

# A Call for the Regulations of White Shark Adventure Tourism and Research Activity at the Farallon Islands, California

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## Introduction

White shark adventure tourism has increased dramatically in recent years at Southeast Farallon Island in the Gulf of the Farallones National Marine Sanctuary (GFNMS), California. Currently there are no regulations in place regarding the behavior of tourism companies or the number of companies that can operate at the Farallones, in attempts to show white sharks to their clientele. We are especially concerned about the dumping of chum and other chemicals to attract sharks, the deployment of surfboards and other decoys to elicit attack responses from sharks, and the close approach of large tourist boats to feeding sharks, resulting in the permanent displacement of the sharks from their prey. We believe that these behaviors have negative impacts on the ability of the sharks to feed and thus are disrupting an important component to the marine ecology of the area. We have been researching the occurrence patterns and behavior of white sharks at the Farallones for over 20 years. Here we document our observations on white sharks as related to human disturbance issues.

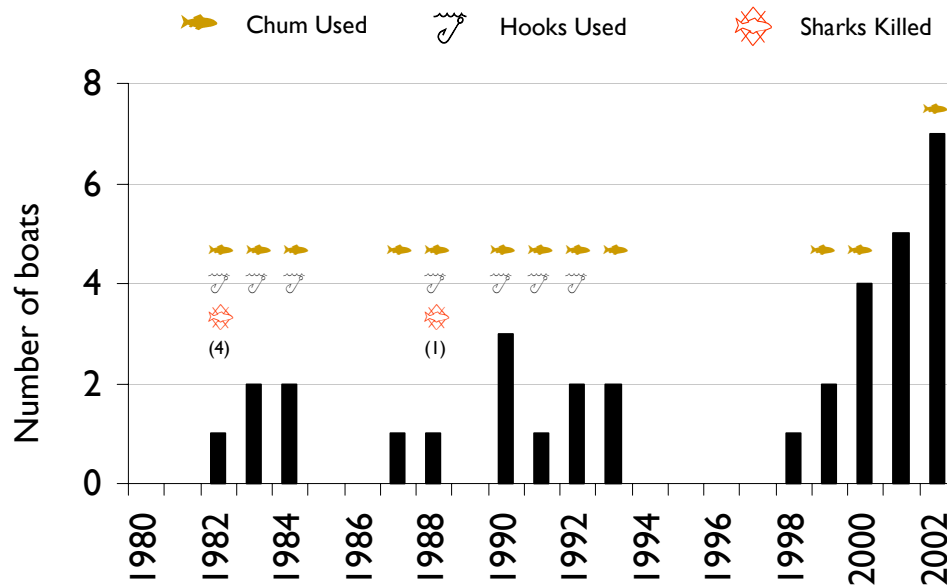


Figure 1. The number of boats observed at the Farallon Islands attempting to interact with white sharks for recreational purposes between 1980 and 2002.

### History of Recreational Activity regarding White Sharks at the Farallones

Between 1982 and 1993 we observed ten different boats involved in white-shark related recreational activity (Fig. 1) that spent 49 days at the Farallones (Fig. 2). All observations were documented by trained PRBO biologists stationed at the island during the shark season (September-November) of each year (*cf.* Table 1). Recreational activities have included fishing, trophy-hunting, and the use of decoys, chum, and submersible cages to view white sharks. Five of these boats were attempting to fish or hunt sharks and five were attempting to view sharks. All 10 boats employed chum or decoys to attract sharks (Fig. 1), and three of the five shark-viewing boats had submersible cages. Only one fishing boat, the *Merva W*, successfully killed white sharks: four in 1982 and one in 1988. Following the 1982 event fisherman from the *Merva W* were glorified in the media as heroes. The elimination of four sharks from the population in 1982 resulted in a significant decline in shark attacks witnessed at the Farallones during 1983-1985 (Fig. 3), indicating the vulnerability of the shark population to the absence of just four individuals. These data were used to successfully lobby the state of California to protect white sharks from fishing and hunting. California AB 522 was passed in 1993, and resulted in an absence of boats attempting to kill or view white sharks at the Farallones in 1994-1998 (Figs. 1 and 2).

