

Perspectives on Tarpon, Based on the Historical Recreational Fishery in the Gulf of Mexico

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ABSTRACT

The recreational tarpon fishery began in the late 1800's in the Gulf of Mexico and attained premier status among affluent anglers off both Texas and south Florida in the early and mid 1900s. The recent availability of catch data associated with these tarpon fisheries has proved informative in depicting their early status and trends. Historically, anglers (especially in association with hotels and angling clubs) typically recorded date of capture, size (length in inches, weight in pounds, and, occasionally, girth in inches), as well as location and other anecdotal information. Separately, SAB and GJH recently analyzed and presented data on the historic tarpon fishery of the Gulf of Mexico based on approximately 1,000 fish from south Florida and 2,700 fish from Texas. The recent availability, through the efforts of DE, of more than 13,000 additional catch records from 1902 to 1932 allowed a more in depth examination into the details of the recreational tarpon fishery and basic biological attributes of the species. Larger catches of tarpon were reported from 1912 to 1930 with some annual catches exceeding 1,000 tarpon per year. There was an overall reduction in size of tarpon landed but there was no tendency for the variation in tarpon size to change over time. During the period for which there were data, there was no tendency for the fishery to shift from May to June as had been speculated in another study. Evidence is presented that implies the tarpon stocks off southwest Florida may have been overexploited by the historical recreational fishery. The recreational tarpon fishery in the Gulf of Mexico may prove unique in having detailed historical data available that allows time-based comparisons with the modern fishery.

KEY WORDS: tarpon, fishery, history, size distribution, season, Gulf of Mexico, Texas, Florida

Perspectivas acerca del Tarpón basadas en la Historia de la Pesquería Recreacional del Golfo de México

La pesquera recreacional del tarpón comenzó en la época de los últimos 1800's en el Golfo de México y logró un estado de primera categoría entre afluentes pescadores de caña en Tejas y el Florida Sur en los 1900s. La reciente disponibilidad de estos datos asociado con la industria pesquera han probado informativo en representar sus categorías y tendencias. Históricamente los pescadores, especialmente en asociación con los hoteles y los clubs de pescadores de caña, registraron típicamente la fecha de la captura, tamaño (longitud en pulgadas, peso en libras, y de vez en cuando, circunferencia en pulgadas), y también la localización como otra información anecdótica. En separados experimentos, SAB y GJH analizaban y presentaron recientemente datos sobre la histórica industria pesquera del tarpón en el Golfo de México basados en aproximadamente 1,000 pescados en Florida Sur y 2,700 pescados en Tejas. La disponibilidad reciente, con los esfuerzos del DE, de más de 13,000 expedientes adicionales de la pesquería a partir del año 1902 a 1932 permitieron más profundas examinaciones de los detalles de la pesquera recreacional del tarpón y las cualidades biológicas básicas de la especie. Retenes más grandes del tarpón fueron reportado a partir del año 1912 al 1930 con algunos retenes anuales que excedían 1,000 tarpón por año. Había una reducción total de tamaño del tarpón pescado pero no había tendencia para la variación de tamaño del tarpón a cambiar en un cierto plazo. Durante el período para el cual había datos, no se encontró un cambio en la pesquera de mayo a junio como especulado en otro estudio. La evidencia representada implica que la cantidad de tarpón en el sudoeste de la Florida pudo haber sido afectada por la histórica industria pesquera recreacional. La pesquera recreacional del tarpón en el golfo de México puede probar ser original en detallar los datos históricos disponibles para permitir comparaciones basadas en tiempo con la industria pesquera moderna.

