



**U.S. DEPARTMENT OF COMMERCE  
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NATIONAL MARINE FISHERIES SERVICE**

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## **1990- 2011 Results for Live Marine Turtle Strandings due to Shark Attack<sup>a</sup>**

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This report reviews the results for live marine turtle strandings due to shark attack in the Hawaiian Islands from 1990 to 2011. Sharks are the only predator found around the Hawaiian Islands capable of preying on sea turtles in all phases of life. Tiger sharks (*Galeocerdo cuvier*) have cusped-shaped serrated teeth to allow breaking through the shell of an adult turtle. However, not all shark attacks are fatal. There have been many documented cases of turtles that have recovered completely in the wild after sustaining severe injuries from shark encounters. In cases of live marine turtles that strand ashore or are brought to shore, medical care is provided to assist the victims of shark attack with mild to severe injuries. In some cases, injury due to shark attack was only one of multiple causes for stranding.

From 1982 to 2011 there were 6198 documented turtle strandings and 234 cases of which were due to shark attacks (Table 1). More comprehensive consistent veterinary services were available to the Marine Turtle Research Program (MTRP) in 1990. This was coupled with greater resources made available to provide rehabilitation. Therefore, the 1990-2011 data summarized in this report will only be taken from the 5614 stranding records from that time period, 212 (4%) of which involved shark attack.

Of the 212 shark attack cases, 47 stranded alive, while 165 stranded dead. Of 47 live stranded turtles that MTRP documented of shark attack injuries or witnessed shark attacks, only 32 of these cases were actually seen by MTRP at some point throughout the case.

When broken down by species, 45 were green turtles (*Chelonia mydas*), one was a loggerhead (*Caretta caretta*) and one was a leatherback (*Dermochelys coriacea*). Of the 47 live strandings reported, 18 were seen by a veterinarian. Most turtles with shark attack injuries went to NOAA contract veterinarian, Dr. Robert Morris. However, one case was seen by a veterinarian in Kauai. Of those 18 turtles, treatment was attempted on six. Five turtles were able to be rehabilitated and released. The remaining 13 died. Euthanasia was

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immediately carried out on 10 of those 13 turtles due to a poor prognosis. One turtle died after initial treatment and two died after arriving at the clinic, but before receiving any treatment. Comprehensive necropsies were completed on all 13 turtles.

The Kewalo Research Facility (KRF) at Kewalo Basin, Oahu was utilized from 0-191 days (average of nine days) by MTRP for rehabilitation efforts of turtles with shark attack injuries. Days spent at KRF were determined on a case by case basis as advised by the veterinarian. Live turtles that were eventually released resided in these tanks for an average of six days. Turtles that did not survive inhabited the tanks for 0-7 day, averaging less than one day for each case.

Of the 47 live turtles attacked by sharks 38 stranded with new injuries sustained within about 24 hours. Nine turtles were found when their shark attack injuries were more than 24 hours old.

Treatments varied with each case based on the severity and location of the injury. Some cases involved many different treatment types. The summaries below include each case that a specific treatment was used, regardless of whether alternative methods were also utilized. Therefore, many cases are included multiple times.

Antibiotics, including Amikacin and Baytril, are known to fight off bacterial infections. They were prescribed and administered in five of the six turtles that were treated by MTRP's veterinarian after stranding live due to a shark attack. Four of the five turtles treated with antibiotics were rehabilitated and released.

Wounds were cleaned and/or flushed in four cases with shark attack injuries. Three out of the four turtles with cleansed wounds were rehabilitated and released.

Topical antibiotics were used in one case to further protect a wound from infection. This turtle survived and was released.

Intraperitoneal (IP) fluids of various compositions are administered to animals sustaining blood loss to maintain appropriate blood pressure and to replace nutrients into the body. Two turtles were administered IP fluids, both were rehabilitated and released.

Vitamin supplements were administered to one turtle with severe wounds and a long recovery (191 days) after a shark attack. This turtle was successfully rehabilitated and released.

Winstrol, a drug used for the treatment of anemia, was used on one turtle with severe wounds and a long recovery (191 days) after a shark attack. This turtle was successfully rehabilitated and released.

Based on these data, only 30% (14 out of 47 cases) of the turtles that stranded live due to shark attack survived until release. In some cases, the shark attack injuries to the turtles were so extensive that euthanasia was the only humane course of action. However, in cases where providing medical treatment was deemed a viable option, 83% of turtles (five out of six cases) were rehabilitated and released.

Table 1.

1990-2011 Summary for 47 Live Marine Turtle Strandings due to Shark Attack							
<b>Shark Attacks</b>	<b>Total</b>	<b>Live</b>	<b>Dead</b>	<b>Number of Day in Rehabilitation</b>			
1982-2011	234	48	186	Total	0-191		
1990-2011	212	47	165	Live	0-191		
				Fatal	0-7		
<b>Final Result</b>				<b>Average Number of Days in Rehabilitation</b>			
Released	14			Total	6		
Died/Euthanasia Death	33			Live	22		
				Fatal	<1		
<b>Live Shark Attack since 1990</b>							
Total	47			<b>Treatments</b>	<b>Total Treated</b>	<b>Lived</b>	<b>% Survival</b>
Green Turtles	45			Antibiotics	5	4	80
Loggerheads	1			IP Fluids	2	2	100
Leatherbacks	1			Cleanse Wound	4	3	75
				Topical Antibiotic	1	1	100
				Vitamin injection	1	1	100
				Winstrol	1	1	100
<b>Veterinary Treatment</b>							
Seen by a Veterinarian	18						
Treated by Veterinarian	6						
Treated by Veterinarian and released	5			<b>Freshness of Injury</b>			
				Old Injury	9		
				New Injury (past 24 hours)	38		

Inclusions: This report is accompanied by an Excel spreadsheet of the summary statistics in Table 1. – Rehab Shark Attack\_table.xlsx