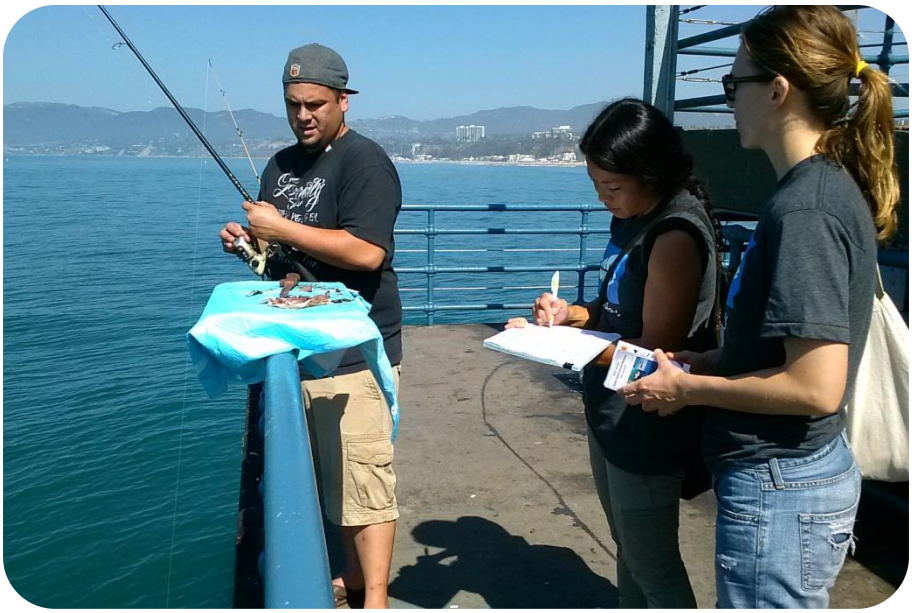
HEAL THE BAY'S
SHARK AMBASSADOR PROGRAM



FINAL PILOT PROGRAM REPORT
AUGUST 30, 2014 - NOVEMBER 30, 2014

Heal the Bay

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HISTORY/NEED FOR SHARK AMBASSADOR PROGRAM

A juvenile white shark, approximately 6-8 feet long, was caught by hook-and-line from Manhattan Beach Pier on the morning of Saturday, July 5, 2014. After the shark had been struggling for nearly an hour on the angler's line, a group of ocean swimmers inadvertently crossed its path. As one swimmer passed over the thrashing shark, he was bitten on his side and hand. It is likely that the bite was accidental because the swimmer encountered the shark while it was in distress. Shark experts call this a provoked attack because there was human provocation involved--in this case with a hook, line and fisherman. This incident sparked the temporary closure of the Manhattan Beach Pier to pier anglers, and initiation of Heal the Bay's Shark Ambassador pilot program.

Santa Monica Bay is home to dozens of shark and ray species. Sharks are at the top of the food chain in virtually every part of every ocean. They keep populations of other fish healthy and ecosystems in balance. In addition, a number of scientific studies demonstrate that the depletion of sharks can result in the loss of commercially important fish and shellfish species down the food chain. Many local sharks are small, like the swell shark and horn shark, and live in kelp forests and rocky reefs. Juvenile white sharks are seasonal residents of Southern California's coastal waters, likely congregating in Santa Monica Bay due to a mixture of abundant prey and warm water. Manhattan Beach has been an epicenter for sightings over the past few summers. White sharks are frequently spotted by boaters, pier-goers, surfers and paddlers--especially between the surf spot El Porto and the Manhattan Beach Pier. Juvenile white sharks, measuring up to 10 feet, prey mostly on bottom-dwelling fish such as halibut, small rays and other small sharks.

According to the Department of Fish and Wildlife, there have only been 13 fatal white shark attacks in California since the 1920s. Swimmers and surfers have frequented Manhattan Beach for generations, and it is commonly known that the area is home to a seasonal population of juvenile white sharks. Los Angeles County lifeguards have a safety protocol of warning ocean-goers to exit the water when there has been a verifiable shark sighting. Lifeguards also have discretion to close the beach temporarily to ocean-goers if they detect any risk.

However, closing piers to fishing will not likely reduce risk of wildlife-angler-swimmer conflict, nor is it consistent with California's laws or beach culture. Many anglers who fish on municipal piers do it for subsistence--to put food on the table- and piers are one of the only places in the state where individuals do not need a fishing license, which reduces expenses and provides public access to fishing for everyone. However, anyone that fishes or hunts anywhere in California must adhere to the state's Department of Fish and Wildlife regulations. These regulations state that "white sharks (*Carcharodon carcharias*) may not be taken or possessed at any time."

As a result of the shark bite incident in Manhattan Beach, and concerns from Santa Monica Bay cities about potential conflicts between pier anglers, swimmers/surfers, and sharks, Heal the Bay worked with local municipalities to create a program to educate pier anglers about how to avoid catching sensitive species like white sharks and how to act responsibly if one is caught.

PROGRAM DEVELOPMENT

Following a collective effort from many Santa Monica Bay cities, municipalities pooled funds together to pilot a Shark Ambassador Program throughout the fall of 2014. Before launching the outreach and research aspect of the program, Heal the Bay staff developed educational materials, created a data sheet and survey questions (below), and trained experience Pier Angler Outreach staff on shark natural history and fishing regulations.

