

Beneath the Surface of San Diego

Perspectives & Innovations At Depth

A History of San Diego Sport Diving



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Introduction

“Beneath the sea, barely a block from the beach, lies a land of strange and fascinating beauty, a silent wilderness of kelp and vividly colored fishes which holds skin divers in a powerful and magnetic grip.”

-San Diego Union Tribune—September 8, 1957

The beautiful coastal city of San Diego in southern California has been the nucleus of underwater exploration, innovation and research throughout sport diving’s relatively short history. Boasted as the home of the first dive club in the world, the first oceanographic research institution to use diving for science, and many of the most influential diving pioneers, San Diego has a rich cultural heritage in sport diving antiquity. Large and significant portions of this history have gone undocumented, as many stories and observations remain accessible only in the memories of these pioneers themselves. However, recreational divers in San Diego represent a large stakeholder group with a highly respected and knowledgeable capacity for shaping local marine resource management choices, and divers rely on the health and protection of these coastlines as a driver for their passions, leisure and fascination. Therefore, it is crucial to ensure that the stories of sport diving’s originators no longer remain untold.

In October 2013, I began documenting a history of San Diego sport diving as conveyed from the perspectives of these recreational explorers.

My intent was to collect and document the stories of local divers over the

last century, and in so doing capture a depiction of sport diving's heritage in San Diego. The process led to a newfound appreciation for my own cultural identity as a life-long San Diego sport diver, and an understanding of the commemoration that these individuals merit. Equally as important as collecting these stories is archiving them where they can be easily accessible to the public, so that they may bring the same sense of identity to divers not only in southern California, but to anyone, anywhere. This rich history of expert knowledge, innovation and experience has contributed to and often been a driving force of diving culture all over the world, yet that fact is little-known even among native San Diegans.

The importance of documenting these stories and memories and archiving them for public use stems from the sense of wonder, adventure, and love for the sea shared by all sport divers young and old. This notion has remained prevalent throughout the development of diving equipment technology and practice protocol, breakthroughs in scientific marine research, shifting ecological baselines, and subsequent resource management endeavors. The goal of this project is to recognize the achievements of San Diegans in underwater exploration as shared in their own words. In doing so, it is preserving a wealth of local knowledge that otherwise would be lost, and engaging local sport divers as a recreational stakeholder group through accessibility to the rich and valuable diving history here in San Diego.

Methods

Oral histories were recorded with eight experienced local San Diego divers who began diving recreationally and went on to become influential contributors to revolutions in marine science, diving technology and ocean resource management. Diving experts Barbara Allen, Jim Fallon, Bill Howard, Dave Leighton, Frank Leinhaupel, Dick Long, Ron McConnaughey, Chuck Mitchell and Chuck Nicklin, along with many of their friends and families, generously contributed their time, stories and artifacts to offer as-yet undocumented perspectives of early diving in southern California. Divers were selected based on several factors important for capturing a balanced and reliable depiction of local dive history. Age was prioritized so as to draw on the earliest years of diving in San Diego. Additional review of previously recorded oral histories also contributed to early diving depictions, and was particularly useful for commemorating the achievements of pioneers no longer living today. However, the main goal is to collect histories that have not yet been recorded.

Equally prioritized was mental awareness and memory accessibility of the divers as a means to record reliable history and avoid skewed or misconceived stories resulting from the unfortunate struggles of old age. With this in mind, the necessary step of developing relationships through correspondence with participants prior to recording oral histories was

taken. These relationships served not only as a method for assessing the degree of eligibility for inclusion in the project, but also for establishing contact with more potential participants resulting from existing social networks. Most importantly, they provided a deeply rewarding experience that often accompanies intergenerational interaction. For that, I am forever blessed. Other factors that influenced the selection of participants were to have spent the significant majority of their lives in San Diego, and to be available to meet in San Diego due to the absence of travel funds. Although it was only possible to record oral histories with eight divers within the scope of the MAS Center for Marine Biodiversity & Conservation Capstone research project, contact has been made with additional divers and oral histories are planned to be recorded with Bob Shea, Andy Skieff, Pat Gallagher, Larry Reddin, and several other diving experts as Dr. Paul Dayton and I continue this project into the future.

Oral histories took the form of loosely-structured, informal interviews and all were recorded on an audio recording device; three were additionally filmed on camera. Additional artifacts collected included photocopies of original photographs and historical newspaper articles; larger items such as diving gear, spear guns, books, and underwater camera housings were photographed in detail with permission from the owners. Stories shared as afterthoughts via email and mail correspondence were also copied and archived with their respective oral histories. Furthermore, stories told during various social events were

jotted down in a notebook. Audio recordings were transcribed by a professional court captioning service and then edited by both the interviewer and the diver to ensure the fluidity of the topics discussed, correct the spelling of names and places, and compensate for stories remembered and discussed prior to or following the date of recording. Final copies of oral histories and artifacts will be archived for the public as the project continues into the future. Venues for this include a website providing links to full digital files of all documents, the San Diego Maritime Museum, the San Diego Historical Society, the UCSD/Scripps Institution of Oceanography library, and the South West Fisheries Science Center. Plans to create future displays of the artifacts are also in the works. Lastly, all histories including the Capstone Report were sent to those quoted and involved for approval regarding the way they are portrayed.

Background

The purpose of the project overall is to tell the history of sport diving in San Diego from the perspectives of those at its forefront. Utilizing the format of oral history achieves this purpose and serves as an advantageous opportunity to help people hold onto and sustain their culture through recording it. This is particularly valuable in the realm of San Diego recreational diving. The population of San Diego County has increased by 2,760% since the year 1920¹, and subsequently the city has experienced drastic levels of coastal development and pressure on marine resources. Oral history can have a multitude of impacts on social perceptions and can be particularly useful as a means for a city, town or village to seek meaning for its own changing character, as well as for newcomers to gain a sense of roots in personal historical knowledge. It can be used to change the focus of history itself and open up new areas of inquiry; it can break down barriers between teachers and students, between generations, between educational institutions and the world outside; and it can give back to the people who made and experienced that history a central place through their own words.² In focusing on insight into the use of a nature resource, oral history can successfully bring the past into the present to help stakeholders discern the best course of action into the future.