PALABRAS CLAVES: tarpón, industria pesquera, historia, distribución de tamaño, estación, Golfo de México, Tejas, Florida

INTRODUCTION

Tarpon (*Megalops atlanticus* Valenciennes 1847, family Megalopidae) is highly prized as a recreational sport fish. The species is broadly distributed along coastal areas, occurring in the Atlantic Ocean north to Nova Scotia and southward to Rio de Janeiro, including the Gulf of Mexico

and Caribbean Sea (Zale and Merrifield 1989, Crabtree *et al.*, 1995). It is also known from the west coast of Africa (Midgalski and Fichter 1976) where the current world's recreationally landed tarpon was captured (130 kg, IGFA 2005). Today, the recreational tarpon fishery attracts a large number of participants throughout its range. Histori-

cally, this recreational fishery began in the late 1800's and by the early 1900's had become the focus of a large leisure class of participants, especially off Texas and southwest Florida.

Until recently, few data on the status and trends in these historical fisheries were available. More recently, however, data have become available to the scientific community allowing some perspective into the early fishery. For example, over 2,700 tarpon scales housed at an inn in Port Aransas, Texas (USA) were examined by Holt *et al.* (2005). Additionally, Bortone (in press) was able to gather data recorded on scales from nearly 1,000 tarpon as part of the recreational fishing effort off southwest Florida. The early recreational tarpon fishery has proven a boon to scientists as fishers often recorded valuable information directly on a scale of the fish they captured, presumably as a trophy or souvenir of their catch. These data usually consisted of date of capture and estimators of size: weight in pounds and/or length (presumably total length) in inches and, occasionally girth in inches. Other information often recorded included name and hometown of fisher, the fishing guide's name, and the specific location of capture. Other anecdotal information was sometimes included such as a quip or witty comment. For example, a scale found at the Tarpon Bar on Useppa Island came from a fish landed by Walter L. Long with the date 24 January 1929, weight 128 lbs. and the inscription "no more – no less".

Data recorded from these scales has provided valuable information on the biology of tarpon from the early to mid 1900's but overall these investigations were based on relatively few specimens because much of the data recorded on the scales were incomplete. One of us (DE) was able to procure a copy of a log book published by the Izaak Walton Club entitled "Useppa Inn – The Greatest Sport on Earth". Data in this book included catch data from the rec-

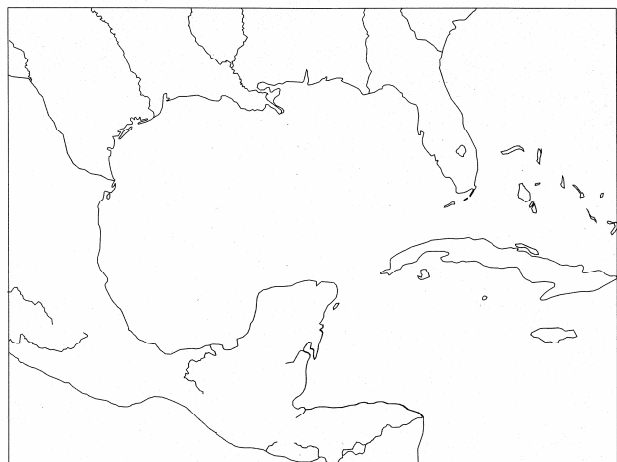


Figure 1. Map indicating sites referenced in text. Boca Grande Pass is the fishing location for anglers who landed

recreational anglers who stayed at or fished out of the Useppa Inn on Useppa Island from 1902 to 1932. It included catch information, chiefly on tarpon, regarding date of capture, fisher's name, and size in pounds. In all, more than 13,000 entries were listed in the log. Interestingly, hotels in the early 1900's often printed up the catch records from previous years to use as advertising to attract winter and spring vacationers to the hotel for the upcoming season.

This log book is a virtual treasure of historic information and it is upon the data in this log book that this paper is based. Herein, we summarize these data to make the information available to the scientific community. As part of the summary we examine trends over time with regard to reported catch, size, and seasonal catch levels. Moreover, we conduct limited analyses to address questions and hypotheses raised in the reports by Holt *et al.* (2005) and Bortone (in press).

