

## *More Rare Than Dangerous: A Case Study of White Shark Conservation in California*

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### Introduction

In the first week of October 1993, those of us who had been working to win protection for white sharks *Carcharodon carcharias* in California could only wait for the final act to play out. Assembly Bill (AB) 522, which the authors of this chapter had sponsored and shepherded through the California legislature, was on the governor's desk, awaiting its fate as the first attempt at white shark protection in the United States. The governor's signature would mean that, with a few exceptions, no white sharks could be taken in California for at least 5 years. A veto would provide a discouraging precedent for any similar effort in the future. Moreover, it would mean a disappointing end to a year's hard work by an unusual alliance that included legislators and legislative staff members, commercial and sport fishermen, surfers, commercial and sport divers, sea kayakers, scientists, and environmentalists.

As an avid sport diver, AB 522's author, Assemblyman Dan Hauser, had needed some convincing to carry a bill to protect white sharks. Once persuaded, he and his staff then became superb champions of the measure. With their collaboration, we managed to get it through four committees, the Assembly, and the Senate without any votes cast against it, in a year when bitter partisan fights were the rule. The joke passed around was that, with politics so brutal, pro-

tection for white sharks became the easiest consensus issue.

Dan Hauser is a Democrat, and his office happened to face Republican Governor Pete Wilson's offices across a small courtyard in the capitol building. As the deadline for the governor's action approached, our anxiety grew as the list of vetoed bills lengthened. To break the tension, one of Hauser's staff put a hand-drawn poster in one of their courtyard windows: a shark fin protruding from waves, with the message "Please sign AB 522." On October 11, the last day for Wilson to act on bills, a large poster appeared in one of the governor's windows: a giant shark leaping clear of the water, mouth open and wearing hot-pink sunglasses, and a marker-pen message in the governor's handwriting, "Dan—Cordially, Pete Wilson."

When the legislation went into effect on January 1, 1994, California became the second jurisdiction in the world (after South Africa) to protect "the supreme hunter-killer; the largest game fish in the world; the most dangerous of the sharks; the *ne plus ultra* of predators . . . one of the few animals on Earth that we fear can—or worse, *will*—eat us . . . the stuff of which legends are made," a creature that is, at the same time, more legend than real and "more rare than they are dangerous" (quotations from Ellis and McCosker, 1991).

This chapter is a case study of AB 522 that de-

scribes its genesis, the considerations that went into deciding what to include in the bill, the strategy for winning approval by the legislature and the governor, and the process of assembling a remarkably disparate alliance to support it. Our narrative emphasizes two themes that we believe were critical to the ultimate success of the bill. First, white shark research and the close collaboration of white shark researchers with conservationists were both crucial in developing the unprecedented state policies embodied in AB 522. Second, the attitudes of people in the marine user groups that most frequently encounter white sharks were extraordinarily positive. Both of these elements are likely to be similarly important in attempts to protect white sharks anywhere else in the world.

Our reconstruction of the political process is fairly detailed in the hope that this case study will be helpful in white shark conservation efforts elsewhere in this species' range, as well as future efforts in California. AB 522 adds support to the truism that conservation victories are temporary. The California legislature routinely places an automatic expiration date on new regulations; the assumption is that people will make the effort to renew the regulations if there is enough support for them. AB 522 has such a "sunset" clause: its provisions will end after 5 years—on January 1, 1999—unless the legislature removes or extends that date in the meantime.

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### Some Prehistory of AB 522

Nine years ago . . . I witnessed for the first time, off the California coast, a predatory attack by a great white shark. The attack took place close to me, less than 25 meters from shore. The first signs were dramatic. The blue water suddenly turned a vivid crimson, stained by the blood of a struggling northern elephant seal. The huge shark, much of its body out of the water in clear view, swam vigorously back and forth. It appeared to be enjoying its meal. (Klimley, 1994)

In 1982, Peter Klimley, David Ainley, then in charge of the Point Reyes Bird Observatory (PRBO)'s Farallon Islands research, and one of the authors (B.H.), then executive director of PRBO, first discussed collaborating on white shark research at the Farallones. Beginning in 1970, PRBO Farallones biologists and volunteers had been documenting all observed white shark attacks on pinnipeds, but Klimley's experience in shark research suggested a range of other opportunities. Farallon Island white shark research escalated in 1985 and 1987 and eventually involved Klimley, Ainley, Peter Pyle, and Scot Anderson of PRBO, and John McCosker and Ken Goldman of the California Academy of Sciences. We refer to the ele-

ments of that research relevant to this chapter, but the full descriptions are covered in several other chapters in this volume. B. Heneman left PRBO at the end of 1984 but continued to follow the Farallon white shark research as it matured to produce additional interesting contributions to the white shark literature (e.g., Ainley *et al.*, 1985; Klimley *et al.*, 1992). Of particular importance to white shark conservation was support for the picture of a small population with low reproductive potential vulnerable to even modest levels of mortality (see Chapter 34, by Pyle *et al.*).