¹ U.S. Bureau of the Census

² Thompson, Paul. *Voice of the past: Oral history*. Oxford University Press, 2000.

For the cultural anthropologist, oral history serves as a powerful method for contextualizing and conceptualizing the heritage of social heroes yet unsung. The process of recording an oral history in itself establishes a relationship between the listener and the speaker, which can be particularly advantageous when participants come from a variety of backgrounds, experiences, or expertise. This method provides members of a society to engage one another, and more distinctly to connect cross-generationally. The process of sharing and collecting oral history brings value to all individuals involved. It requires a mutual exchange of knowledge, time and effort likely drawn from shared interests or heritage. It is for these reasons among others that oral history was the chosen method for documenting perspectives and innovations beneath the ocean's surface of San Diego. In the words of diving historian Eric Hanauer, "The history of diving isn't visual; it is found in the words of the people who lived it."³

Building a legacy is rarely done alone. The achievements of early San Diego sport diving were contributed to by a number of divers over a number of years. In collecting the oral histories used for this project, establishing friendships with influential and historically significant divers, and subsequently feeding my own passion for underwater exploration, the take-home lesson learned is that innovations are often culminations of the efforts of many. It is because of this collaborative

³ Hanauer, Eric. *Diving Pioneers: An Oral History of Diving in America*; Watersport Publishing, Inc. 1994, San Diego, CA.

historical effort that so many current recreational stakeholder groups are able to enjoy San Diego's marine resources for generations to come.

A History of San Diego Sport Diving

“You don't have to go to Africa for your wilderness,' says Frank Leinhaupel. 'It's right here.’”⁴

The Early Days

In the early 1900's, diving in San Diego was limited to hardhat commercial abalone harvesters and occasionally Navy salvage divers. Early hardhat diving was a heavy and cumbersome affair, involving a paradox of both complicated engineering and simple technology. The basic construction of a surface-supplied diving suit weighing over 200lbs essentially removed any possibility for its' wearer to swim freely and observe the underwater world around him. For this reason, the use of hardhat diving was solely for commercial rather than recreational purposes, and is considered preliminary to the history of sport diving in San Diego.

However, there is no stopping a pioneer with brazen drive to seek what is beneath the surface. In 1941, Frank Leinhaupel was exploring

⁴ San Diego Union Tribune, September 8, 1957

his own kind of “hardhat diving” in the Fox River of Illinois at the age of twelve.



Frank: I read somewhere that you could make a hardhat for salvage work in the lakes and rivers in the Midwest. My dad did the rest. The air supply was a long handle hinged to a small platform. Two bicycle pumps hinged also to the sides of that base and attached near the top of the center handle. By rocking the handle back and forth the bicycle pumps generated a fairly steady stream of air.

We soon found out that no one wanted to sit in the boat and man the pump. So we would just put the helmet over the swimmer’s head without the air hose, let go and bombs away! There was enough air in the helmet for a few minutes groping around in zero visibility and mud bottom environment. The diver generally just dumped the helmet and came to the surface and left the helmet to be hauled up separately by the safety line.

About the only thing we found on the bottom of use were clams which served as bait for river catfishing.”⁵

When Frank came to San Diego in 1953 to pursue his graduate studies at the Scripps Institution of Oceanography, he found there was a lot more to look at underwater than what he’d seen through a ’41 homemade hardhat. Yet that initial descent into the Fox River was for

⁵ Oral History: Frank Leinhaupel, Recorded with Ashleigh Palinkas and Paul Dayton, 28 February 2014.

him an experience of significance shared by every diver throughout time and space: that first moment one can see underwater.

Ron McConnaughey – Mission Beach, CA: “It was probably 1949, somewhere around there. I don’t have a super accurate memory of that but it was around that year. And I just loved it. I put that mask on and everything was visible for the first time! You know, before that we were just looking down through the water and everything was distorted.”⁶

Chuck Nicklin – Point Loma, then La Jolla, CA: “I went to the [La Jolla] Cove and there was a guy that had just returned from overseas, from Japan, and he had a mask that was like the divers in Japan used...I put the mask on and there was garibaldi and little fishes and the water was calm and it was La Jolla Cove! I spent a lot of my life at La Jolla Cove after that.”⁷

Dick Long – Monterey, CA: “A guy where I worked was a skin diver...and he took me in the water. I saw fishes that big [holds up palm] which excited me...I had about fix-foot visibility but at that point I was gone. I was—I knew that this was my thing.”⁸

Barbara Allen – Catalina Island, CA: “As a lifeguard we had an annual outing at Catalina at a Boy Scout camp...So a bunch of us got masks, fins, snorkels—snorkeled out from shore, got into a kelp bed and panicked! [Laughter] It was like, how do you get through this stuff?”⁹

Curiosity about the underwater world was the driving force behind every impassioned sport diver’s initial donning of a facemask, even though the “very-first-time” experience certainly is different for even the most competent and eager divers. For some, it is magnificent and enchanting; for others it is mediocre; and for many it is downright forgettable. What is exemplary about the early divers of San Diego is the

⁶ Oral history: Ron McConnaughey, Recorded with Ashleigh Palinkas 18 February 2014.

⁷ Oral history: Chuck Nicklin, Recorded with Ashleigh Palinkas and Paul Dayton, 29 January 2013

⁸ Oral history: Dick Long, Recorded with Ashleigh Palinkas, 23 April 2014

⁹ Oral history: Barbara Allen, Recorded by Ashleigh Palinkas. 21 March 2014

fact that reliable masks were hard to come by, yet they persevered anyway.