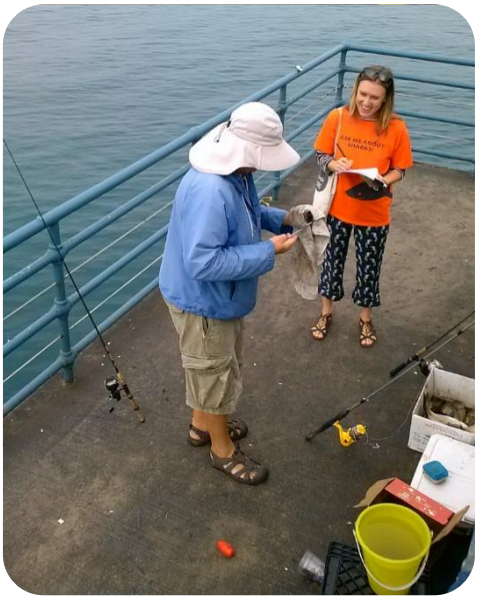
The outreach and surveys were conducted on six piers in the Santa Monica Bay from 9:00 AM to 1:00 PM. The Shark Ambassador team covered 2 piers/day, 3 days/week (Thursday or Friday, Saturday and Sunday), with 2 outreach workers/pier – rotating across Malibu, Santa Monica, Venice, Manhattan Beach, Hermosa and Redondo Pier. This amounted to 4 hours per person, giving us a total of 8 hours per day per pier. Manhattan, Venice and Hermosa had more outreach hours, since those piers are more frequently visited by surfers and the risk with anglers was expected to be greater than the other pier locations.

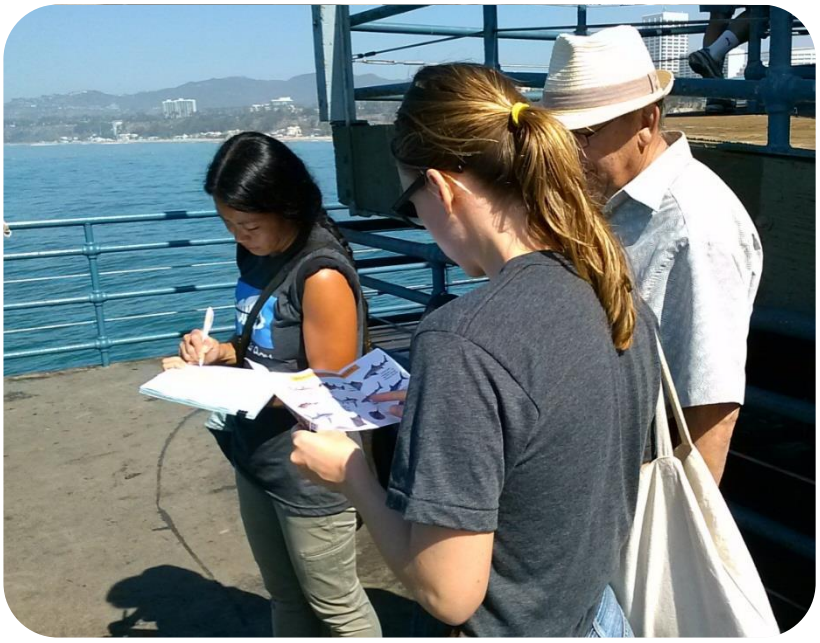
Shark Ambassador Program monthly schedule:

Time	Week 1	Week 2	Week 3	Week 4
Day 1: 9:00-1:00 PM	Malibu/SM	SM/Venice	Venice/Hermosa	Malibu/SM
Day 2: 9:00-1:00 PM	Venice/Manhattan	Venice/Manhattan	Venice/Manhattan	Venice/Manhattan
Day 3: 9:00-1:00 PM	Hermosa/Redondo	Manhattan/Hermosa	Manhattan/Hermosa	Hermosa/Redondo

TOTAL Hours per month=96

Malibu = 8
Santa Monica =12
Venice =24
Manhattan =24
Hermosa =20
Redondo = 8





Heal the Bay

Shark Ambassador Program

Total # of anglers _____
Total # swimmers present_____
Total # surfers present _____
Last Modified Aug 28, 2014

Date: Location: Outreach worker:

Start Time: ********* FILL OUT ONE LINE PER PERSON*********
End Time: Use a new form each day at each pier.

