

The image features two men in wetsuits standing on the left, each holding a large white seabass vertically. The fish are silver with a golden sheen. The background is a large, close-up image of a white seabass's head, showing its eye and scales. The title 'Tracking White Seabass' is overlaid on the right side of the image.

Tracking White Seabass

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White seabass made weekly headlines in 2010 during what was considered to be one of the best years on record for recreational seabass fishing in California. Banner catches were reported along the coast from Half Moon Bay to south of the border, with many California anglers catching their first white seabass ever and many others topping their largest catch to date. With many of the catches ranging from 40 to 65 pounds, the large size of the fish landed made that extended season all the more remarkable.

Consistent seabass fishing from March through November filled the void of an otherwise unproductive offshore season for the typical summer-fall pelagics (albacore, yellowfin tuna, and striped marlin). Good seabass fishing coupled with the dismal offshore scene resulted in higher fishing pressure on the near-shore resources than in years past.

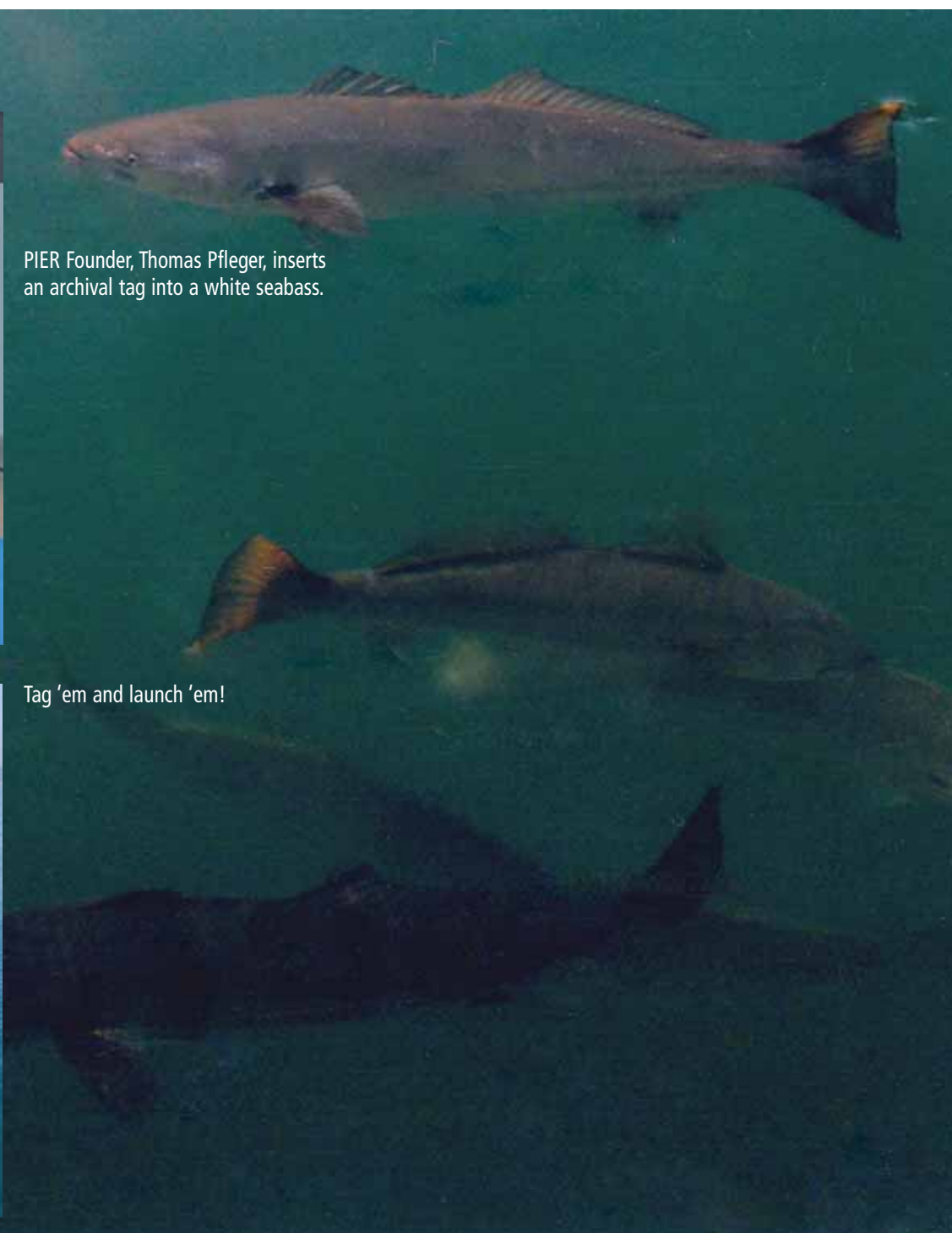
Although white seabass have a reputation for being incredibly elusive, there are times when they let their guard down and will eat nearly anything you throw at them, and when they aggregate in large numbers to spawn or when the aggregations overlap with masses of spawning squid, they are particularly vulnerable. It is at that time that seabass replenish spent energy reserves and can be incredibly easy to target. An abundance of squid off the Southern California coast and Channel Islands throughout 2010 was likely a driving force behind the season's outstanding white seabass fishing.