The San Diego Bottom Scratchers are widely recognized as the first dive club in the world, and as the first individuals in San Diego to be considered sport divers. Having been watermen all their lives, the Bottom Scratchers lived up to their name by being known to scratch around the bottom of the ocean for food to feed families and friends during the Great Depression in the 1930's. It is also said that their name came from the scratching of horn shark horns dangling from their swim trunks, a trophy collected during one of their several formidable club initiation rituals. After a year of diving together and sharing their catch, the club was officially founded in 1933 by divers Jack Prodanovich, Ben Stone, and Glenn Orr. Throughout their lifetimes, members of the Bottom Scratchers were widely accredited for inventing ever-refined models of goggles and subsequent facemasks¹⁰, underwater camera housings¹¹, paddleboards¹², and spearguns¹³ among other miscellaneous tools for exploration beneath the surface. Word of the San Diego Bottom Scratchers continued to spread, and in 1949 they were featured in the May issue of *National Geographic Magazine*¹⁴. The article by then estimated there to be 8,000 skin divers in Southern California.

¹⁰ Appendix I, Figure 1

¹¹ Appendix I, Figure 2

¹² Appendix I, Figure 3

¹³ Appendix I, Figure 4

¹⁴ Appendix I, Figure 5

As interest in the bounty of the sea grew, so did the interest in developing new technologies and dive gear with which to better explore it. Because diving equipment had yet to be mass-produced, existing gear was often too expensive or hard to get for most San Diegans exploring the underwater world. It is important to note here that the intention of this project is not to ordain what single individual was responsible for a particular invention in time; driven by curiosity and drawn to the wonder of the sea, divers everywhere were experimenting with their own models for what is today considered standard diving equipment.

Wally Potts – La Jolla, CA: “I’d like to point out one thing. These aren't the first worldwide goggles. These are similar to the old commercial pearl divers' goggles used in the south Pacific, Japan and other places. We've never seen any models over here prior to us building them. We had read up on pearl diving and seen their sketches, photographs, or something, which gave him the idea of building them.”¹⁵

Prior to the globalization of diving information, industrial manufacturing of diving equipment, and mass-marketing of diving as a recreational sport, divers in San Diego drew solely from self-motivation and community knowledge to experiment with gear that today one can simply purchase anywhere from drugstores to sporting goods distributors. European and Japanese divers were substantially more advanced in diving technologies before sport divers in San Diego ever began to peer beneath the surface of the sea, and innovators such as Jack Kitching, Hans Hass, Jo Kain, and many early divers in the

¹⁵ Oral history: Jack Prodanovich and Wally Potts, Recorded by Craig Carter, 29 August 1983

Mediterranean were even conducting scientific research utilizing diving technology prior to the 1930's. However, prototypes already developed in other parts of the world were not yet available to sport divers in San Diego, and therefore those who wished to explore southern California waters at depth resulted to crafting and refining their own. It is for this reason that the divers highlighted in this project are each themselves considered innovators.

Masks / Goggles

Wally Potts: "The guy that started it, though, was Glen Orr...These goggles started with the fact that we saw some swimming goggles. Glen Orr is the father of diving in San Diego. He realized that he could look under water by looking through a mask with an old commercial diver. Then he ran onto a pair of rough-water swimming goggles like Florence Chambers and all those rough-water swimmers used. He found out those would work. He had the only pair, so the rest of us couldn't dive, so we went ahead and made these up, a copy."

Jack Prodanovich: "It is a piece of radiator hose, a short piece cut to the contour of your eye socket, then a woman's compact that they used to use for rouge. [We] used the mirror after [we] scratched the silver off of it."¹⁶

Goggles used for swimming at the surface served as a prototype for developing a means to see underwater, but at depths of 10-40 feet, divers soon became fed up with experiencing "eye squeeze". This is a result of compression within each eye's goggle due to additional atmospheric pressure at depth, and paradoxically made for greater discomfort among more advanced, deeper divers. Additionally, goggles often made divers

¹⁶ Oral history: Jack Prodanovich and Wally Potts, Recorded by Craig Carter, 29 August 1983

like Prodanovich experience double vision. Over time, determined sport divers in San Diego began experimenting with other prototypes being developed in many parts of the world. Using rubber hosing, single-plate masks were initially crafted to avoid eye squeeze and included a rubber hand pump to introduce air into the mask and compensate for air compression when diving. Eventually, masks with rubber enclosing the nose as well as eyes enabled divers to equalize the pressure within the mask with air supplied by the lungs, reducing the side-effect of drag produced by the previously attached hand pump.

Paul Dayton: “Jack Kitching—you know, they had real hardhats then for sure—but he just used one of those old British—they called them “biscuits”, but it was just a cookie container made out of glass so you could see the cookies in them, and he just took a cookie box and put it around the milk can that he put over his head.”¹⁷

Frank Leinhaupel: “We started with the available round faceplates. Later there was the model designed for SCUBA with the squeezable nose projection for clearing ears. We punched a hole in the bottom of the nose extension and put in an exhaust valve that now were showing up in snorkles. After a while, these masks with exhaust valves were more available, probably as UDT models.”¹⁸

Jim Stewart – La Jolla, CA: “...on Memorial Day of 1941, I got courage to ask a girl to come out to the beach with me, and we rode the bus out. Lo and behold, a kid I was in junior high school with was in the La Jolla Cove and had a face mask...He said, “I can see under water.” I said, “Nah, you can’t see under water.” I put his mask on, and *I could see under water*. Well, the next week I had me a face mask, and that’s how it all started.”¹⁹

¹⁷ Oral History: Frank Leinhaupel, Recorded with Ashleigh Palinkas and Paul Dayton, 28 February 2014.

¹⁸ Frank Leinhaupel, written correspondence 23 February 2014

¹⁹ Oral history: James Stewart, Recorded with Ron Rainger, 10 February 2000.

Snorkels

The use of the snorkel as a means of breathing air at the surface without emerging one's face out of the water didn't become popularized until the mid-1950's, and even then was barely considered mainstream by the hardy early sport divers of the time.