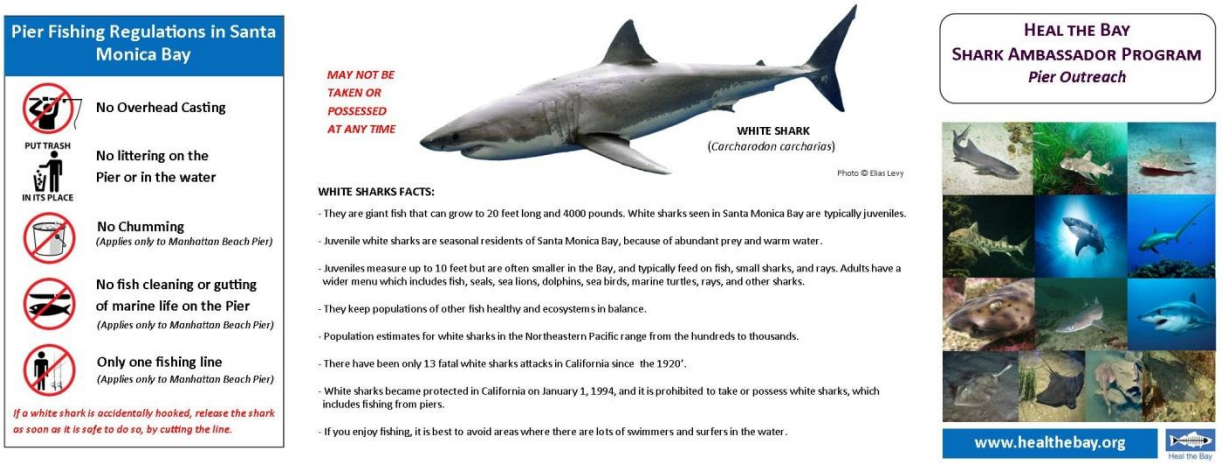
	Type of angler	Target species	Species caught	Fishing location	Type of Gear	Ethnicity/ Language	Zip Code
1	☐Sport ☐Subsistence Child present____			☐End of pier ☐Side of pier	☐Rods and Reels Hook Size_____ Line Test_____ Other_____		
2	☐Sport ☐Subsistence Child present____			☐End of pier ☐Side of pier	☐Rods and Reels Hook Size_____ Line Test_____ Other_____		
3	☐Sport ☐Subsistence Child present____			☐End of pier ☐Side of pier	☐Rods and Reels Hook Size_____ Line Test_____ Other_____		
4	☐Sport ☐Subsistence Child present____			☐End of pier ☐Side of pier	☐Rods and Reels Hook Size_____ Line Test_____ Other_____		
5	☐Sport ☐Subsistence Child present____			☐End of pier ☐Side of pier	☐Rods and Reels Hook Size_____ Line Test_____ Other_____		
6	☐Sport ☐Subsistence Child present____			☐End of pier ☐Side of pier	☐Rods and Reels Hook Size_____ Line Test_____ Other_____		
7	☐Sport ☐Subsistence Child present____			☐End of pier ☐Side of pier	☐Rods and Reels Hook Size_____ Line Test_____ Other_____		
8	☐Sport ☐Subsistence Child present____			☐End of pier ☐Side of pier	☐Rods and Reels Hook Size_____ Line Test_____ Other_____		
9	☐Sport ☐Subsistence Child present____			☐End of pier ☐Side of pier	☐Rods and Reels Hook Size_____ Line Test_____ Other_____		
10	☐Sport ☐Subsistence Child present____			☐End of pier ☐Side of pier	☐Rods and Reels Hook Size_____ Line Test_____ Other_____		

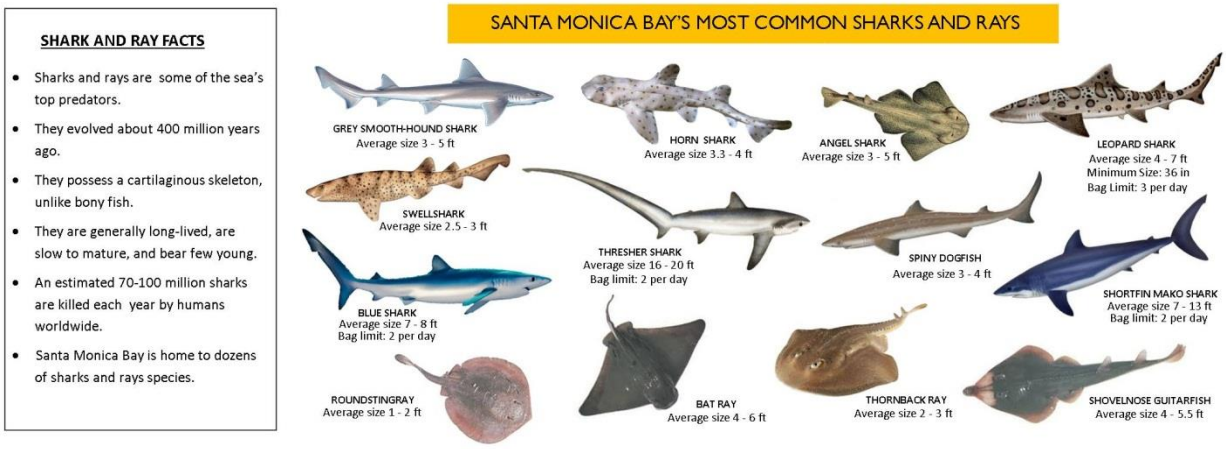
Notes:

Shark Ambassador Program Data Sheet

SHARK AMBASSADOR PROGRAM OUTREACH & SURVEYS

From August 30 to November 30, 204, trained Heal the Bay staff conducted outreach as Shark Ambassadors on six piers (Malibu, Santa Monica, Venice, Manhattan, Hermosa and Redondo Beach Piers) three days/week in four languages (Chinese, Spanish, Russian, and English). Shark ambassador outreach included discussion of local shark species and responsible fishing techniques, distribution of basic educational materials (below) that include local shark identification tools and relevant fishing regulations, how to avoid catching large sharks, and what to do if one is caught. In addition to educational outreach to anglers on piers, Shark Ambassadors also record data through surveying all anglers encountered on piers and observing ocean recreation adjacent to the piers. These data include the number of pier anglers and whether or not they are sport anglers or subsistence anglers, the number people recreating around the piers, and type of ocean recreation they are engaged in, target species, and angler ethnicity. Over three months during this pilot program, Heal the Bay's Shark Ambassador Team spoke to 736 total anglers across the six piers.