In 1992, the authors, both on the staff of the Center for Marine Conservation (CMC), were responsible for developing marine conservation initiatives on the Pacific coast. Given the Farallon Islands research and CMC's involvement in shark conservation along the Atlantic and Gulf coasts, white shark conservation seemed to be a likely candidate. Consultation with Ainley and Pyle inspired development of a campaign to protect white sharks in California late in 1992, timed to take advantage of the 1993 legislative session in Sacramento.

Our broad political strategy was based on several assumptions. We assumed that the proper forum was the state rather than the federal government. The potential take of white sharks that we were most concerned about was in state waters, within 3 miles of the mainland or any islands. White sharks had been taken in California waters from 1980 to 1992 (Table I). Furthermore, management of any shark fisheries off California was a state responsibility, because there was no federal fishery management plan for sharks. Even if a case could be made for federal management of shark fisheries, achieving it would be a several-year process, with the outcome even less certain than what we were attempting at the state level.

After reviewing the state fish and game code, we concluded that white shark protection could not be achieved under existing legislation; new legislation would be required. In other words, we would be initiating a highly political process in which even a modest misstep could kill the legislation and stall the effort for at least 1 year.

We assumed that passing a law to protect an animal best known in the public's mind for killing and eating people would require broad support and negligible opposition. To develop that support and minimize any potential opposition, we needed to do two things: (1) marshal a wide variety of arguments to appeal to different perspectives and (2) from the beginning, consult with and involve everyone we could think of who might support—or oppose—the protection of white sharks. Our political strategy remained based on these assumptions throughout the cam-

TABLE I White Shark Landings in California by Port

Year	Total Landings <sup>a</sup> (kg) <sup>b</sup>	Eureka (kg)	San Francisco (kg)	Monterey (kg)	Santa Barbara (kg)	Los Angeles (kg)	San Diego (kg)
1980	753.0		752.1		0.4		
1981	19.1				19.1		
1982	3652.3		3617.0		35.4		
1983	287.6		3208.7		35.4		
1984	2767.8		2495.2		186.9		85.7
1985	1234.7		103.4	407.8	103.5		20.0
1986	1202.5		181.0	31.8	262.2	68.0	59.4
1987	608.7				187.8	259.0	162.4
1988	996.1				18.1	259.0	162.4
1989	595.1			303.9	284.0	259.0	2.7
1990	120.2				87.1	11.8	21.3
1991	54.9				13.2	29.9	11.8
1992	434.1				135.2	248.6	50.3
1980–1992	12,726.4		8647.3	734.4	2081.1	841.0	413.7

<sup>a</sup>Data from the California Department of Fish and Game landing receipts reported in *Commercial Fish Landings, 1980–1992*. Landing receipt masses are normally for dressed mass (head and gutted). Extremely low values may represent shark parts or could be the result of data entry error.

<sup>b</sup>Catch data were converted from pounds to kilograms.

paign. Nothing that happened over the next several months caused us to question their correctness and fundamental importance.

If our political strategy was correct from the beginning, we fell well short of the mark initially in choosing our policy objectives; there may be a lesson here for white shark conservation efforts elsewhere. Given the white shark's reputation, aggravated by the still potent imagery of the 1975 movie *Jaws*, we were concerned that a proposal to protect this species might be met with widespread skepticism and hostility from some quarters. We assumed that we had to set our sights low for this initial effort. Although we thought the evidence argued for coastwide protection, we doubted we could find enough support for such an ambitious plan. After consulting with the Farallones researchers, we decided the minimum objective would be seasonal protection (July–February?) within 1 mile of the Farallon Islands, an absolutely defensible and enforceable proposal. Year-round protection at the Farallones would be one step better, and our most ambitious plan envisioned similar seasonal or year-round protection at Año Nuevo Island, another location on the northern California coast where very high seasonal concentrations of pinnipeds attracted large white sharks.

### Launching the Proposal

(b) The white shark, as the principal apex predator off the California coast, plays a vital role in maintaining the overall health and stability of California's marine environment and is also a species of great interest to the public. (c) A healthy white shark population off the California coast is critical to maintaining a balance in our marine ecosystems. (d) The white shark has been, and continues to be, uncommon, and its population off the California coast is sensitive to any increased level of sport or commercial taking, as has been demonstrated in the recent past. (policy of the state of California, excerpted from the findings written into AB 522)

In January 1993, we faced two tactical decisions as the deadline for introducing new bills in the legislature approached. First, we needed a legislator who would carry our bill. Assemblyman Dan Hauser, chairman of the legislature's Joint Committee on Fisheries and Aquaculture, was the obvious choice. Hauser represented the north coast, the center of California's fishing industry, and he authored most of the fisheries-related legislation.