Chuck Mitchell – Ocean Beach, CA, 1954: "...I know you asked about the first time I wore a mask, and I don't remember that...I remember going down [to the Ocean Beach jetty] and snorkel—actually, just swimming around with a facemask; I didn't have a snorkel!—for hours."²⁰

Chuck Nicklin – La Jolla Cove, CA, 1955: "[At that point]...I was swimming with a mask. There were no snorkels at that time...And when they first came out with snorkels I said, "What a silly thing that is." [Laughter] One of the greatest inventions!"²¹

Surely the snorkel was a debatably comical contraption, if anything just implied by its' name, but once the reason behind the technology caught on, divers were catching on even faster.

Frank Leinhaupel - La Jolla, CA, 1954: "We modified our snorkels, replacing the rubber tubing with aluminum tubing. Bent into the typical shape, but perhaps five inches longer. Going out from Boomer²² through the kelp was done in a series of dives. Swim under the mantle as far as reasonable, then look for a place to find air. The alternative was to hold the snorkel firmly and push up through the mantle. The top was cut at an angle to try to prevent a last kelp fond from becoming a one-way valve by closing the opening. When that failed it was a matter of clawing to the surface with the mask and snorkel around your neck."²³

²⁰ Oral history: Chuck Mitchell, Recorded by Paul Dayton and Ashleigh Palinkas, 6 May 2014

²¹ Oral history: Chuck Nicklin, Recorded with Paul Dayton, Ashleigh Palinkas and Theresa Sincrope-Talley, 29 January 2013

²² Boomer Beach, La Jolla, CA

²³ Frank Leinhaupel, written correspondence 23 February 2014

Fins

Swim fins, commonly recognized as having been invented in Japan and most popularly utilized by British frogmen, were not easily available to San Diego's earliest divers. Initiation rules upheld by the San Diego Bottom Scratchers in the 1930's included collecting three abalone below 30 feet of water, nabbing a 10 lb. California spiny lobster, and bringing up a large horn shark bare-handed. Each endeavor was required to be exacted on a single breath, and the challenge was exacerbated by the absence of propulsion provided by swim fins. However, along with masks and snorkels, fins were among the first components of diving gear made available to divers for purchase.

Frank Leinhaupel—La Jolla, CA, 1956: "The Churchill fins came first. Then for diving free or with SCUBA, the Voit giant duckfeet were a necessity. These I had to buy, but the transition to jet fins came about because they sank, providing an unlimited supply lost in shallow water by beginning divers."²⁴

The majority of local watermen were often motivated by either the necessity to collect food for their families, or the drive to supply their insatiable fascination with the sea by engaging the underwater realm. These factors again discern the reason behind why San Diego became a hub for the development of both diving inventions and skill.

Spear Guns

To fully acknowledge the development in spear gun technology by local San Diego innovators would necessitate an entire book on the

²⁴ Frank Leinhaupel, written correspondence 23 February 2014

subject alone. However, their evolution can be broken down into three main periods: the early pole spears, moving from spears to rubber- and spring-powered guns, and the subsequent engineering of design. Jack Prodanovich and Frank Leinhaupel are among others known to have designed and welded multiple versions of spearpoints mounted on the ends of poles ideal for fishing shallow-water benthic species such as halibut and other flatfish, or simply practicing by targeting stingrays.²⁵

Chuck Nicklin—Torrey Pines and La Jolla Cove, CA, 1955: "...I would get some time off during the week and we made these big pole spears, big wooden pole spears with a little piece of bungee on the end...And we'd go up, I'd go up [north to Torrey Pines State Beach] with my pole spear and shoot a stingray...And then I got a little more involved and started going out of the [La Jolla] Children's Pool, you know, trying to shoot white seabass and yellowtail and stuff like that but I shot it with a big pole spear. Before I even got into the diving business or sort of had anything to do with spear guns."²⁶

Jim Fallon – Pacific Beach, CA 1952: "We used to go out and spear stingrays right in the surf line with big pole spears. So I was probably, God, 11, I was probably 11 or 12...we would just go out and take 10 foot 12 foot long pole spears and spear them and stack them on the beach. There was no...it was just to kill!

Ashleigh: They're not good eating or anything. Just reducing the risk of stepping on them, right?

Jim: Sure. But that is the first time I had a mask in the salt water. It was just in the surf line, you could almost stand up. The first time I had a mask on in the ocean. Wow. I'd forgotten about that."²⁷

Most common for original San Diego sport divers was the initiation into spearfishing upon the purchase of the French arbalete speargun.

Paul Dayton—"And then this, you [Frank] used the same thing. That's the arbalete that you talked about in your e-mail, kind of like my old spear gun. I very quickly got into a spear that attached a little toggle

²⁵ Appendix I: Figure 5

²⁶ Oral history: Chuck Nicklin, Recorded with Paul Dayton, Ashleigh Palinkas and Theresa Sincrope-Talley, 29 January 2013

²⁷ Oral history: Jim Fallon, Recorded with Ashleigh Palinkas, 19 March 2014

head but they were really expensive and we were very poor and every time it hit a rock, it broke.”²⁸

Chuck Mitchell-- Point Loma, CA, 1954: “Then spearfishing, originally with a hand spear and then [I remember] getting finally a spear gun. I must’ve been fourteen or something like that. I remember getting an arbalete, the French speargun. That was a major breakthrough. Oh, I should mention that although—well, at Point Loma High School, Jack Prodanovich was our janitor there. He and I never really talked about diving, but I would see him and I spent a lot of time with Jim [Stewart] later, and most of the Bottom Scratchers I knew personally. They were all hanging around here someplace. At one time or another.”²⁹

Being older and more experienced with diving and San Diego’s underwater environment, the Bottom Scratchers were known local pioneers in spearfishing and speargun technologies. Potts and Prodanovich would make custom spear guns for respected fellow divers, and many divers were responsible for perfecting the guns by increasing power, range, and maneuverability.