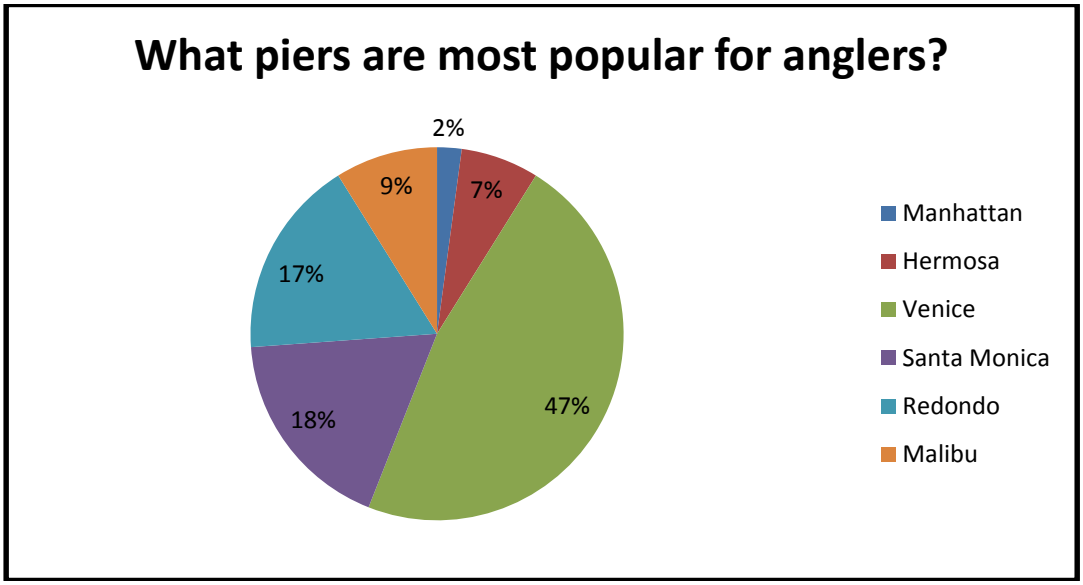




Shark Ambassador Program Brochure

PIER RESEARCH & SURVEY RESULTS

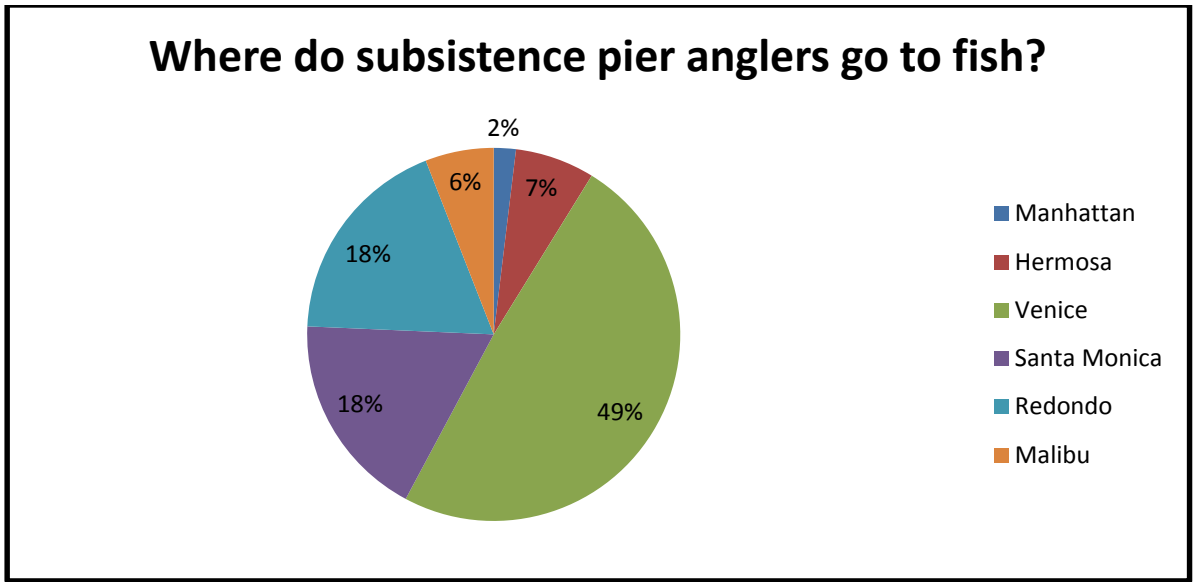
Heal the Bay conducted 736 surveys over the course of this pilot program. Following are some of the main data questions that emerged from stakeholder discussions, along with survey results from the pilot project that help provide information to answer these questions.