MATERIALS AND METHODS

As indicated, data for this study were obtained entirely from the log book entitled "Useppa Inn – The Greatest Sport on Earth" published in 1932 by the Izaak Walton Club and included data from 1902 to 1932. In addition, information on the first page inside the cover indicated: "Useppa Inn, Useppa Island, Fla., Izaak Walton Club, Official List of Large Fish Taken in Charlotte Harbor Waters,

Table 1. Annual summary of abundance and length (FL in cm) for tarpon caught by recreational anglers from Useppa Island.

Year	No. Indiv.	Mean FL (cm)	Std. Dev.	Min.	Max.
1902	185	149.03	18.67	107.89	195.95
1903	336	155.61	18.84	72.07	195.58
1904	48	148.43	16.86	118.81	185.85
1905					
1906	113	153.38	18.03	90.91	191.03
1907	86	154.17	17.60	79.36	194.08
1908	81	139.18	16.53	104.14	182.93
1909	40	139.89	19.11	109.08	177.71
1910	8	142.48	6.19	135.34	150.50
1911	14	132.10	18.44	107.89	164.18
1912	430	152.04	17.56	62.91	194.46
1913	288	148.56	18.46	69.28	199.21
1914	351	142.85	18.95	73.38	195.21
1915	340	155.22	18.86	101.49	197.41
1916	1292	159.78	18.40	59.18	200.28
1917	789	150.95	20.59	72.07	192.19
1918	434	149.50	19.00	74.66	194.08
1919	892	149.57	18.48	74.66	189.07
1920	485	148.77	17.81	98.70	191.42
1921	544	149.63	19.01	94.18	191.80
1922	864	145.30	20.62	85.52	198.50
1923	531	143.46	19.27	59.18	189.07
1924	404	140.49	18.30	74.66	186.46
1925	652	139.11	18.11	59.18	200.28
1926	264	141.49	20.39	59.18	185.02
1927	1396	141.73	17.32	83.57	191.80
1928	219	139.25	20.08	85.52	187.07
1929	1224	144.38	17.10	59.18	184.82
1930	460	143.96	18.88	85.52	190.64
1931	165	142.08	19.39	94.18	182.08
1932	222	128.68	21.86	79.36	179.92

1902-1932.” Data in the log book were tabulated by date and weight in pounds. To conduct our analyses, all weights were converted to kilograms. Subsequently, all data were converted to fork length in cm using the equation for relationship between weight in kg and fork length in mm provided by Crabtree *et al.* (1995) where:

$$\log_{10}W = -7.9156 + 2.9838 \times \log_{10}FL$$

Several assumptions were made with regard to the data. All fish were assumed to have been caught in the area around Boca Grande Pass which is part of Charlotte Harbor

and near Useppa Island, where the center of the modern day tarpon fishery is today. The data were treated as non-parametric data. That is the data were neither chosen nor reported at random from the larger population of tarpon. We assume selection to report by the fishers had taken place but it was also assumed that selection did not change over time and/or season. We assumed the data were recorded accurately and without bias. Analyses in previous studies by Holt *et al.* (2005) and Bortone (in press) where they analyzed length – weight relationships based on historical data, indicated that these relationships were similar to those reported by modern day scientists on current popu-

Table 2. Summary of monthly recreational tarpon landings reported at Useppa Island from 1902 to 1932.