PIER Founder, Thomas Pflieger, inserts an archival tag into a white seabass.



Tag 'em and launch 'em!



While the recent abundance of large white seabass in Southern California waters is a good indication of a rebuilding population, many factors must be evaluated before the stock can be declared fully recovered, especially considering the history of overexploitation that seabass have. Over the past century, white seabass populations have experienced sharp declines on at least three separate occasions, once in the 1920s, again in the late 1950s, and more recently in the 1980s. All of these events were preceded by periods in which annual harvest levels exceeded two million pounds, suggesting that the stock is limited in size and especially vulnerable to heavy fishing pressure. Accurate landing estimates are not yet available for 2010, but it is likely that recreational harvest was higher than in previous years. Contrary to popular belief, recreational catch estimates have met and even exceeded commercial landings in some years over the past decade. Of additional concern is that current recreational landing statistics are likely underestimated, as a large percentage of the landings come from private marina-based vessels, a group that is not adequately sampled

with the current survey techniques. Because the white seabass are sought after by recreational anglers, spearfishers, commercial hook-and-line vessels, and gill-netters, all user groups must be considered for the effective management of this resource. Similarly, with the growth of this fishery in recent years, we all benefit from maintaining a healthy and sustainable fishery.

Because the white seabass is a relatively long-lived species with a history of being over-fished, we must recognize that the stock cannot support high levels of harvest indefinitely. What was apparent during the 2010 season was that the sizes of seabass landed were mostly large. From our field research activities in Southern California, we noted that most of the fish landed along the coast were between 40 and 55 inches in length, a size that corresponds to an age of 12 to 18 years. The limited variation in fish size suggests that we may be relying predominantly on a few strong-year classes and that juveniles and smaller adult cohorts may not be adequately represented within the population. Removal of larger and older individuals also presents a greater impact on the reproductive output be-

cause these large fish are capable of producing a greater quantity of potential offspring when compared to smaller fish. The 12- to 18-year-old fish (40- to 56-pound size-class) that made up the bulk of the catch last season were likely the result of good recruitment following reduced landings and fishing effort after Californians voted to ban the use of inshore gillnets within three miles of the coast in 1992. Inshore gillnets were a very effective method of harvesting white seabass, particularly when they aggregate to spawn. Currently, the gillnet fishery is highly regulated, and it is only after a couple of decades that stocks have recovered from an all-time low in 1980, a time when sport-caught white seabass were not so common, and fish exceeding 40 pounds were nearly unheard of.

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Craig Heberer and a 50-pound "gray ghost."