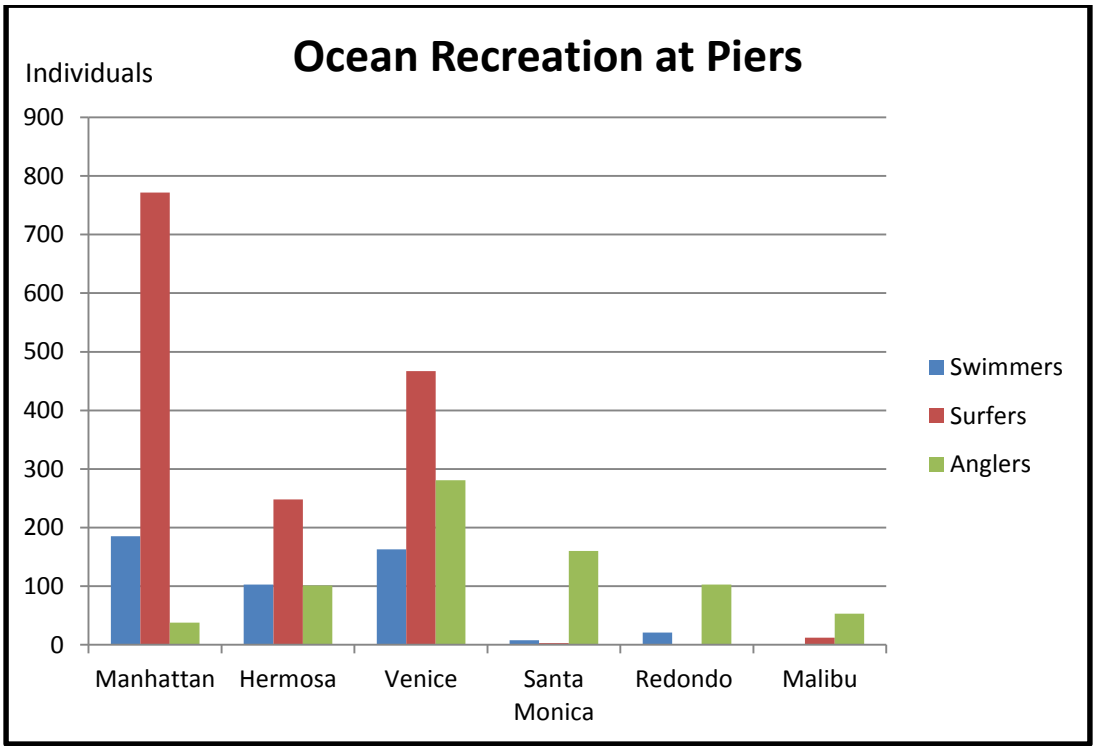
From September-November 2014, we found that Venice Pier is the most popular among pier anglers in Santa Monica Bay, with 47% of all anglers across the six piers observed at the Venice Pier, followed by Santa Monica (18%) and Redondo Pier (17%). Manhattan is the least visited pier by anglers, constituting just 2% of the pier anglers encountered during our surveys. This could be due to Manhattan Beach Pier's more restrictive fishing regulations and as a result of the shark incident that occurred on the 4th of July, 2014.

Location	FROM 8-30/11-30	SUBSISTENCE ANGLERS	%	SPORT ANGLERS	%
Manhattan	38	30	77	8	23
Hermosa	101	90	88	11	12
Venice	281	256	91	25	9
Santa Monica	160	140	87	20	13
Redondo	103	96	92	7	8
Malibu	53	31	56	22	44
TOTAL	**736**	643	86	93	14

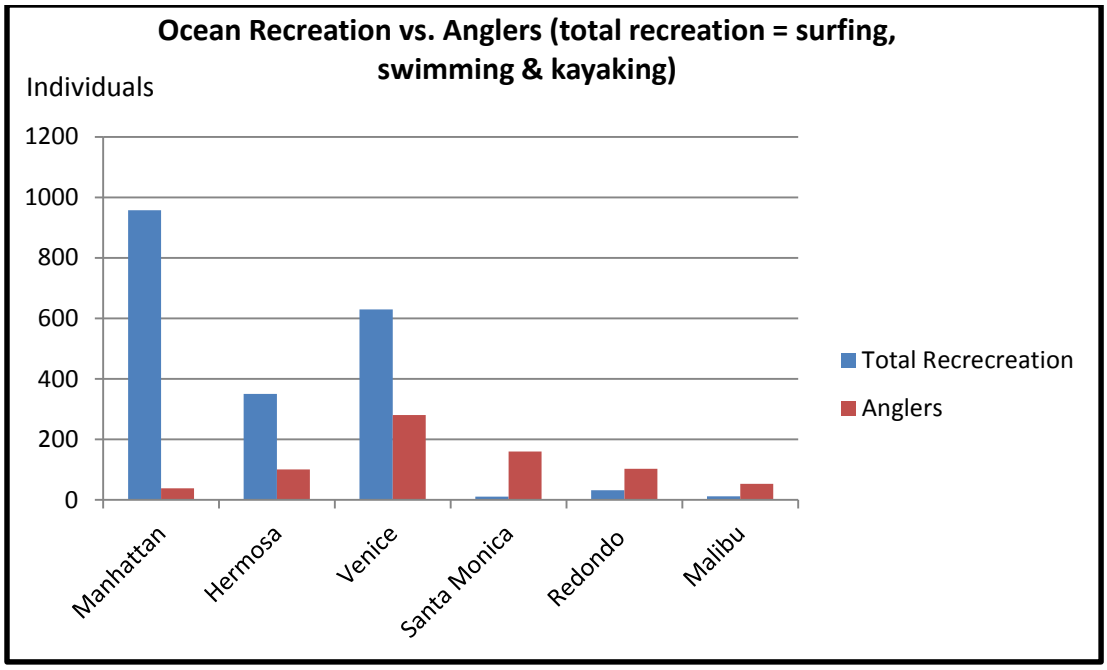
Of the total anglers surveyed, 86% were subsistence anglers, while only 14% were sport anglers. Municipal piers are popular for subsistence anglers, who fish to feed themselves or put food on their family table. This is because piers are easily accessible and are one of the only places in California where individuals do not need a fishing license, which makes it more affordable.