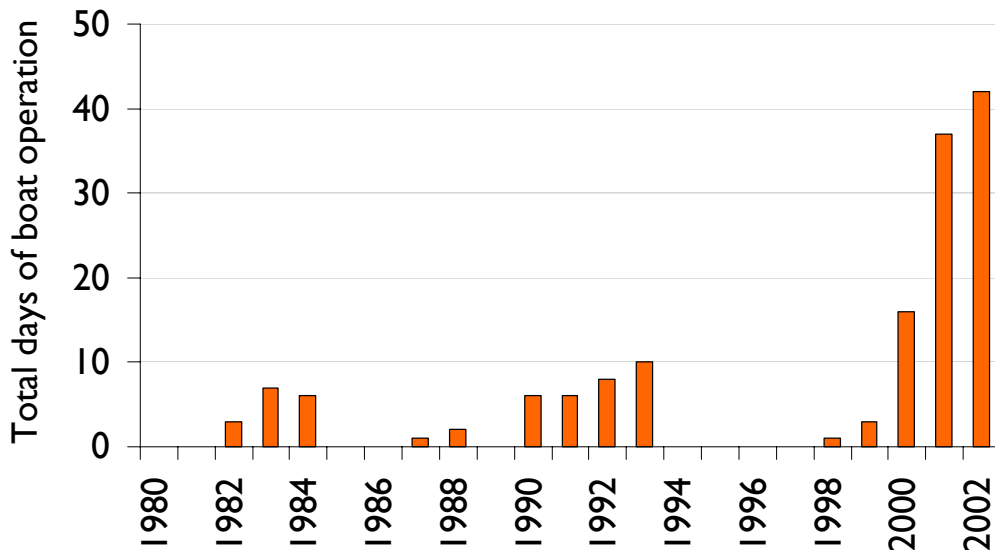


Figure 2. The number of days spent by boats attempting to interact with white sharks at the Farallones between 1980 and 2002.

The development of the “adventure tourism” industry in the late 1990’s resulted in a dramatic increase in the number of boats, and days spent by these boats, attempting to view white sharks at the Farallones between 1998 and 2002 (Figs. 1 and 2). Fifteen separate vessels were observed attempting to view white sharks during this period. Chumming was employed by six of these boats and there are rumors that other chemicals were used (undetected by us) to attract sharks to these boats. Three of these boats were observed deploying cages in the water and thirteen of fifteen were observed deploying decoys. Two boats (in 1998 and 2002) were observed using chum but not decoys.