Second, we needed to expand the circle of people we were talking to beyond the "family" of CMC, PRBO, and the California Academy of Sciences. We decided to try out the idea on Zeke Grader, Executive Director of the Pacific Coast Federation of Fishermen's

Associations (PCFFA), the main fishing industry association in California. PCFFA and Grader, a friend and colleague from various issues, had a solid history of working closely with the environmental and scientific communities on such issues as offshore oil and gas development, the impact of logging practices and water diversions on salmon streams, San Francisco Bay dredge spoils disposal, and conflicts between gill nets and wildlife. Grader also worked closely with Assemblyman Hauser and Mary Morgan, the outstanding staff person for Hauser's committee.

We thought that the fishing industry reaction might be mixed. On our side was the role of white sharks in controlling seal and sea lion populations and the fact that there was no existing commercial fishery directed at white sharks. Against us was the possibility that industry might resist putting any potential target species out of bounds. PCFFA and the fishing industry were the most organized marine user group in Sacramento; given Grader's conservation sympathies, we knew our proposal would be in trouble if it got an unfavorable response from him. If he was enthusiastic, we would have an invaluable ally. The authors decided we would present the "ambitious" year-round Farallones and Año Nuevo plan when we met with Grader in early January 1993.

Grader was, indeed, enthusiastic and thought industry would generally be supportive. Moreover, he had a surprising suggestion—that we go for white shark protection on the entire California coast. He also made a welcome offer—that he include white shark protection on PCFFA's shortlist of new fisheries bills for Assemblyman Dan Hauser and Mary Morgan. In the space of a few minutes, the fortunes of white shark conservation in California underwent breathtaking change. When, with Grader's help, we persuaded Hauser to carry the bill, our campaign had found the best possible advocate within the legislature. On the other hand, instead of trying to protect white sharks near a couple of specks along the coast, we found ourselves committed to a coastwide measure.

### Gearing Up for the Legislative Season

The white shark may be the last of Earth's primary predators capable of invoking irrational fear and response in humans. Although landbound predators such as lions, tigers, and wolves once held this authority, they have all been subdued, nearly eradicated, or restricted to wildlife preserves where we point at them from the safety of our automobiles. But *Homo sapiens* remains out of its element in the ocean, and it is from this perspective that the white shark still lurks in the primal quarters of the human mind. By revealing the white shark's natural story, we hope to supplant fear

and vindictiveness with respect and understanding for this beleaguered citizen of the sea. (Pyle, 1992)

The vastly expanded geographic scope of the proposed legislation added significant challenges to our lobbying campaign. We would need to enlist the help of more organizations in more parts of the state. After Hauser agreed to carry a bill, the first step in broadening our base of support was to invite PRBO and PCFFA to be the principal cosponsors. Both organizations agreed, creating a strong trio of supporters: PRBO, whose Farallon Islands base was home to the most extensive white shark research in the United States; PCFFA, the principal commercial fishing industry organization in the state; and CMC, a national environmental organization that was already a leader in shark conservation.

We also initiated an AB 522 contact group, compiling a lengthy list of organizations that might be interested in the bill. We wanted feedback on the bill's provisions, and we wanted to make sure that user groups first heard about the bill from us, not a newspaper story. To meet the deadline for introducing new bills, Assemblyman Hauser had introduced a preliminary version of AB 522 in January. We knew we would have to refine the bill to address concerns that had not occurred to us. We wanted to learn what those concerns were as early in the legislative process as possible.

We had witnessed what could happen to a bill when unanticipated concerns were raised during hearings. All too often, legislators, under time pressure and operating without sufficient information, yield to the temptation to actually write the laws they make, drafting and adopting new language in the space of minutes. On such occasions, the bill's proponents usually can do little but watch—and hope the wreckage will be limited. Committee hearings are not the place to write legislation.

On March 2, 1993, CMC and PRBO invited a shortlist of groups to discuss the bill at a "white shark conservation scoping meeting." It was our first gathering of organizations whose views we did not know in advance. We met at the offices of the Gulf of the Farallones National Marine Sanctuary, a jurisdiction that was as supportive of our efforts as a federal agency could be on a state issue. The California Department of Fish and Game, which would be commenting on our bill, sent observers at our invitation. Interest groups represented included surfers, sea kayakers, commercial sea urchin divers, and those advocating marine mammal conservation and local shark conservation. Organizations representing gillnetters and

commercial abalone divers did not attend, but wrote to us with their concerns.

Those who wrote and attended the meeting were generally supportive, but they raised three issues. The local (Monterey Bay) shark conservation group proposed including protection for basking sharks *Cetorhinus maximus* in the bill. As sponsors of the bill, we decided against adding another species for which there was much less reliable information available and which was the target of a small directed fishery. We thought that the result might be protection for neither. In writing, the California Gillnetters Association asked us to exempt their white shark by-catch, and the California Abalone Association (CAA) expressed concern about divers being prosecuted if they killed or injured white sharks in self-defense. (We describe how we addressed those concerns below, under Navigating Sacramento.)

The meeting produced two important outcomes. Before the legislative hearings began, we had identified significant additional support, and, as it turned out later, we had learned of all but one negotiable issue that would be raised about AB 522.