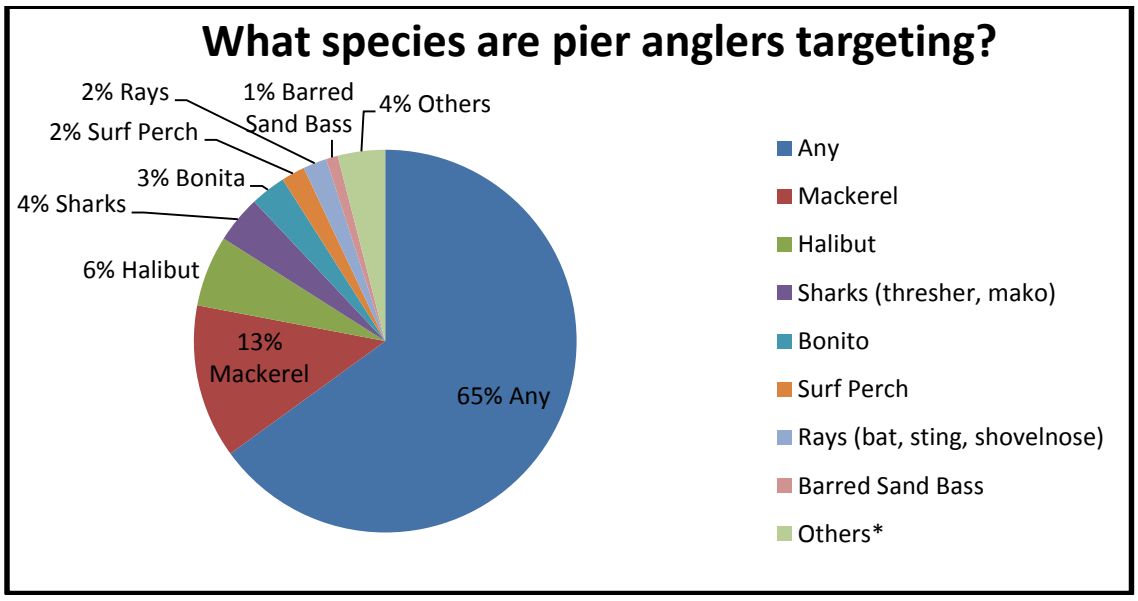
Venice Pier is the favorite pier for subsistence anglers in Santa Monica Bay followed by Santa Monica and Redondo Pier respectively. Manhattan Beach, Hermosa and Malibu are the least visited by subsistence anglers.



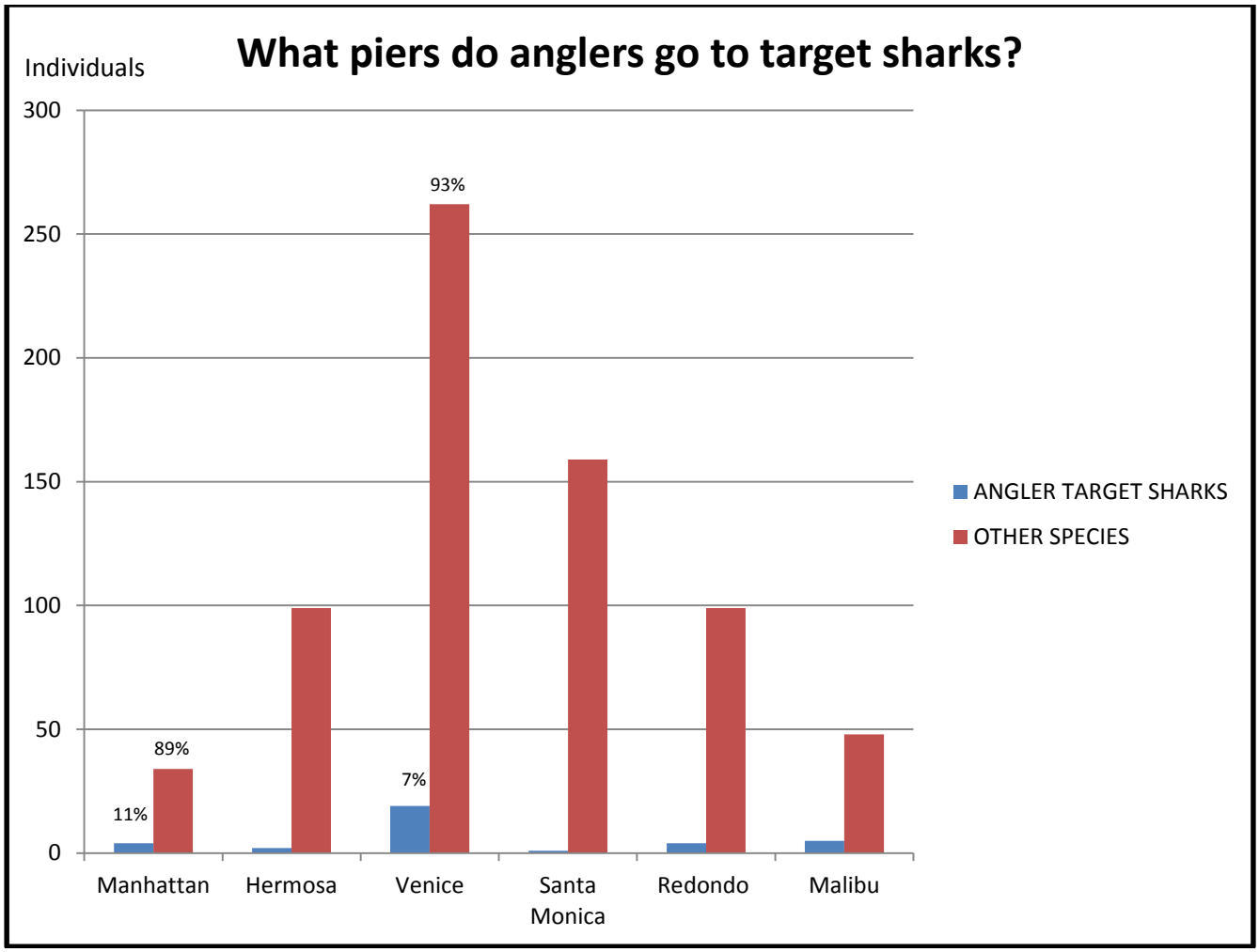
The most popular recreational activities in and around the piers are fishing, surfing and swimming. Different activities tend to be more popular at certain piers. For example, surfing and swimming are among the most popular around Manhattan Beach, Hermosa and Venice Piers, while fishing is popular on Venice, Santa Monica, Redondo, Hermosa Beach, and Malibu Piers.



