within Virginia. Each site experienced a different level of historic commercial harvest (in parentheses) based on annual harvester landing reports on file with the Virginia Department of Game and Inland Fisheries. Individual population estimates by sampling period are presented in Appendix Table 2 and were created within Program Mark using mark-recapture data from this study. Mean population estimates (μ) were divided by the proportion of trap sites sampled (Methods, equation 1) to calculate the adjusted mean population estimates (μ_{adj}) for each site. The estimated size of each study site (Est. Size) was used to establish per hectare density estimates (Density).

Site	Population Est. (μ)	Population Est. (μ_{adj})	Std. Dev.	Est. Size	Density
Morris Creek (0%)	156.73	373.19	243.66	48.53 ha	7.69 turtles/ha
Walkerton (16%)	118.22	281.48	288.59	69.71 ha	4.04 turtles/ha
Totuskey Creek (44%)	90.87	216.37	186.84	73.43 ha	2.94 turtles/ha

	Year Total Reported (Less Than 10/Water/Year Excluded)								
	2019	2020	2021	2022	2023	Totals	Waterbody 2015 (NHD)	(From 11 Studies: Range 0.04-66/HA)	
Waterbody (n=20*)							HA	8/HA MED Density	% Take Over 5 Years
Assiscunk Creek	0	0	14	0	0	14	50	400	4
Assunpink Lake	58	0	0	0	0	58	98	784	7.40
Belchers Creek	37	0	0	0	0	37	7	56	66.07
Cranbury Brook	0	0	0	89	0	89	7	56	158.93
Crosswicks Creek									12.04
Davison's Mill Pond									69.32
Mantua Creek									10.59
Manumuskin River									27.96
Mercer Lake									4.06
Millstone River									7.59
Mirror Lake									1.53
Mullica River									0.15
Musconetcong River									1.55
Paulinskill River	93	0	0	0	0	93	126	1008	9.23
Rancocas Creek	0	40	0	79	0	119	300	2400	4.96
Rockaway River	28	0	0	0	0	28	115	920	3.04
Swartwood Lake	41	0	0	0	0	41	211	1688	2.43
Vernon Valley Lake	0	42	0	0	0	42	114	912	4.61
Wallkill River	52	0	0	0	0	52	705	5640	0.92
Woodbury Creek	0	16	0	16	12	44	350	2800	1.57

11 of 20 Waterbodies *Potentially*
Unsustainable Harvest Over 5-year
Window

Reminder: High adult survival rates (~ 95%) in stable populations; Analysis only looking at ~ half a generation time.

* Only subset of waterbodies evaluated based on harvest locality information/specificity.

	Totals (2014-2023)	Waterbody 2015 (NHD)	(From 11 Studies: Range 0.04-66/HA)	
Waterbody (n=20)		HA	8/HA MED Density	% Take Over 10 Years
Assiscunk Creek	35	50	400	9
Assunpink Lake	58	98	784	7.40
Belchers Creek	37	7	56	66.07
Cranbury Brook	89	7	56	158.93
Crosswicks Creek	504	137	1096	45.99
Davison's Mill Pond				131.82
Mantua Creek				17.68
Manumuskin River				48.03
Mercer Lake				4.06
Millstone River				7.59
Mirror Lake				1.53
Mullica River				0.61
Musconetcong River				9.08
Paulinskill River	588	128	1008	38.49
Rancocas Creek	286	300	2400	11.92
Rockaway River	43	115	920	4.67
Swartswood Lake	41	211	1688	2.43
Vernon Valley Lake	42	114	912	4.61
Wallkill River	123	705	5640	2.18
Woodbury Creek	111	350	2800	3.96

14 of 20 Waterbodies *Potentially*
Unsustainable Harvest Over 10-year
Window

Reminder: High adult survival rates (~ 95%) in stable populations; Analysis only looking at ~ half a generation time.