In an effort to better understand the dynamics of the white seabass resource, PIER initiated a series of studies that focuses on white seabass movement patterns, reproductive biology, and spawning locations. Since 2008 the PIER and Catalina Seabass Fund have deployed over 180 archival tags in sport-caught white seabass ranging in size from 28 to 60 inches (10 to 65 pounds). These tags are surgically implanted into the gut cavity, and a white stalk protrudes from the abdomen for identification. Tags record depth and temperature readings every minute and log data for periods of up to three years.

"Tagged white seabass have been recaptured over a 700-nautical-mile range, from Half Moon Bay, California to Punta Baja."

Heightened fishing pressure in 2009 and 2010 was evident in our tag return rates, as 23 individuals have already been recaptured. Although this 13 percent tag recapture rate may not appear to be exceptionally high, it must be considered that this is only the third season of the tagging project and that the recapture rate will likely continue to increase in subsequent years. Additionally, this recapture rate does not take into account natural mortality (predation), tagging mortality (fish that may have died following the tagging procedure), tags that were shed, or tagged fish that were captured but not reported. Of the 13 percent recaptured to date, eight were caught by commercial hook-and-line vessels, seven were taken by commercial gillnetters, five were captured by recreational anglers, and two were harvested by spearfishers.

Tagged white seabass have been recaptured over a 700-nautical-mile range, from Half Moon Bay, California (37° 30' N / 122° 28' W) to Punta Baja (30° 06' N / 115° 49' W). The longest point-to-point horizontal distance traveled was 448 nautical miles during a 15-month period at liberty, while another individual traveled over 360 nautical miles in just 76 days. More than 3,000 days of fine-scale movement and temperature data (greater than two million rec-

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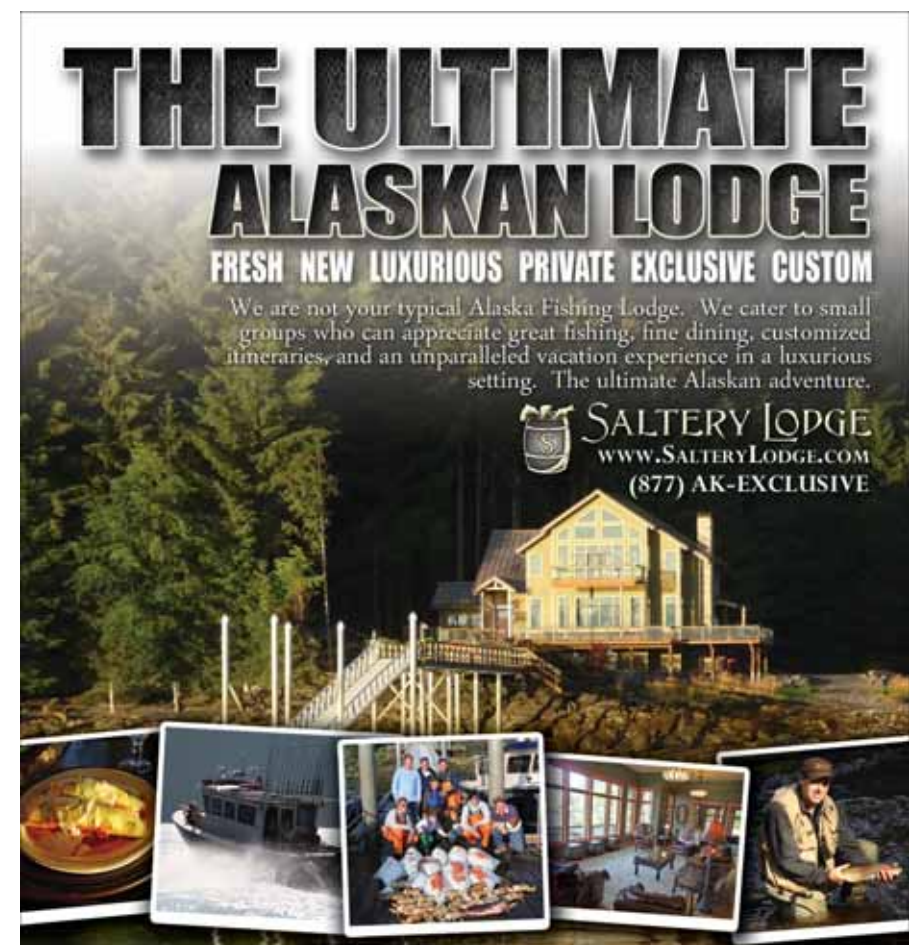
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ords) are being currently analyzed by the PIER team to answer important questions related to depth distribution and habitat utilization. Collectively, the average depth for all tagged fish was 60 feet with brief dives to a maximum depth of 800 feet. Tagged fish also tolerated water temperatures from 50.0 to 74.4 degrees Fahrenheit.