Year	Month												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1902	0	0	2	26	157	0	0	0	0	0	0	0	185
1903	0	0	19	67	250	0	0	0	0	0	0	0	336
1904	0	0	21	27	0	0	0	0	0	0	0	0	48
1905													0
1906	0	0	0	10	103	0	0	0	0	0	0	0	113
1907	0	0	2	40	44	0	0	0	0	0	0	0	86
1908	0	0	12	69	0	0	0	0	0	0	0	0	81
1909	0	0	9	31	0	0	0	0	0	0	0	0	40
1910	0	0	1	7	0	0	0	0	0	0	0	0	8
1911	0	0	1	13	0	0	0	0	0	0	0	0	14
1912	0	0	9	86	296	39	0	0	0	0	0	0	430
1913	0	2	8	40	218	20	0	0	0	0	0	0	288
1914	0	5	6	63	266	11	0	0	0	0	0	0	351
1915	0	0	3	11	239	87	0	0	0	0	0	0	340
1916	0	1	20	24	468	779	0	0	0	0	0	0	1292
1917	20	6	30	50	428	255	0	0	0	0	0	0	789
1918	0	0	13	74	347	0	0	0	0	0	0	0	434
1919	0	1	5	36	742	108	0	0	0	0	0	0	892
1920	1	0	2	21	456	2	0	0	0	0	0	0	482
1921	0	0	12	72	460	0	0	0	0	0	0	0	544
1922	3	7	31	84	739	0	0	0	0	0	0	0	864
1923	1	3	21	131	375	0	0	0	0	0	0	0	531
1924	0	0	0	23	381	0	0	0	0	0	0	0	404
1925	6	17	37	91	501	0	0	0	0	0	0	0	652
1926	0	2	2	15	245	0	0	0	0	0	0	0	264
1927	0	2	8	142	1244	0	0	0	0	0	0	0	1396
1928	0	0	0	33	186	0	0	0	0	0	0	0	219
1929	0	1	10	138	1075	0	0	0	0	0	0	0	1224
1930	0	0	1	8	450	0	0	0	0	0	0	1	460
1931	0	0	0	13	152	0	0	0	0	0	0	0	165
1932	19	29	23	74	77	0	0	0	0	0	0	0	222
Total	50	76	308	1519	9899	1301	0	0	0	0	0	1	13154

lations of tarpon, thus indicating reasonable accuracy of historical weight data from those fish for which both length and weight data were reported. This implies reasonable accuracy of weight data reported in the log book. It should be noted that the fish data reported previously by Bortone (in press) were also included in the log book upon which this study is based.

Comparisons of abundance and length of tarpon caught near Boca Grande Pass were made with fish caught from Port Aransas (Figure 1) with data made available by G.J. Holt from the previous historical analysis of tarpon caught off Texas (Holt *et al.* 2005).

RESULTS

Weight and date-of-capture data were available for 13,154 tarpon caught off Boca Grande Pass from 1902 to 1932. An inspection of the abundance distribution of reported catch by year (Table 1 and Figure 2) indicates considerable variation from year to year. While no data were reported for the year 1905 (no explanation was offered in the log book for these missing data), reduced catches occurred in 1910 and 1911 while over a thousand tarpon were reported for the years 1916, 1927, and 1929. In general, high numbers of tarpon were reported from 1912 to 1930.

In comparison to fish captured off Port Aransas, the recreational fishery off Boca Grande Pass obtained high catches of tarpon earlier than off Texas (Figure 2). Port Aransas had larger catches from the period beginning in 1927 but these catches decreased after 1940.

The annual average size of tarpon captured off Boca Grande Pass (Table 1 and Figure 3) also displayed considerable variation from year to year. There was, however, an overall trend toward reduction in average size ($R = -0.45$, $p = 0.013$) and minimum size ($R = -0.42$, $p = 0.021$). There was no significant trend with the variance in size, as meas-

ured by the standard deviation or with the maximum size (Figure 3). Interestingly, if one considers the relationship between maximum size of tarpon landed by year, there was a significant negative relationship ($R = -0.712$, $p < 0.001$) after 1912.

In an examination of the change in size with time, it should be noted (Figure 4) that there was no significant change with time for tarpon collected off Texas ($R = 0.014$, $p = 0.447$). However, there was a slight but significant decline in size among tarpon caught over time off Boca Grande Pass ($R = -0.085$, $p < 0.001$).

The seasonal catch off Boca Grande Pass was examined for changes in the percent catch with regard to the months April, May, and June (when the majority of tarpon were caught) for the years 1902 – 1932 (Table 2 and Figure 5). In general, catches for other months contributed little to the overall annual landings. Clearly, most fish were caught during May throughout the study period. Notably, when annual catches were low (i.e., around 1910), a larger percent of the catch was obtained during April. Additionally, during 1916 a larger percentage of fish were caught during June than May. Overall there was no tendency for the catch to shift seasons over time.