Waterbody (n=20)	% Take Over 10 Years w/8 turtles/ha	% Take Over 10 Years w/4 turtles/ha	% Take Over 10 Years w/16 turtles/ha
Assiscunk Creek	8.75	17.50	4.38
Assunpink Lake	7.40	14.80	3.70
Belchers Creek	66.07	132.14	33.04
Cranbury Brook	158.93	317.86	79.46
Crosswicks Creek	45.99	91.97	22.99
Davison's Mill Pond	131.82	263.64	65.91
Mantua Creek	17.68	35.36	8.84
Manumuskin River	48.03	96.05	24.01
Mercer Lake	4.06	8.12	2.03
Millstone River	7.59	15.17	3.79
Mirror Lake	1.53	3.07	0.77
Mullica River	0.61	1.21	0.30
Musconetcong River	9.08	18.17	4.54
Paulinskill River	38.49	76.98	19.25
Rancocas Creek	11.92	23.83	5.96
Rockaway River	4.67	9.35	2.34
Swartswood Lake	2.43	4.86	1.21
Vernon Valley Lake	4.61	9.21	2.30
Wallkill River	2.18	4.36	1.09
Woodbury Creek	3.96	7.93	1.98
Total Waterbodies Over 5%	14	17	9

Commercial Harvest Regulations by State: 2024

https://www.fishwildlife.org/application/files/4817/1214/9112/State_of_the_Union_Apr_2024.pdf

	Open Season	Daily Bag	Annual Bag	Aggregate	Size	Age Class
Delaware	June 15 - May 15	Unlimited	Unlimited	Unlimited	At least 11 inch carapace length	Any
Maryland *	Year Round ¹	Unlimited	Unlimited	Unlimited	At least 11 inch carapace length	Juveniles/adult
New Jersey (2016 Revision)	April 1- May 15 July 1 – October 31	Unlimited	Unlimited	Unlimited	≥12 inch carapace	Any
New York **	July 15 - September 30	5	30	30	≥12 inch carapace	Any
Pennsylvania	July 1- October 31	15	NS	30	Any	Any
Virginia	June 1 – September 30	Unlimited	Unlimited	Unlimited	≥13 inch carapace	Any

* Tidal Waters Only; ** harvest with firearm or bow; 1=Charles County which is closed between April 15th and May 31st.

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	Open Season	Daily Bag	Annual Bag	Aggregate	Size	Age Class
Delaware	June 15 - May 15	Unlimited	Unlimited	Unlimited	At least 11 inch carapace length	Any
Maryland *	Year Round ¹	Unlimited	Unlimited	Unlimited	At least 11 inch carapace length	Juveniles/adult
New Jersey (2026 Revision)	April 1 – May 15 July 15 – October 31	10	250	250	≥13 inch carapace	Any (Adult)
New York **	July 15 - September 30	5	30	30	≥12 inch carapace	Any
Pennsylvania	July 1- October 31	15	NS	30	Any	Any
Virginia	June 1 – September 30	Unlimited	Unlimited	Unlimited	≥13 inch carapace	Any

* Tidal Waters Only; ** harvest with firearm or bow; 1=Charles County which is closed between April 15th and May 31st.

Table 1. Hypothetical snapping turtle size limits (inches) with effective size class protected based on combined 2008 and 2009 harvester data from Maryland. Columns show cumulative totals and percent protected (reproductive individuals only). For example, in 2008, 10.0 inches would protect 9 females and 26 males, representing 17% of all females and 18% of all males harvested, respectively.

Year	Size limit	% Females protected	% Males protected	Total no. protected
2008	9.0	8	7	15
	9.5	13	12	25
	10.0	17	18	35
	10.5	40	28	62
	11.0	63	37	87
	11.5	83	50	117
	12.0	90	59	134
	12.5	96	67	149
	13.0	100	76	163
2009	9.0	8	3	22
	9.5	16	7	44
	10.0	30	12	83
	10.5	42	17	115
	11.0	60	26	168
	11.5	80	40	237
	12.0	90	50	279
	12.5	94	63	318
	13.0	98	72	346

