

# Arizona Game and Fish Department

Region III Fisheries Program

## Topock Marsh Fish Survey Report February 2015

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**Executive Summary-** On February 17-19, 2015 Region III Fisheries Program personnel surveyed Topock Marsh. A total of 421 fish were sampled using experimental gillnets with 10 net sets (203 net hours). Gizzard shad were the most abundant species caught gillnetting with 58% of the total catch followed by channel catfish with 17%. The overall relative weights of channel catfish (120w<sub>r</sub>), largemouth bass (99w<sub>r</sub>), and black crappie (108w<sub>r</sub>) indicate healthy fish while the w<sub>r</sub> of bluegill (87w<sub>r</sub>) and striped bass (82w<sub>r</sub>) reflect a slightly thinner fish. No razorback suckers were sampled this year marking the first year since the 2010 stocking that they were not sampled.

**Introduction-** Topock Marsh is a 4000 acre impounded backwater created from a historical meander of the Colorado River. Topock Marsh is in the Havasu National Wildlife Refuge which was created by congress in 1941; in 1966 South Dike and North Dike were completed creating Topock Marsh. The Fish and Wildlife Service manages the refuge primarily for waterfowl and secondarily as a sport fishery. This annual survey is conducted to serve as a means to monitor the fishery over time and provide necessary information for biologist to devise and implement effective management plans as defined in the Standard Fish sampling Protocol for State of Arizona Waters (2004). The warmwater sport fisheries of the marsh include self-sustaining populations of largemouth bass (*Micropterus salmoides*), channel catfish (*Ictalurus punctatus*), black crappie (*Pomoxis nigromaculatus*), striped bass (*Morone saxatilis*), yellow bullhead catfish (*Ameiurus natalis*) and common carp (*Cyprinus carpio*). All three *Lepomis* species (bluegill, green sunfish, and redear sunfish) exist in the marsh but are not sampled every year. Gizzard shad (*Dorosoma cepedianum*) is the most abundant species currently after the first detection in 2012. Razorback suckers (*Xyrauchen texanus*) were stocked in 2010.

**Methods-** Topock Marsh sample sites consisted of 10 random experimental gillnet sites. The random sites were chosen while navigating through the marsh incorporating a variety of different habitat types (i.e. depth, channelization, vegetation).

One hundred fifty feet experimental monofilament gillnets are set horizontally from shore and orientated perpendicular to the nearest shoreline. Randomization of mesh size towards shore (i.e. small or large mesh near shore) was achieved by how the nets were placed in the containers before deployment. Five nets were deployed from the South Dike area and the other five nets were deployed from the North Dike area. Nets were set during late afternoon, fished all night and pulled the next day.. All fish were weighed, measured and recorded after each net was pulled.

**Results-** The total number of fish went from 385 in 2014 to 421 in 2015 primarily due to the increased number of gizzard shad (Table 1). All species showed a decline in numbers except gizzard shad, bluegill and threadfin shad. No bluegill or threadfin were sampled in 2014. No razorback suckers were contacted this year for the first time since the 2010 stocking. Topock Marsh continues to be a productive channel catfish fishery as the 8069 gram (17.8 lbs.) indicates (Table 2). The Proportional Stock Density (Table 3) reflects a sportfish population that is in the typical range for evenly distributed size

classes except for the channel catfish's PSD of 86 which indicate a population dominated by large fish. The relative weight (Table 4) of the main sportfish in the marsh suggests fish that they are well fed and healthy. Striped bass'  $W_r$  of 82 was less than the objective range of 90-100 but still represent desirable fish. The length frequency distribution represented in Figure 1 resembles the standard bell curve for the selected species with the exception of the striped bass. Striped bass sampled only had two size categories represented; less than stock and stock. Gillnetting seems to target fish that are larger which slightly distorts the standard distribution curve.

**Discussion-** The annual gillnetting survey on Topock Marsh did not produce any significant findings or changes in the fish community. Comparisons over time will be needed to evaluate the impact of gizzard shad on the marsh's aquatic life. The condition of the fish, excluding striped bass, indicates that available resources are being used. One reason for striped bass relative weights lower than other predatory fish, may be that they are deep/cold water sight hunters and the turbidity of the marsh is high enough to affect their feeding. Continued monitoring of Topock Marsh should help biologist understand the effect gizzard shad have on the sportfish present in the marsh. The Fish and Wildlife Service are planning to install remote pit tag scanners in the inflow area to detect the movement of razorback suckers from the river and the marsh and deploy a few scanners in several other places in the marsh. Interestingly no razorbacks were contacted during the survey.

#### **Literature cited-**

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**Table 1.** Species composition, total number, percent of total, catch per unit effort (fish/hr), standard error, of fish sampled using experimental gillnets at Topock Marsh during the winter survey 2015.

Species	Number Sampled	Percent of Total (%)	CPUE	Standard Error
Yellow bullhead	9	2	0.04	0.3
Common carp	6	1	0.03	0.2
Gizzard shad	246	58	1.21	3.2
Threadfin shad	13	3	0.06	1.0
Channel catfish	70	17	0.35	1.1
Bluegill	3	1	0.01	0.2
Largemouth bass	9	2	0.04	0.4
Striped bass	55	13	0.27	2.9
Black crappie	10	2	0.05	0.3

**Table 2.** Total length (mm) and weight (g) by minimum, maximum, and mean, and standard error, of fish sampled using experimental gillnets at Topock Marsh during the winter survey 2015.