DISCUSSION

It is difficult to interpret the catch patterns of tarpon over time, based on these historical data. It is not possible to assume that effort was constant or that data reporting was completely accurate. The changes in catch may be more reflective of numbers of winter tourists or changes in transportation, economics, or social values of the times. Nevertheless, one might speculate that, if the number of tarpon reported is a reasonable indicator of local abundance, then there may have been decline in abundance of tarpon over time. The data reported off Texas (Holt *et al.* 2005) indicate a similar scenario of increased catch followed by decline. Again, artifacts of bias notwithstanding, the catch trends may be indicative of the overall affect that recreational fishing pressure may have had on tarpon populations, independently along two Gulf coasts.

Bortone (in press), using a smaller subset of tarpon catch data from southwest Florida, indicated a slight, but statistically significant, decline in the size of tarpon caught. Here we present two separate analyses that demonstrate this same tendency of decline in size over time among a larger data set of tarpon caught along the southwest Florida coast. Haedrich and Barnes (1997) indicated that a reduction in size of fish in a fishery (along with a reduction in catch) over time was indicative of an overexploited stock. The data presented here do not allow rejection of the null-hypothesis that the stocks were not overexploited. One might assume that removal of as many as 1,000 tarpon a year from the local fishery off Boca Grand Pass should lead to overexploitation. To substantiate this claim, however, would require application of exploitation models that are beyond the scope of this paper.

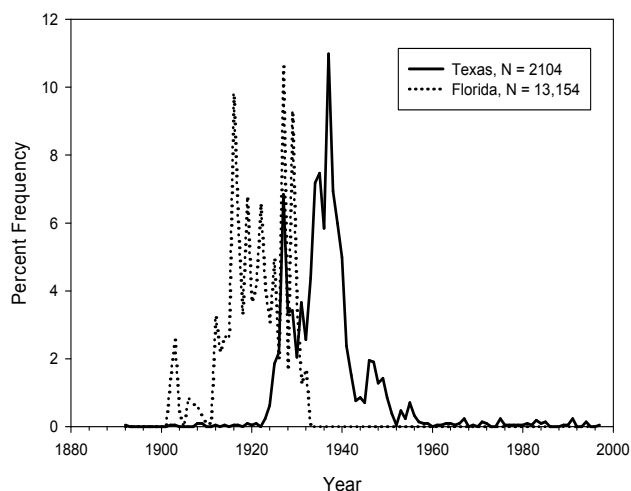


Figure 2. Comparison of number of tarpon landed by recreational anglers fishing out of Useppa Island, Florida (Boca Grande Pass) and Port Aransas, Texas.

Interestingly, data from the historical fishery off Texas (Holt *et al.* 2005 and herein) did not indicate a detectable decline in size of tarpon over time. Holt *et al.* (2005) speculated that cause for decline of the tarpon stocks off Texas may have resulted from the lack of recruitment.

Bortone (in press) presented data implying that local abundance (based on reported recreational catch) may have shifted to later in the season (i.e., from March through May to April to June) off southwest Florida. He also indicated that the shift may be only apparent and may actually reflect a change in fishing habits among fishers. With the analysis of the larger data set here, it can be observed that there was apparently no long-term shift in the seasonal occurrence of the fishery from 1912 to 1931. A disruption in the seasonal abundance occurred in 1916 but no explanation is offered here. The data presented here do not discount the speculation that there has, indeed, been a shift in local abundance of tarpon that occurred after 1931 as the recreational fish-

ery off Boca Grande Pass in more recent years has centered in June and not May.