The next day, we gave white shark protection its first airing in the state capitol at the annual Fisheries Forum. Hosted by Assemblyman Hauser's Joint Committee on Fisheries and Aquaculture, the forum provided an opportunity for legislators to hear what commercial and sport-fishing interests considered to be important issues in the coming year. As the largest regular meeting of California fisheries interests, it was an excellent opportunity to promote our bill in both the hallways and the hearing. Again, the reception received by our plan was encouraging, with a few people suggesting ways to strengthen the bill. Even commercial fisherman Mike McHenry, notorious for catching four large white sharks at the Farallon Islands in 1 day in 1982 (see Chapter 34, by Pyle *et al.*), said he favored protection for them.

During the public comments, a representative of the party boat industry expressed the frustration much of the fishing industry felt about the escalating California sea lion population and the general concern for dwindling salmon numbers; he proposed a slogan that was well received: "Save a salmon, kill a sea lion." White shark protection was next on the agenda, with comments from one of us (B.H.). Believing that the best tactic might be to leave them laughing, he picked up on the sea lion issue, suggesting an alternative, more legal slogan: "Save a salmon, save a great white shark." When the line got a warm response, we knew we were off to a running start in Sacramento.

The killing of the four sharks at the islands possibly nullified our study, but their capture and the subsequent reduction in shark activity did indicate some interesting points. First, it became apparent that only a few, and perhaps no more than six different, large white sharks were responsible for the level of activity we observed in recent years. . . . Second, the fact that capture of the four sharks significantly reduced shark sightings and shark/pinniped interactions indicated that the individual sharks were somewhat "resident" during the fall. . . . A week after capturing the four sharks, the same commercial vessel returned, and fished for but caught no sharks. . . . This indicates that it may be relatively easy to "over-fish" a local concentration of large white sharks. (Ainley *et al.*, 1985)

We were familiar with the Farallon Islands research and were confident in the arguments for white shark protection for that area and Año Nuevo Island, which was fundamentally similar. The expansive geographic scope of our bill meant that we needed to acquaint ourselves with much more information on white sharks to respond to potential objections to coastwide protection. The crash course we got in the most up-to-date research at the Symposium on the Biology of the White Shark at Bodega Marine Laboratory, March 4–7, 1993, was an enormous help. We also were able to try out ideas for the legislation on white shark specialists from Australia, New Zealand, South Africa, the Mediterranean, and southern California. The information we gleaned from the symposium enabled us to further shape the bill and refine our arguments. The reinforcement received on our decision to seek coastwide protection was an additional benefit.

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### The Arguments for AB 522

\$1,000 REWARD for 1st Great White Shark in 1993 on the *California Dawn* (San Diego party boat advertisement, *Western Outdoor News*, February 26, 1993)

I am writing to express my support for AB 522 to protect white sharks in California. As you may know, I was mauled by a shark thought to be a Great White on July 1, 1991 while surfing near Davenport, CA. My experience with the shark convinced me that sharks are an important part of the natural order of things. Any creature which is as well-adapted to its environment as the shark deserves a lot of respect. (Eric Larsen, letter to Assemblyman Hauser, April 17, 1993)

These two quotes embody the fundamental arguments for white shark conservation: the threat of an outmoded attitude we can no longer afford, and the promise of a new outlook that we in the scientific and conservation communities would do well to both encourage and learn from.

In order not to miss an opportunity for persuasion, we and our collaborators in the scientific community assembled a more complex suite of arguments. Its

basic form was that these magnificent and uncommon animals are an important component of our coastal marine ecosystems, and that their population—typical of top predators—was naturally low and vulnerable to even a modest level of sport or commercial take. We buttressed that statement with a variety of supporting evidence and arguments, summarized below.

### *The Scientific Holistic Argument*

This cluster of arguments has to do with the general value of biological diversity for its own sake, the more specific importance of apex predators to ecosystems, and the direct application of those attitudes to white sharks and the California coastal marine environment.

For some, this argument was simply about trying to maintain natural balances between sharks, mammals, fish, and other organisms in the marine environment. Others, particularly in the commercial and sport-fishing communities, saw a system that was terribly out of balance and in need of correction. As the Sportfishing Association of California (the organization of southern California party boat operators) put it in supporting the bill, "We only hope that an expanded population of white sharks helps to begin to control the runaway population of California sea lions that have overrun our near shore areas and the sport fishing fleets' fishing grounds." Indeed, large white sharks may be the main check on the rapid population increase of pinniped species that many fishermen consider to be serious competitors with humans for certain fish.

The role of white sharks in controlling pinniped populations was a surprising point of consensus, mentioned in more letters of support than any other argument. Organizations using this argument included some of the strongest marine mammal protection organizations in the state, including the Marine Mammal Center, Friends of the Sea Otter, and the American Cetacean Society. The California Urchin Divers Association probably analyzed the situation correctly in their letter of support: "Most people have no desire to control burgeoning marine mammal populations. White sharks may be one of the few lethal controls on marine mammals that are acceptable to the general public."