Jack Prodanovich—“It’s doubled the power. Well, it isn’t actually doubled, but you get about a third more power. An example would be a bow and arrow. We had the standard recurved bows and they went up to X amount of pounds that they pulled. Now they’ve come out with the compound bows which is (a) much more powerful weapon. While it isn’t exactly the same, this weapon is about a third more powerful than the old weapon. It would be just like the compound bow.”³⁰

Chuck Nicklin: “So I went to Wally [Potts] and between my fumbling and Wally’s help I built my first real spear gun. Up until that time we have some little French arbaletes but when I first started being a real spear fisherman was with Wally Potts and Jack Prodanovich. Wally really made the guns. I think Jack got a lot of publicity for it too and I think Wally would do the basic things and Jack would prime it up, so he would come up with new ideas like a new reel or all that kind of stuff. So

²⁸ Oral History: Frank Leinhaupel, Recorded with Ashleigh Palinkas and Paul Dayton, 28 February 2014

²⁹ Oral history: Chuck Mitchell, Recorded by Paul Dayton and Ashleigh Palinkas, 6 May 2014

³⁰ Oral history: Jack Prodanovich and Wally Potts, Recorded by Craig Carter, 29 August 1983

Wally and Jack were—I spent a lot of time in their garage for a while, while they were trying to put together stuff so I could shoot fish.”³¹

The Bottom Scratchers were certainly not the only ones making spear guns in San Diego. Frank Leinhaupel, Al Larson, Vern Fleet and many fellow members of the Addict’s dive club developed technologies that are widely sold in stores today.

Frank Leinhapel: “No question, it was the Addict gun or, more loosely, a rubber-powered spear gun that I came to find worked best. It has the arrow release mechanism to the rear and separate from the trigger mechanism for better maneuverability under water.

I had an Italian Mae Mares spring gun which had a short, heavy, slow-moving arrow in the front end ending at the pistol grip, and then a tube extending rearward with a compressed spring. I got it as a bribe for using it in competition in order to generate publicity for sales here. It wasn’t much for delivering an arrow, but then it was designed mostly for diving reef fish in the Mediterranean at short range. But you could whip it around, aim and shoot much faster than the arbalete type, which required you to swim around the pistol grip to swing the gun.

We saw reason for immediate improvement and I worked with Al [Larson] to come up with a laminated barrel, and some changes in the hardware. We made every part of the gun except the rubber tubing... We made two identical more or less original Addict guns after the lost prototype. I still have mine³² after having it lost on my first black seabass. I was diving that day out of Casa [Cove] with a few Long Beach Neptunes who just wanted a look at a black seabass. I got the fish and float, but lost the gun. It was returned twenty or thirty years later by whome I knew had found it and who knew all along it was mine but wanted to pull my string.”³³

One of the most easily discernable innovations of the Addict gun is the placement of the trigger mechanism further toward the center of the gun’s shaft. This enabled the Addicts members as well as those who purchased Addict-built guns to have better maneuverability underwater, particularly in and around giant kelp. At the time, the majority of

³¹ Oral History: Chuck Nicklin, Recorded by Paul Dayton, Ashleigh Palinkas and Theresa Sincrope-Talley, 29 January 2013

³² Appendix I, Figure 7

³³ Frank Leinhaupel, written correspondence 23 February 2014

spearfishing in San Diego was done on the edge of kelp forests; today, with bluewater hunting having gained in popularity, guns are built much longer for broader shooting range. However, the groundbreaking Addict's idea for separating the trigger mechanism from the arrow release at the rear of the shaft is one that changed the development of spear guns forever. The early sport divers in San Diego during the 1940's-1950's consider the Addicts and the Bottom Scratchers to be the primary leaders in speargun technology and construction. They are still saluted for such innovations today, and the Addict gun serves as the prototype for the majority of spearguns sold in San Diego.

Wetsuits; Or the Next Best Thing

San Diego, a dry temperate region, is not known for having particularly warm water. Sea surface temperatures may range from 75-78F in the summer, yet usually average between 48-60F in the winter. Moreover, upwelling pushes the even colder sub-thermocline waters closer to the surface creating periods when skin diving was nearly impossible. Many early divers began diving solely in swim trunks; following WWII, it was common to use wool Navy "watch" sweaters to provide any much-needed insulation underwater as was possible.

Chuck Mitchell—San Diego Bay, CA, 1954: "The nice thing was, you could stay in the water until you got so cold you are shaking so bad that you couldn't do anything, and then you come out and lay on the big dredge pipe because it would get hot in the sun, and get warm and then go back in the water. That sort of—that is how it kind of started. And then I managed to get swim fins and a couple of things, in those days

there were no wetsuits, so you always got cold. You wore a sweater, I know we used to wear the Navy watch sweaters, those wool scratchy sweaters that helped keep some of the water from recirculating and that worked pretty well.”³⁴

Chuck Nicklin, 1959: “We were just now starting to find out about wetsuits. You know, all been making our own wetsuits out of stuff. Had funky dry suits. But we would go out and I remember abalone season would start I think that first Monday in February or some darn cold time, and me and my friend would go out and we’d dive for abalone and try and talk our wives into hanging out at the beach while we pounded abalone and did all that stuff. And we were *cold* because this was before wetsuits and we just wore a bathing suit and heavy Navy sweaters just because it would keep the water—it would just slow the circulation a little bit.”³⁵

Dick Long—Monterey, CA, 1956: “...So [a coworker] took me to Monterey, and that’s where he introduced me to the ocean and all of that. And after that I just couldn’t get enough. At the time I was married, my wife was pregnant, I worked through my vacation. And the baby got half the money and I got the other half of the money and I bought a kit wetsuit, that’s mainly what you did in those days. You made a kit wetsuit. It was not nylon lining, just rubber. And the first thing I did is spill the glue all over the kitchen floor.”³⁶

What today is considered to be standard introductory diving equipment really is the result of much perseverance on the part of early San Diego sport divers and certainly involved a lot of trial and error. Despite spilling the glue for his first kit wetsuit, Dick Long has become one of the world’s top experts in dive suit technology today. Throughout his career, British and American militaries and research institutions internationally have solicited his expertise in underwater exposure protection, and he is the founder of the world’s top drysuit manufacturing company, Diving Unlimited International in Chula Vista,

³⁴ Oral history: Chuck Mitchell, Recorded by Paul Dayton and Ashleigh Palinkas, 6 May 2014

³⁵ Oral history: Chuck Nicklin, Recorded with Ashleigh Palinkas and Paul Dayton, 29 January 2013

³⁶ Oral History: Dick Long, Recorded by Ashleigh Palinkas, 23 April 2014

San Diego. These stories of diving equipment developments highlight the significant role early sport divers in San Diego played as the innovators who opened many doors for local recreational and scientific diving enthusiasts today.