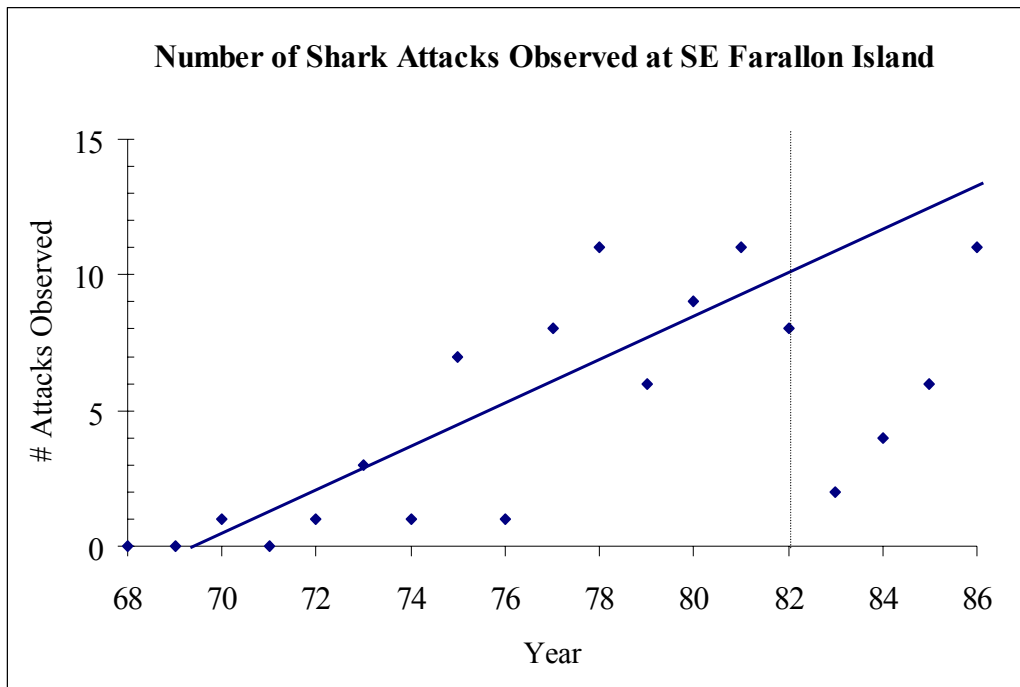
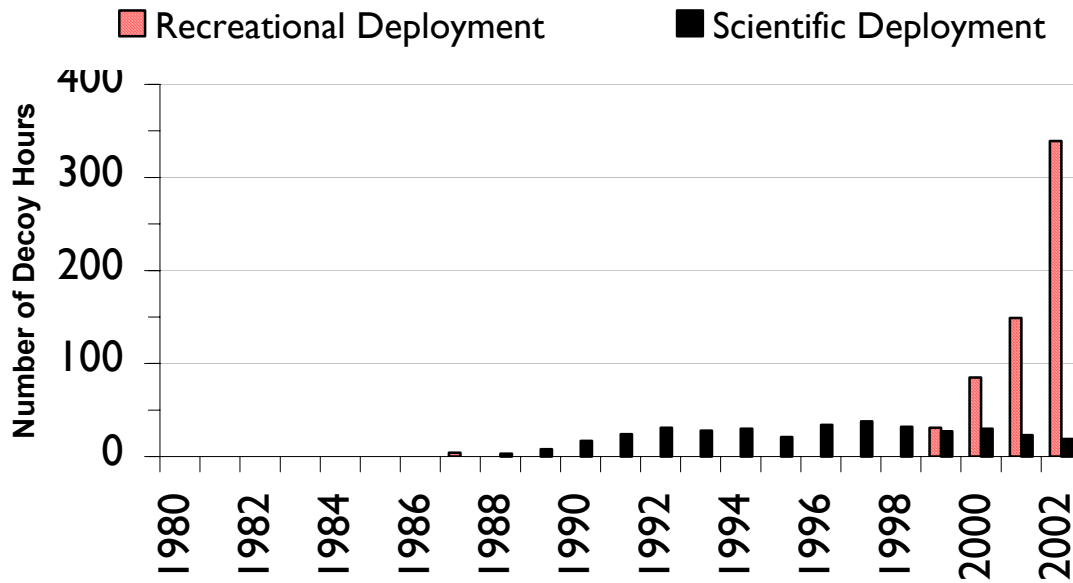


Figure 3. *Affects from the removal of four white sharks from the Farallon population in 1982.*

Decoys have been deployed between 1986 and 2002 for both scientific and recreational purposes (Fig. 4). Researchers at the Farallones have employed a self-imposed limit of one hour per day in the use of decoys for scientific purposes, so as not to overly disturb the sharks or their hunting strategies. Thus, no more than 38 hours of decoy deployment per year has been employed, with maximum deployment occurring in 1997 (Fig. 4). Use of decoys in research declined between 1997 and 2002 out of further concern for the sharks and because of a reduction in decoy use within the framework of the research program (Fig. 4).

Decoy use for recreational purposes was observed in 1986 (one boat for one day) and in 1999-2002 (Fig. 4). Use during the latter period has increased exponentially, to a high count of 339 hours in 2003 (Fig. 4, Table 1). Decoy use could be broken down into two categories: active trolling around the island and stationary deployment near submerged cages. In 2002, we calculated 172 hours of trolling by six boats and 167 hours of stationary deployment by two boats (Table 1). Most decoys have been surfboards. We have observed four different boats deploying chum and surfboards at the same time, which might condition white sharks to become interested in surfers along the coast. At least two decoys employed by separate boats have been constructed of plywood or heavy lumber, rigid materials that would likely result in injury to sharks striking the decoys.