### *The Biological Argument*

This argument emphasized what was known about white shark biology and populations and what

might be inferred from other sharks. The conclusion to be drawn from the evidence was that the white shark population, at least that of adults, was low along the California coast, that circumstantial evidence indicated the population was not growing, and that white sharks are slow-growing animals with low fecundity, and therefore highly vulnerable to overfishing.

The very general conclusions about population size relied heavily on the research of known individuals at the Farallon Islands and the reduction in observed shark attacks on pinnipeds at the Farallones after four large sharks were caught in 1982.

Three pieces of evidence helped support the argument that the California population has not increased in the previous two decades. First, shark attacks on seals and sea lions at the Farallon Islands had not increased at a more rapid rate than the pinniped populations (see Chapter 34, by Pyle *et al.*). Second, although the southern sea otter population had doubled since 1968, evidence of white shark attacks on them had actually decreased since 1975 (see Chapter 28, by Ames *et al.*). Finally, there had been no increase in white shark attacks on humans in California, based on comparing the 1973–1982 and 1983–1992 decades (Fig. 1) (see Chapter 39, by McCosker and Lea).

Research by Cailliet *et al.* (1985) suggested that white shark females are at least 9–10 years old when they first breed, and they have fewer than 10 pups per litter. If their breeding behavior is like that of

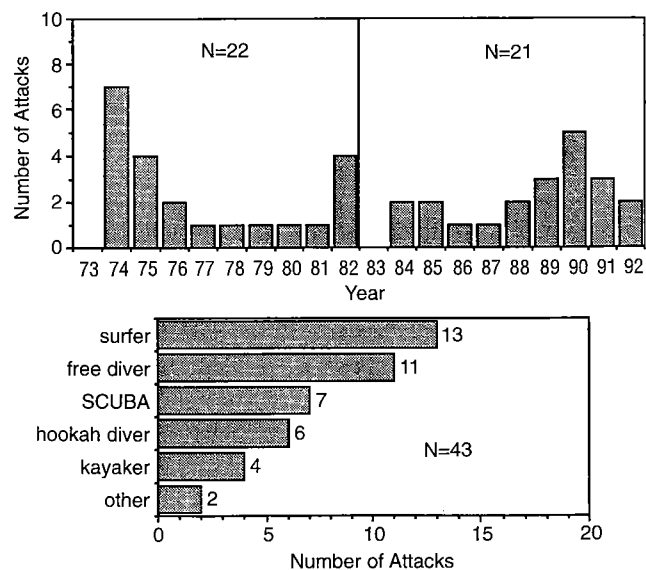


FIGURE 1 Fact sheet on white shark attacks on humans by decade (1973–1982 and 1983–1992) and by water activity of the victims. (Prepared by the Center for Marine Conservation from data provided by J. E. McCosker and R. N. Lea.)

some other large sharks, they may breed only every 2–3 years. All of this information supports the slow-growth/low-fecundity/vulnerability to overfishing argument.

### *The Threat of Endangerment Argument*

This argument summarized the evidence that trophy or thrill fishermen might well be an imminent threat to the white shark status quo. We knew of ads such as the one above, for example, and an Australian white shark fisherman was widely quoted as saying he was going to fish white sharks in California next. The financial incentive certainly existed to take large white sharks. We had seen a medium-sized set of white shark jaws for sale for \$8000 in a Miami store, and we heard numerous accounts from knowledgeable people of large jaws fetching \$8000–\$10,000 in Australia and Japan. Furthermore, the combination of rapidly escalating world demand for sharks for food and the institution of a restrictive federal fishery management plan for sharks on the Atlantic coast could result in unpredictable fishing pressures on various West Coast species, including white sharks.

Although there was no existing fishery directed at white sharks (an argument for action in itself, since no fishery would be shut down), we argued that the state had an excellent opportunity to take the virtually unprecedented step of protecting a vulnerable species before it got into trouble. Moreover, here was a chance to avoid another Endangered Species Act crisis.

### *The Precedent Argument*

South Africa's total protection of white sharks, instituted in 1991, provided a precedent (Compagno, 1991). South African waters are famous for being shark infested; if that government had protected white sharks, perhaps it really was reasonable for California to do the same. The South African law may also have been an implicit challenge: Did California have the guts to follow suit? We also were able to say that South Australia was considering similar regulations, a statement that is still true as of this writing (B. Bruce, personal communication).

### *The Spiritual Argument*

This argument was closely related to the scientific holistic argument, and many of the bill's supporters wove the two together. As with the Eric Larsen letter quoted above, we most often heard *rational* fear bal-

anced by respect, awe, and acceptance of the white shark as a creature with its own right to exist. We and others contended that these are magnificent and rare animals that should not be condemned as evil or malevolent. As one white shark biologist put it, "This is not the indiscriminate killer that the media portrays [sic], but simply one of the ocean's many organisms, tending to its livelihood" (Pyle, 1992). In other words, it was time to get past the "*Jaws* mentality," just as, on land, we no longer believed in killing the bears and wolves to make it safe to walk in the woods.