The Good Ol' Days

For the spirited diver, San Diego is not a bad place to be. Those who were born here appreciate it tremendously, and those who weren't made sure they were diving here as soon as was possible.

Ron McConnaughey—Born in Mission Beach, San Diego in 1941: “We grew up in Mission Beach, Mary Lou and I both grew up in Mission Beach and stayed in the beach area all our lives.”³⁷

Chuck Nicklin—Moved to San Diego in 1942: “I was born in Massachusetts and my father was in the Navy, and in World War II he was all over the world in the Navy. He was reassigned to San Diego when I was 13 or 14 years old. I was a teenager and I didn't want to go. There was no way I was coming to some place called San Diego! Then finally we came to San Diego—on midnight of 1942, in an ice storm, we got on a train and came to San Diego. And we were in San Diego for maybe three months and my father came home and he was delighted that we were going back to Boston. He was being reassigned to Boston, and I said, not me! I'm a California boy! I'm not going! I'm not leaving! And they'd had to drag me from Massachusetts, but there was no way they were going to get me to leave San Diego.”³⁸

Barbara Allen—Moved to San Diego in 1957: “The first time I came [to San Diego] as a, quote, ‘diver’ was when I was taking the LA County Underwater Instructors class, which was in 1957...Part of it was a weekend checkout dive at Scripps, Scripps Canyon, Scripps Pier. It was a wonderful gathering, starting Friday night...My roommate and I went to the beach that day with Ron Church, and Vern Fleet, his roommate--in the water we met all these wonderful people—

³⁷ Oral History: Ron McConnaughey, Recorded by Ashleigh Palinkas, 18 February 2014

³⁸ Oral history: Chuck Nicklin, Recorded with Ashleigh Palinkas and Paul Dayton, 29 January 2013

said, “You got to come to a party tonight at Lamar Boren’s house!”...and we met all these other people. Henry Henson, unusual waterman, and Andy Skieff...Well it was like, gosh, we’ve got to move down here! This is wonderful! Then, when we did, everything was intermeshed.

Ashleigh: Would you say that when you came down to San Diego there was more of an inviting diving community and that is what attracted you?

Barbara: Okay. In LA I was really fortunate getting right in the Dive and Surf. And being able to teach classes with Roger Hesslet. Catalina every weekend. Loved kelp diving...But the difference was, that was getting on a boat and going to Catalina. I didn’t care for climbing down the cliffs at Palos Verdes. I didn’t know Laguna and other places that well. So to come to San Diego and be able to jump in the water--first time was at Boomer Beach, right around from the La Jolla Cove. And the next day it calmed down a bit and we snorkeled and everything was right there off the sand on the shore. God. And it still now—the Cove is an aquarium because of the MPA. It was just like, gosh! Come down here, we can go diving anytime we want, blah blah blah. And it happened that we both got jobs in La Jolla and could come down at our lunch hour and jump in the water.”³⁹

Convenient beach access and the contagious southern California lifestyle remains even today to be the main draw for what has since come to feel like mass migrations to San Diego. For divers, however, that is only the tip of the iceberg regarding what this coastal city has to offer. They come for what is beneath the surface. Stories illustrating the prolific sea life and the ocean’s bounty are common and interwoven among the memories of early San Diego sport divers, and even today the area remains a top destination for underwater recreation and observation.

Frank Leinhaupel: “When we started diving here in the ‘50s, every time you looked under a reef you had a feeling that you were the first human being to see that spot. You were at the edge of civilization when you went someplace where obviously other people had not been—not trashed or anything like that.”⁴⁰

³⁹ Oral History: Barbara Allen, Recorded by Ashleigh Palinkas, 21 March 2014

⁴⁰ Oral History: Frank Leinhaupel, Recorded by Ashleigh Palinkas, 26 February 2014

Chuck Mitchell: “Oh, I think the outer edge of the La Jolla kelp is spectacular. The north branch of the canyon—I haven’t been there in decades and decades but it’s pretty spectacular. Those would be my two favorite spots...And you know, I’ve been all over the central Pacific, South America and everywhere, diving so many places. But I still don’t think you can beat the good ol’ Southern California kelp beds...The water is so clear. Yeah, like all of those pictures of the kelp with the sun shining through. It’s just really spectacular.”⁴¹

Ron McConnaughey: “I love clear winter days. The water can be cold, but if it was really clear, I remember days—I don’t know that I can sort them out into one single day, but the beautiful clear water, sand channels with the sun sparkling off them and things like that. And fish swimming in the water column looked like they were suspended in air, and the algae waving back and forth really looked nice.”⁴²

Barbara Allen: Some of those dives [off Del Mar, San Diego] were the most beautiful, clear—we were in like 40 to 60 feet of water. And the fish, the little guys were just like part of the crowd. They got used to us after a while, it seemed. And I just loved it, I could sit on the bottom and get tired and look up and around and they’d come up and look in my mask.”⁴³

The perspectives that early San Diego divers had regarding the underwater world around them beautifully illustrate the reason divers of all generations in every part of the world become engaged with life beneath the surface. Each diver is unique, motivated by a wide range of objectives that impel them to take the first plunge. Yet it is the appreciation for beauty that is uniquely shared among sport divers as inciting to go back for more, and to continue their explorations at depth.

Jim Fallon: “When San Diego has 40+ ft. visibility or more, it is absolutely gorgeous. The kelp beds are gorgeous. I think they are my favorite area to go to and snorkel in. Just to dive through there, you see so many fish of all kinds. The calicos, the señoritas, there’s just—the opaleye—you see so much in the kelp forest. That’s—I feel that’s some of

⁴¹ Oral history: Chuck Mitchell, Recorded by Paul Dayton and Ashleigh Palinkas, 6 May 2014

⁴² Oral History: Ron McConnaughey, Recorded by Ashleigh Palinkas, 18 February 2014

⁴³ Oral History: Barbara Allen, Recorded by Ashleigh Palinkas, 21 March 2014

my prettiest memories and I'd like to see it again. I don't know. I'd just like to go and look and see. Now, the only place I dive is over in Hawaii where it's warm."