On eight occasions between 1986 and 2002 biologists at the Farallones or other observers have witnessed large boats (36' or more) approaching feeding white sharks and permanently scaring them away from their prey. The latest such event occurred on 24 November 2002 and was witnessed and documented by several observers on a nearby whale-watching boat. The sharks do not seem to be as affected by the approach of a 17' research boat. We believe that white sharks will be frightened away by boats presenting silhouettes on the water that are larger than they are, in this case between 12 and 20 feet. Research activities have been modified during the past five years such that boats do not approach a feeding shark until full consumption of the prey has occurred, so as not to risk affecting the feeding behavior of the shark.

### Problem Statement

Despite its image the white shark is a sensitive species, with a very slow reproductive rate and low worldwide populations. At the Farallones, individual white sharks may spend up to three months of the year attempting to prey upon a single seal. Being frightened away from their prey, or confused by the deployment of decoys or chum, thus represents the disruption of critical hunting and feeding opportunities. Because there are currently no restrictions to the activities of adventure tourism boats or the number of such boats that can operate at the Farallones, we feel that regulations are needed to prevent disturbance. Disruption of the natural white shark hunting and feeding strategies would have substantial impacts on the ecology of the marine ecosystem in the GFNMS, resulting in overpopulations of seals and sea lions and subsequently a reduction in salmon, rockfish, ling cod, halibut, and other declining and commercially important fish species on which these pinnipeds feed.

In Australia and South Africa multiple feuding white-shark-watching enterprises created a hostile and unsafe environment for each other and the sharks, and caused the disruption and eventual abandonment of valuable long-term research at these locales. In both these

Boat Name	Dates	Decoy Hours		Hours		Unknown activities	Total Hrs.*
		Trolling	Drifting	Chumming	Cage-diving		
<i>Patriot</i>	9/14-12/4	47	64	0	55	164 <sup>†</sup>	275
<i>El Cid</i>	9/29	1	4	0	0	0	5
<i>Bayliner</i>	10/19	9	0	0	0	0	9
Unknown	10/20	6	0	0	0	0	6
<i>Cortez</i>	11/21	3	0	0	0	0	3
<i>Shiraz</i>	11/23	0	0	1	0	0	1
<i>Zodiac</i>	12/4-14	9	0	5	0	0	14
<b>TOTAL</b>	<b>9/14-12/14</b>	<b>75</b>	<b>68</b>	<b>6</b>	<b>55</b>	<b>164</b>	<b>313</b>

\* Cage-diving hours are also tallied under decoy-drifting hours (since all 55 hrs. involved decoy deployment) and so are omitted from total hours.

<sup>†</sup> Estimated to involve 69 hrs. trolling decoys, 95 hrs. drifting decoys (including 82 hrs. cage-diving)

*Table 1. Data collected on adventure tourism activities by observers stationed at the Lighthouse at Southeast Farallon Island in 2002.*

areas regulations were adopted which have resulted in the education of tour boat operators, a much greater safety record for divers attempting to view sharks, and a substantial reduction in disturbance to the natural behaviors of the sharks. We believe that it is an appropriate time to implement such regulations in the GFNMS. As researchers, we are also concerned about future research activities also having an impact on the white sharks at the Farallones. Thus we recommend that regulations include the activities of all boats, whether involved in recreational or scientific activities.

### **Recommendations**

We recommend the following:

- 1) No research or shark-viewing vessels will be allowed to approach feeding white sharks in the GFNMS within 50 m.
- 2) No decoys shall be allowed for research or shark-viewing purposes within the GFNMS. Decoys would be defined as any floating object larger than 50 cm and smaller than 4 m in length.
- 3) No chumming shall be allowed for shark-viewing or research purposes.
- 4) Recreational activity for white shark viewing shall be restricted to the southern and eastern waters of Southeast Farallon Island, between Shubrick Point and Saddle Rock.
- 5) No intentional "take" (defined as the actual or attempted harassment, hunt, capture, or kill) of white sharks by any means may occur.

This report is available at the PRBO website at <http://www.prbo.org/marine/sharkreg.htm>.