The sponsors and the other supporters of AB 522 blended these five basic arguments in a variety of ways. Here, we have tried to tease them apart in order to recognize and characterize the different components.

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### **Dealing with Our Client's Negatives**

Great White Shark Devours Newlywed Diving Off Australia (*San Francisco Chronicle* headline, June 10, 1993)

What shark scientists find remarkable about attacks on humans by the most terrifying animal in the sea is not that there are so many of them, but that there are so few. And that so very few white shark attacks are fatal (*Sacramento Bee*, March 8, 1993)

In developing arguments and printed material for AB 522, the authors had to decide how to confront one issue that was impossible to ignore: white shark attacks on humans. One reality that we could do nothing about was that the legislative session would be reaching a climax just as the risk for white shark attacks was peaking along the California coast. We settled on a strategy of presenting factual information and assuming people would conclude that this was a nonissue (Fig. 1).

The shark attack records provided to us (J. E. McCosker, personal communication) show that the number of shark attacks in California is low (about two per year, on average, since 1973), that the rate of attacks has not increased in the past 20 years, and that only about 10% of the attacks are fatal. It also seemed reassuring to us and to others to point out that many more people are killed by lightning, by bee stings, by grizzly bears in Glacier National Park, or by pigs in Iowa than by white sharks.

Furthermore, we felt that it was important to help disseminate the growing evidence that people can reduce the risk of shark attacks by being sensible about where and when they are in the water (see Chapter 42, by Burgess and Callahan, and Chapter 44, by Baldridge).

## The Coalition

Suppose you're a 4,000-pound ocean predator with a mouthful of dagger-like teeth and a nasty habit of occasionally snacking on humans. Where do you look for friends? Where else but California, *amigo*? (*San Diego Union Tribune*, March 12, 1991)

When we step off the Pacific Rim into the Pacific we have to understand whose domain we're in. The ocean is a wild and wonderful place and it won't be nearly as wonderful if we eliminate the wild. We will always be in more danger on the highway than we will ever be while in the ocean. And just as we wouldn't want to bump into a tiger in the jungle, or a bear in the woods, the world wouldn't be as great a place without them. (Caughlan, 1987)

In our efforts to develop support for the white shark conservation campaign, one of our earliest contacts was Rob Caughlan, who could count among his many accomplishments being president for several years of Surfrider Foundation, the largest and most politically active organization of surfers in California. Caughlan, despite a few scary experiences of his own, had written several pro-white shark articles for surfing publications. He put us in touch with other key surfers, an important marine constituency where we had few contacts. These early names were the nucleus of a contact list that expanded to over 75 individuals, most of them representatives of marine user groups up and down the coast of California.

With Pyle and McCosker, we put together fact sheets that explained AB 522 and the importance of white shark protection, described the Farallon Islands research, and provided reliable information on shark attacks on humans in California (e.g., Fig. 1). Our outreach effort consumed many days, as we communicated with people on our contact list through mailings, by phone, and at meetings. We devoted similar effort to a media campaign. The single most important element of the political process was the large investment of time in explaining, answering questions, reassuring, and soliciting letters of support to the legislature and, eventually, the governor.

The result of these efforts: sympathetic newspaper and television stories seen by legislators throughout the state, a stack of letters from an impressive list of supporters, and absolutely no opposition. Supporters included three key recreational marine user groups: the Central California Council of Diving Clubs, Surfrider Foundation, and Bay Area Sea Kayakers. [Interestingly, the strongest support for AB 522 among sport divers was in northern California, where more than 90% of white shark attacks on humans in California have occurred (see Chapter 39, by McCosker and Lea). Divers in southern California expressed the most reluctance.] The Marine Mammal Center, Friends of the

Sea Otter, and the American Cetacean Society had large California memberships and were organizations well known in Sacramento. From the fishing industry, PCFFA was joined by the Sportfishing Association of California and the Golden Gate Fishermen's Association (the two organizations that represent all the party fishing boat operators) as well as the California Urchin Divers Association. The California Academy of Sciences, which rarely enters a political fray, had all the more impact when it weighed in, thanks to John McCosker's efforts within that respected institution. The American Elasmobranch Society and PRBO were other scientific organizations supporting the bill. National environmental groups included the Natural Resources Defense Council, Earth Island Institute, Defenders of Wildlife, and CMC.

## Navigating Sacramento

(a) It is unlawful to take any white shark (*Carcharodon carcharias*) . . . except under permits used pursuant to Section 1002 for scientific or educational purposes or pursuant to subdivision (b) for scientific or live display purposes.

(b) Notwithstanding subdivision (a), white sharks may be taken incidentally by commercial fishing operations using set gill nets, drift gill nets, or roundhaul nets. White sharks taken pursuant to this subdivision shall not have the pelvic fin severed from the carcass until after the shark is brought ashore. White shark taken pursuant to this subdivision, if landed alive, may be sold for scientific or live display purposes.