Species	Length (mm)				Weight (g)			
	Min	Max	Mean	SE	Min	Max	Mean	SE
Yellow bullhead	191	297	260	12	82	385	252	35
Common carp	447	625	508	26	1072	4220	1887	478
Gizzard shad	180	471	350	4	50	1386	527	20
Channel catfish	237	848	507	15	89	8069	1404	155
Threadfin shad	81	100	90	1.6	5	8	7	.2
Bluegill	66	109	83	13	5	21	11	5
Largemouth bass	212	380	298	20	99	781	377	84
Striped bass	220	464	305	10	98	864	287	26
Black crappie	158	260	190	12	48	272	110	25

**Table 3.** Proportional and relative (S=stock, Q=quality, P=preferred, M=memorable, T=trophy) stock densities, including standard error, of selected species collected during winter survey at Topock Marsh in 2015 using experimental gillnets.

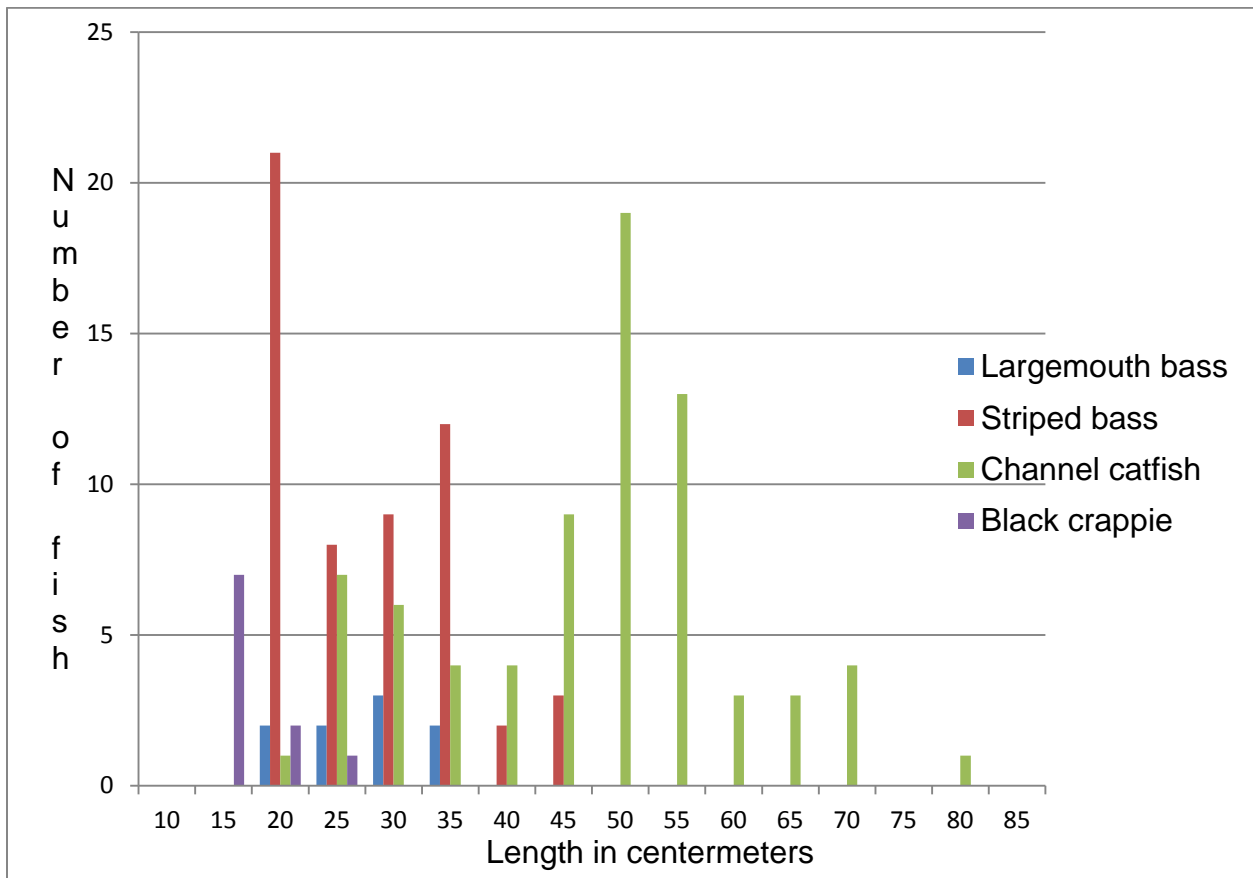
Species	PSD	RSD P	RSD M	RSD T
Black crappie	30 ±	10	-	-
Striped bass	0 ±	-	-	-
Largemouth bass	56 ±	11	-	-
Channel catfish	86 ±10	17	6	-

Note: - indicates that no fish were sampled in those size indices.

**Table 4.** Overall average and structural indices categories (S=stock, Q=quality, P=preferred, M=memorable, T=trophy) of relative weight ( $W_r$ ), and standard error, of selected species collected during winter survey at Topock Marsh in 2015 using experimental gillnets.

Species	$W_r$ Overall	$W_r$ S-Q	$W_r$ Q-P	$W_r$ P-M	$W_r$ M-T
Black crappie	108 $\pm 1.9$	108 $\pm 2.7$	95 $\pm 1.8$	94 $\pm 0$	-
Striped bass	82 $\pm 1.2$	82 $\pm 1.2$	-	-	-
Largemouth bass	99 $\pm 3.7$	99 $\pm 5.1$	91 $\pm 3.9$	95 $\pm 0$	-
Channel catfish	98 $\pm 2.0$	109 $\pm 10.3$	84 $\pm 1.4$	94 $\pm 4.2$	105 $\pm 4.7$

Note: - indicates that no fish were sampled in those size indices.



**Figure 1.** Length frequency histogram of selected species sampled with experimental gillnets during the winter survey on Topock Marsh in 2015.