In the early days of San Diego sport diving, the bounty of the sea was for many divers just as incentivizing a reason to return to depth as was the beauty of our coastlines. Anthropologic or oceanographic effects that may have impacted the numbers of once-abundant species populations described by San Diego's earliest divers have remained highly contested and controversial among multiple stakeholder groups. Those questions are not the focus of this paper. In documenting the history of San Diego sport diving, the goal of this project is to collect memories from the experiences of those who pioneered underwater exploration locally in order to paint a picture of what these innovators of technology and observation experienced throughout their voyages at depth.

Ecological Baselines

The early divers in San Diego were in many cases the first underwater naturalists in the country. Whenever today's divers are privileged to relive the past through the memories of the early pioneers in San Diego waters, inevitably the question, "What did you see underwater back then?" arises.

Abalone & Lobster

When asked to describe what ecological populations looked like under water in the years from 1940-1970, a San Diego sport diver's answer almost always begins with stories of the typically abundant and consumptively valuable local invertebrates.

Dick Long: The biggest abalone I [ever saw] was in San Diego.

Ashleigh: Really? How big was the abalone?

Dick: It was—well, I mean it was a red abalone about yea big around [>12in] and at that time they were as common as rocks...Yeah, we used to think about getting abalone by just going down in the ocean and it was like going to the store for a loaf of bread. I mean you expect bread to be at the store, right? Well, we expected abalone to be there.

...You used to go out diving and there would be clouds of [lobster] following you wherever you went. Big ones!"⁴⁴

Chuck Mitchell: "Of course, abalone in the early days of diving were kind of a staple. Whenever we were going to have birthday parties or any kind of party, somebody'd go out and get some abalone. You could always do that. I remember many times at Point Loma, even the outer edge of La Jolla, but particularly Point Loma if you dove in the '50s on the outer edge of the kelp bed, which would be out like 75 feet, as you were 20 feet off the bottom...you could look down and see eight or ten abalone below you. See you could pick them out...And lobsters are kind of the same way. It used to be that you could get lobster just about any time you wanted. You were going to have friends over? No problem, go out and get some lobster."⁴⁵

Jim Stewart: "Then [as initiation into the Bottom Scratchers] you had to get a lobster over ten pounds, which in those days was no big deal..."⁴⁶

Jim Fallon: "The [abalone] limit when I started was five. And it was never a challenge to do it. One time Chuck Nicklin and I were on the beach, just laying on the beach on a sunny afternoon and we decided to have a challenge to just go right out in the Cove right between it and Goldfish Point and stay inside that, closes to the beach, and see who could get their limit first in that shallow—you know, it wasn't any deeper than eight feet, six feet probably. And they were there! You could do it! It

⁴⁴ Oral History: Dick Long, Recorded by Ashleigh Palinkas, 23 April 2014

⁴⁵ Oral history: Chuck Mitchell, Recorded by Paul Dayton and Ashleigh Palinkas, 6 May 2014

⁴⁶ Oral History: James Ronald Stewart, Recorded by Ron Rainger, 10 February 2000

wasn't easy, but it wasn't difficult either. Now I doubt if you'd find an abalone in there. We used to get them and put them back down. We weren't taking them, but it was just to see who could get five first...They were just prolific. I'd love to go out and look now, see if I could see any there."⁴⁷

Yellowtail, Sheephead & White Seabass

Larger pelagic fish were highly valued for the thrill of encountering such large wild animals in the early days, and still remain to be for divers today.

Chuck Mitchell: "And on one occasion [measuring kelp stipes with Wheeler North in late 1950's], I was holding the tape measure and there was a big 30lb. sheephead out there and he was swimming back and forth and back and forth and I figured he was just waiting for something. And then he keeps rushing in, right into my face! And on occasion I am poking him, and I thought he was going to tear my throat out and then Wheeler started pulling on the tape and there was nothing I could do, I had to hold on. And that big guy rushed in and I must have been—there must've been a big brittle star or something right there [gestures]. You could hear his jaw snap shut right here!...I thought, 'He tried to kill me!'"⁴⁸

Frank Leinhaupel: "Yellowtail were always cruising off Skylight Rock just off Boomer, off the point there. That's where we got big yellowtail, schools of yellowtail were outside chasing the anchovies and stuff like that. We would go out with my boat, with the little Boston Whaler I had, and go out...to the Bird Rock kelp bed and back then there was actually a sort of passageway.

We would watch bait and the bait would come down on the outside. And one thing that would happen is white seabass would make a pass from one kelp bed to the other and if you just watch that passageway, you would see a white going through. They seemed to travel through the kelp there moreso than here. I always thought that they followed the kelp down and not out in the ocean like the yellowtail. They're not in clear water as much as the yellowtail. Or Bonita, or the occasional just, *wave* of bluefin [tuna] would go through. Bonito and yellowtail...and just thousands of barracuda.

...When I ventured outside of the kelp bed off Boomer, there were fish *everywhere*. If you just splashed your fins, the bonito thought there was bait being attacked and would come in to see what was happening.

⁴⁷ Oral history: Jim Fallon, Recorded by Ashleigh Palinkas, 19 March 2014

⁴⁸ Oral history: Chuck Mitchell, Recorded by Paul Dayton and Ashleigh Palinkas, 6 May 2014

...Let me say that in those days, as soon as the wind came in, the north wind is all it took. Just a little bit offshore to push the surface water out, and that water that came up was ice cold, absolutely clear, full of nutrients. It would go out a mile or two and almost immediately it was totally alive with plankton. And within a few days it was just these streams of dead plankton and stuff sinking. It was start to get pearly, the water. We always thought that pearly water was ideal white seabass water...when the visibility was a little less. Yeah, but I've always sort of thought that that somewhat limited visibility, particularly that kind of pearly water, was white seabass water."⁴⁹

Black Sea Bass

Another common exploit among early divers was the awe-inspiring experience of seeing a Giant Black Sea Bass in the wild. In response to the question, "What was the biggest fish you ever saw?" early San Diego divers share very similar caches.