NJ Commercial Harvest Permit Guidance

<https://dep.nj.gov/njfw/fishing/freshwater/freshwater-fisheries-permits/>

- **Snapping Turtle** – Effective June 25, 2016, commercial harvest permits for snapping turtles will only be issued to permittees who have received a permit(s) from January 1, 2010, to December 31, 2014, and have submitted a harvest report(s) prior to January 1, 2015, indicating the harvest of at least one turtle during that time period.
- Only snapping turtles with a minimum carapace length of 12 inches may be harvested. Snapping turtles may be taken by means of spears, angling with hook and line, dip nets not more than 24 inches in diameter, traps, or by hand. Turtles may not be taken with a gun or bow and arrow. Traps must be designed to provide a means of escape, or survival, of species of turtles other than snapping turtles. As such, they must be designed so that at least the topmost two inches of the trap remains exposed, at all times, above the surface of the water, and must have an escape hole of sufficient size to permit the escape of other turtle species. Flotation devices that have sufficient strength to support the weight of the trap and keep it afloat for at least 24 hours must be used.
- All traps must be identified with the name and address of the permittee and must be tended at least once every 24 hours. No more than 30 traps may be set. A person shall not take, kill or have in possession snapping turtles from May 15 to June 30, or from October 31 to April 1. The [Department of Health and Senior Services](#) may have additional regulations regarding required testing for turtles sold or used for human consumption. Permits are issued for a maximum of ten waterbodies per permit. Permits expire on October 31 of each year. Annual harvest reports must be submitted by December 31 of the current permit year. The possession, taking, or attempting to take any other species of turtle is prohibited.

NJ Commercial Harvest Permit Guidance

Suggested Language

- **Snapping Turtle** – Effective January 1, 2026, commercial harvest permits for snapping turtles will only be issued to permittees who have received at least one permit from January 1, 2020 to December 31, 2025, and have submitted a harvest report of at least one turtle during that time period.
 - **There are ~ 50 permittees who have not applied in the past 5 years who are otherwise eligible to apply in 2025.**
 - **There would remain ~ 9 permittees eligible for permits in 2026, based on current 2020-2023 numbers.**

Recreational Harvest Regulations by State: 2024

	Season	Daily Bag	Annual Bag	Aggregate	Size	Age Class
Connecticut	July 15 - September 30	5	10	10	≥13 inch carapace	Adult
Delaware	June 15 - May 15	1	Unlimited	Unlimited	At least 11 inch carapace length	Adult
Maryland	Year Round*	1	Unlimited	1	4" minimum carapace	Juveniles/adult
Massachusetts	Jan. 1 – Apr. 30; July 17 – Dec. 31	2	Unlimited	2	≥12 inch carapace	Adult
New Hampshire	???	2	2	2	Any	Any
New Jersey	April 1- May 15; July 1 – October 31 July 15 – October 31	1	Unlimited	Unlimited	≥12 inch carapace ≥13 inch carapace	Adult
New York	July 15 through September 30	5	30	N/A	≥12 inch carapace	Adult
Pennsylvania	July 1 to October 31	15	NS	30	Any	Any
Rhode Island	Year Round excluding May 15 - July 15	6	6	N/A	≥13 inch carapace	Adult
Virginia	June 1 to September 30	5	Unlimited	5	≥13 inch carapace	Adult
West Virginia	Year Round	10	Unlimited	20	Any	Any

Harvest Recommendation Options and Actions

- Clarifications in Public Materials:
 - No harvest from land.
 - No harvest of eggs from nest.
 - No take for personal possession.
- Outreach:
 - Initiate survey to better understand recreational harvest.
- Changes to Fish Code:
 - Limit new commercial entry
 - Institute daily and annual harvest limits, by applicant.
 - Drop early harvest window of April 1- May 15 and retain July 15 – October 31.
 - Better protection of breeding period and early nesting season.
 - 156 to 108 days
 - 13-inch carapace measurement is curved carapace (vs straight-line)
 - Easier to measure in field
 - Harvest intended only for personal consumption, not to keep for personal possession, i.e., pet turtle.

Commercial Harvest of Bullfrog and Green Frog

- No commercial permit applications since 2016.