Based on the wide geographic span of tag returns, it appears that white seabass move long distances throughout the season and that fishing effort is consistently high throughout much of their range. Because several questions remain unanswered regarding white seabass population size, spawning areas, and movement patterns, additional studies are in the works. To better identify white seabass migration pathways and the extent to which we share the stock(s) with Mexico, PIER and CSF have plans to continue this tagging project using more sophisticated archival tags to better understand the horizontal movement patterns. Additionally, PIER will continue with ongoing research that focuses on determining where white seabass spawn, using bioacoustic techniques. Because adult white seabass produce low-frequency sounds during the spawning season, moored hydrophones can be used to pinpoint the areas that are frequented during the spawning season.

Due to the overall lack of information available for this rebuilding resource, effective management decisions must be based around fishery trends over multiple years. Collectively, fishermen, researchers, and managers need to continue to pay close attention to what's happening with our fishery. Now that the age of communication has permeated the recreational fishing community, it is often a matter of hours before a few anglers turn even the most remote location into a parking lot. Information-sharing on fishing locations, gear, and techniques provides all of the components necessary to teach the art of catching white seabass to a generation that lacked the opportunity in the past. Since fleet dynamics have changed so much over the recent past, we need to ask ourselves whether our current regulations are sufficient to prevent a repeat of the over-exploitation that has occurred several times in the past.

Maintaining the white seabass bag limits at one fish per person per day over the entire year has been a recent topic of discussion among anglers. Since white seabass continue to spawn into August, overall reproductive output would benefit from extending the reduced bag limit beyond the current June 15 season opener. However, it may be problematic to further restrict recreational anglers to one fish per

day while commercial fishers are not limited to the number of fish landed. Although it may be premature to move towards another mandatory bag limit reduction, an increasing number of anglers are setting personal limits to eliminate the unnecessary stockpile of fillets in the freezer. Nonetheless, it is imperative that the fleet closely adheres to the suite of regulations that have been developed over the past century to protect spawning stocks and prevent over-fishing. Biding strictly to the current regulations would likely reduce overall take. Some of the areas that are in need of further policing include vessels going over limit, the retention of under-sized fish, and selling fish harvested by recreational fishers or spearfishers without a valid commercial license or from a vessel failing to display commercial numbers.

“It is critical that anglers quit fishing once limits have been achieved, since white seabass are particularly susceptible to post-release mortality, especially when fish are hooked deeply.”

Additionally, it is critical that anglers quit fishing once limits have been achieved, since white seabass are particularly susceptible to post-release mortality, especially when fish are hooked deeply. When practicing catch and release, it is recommended that anglers use circle hooks, baited lures, or lead-heads to reduce gut-hooking fish. By using common sense and some ethical angling practices, we can all assist in maintaining a sustainable white seabass fishery for the next generation of sportsmen and women.

PIER is a non-profit 501(c)3 research institute dedicated to scientific research, education, and the sustainable management of the marine environment. Special thanks are offered to Mr. Thomas Pflieger and family, the George T. Pflieger Foundation, Paxson Offield and the Catalina Sea Bass Fund, the Harris Foundation, Tommy Fullam, Billy Seiler, Lorraine Bohnet, and Vicki Wintrade. To read more about PIER research projects, please visit www.pier.org.

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