(c) Any white shark killed or injured by any person in self-defense may not be landed.

The department shall cooperate, to the extent that it determines feasible, with appropriate scientific institutions to facilitate data collection on white sharks taken incidentally by commercial fishing operations.

This article shall remain in effect only until January 1, 1999, and as of that date is repealed, unless a later enacted statute, which is enacted before January 1, 1999, deletes or extends that date. (from AB 522)

The actual legislative hearings were an anticlimax in the AB 522 campaign. Luck, preparation, and the enlightened attitude of supporters meant the bill sailed through four hearings without questions and with no votes cast against it. What drama there was took place away from the hearing rooms as the authors and Mary Morgan of Assemblyman Hauser's staff negotiated three amendments to meet the concerns of commercial net fishermen, commercial abalone divers, and a large sea aquarium company.

Two commercial fishing interests early in the process requested modifications to the bill as originally drafted, and we were able to work out changes acceptable both to them and to us as sponsors. Mike



Kitihara, representing CAA, asked us to exempt from prosecution anyone who killed or injured a white shark in self-defense. Since neither we nor the legal advisors that we consulted could imagine anyone being prosecuted for self-defense, we were happy to oblige. When CAA proposed as language "Any white shark killed or injured by any person in self-defense may not be landed," we, of course, accepted it.

Tony West, of the California Gillnetters Association, presented us with a thornier problem. According to West, although gillnetters did not target white sharks, they occasionally caught them incidentally (Fig. 2 and Tables II and III). These generally were not the large white sharks, which usually just left a hole

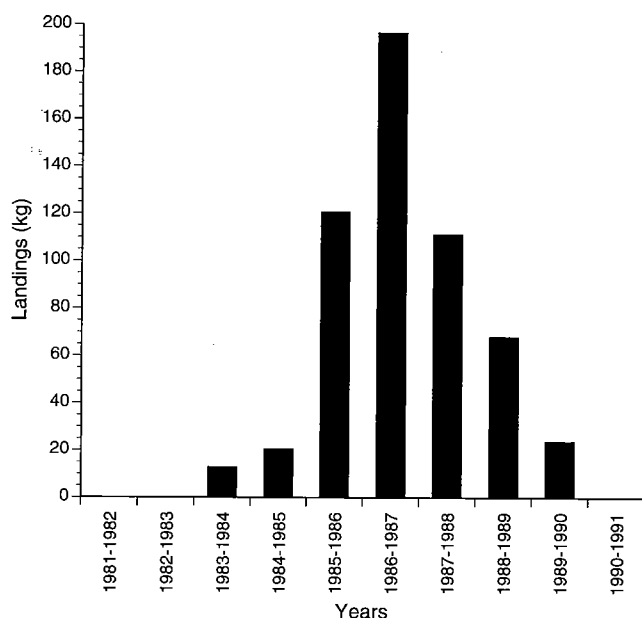


FIGURE 2 Drift gill net white shark landings (in kilograms), from all ports. The data are a subset of those presented in Table I and refer to fishing season rather than calendar year.

TABLE III Number of White Sharks Caught in Southern California Net Fisheries

Fishery	1991		1992		Total
	Los Angeles	San Diego	Los Angeles	San Diego	
Set gill net	1	2	1	1	5
Drift net	0	0	0	0	0

National Marine Fisheries Service (NMFS) observed 10–12% of the gill net and 10–13% of drift net effort. Data were provided by D. Holts, NMFS, Southwest Fisheries Science Center.

in the net. Even the smaller white sharks that were caught caused considerable damage to nets. Allowing gillnetters to land and sell these incidentally caught sharks would mean the fisherman could recover some of the cost of repairing the net.

We did not want the California Gillnetters Association to oppose AB 522, nor did we want to create a loophole through which fishermen might be able to catch significant numbers of white sharks. In order to get accurate information on the extent of white shark landings, we analyzed the available landing and observer data collected by the California Department of Fish and Game and the National Marine Fisheries Service (Tables I and II). We learned that there were three types of net fisheries that caught white sharks incidentally: roundhaul net fisheries for squid and mackerel; nearshore set gill net fisheries for halibut, white sea bass, white croaker, angel shark, and a few other species; and the drift net fishery for thresher shark and swordfish.

