

Red-Eared Sliders Invade New York City

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ABSTRACT

Invasive species are organisms introduced into an ecosystem due to human activities rather than natural processes. Red-eared sliders (*Trachemys scripta elegans*), one of the most common turtles inhabiting New York City, have been categorized as an invasive species due to their rapid population growth and impact on the ecosystem.

INTRODUCTION



RESEARCH QUESTION

What ecological threats do Red-eared sliders pose to the native wildlife in New York City waters?

BACKGROUND

Red-eared sliders are native to the southern United States and were introduced to New York City when they became popular as pets. However, problems began as pet owners began intentionally or accidentally releasing Red-eared sliders into local waterways.

HYPOTHESIS

With the increase in population, Red-eared sliders have competed with other turtle species for food and basking areas. Therefore, the overwhelming presence of Red-eared sliders has led to a loss of biodiversity in New York City parks.

RESEARCH

MATERIALS & METHODOLOGY

Existing iNaturalist data was used to create graphs based on turtle sightings made by observers in two areas. A study found online was also utilized to show the negative effects of Red-eared sliders.

RESULTS & ANALYSIS

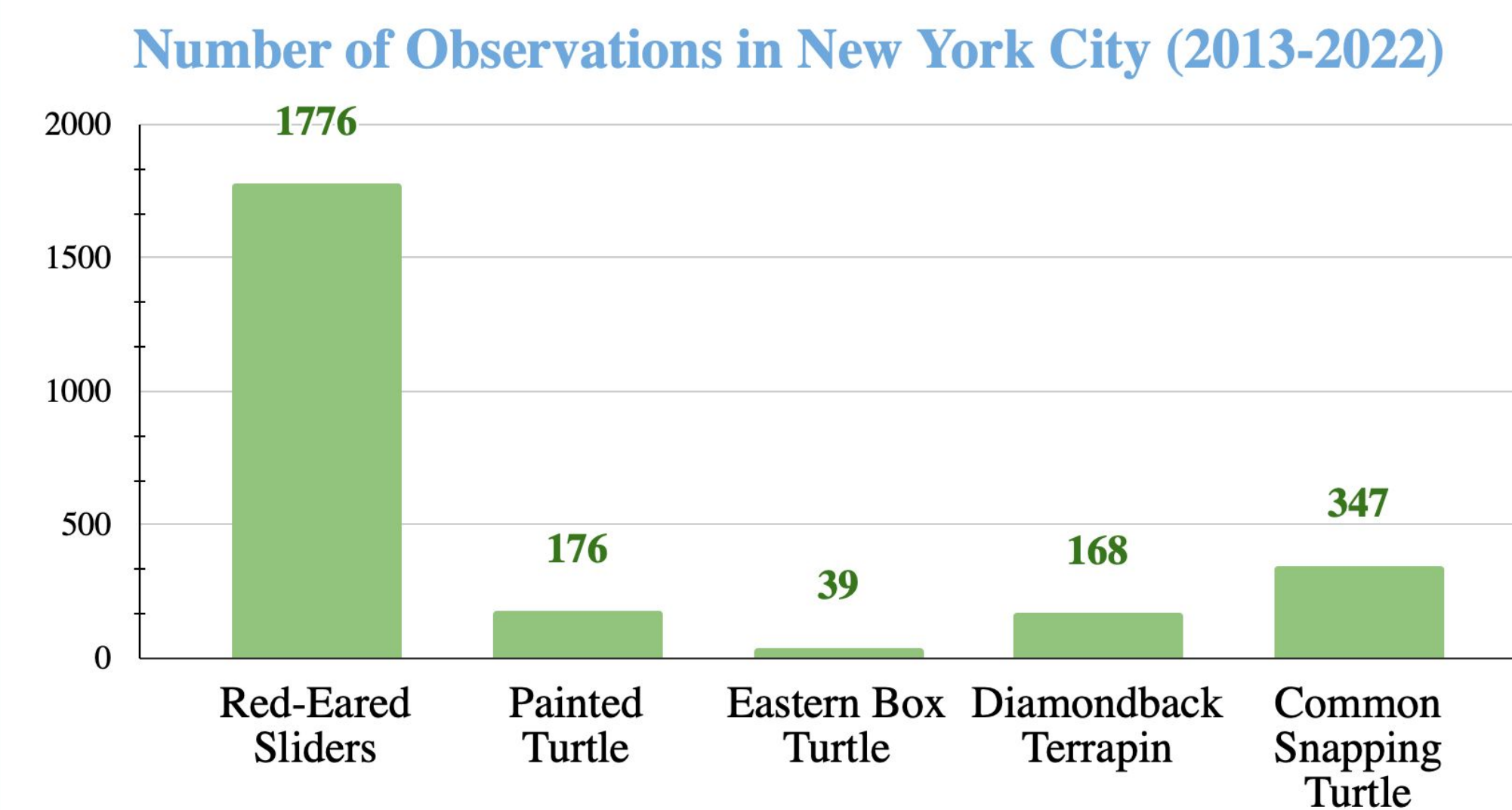


Figure 1: Turtle Observation Trends in NYC (Data Source: iNaturalist)