We were fortunate in acquiring these historical data on the recreational tarpon fishery from southwest Florida. Tarpon and its fishery may be unique in having such a well documented historical account that makes analysis and speculation, based on data, a possibility when assessing status and trends. While more complete and focused data would certainly have been preferred when conducting such an analysis, the scientific community has been able to avail itself to these data to conduct a minimal investigation into its historical status. It is hoped that the discovery of additional historical data on this and other fisheries will become known to the scientific community to further expand these investigations. Moreover, it is hoped that present day recreational fishers would work conscientiously with the scientists to begin establishing long-term biological databases of this and other recreational fisheries so that future

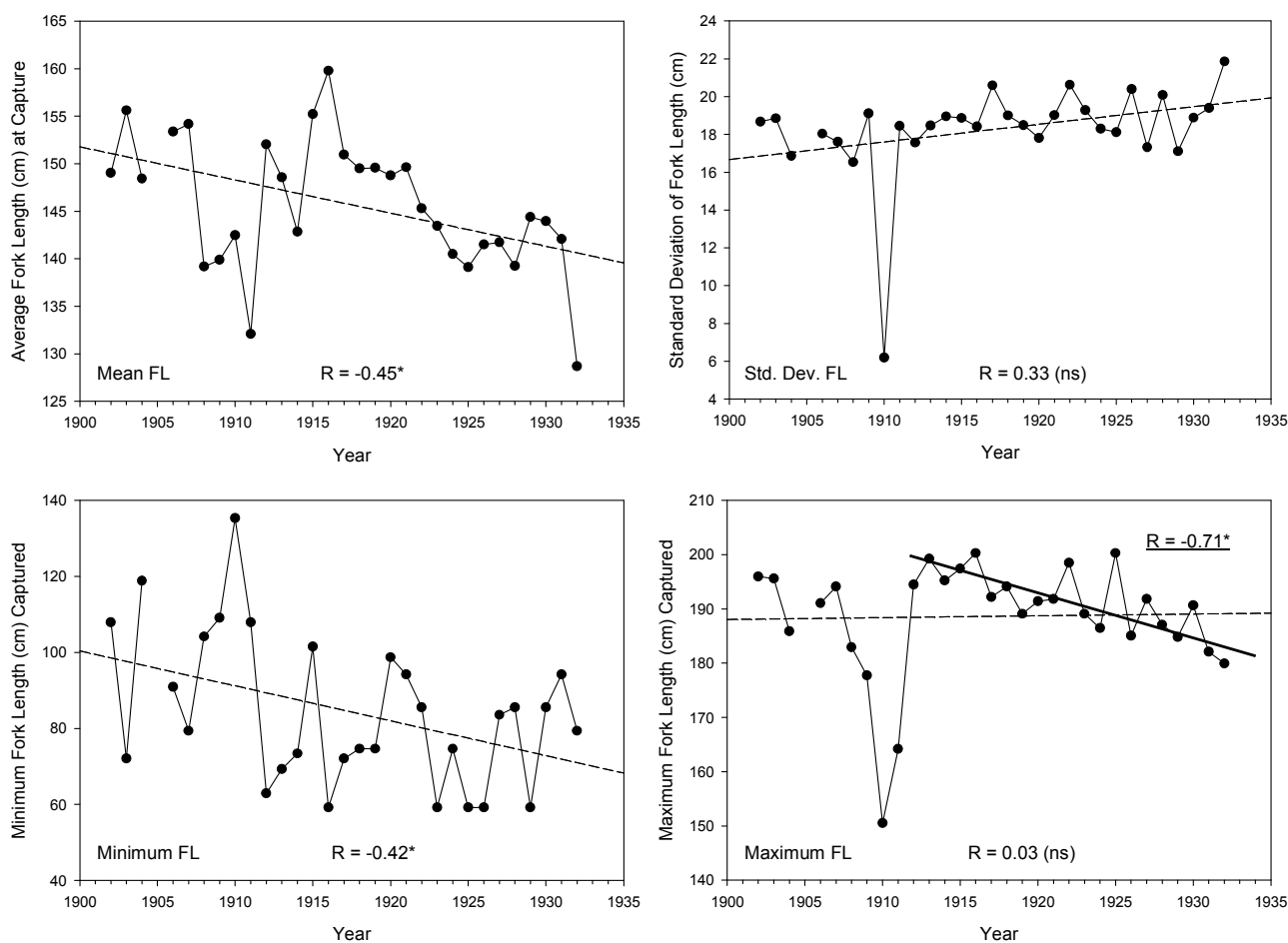


Figure 3. Trends in annual fork length (cm) from 1902 to 1932 for Tarpon caught by anglers fishing from Boca Grande Pass (A = Mean FL; B = Standard Deviation of FL; C = Minimum FL; and D = Maximum FL). R refers to the Pearson