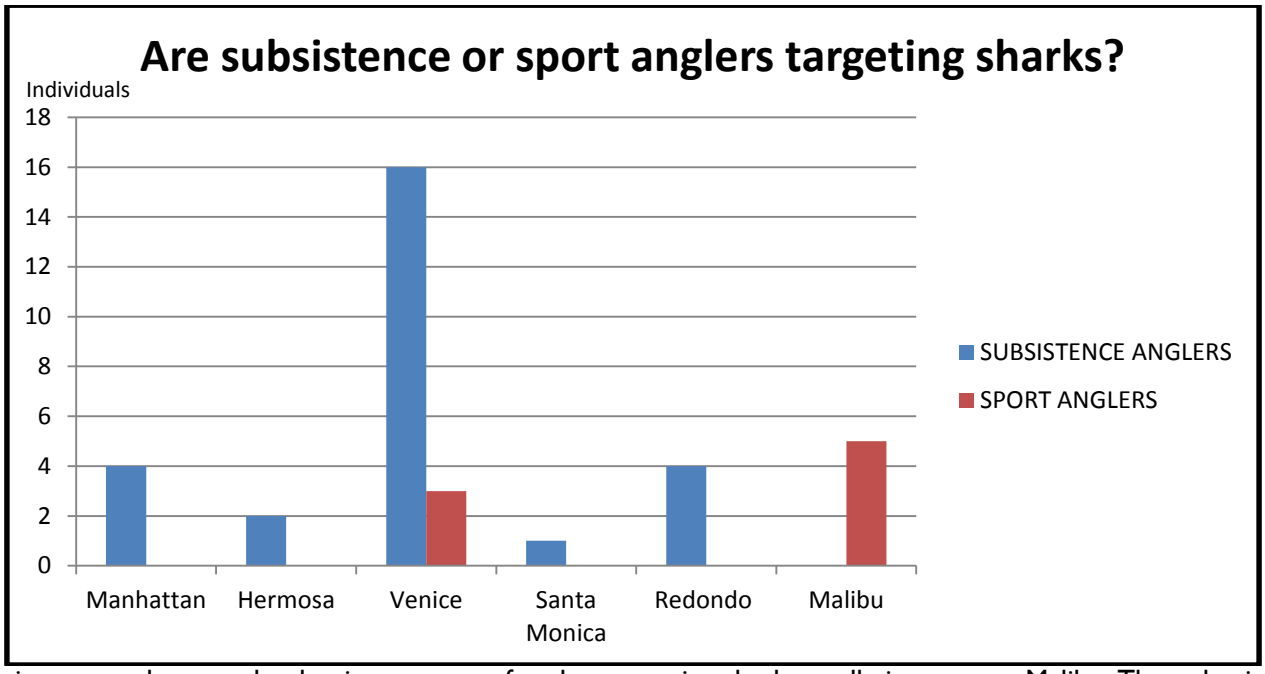
Many recreational activities occur near the piers. Based on our data, it appears that Manhattan, Venice and Hermosa Beach Piers have the highest potential for interaction between anglers, surfers and swimmers, as they are the most popular piers for ocean recreational activities. Of these three piers, Venice Pier likely has the greatest possibility for competing-use interaction due to being the most popular pier for both anglers and ocean recreation in Santa Monica Bay. Manhattan Beach Pier has the highest number of people engaged in ocean recreation of all the piers with almost 1,000 surfers and swimmers present in the waters under and around the pier during the study period. Santa Monica, Redondo, and Malibu piers appear to be primarily for anglers, with much less ocean recreation around the pier.