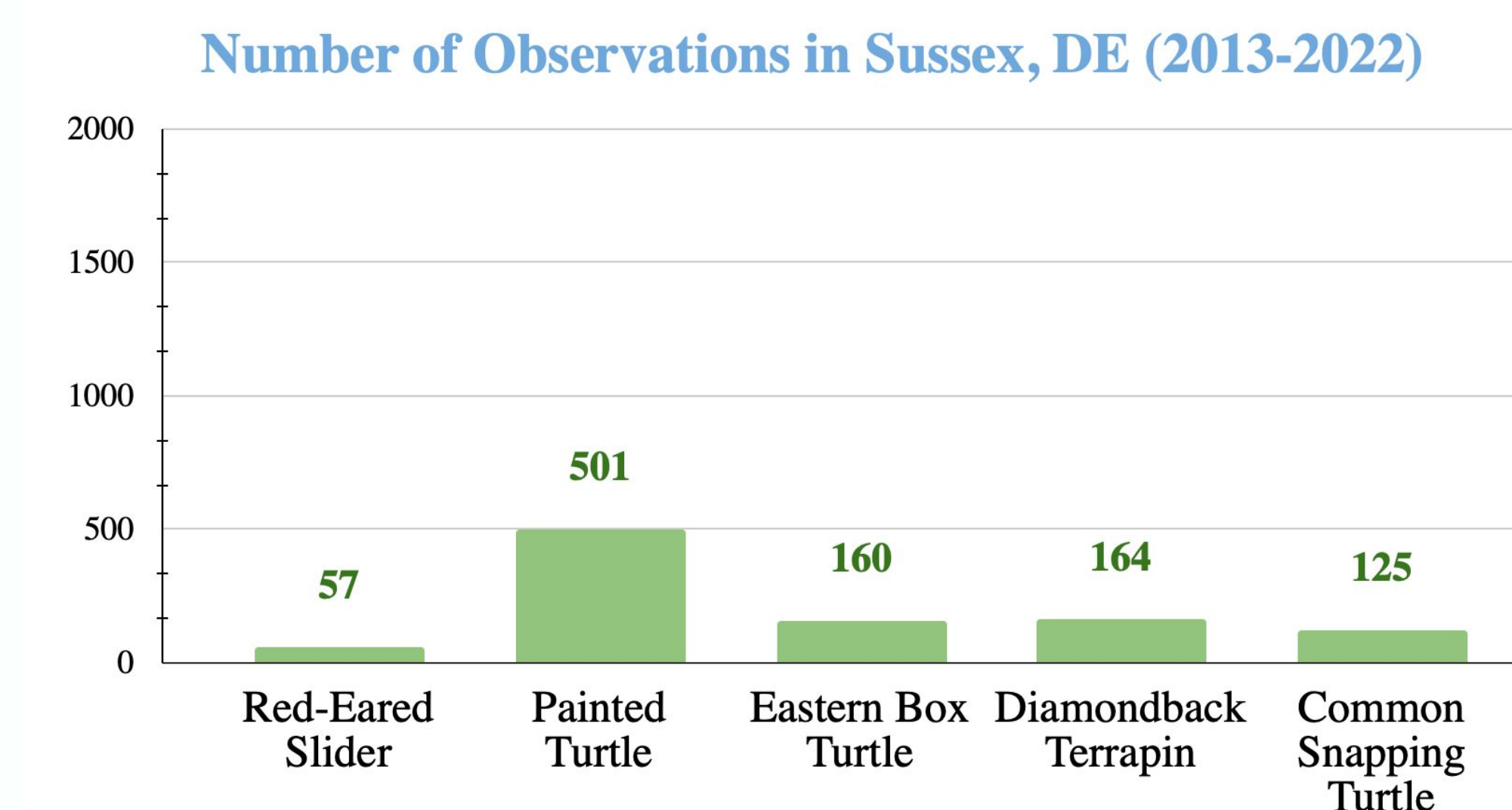


Figure 2: Turtles Observation Trends in Sussex, DE (Data Source: iNaturalist)

As seen in Figure 1, the invasive Red-eared Sliders have an overwhelmingly large amount of sightings compared to the other turtles in New York City. Although the number of sightings does not equate to the actual population number, it can be assumed that a larger population will be observed more. Figure 2 shows turtle observations in Sussex County, Delaware where Red-eared sliders have far less of a presence compared to New York City. The graph shows that with less Red-eared slider presence, three turtle species leveled out while the painted turtles increased in sightings.

Table 2. Mean $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values and sample sizes for all tissues collected from red-bellied turtle (*Pr*) and red-eared slider turtles (*Ts*) between 2008 and 2010 at the Silver Lake Nature Center (SLNC) and at Fort Mifflin (FM).

Wetland Year	Tissue Type	n		Mean $\delta^{13}\text{C}$ (‰)		Mean $\delta^{15}\text{N}$ (‰)		C p-value	N p-value
		<i>Pr</i>	<i>Ts</i>	<i>Pr</i>	<i>Ts</i>	<i>Pr</i>	<i>Ts</i>		
SLNC 2008	Plasma	12	5	-18.19	-25.92	6.91	9.49	0.002	0.03
	RBC	10	6	-19.18	-26.63	5.56	8.33	0.0002	0.004
	Tail	14	7	-18.26	-24.88	6.57	9.80	0.00007	0.00007
FM 2008	Plasma	7	6	-27.28	-26.20	11.50	12.03	0.11	0.65
	RBC	9	5	-26.66	-25.80	10.31	9.53	0.18	0.23
	Tail	9	6	-26.44	-24.88	10.14	10.81	0.018	0.43