The available data and conversations with several fishermen indicated that the white shark catch was low, that none of the gear types would be efficient for targeting white sharks, and that nearly all of the

TABLE II Number of White Sharks Caught by Gill Net Fishing Set near Shore

Common name	Scientific name	Caught	Sold	Retained	Returned alive	Returned dead
California halibut	<i>Hippoglossus stenolepis</i>	4	2	1	1	
White sea bass	<i>Atrastoscion nobilis</i>	2	2			
Soupin shark	<i>Galeorhinus zyopterus</i>	2	2			
White croaker	<i>Genyonemus lineatus</i>	0				
Angel shark	<i>Squatina californica</i>	0				

The California Department of Fish and Game monitored 2–5% of the nets set for California halibut, white sea bass, and white croaker and 1–2% of the effort for soupfin and angel sharks. (From *A Summary of 1983–1989 Southern California Gill Net Observation Data With an Overview on the Effects of Gill Nets on Recreational Catches*.)

white shark catch was in the nearshore set net fisheries. Moreover, restrictions on nearshore set nets that went into effect in 1987 had greatly reduced the take of white sharks in northern and central California (Table I). Finally, a total prohibition on gill nets in state waters off southern California, approved by the state's voters in 1990, would eliminate virtually all white shark take in that area if, as appeared likely, it survived a legal challenge. (The gill net prohibition was upheld by the courts, and it went into effect in 1994.) Confident that the exemption requested by West would not subvert white shark protection, the sponsors of the bill agreed to the language in section (b) (see above).

A few days before AB 522's first legislative hearing (April 13), the Sacramento lobbyist for a large sea aquarium corporation submitted a letter of opposition to Assemblyman Hauser, and then withdrew it, while making it clear that he still had objections to the bill. We were taken by surprise by concerns raised so late in the process by an organization that we thought would likely be an ally. Our efforts to resolve the problem were frustrated for weeks by difficulties in communicating with the lobbyist and by the corporation's policy of not allowing anyone knowledgeable on the staff to talk directly with us about anything to do with legislation. Adding to the confusion, the lobbyist had commented on an out-of-date version of the bill. He finally suggested a minor change in the language about live display; we readily agreed, since it did not change the meaning of the bill. The incident, a reminder that no support can be taken for granted, was a strange end to the evolution of AB 522.

Shark swallows man, then spits him out (*San Francisco Chronicle* headline, August 13, 1993)

As the legislative season dragged on into the higher-risk white shark season along the northern California coast, we kept a wary eye on the newspapers for stories that might be relevant to AB 522's prospects. On August 12, a white shark made a classic nonfatal attack on a recreational abalone diver. It took the man in its mouth headfirst, then spit him out. The victim was able to swim 30 m to shore, where friends helped him out of the water. The attack was off the Mendocino coast, in Assemblyman Hauser's district. Hauser never wavered.

In September, as if to underscore the need for protective legislation, a large white shark caught off Ventura, California, was sold for \$10,000 to someone who wanted to display the dead animal. At the end of the month, the legislature took final action, and the bill went to the governor.

## Discussion

In retrospect, although AB 522 was surprisingly noncontroversial, protection for white sharks in California was far from inevitable. The most important element in this successful campaign was the attitude that had evolved among those most likely to encounter white sharks—divers, surfers, kayakers, fishermen—as well as conservationists, that mirrored the change in popular feeling in recent decades about large terrestrial predators. Although the AB 522 process did not create that positive attitude, it did cause many people in marine user groups to examine their opinions about white sharks and decide how this species could best be protected. In addition, the AB 522 campaign certainly began the process of educating a wider public about white shark conservation. As is often the case, there was also an important fortuitous element: a few individuals who had some relevant history with the species and each other found themselves in professional positions that allowed an effective collaboration on white shark conservation at a time when white shark research in California had matured sufficiently. The result was an unusually beneficial fusion of science and policy to protect a piece of the natural environment well before it was overexploited.

Looking to the future, it is important to remember that AB 522's protections are not permanent and that another legislative effort will be needed in 1998 if white shark protection is to continue in the same, or amended, form. The foundation for such an effort will have to be laid in 1997. Perhaps that would be the time for a white shark workshop that could include representatives of key environmental and marine user groups, as well as shark biologists, and have white shark conservation, in general, and the continuation of white shark protection in California as agenda topics.

We foresee several topics as likely to arise during an effort to extend AB 522's provisions. One question may be whether white sharks should be protected at all. It would be useful, though probably not essential, to have additional information on white shark populations or sensitivity to take. One element of the law that may warrant refinement is the permit process for scientific, educational, or live display capture of white sharks. Finally, chumming to attract white sharks for recreational divers is a controversy that arose in the Monterey Bay National Marine Sanctuary after passage of AB 522; a workshop should at least consider how that practice can either further or interfere with white shark research.

When the new legislative effort is launched in California, this case study may be useful to whoever undertakes it. Moreover, the authors hope it can be a blueprint adaptable to similar efforts on the Atlantic coast of the United States or in other parts of the white shark's range.

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### Summary

We provided an account of successful efforts to protect white sharks *C. carcharias* in California waters, including the political process of developing arguments for the species' protection and building of the

coalition that eventually supported the legislation. Relevant information on white shark attacks on humans, as well as on white shark landings and observer data from California fisheries, was reviewed. The legal protections for white sharks, as currently written, expire after 5 years, on January 1, 1999. We suggested ways to approach the extension of white shark protection in California beyond 1998.

### Acknowledgments

D. Holts and T. West provided us with new information relevant to a history of AB 522. We greatly appreciate the suggestions provided by J. Visick and the editors in reviewing this chapter.