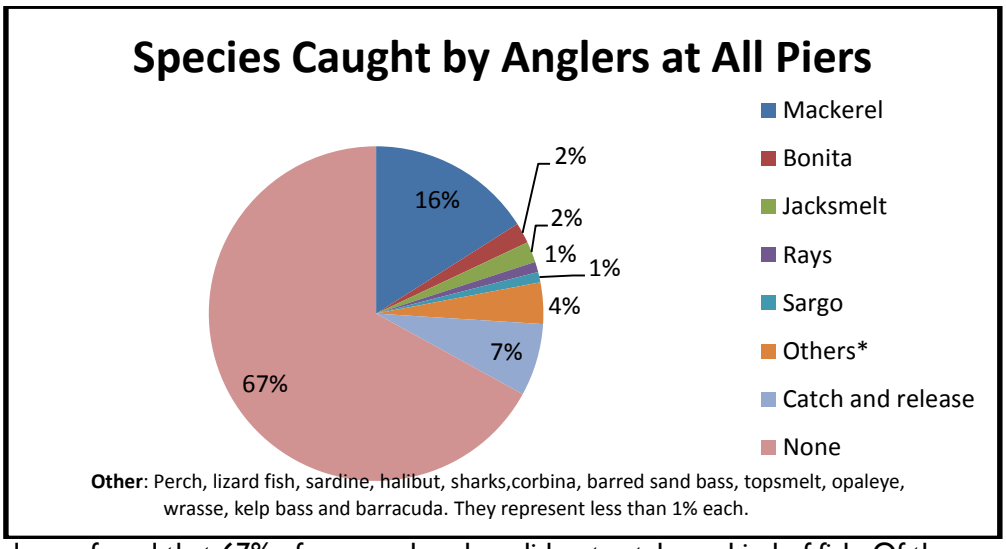
From a total of all pier anglers surveyed, we found that a large percentage of anglers (65%) did not target a specific type of fish, 13% target mackerel, 6% halibut, 4% sharks, 3% bonita, 2% perch and rays each, and a small percentage that included species such as sargo, white seabass, yellow croaker, crustaceans, sea bass, queenfish, and sardines.



In Manhattan Beach, about 11% of anglers on the pier specifically target sharks, constituting less than 10 individual anglers. About 9% of Malibu Pier's anglers and 7% of Venice Pier's anglers are also targeting sharks.



Subsistence anglers are the dominant group of anglers targeting sharks at all piers except Malibu. The only piers with sport anglers targeting sharks in our study were on Malibu and Venice Pier. Venice Pier was represented by both subsistence anglers and sport anglers targeting sharks. Malibu was represented entirely by sport anglers, 100% of whom were targeting sharks. It may be surprising that our outreach team didn't encounter any sport anglers targeting sharks on the Manhattan Beach Pier, since this is where the issue originated. Possible reasons that we did not encounter sport anglers targeting sharks on Manhattan Beach Pier include: 1) we did not survey piers at night because of safety, and 2) our data presents the survey responses as given by the anglers and there is likely some bias that anglers may not disclose all species they are targeting, especially given the high profile white shark incident and that it is unlawful to target white sharks.



During the study, we found that 67% of surveyed anglers did not catch any kind of fish. Of those with successful catches, mackerel was the most abundant species caught during this study (16%). Catch and release was a common practice followed by anglers which represents 7%, of all anglers that caught fish on the piers, with bonita and jacksmelt constituting 2% of the catch. Sharks were grouped in the category of "other" because the instance of shark catch during our surveys was so infrequent. The entire "other" category represents a total catch percentage of less than 1%. During this study, the only pier where people actually caught sharks was Manhattan Beach where three leopard sharks were caught on August 30, and one gray smooth-hound shark was caught on September 14.

To gauge the communities of Los Angles pier angling in Santa Monica Bay, we also collected data on ethnicities and languages of pier anglers. The following two table show the results of our study. The languages spoken and used in our Shark Ambassador team included English, Spanish, Russian and Chinese. Over the course of our pilot study, English was used for 84% of the surveys, followed by Spanish at 9% and 7% for Russian and Chinese.

Ethnicities at Santa Monica Bay Piers

Location	ETHNICITY					Total by Pier
	LATINO	WHITE	ASIAN	BLACK	OTHER	
Manhattan	17 45%	11 29%	8 21%	1 2.50%	1 2.50%	38
Hermosa	50 49%	8 8%	38 38%	1 1%	4 4%	101
Venice	125 47%	22 8%	47 18%	32 12%	40 15%	266
Santa Monica	57 36%	36 23%	16 10%	13 8%	37 23%	159
Redondo	40 38%	10 10%	51 49%	3 3%	0 0	104
Malibu	17 31%	11 20%	14 25%	1 2%	12 22%	55
TOTAL	306 42%	98 14%	174 24%	51 7%	94 13%	723

Other : Russian, Hawaiian, Indian, Egyptian, Lithuanian, Armenian, Ethiopian, Dutch, Bulgarian, Jewish

Languages used during pier outreach

Location	Language used during outreach		
	English	Spanish	Others
Manhattan	33	1	0
Hermosa	82	13	2
Venice	191	21	17
Santa Monica	86	21	19
Redondo	99	1	3
Malibu	43	2	0
TOTAL	534	59	41
	84%	9%	7%

Others: Russian, Chinese

NEXT STEPS

In addition to the educational shark ambassador program, Heal the Bay believes a stakeholder approach is needed to develop a recommended pier management strategy to prevent conflicts among pier users, swimmers/surfers, and sensitive wildlife. We believe that any potential management measures, such as pier fishing zones or gear restrictions, will be best derived from stakeholder discussions, and involve education. We recommend the stakeholder group include management agencies and key stakeholders, including relevant local municipalities, lifeguards, aquaria, angler groups, and relevant state agencies. The information derived from the Shark Ambassador pilot program could inform discussions about a potential pier management plan. Heal the Bay has solicited grant funding to convene and lead a stakeholder group to develop management recommendations to inform a long-term solution to reduce conflict among sensitive species and users at piers along the Santa Monica Bay. Depending on the outcome of that grant request, we may be able to support such action.