SLNC 2009	Filings	7	6	-26.67	-25.35	11.27	10.37	0.004	0.26
	Plasma	15	4	-19.52	-24.10	7.34	11.60	0.029	0.001
	RBC	12	6	-20.33	-24.30	5.97	9.98	0.001	0.0009
FM 2009	Plasma	16	15	-26.45	-26.90	9.74	10.55	0.42	0.22
	RBC	10	14	-27.14	-26.42	9.74	9.26	0.21	0.35
SLNC 2010	Tail	10	12	-25.65	-26.91	9.63	11.12	0.026	0.001
	Plasma	10	10	-18.46	-23.80	8.25	11.14	0.0002	0.0003
FM 2010	Plasma	10	9	-21.43	-24.87	10.85	11.62	0.19	0.5

Figure 3: SLNC (Silver Lake Nature Center) and FM (Fort Mifflin) monthly vegetative resource availability survey (Pearson, Steven H.)

CONCLUSION

CONCLUSION

The invasive Red-eared sliders have effectively outcompeted other New York City turtle species for food, basking areas, and nesting sites. Without an adequate amount of sustenance and nesting sites, turtles are unable to reproduce and survive. Therefore, the number of Red-eared sliders has been rapidly growing while the increase of other turtle species has slowed.

RECOMMENDATIONS

The release of Red-eared sliders into NYC waterways has contributed to their dominance in the ecosystem. There needs to be a rise in awareness emphasizing the responsibility of owning Red-eared sliders and locations where it is safe to release them. An increase in awareness will hopefully reduce the number of Red-eared sliders being released, which will help reduce the pressure NYC native turtle species are facing.

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