product correlation coefficient of the dashed line representing all data; Underlined R value indicates Pearson product correlation coefficient for the solid line in panel D representing only the years 1912-1932, an asterisk (*) indicates significance of $p < 0.05$; ns indicates not significant at $p > 0.05$.

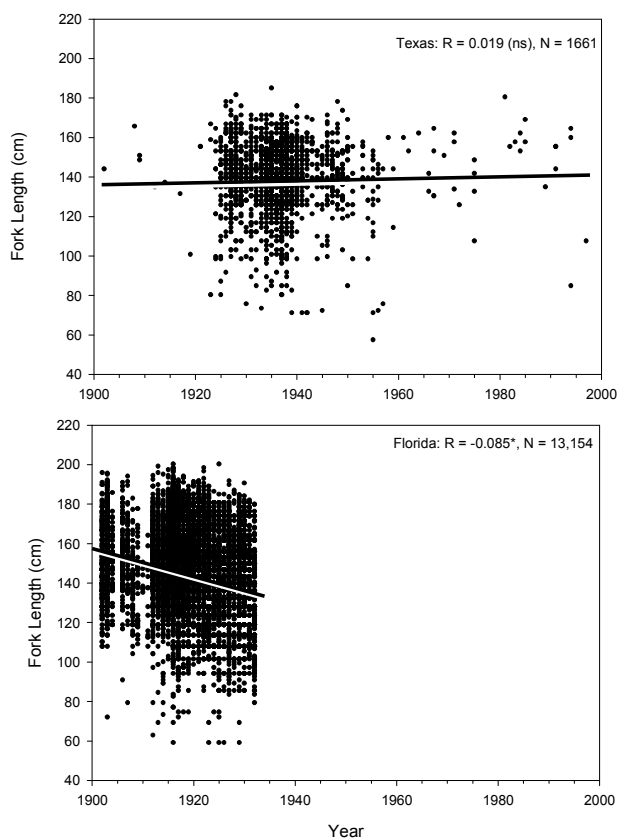


Figure 4. Scatter plot of Fork Length (cm) of tarpon recorded by year from historical recreational fisheries off Texas (above) and Florida (below). A regression line is plotted for each data set. R indicates Pearson product correlation coefficients, Asterisk (*) indicates if regression line is significant at $p < 0.05$, and ns indicates regression line is not significant at $p > 0.05$.

generations will have the advantage of being able to more accurately depict future histories of Gulf and Caribbean fish species.

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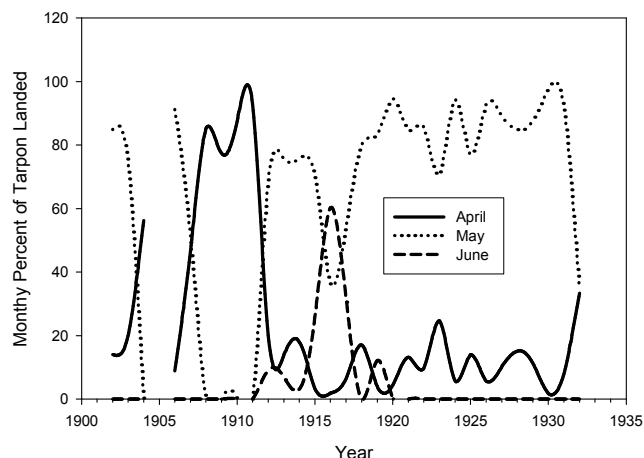


Figure 5. Smoothed curve plot of percent monthly contribution to annual landings of recreationally caught tarpon fishing out of Useppa Island (Boca Grande Pass) from 1902 to 1932.

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