Jim Fallon: "Black sea bass. And probably 370, 380 pounds, in that range."⁵⁰

Ron McConnaughey: "The biggest fish I've ever seen here in San Diego had to be a black sea bass and I saw several of those...My dad was a sport fisherman, a very good sport fisherman. And he caught one once. I think it weighed, I think it was three fives in a row, so 555 pounds. And I of course looked at that, marveled at it in every way shape or form and it just looked like a big bass to me."⁵¹

Dick Long: "The biggest fish I ever found here in San Diego was probably a 400 or 500 pound black sea bass. And to me, I will never get tired of diving with those things, they are just magnificent. Just incredible! And I feel bad that at one time I wanted to shoot one. Just as it was, I never shot a black sea bass...and I'm glad I didn't.

Ashleigh: Yes. Well, I have been seeing them a lot lately. I would say nothing larger than 300 pounds, but still they are really incredible, and to see them after hearing the story of how many of them have been lost, is very motivating.

⁴⁹ Oral History: Frank Leinhaupel, Recorded with Ashleigh Palinkas and Paul Dayton, 28 February 2014

⁵⁰ Oral history: Jim Fallon, Recorded with Ashleigh Palinkas, 19 March 2014

⁵¹ Oral History: Ron McConnaughey, Recorded with Ashleigh Palinkas, 18 February 2014

Dick: Yes, in fact, one of the nice things, I remember a guy killed one [ten years ago]. And they arrested him and when it first got reported, I said, 'Just let the divers take care of him. He will never do that again!'⁵²

The early divers of San Diego were the first to contemplate, suggest, and implement strategies for conserving the same beauty and bounty that initially enraptured them with the sea. Before scientists were establishing carrying capacities in response to local San Diego anthropogenic effects, before San Diego policymakers were pushing management decisions regarding coastal resources, and before newcomers to San Diego's world of diving had any inclination to moderate coastal use, local sport divers drew from their observational expertise and genuine treasuring of our ocean to incite interest in conservation endeavors.

Dick Long: "But to be honest with you, I have done a lot of night diving and you know, I learned that the big fish were the ones that lay all of the eggs. And so I don't catch either one [lobsters or abalone] anymore. I have a bunch of spear guns, but I haven't used them in 25 years."⁵³

Ashleigh Palinkas: "So the [La Jolla Ecological] reserve was implemented...

Jim Fallon: That was good.

Ashleigh: That was a good thing? You supported it?

Jim: You see the decline in-- all along the caves there was always a beautiful area. It's always been beautiful. You would see juvenile white seabass. You'd see a lot of juvenile fish in there. And it was always just a pretty area, and so when-- the idea of implementing it was a good idea. I don't know if the whole idea of extending it up and down the [California] coast is a good one. But I think you've got to protect the species. But you also have to let people go out and enjoy and do what they do. They've cut the limits back...diving for abalone and everything has changed tremendously."⁵⁴

⁵² Oral History: Dick Long, Recorded with Ashleigh Palinkas, 23 April 2014

⁵³ Oral History: Dick Long, Recorded with Ashleigh Palinkas, 23 April 2014

⁵⁴ Oral History: Jim Fallon, Recorded with Ashleigh Palinkas, 19 March 2014

Jim Fallon: “Other than like I said when I used to stack stingrays and stuff, most of the time divers are very conscientious of the environment. If you shoot a fish you are shooting it to eat, not just to stack it up. Other than when they used to have diving competitions and that was more going out for quantity. Although, the fish were given away to charities or whatever, to be used. It was really not—if you look back now, you’d say that was not something that you should do...And I guess that would be something I would change. But the idea of going out and getting a fish for food is not bad to me.”⁵⁵

Bill Howard: “Thinking about abalone...in the late 1960s the Bottom Scratcher Club, they had a guy here at Scripps, one of their members, and they had a lot of experience and they were, I don’t know, twenty years older than we were. I was an active member of the Diving Council, and they came [to a Diving Council meeting] and wanted us to work towards a moratorium on abalone, or make the rules tighter on abalone. Make some no-fishing zones for abalone. And I remember the diving council being younger people, myself included, just listened to them and thought, ‘Oh, these are just old men that can’t cut it anymore,’ and ‘They’re wanting us to give up our abalone,’ and so we didn’t pursue that at all. We listened to them but you know, basically voted not to follow up on it. Years later, it really did happen. But, my own experience going from a professional abalone diver to then stopping that and just doing my sport diving which I’d done before and after that, I’d finally gotten to where the abalone were hard to get and it wasn’t worth doing for the preparation of it...I’d stopped diving for abalone in La Jolla because it was getting too hard to find. And I’d dive off of Sunset Cliffs off of Adair Street...that used to be a place where there was always abalone but it got to the point where even there I couldn’t get any abalone! So when they finally put the moratorium on them, I felt that was a good idea.”⁵⁶

Paul Dayton: “You talk—and Jim Stewart used to talk too about the early efforts to make a reserve out there to protect the broomtail grouper.

Frank Leinhaupel: Yeah and we were very much in favor of it. I never shot a broomtail grouper there. You go through this hero book here, you will not find a picture of a grouper with anybody.”⁵⁷

Whether divers were getting in the water to fish, practice breathholding, or test new diving gear, San Diego’s earliest watermen were the most knowledgeable about how the human use was affecting

⁵⁵ Oral History: Jim Fallon, Recorded with Ashleigh Palinkas, 19 March 2014

⁵⁶ Oral History: Bill Howard, Recorded with Ashleigh Palinkas, 24 May 2014

⁵⁷ Oral History: Frank Leinhaupel, Recorded with Ashleigh Palinkas and Paul Dayton, 28 February 2014

their underwater playground because they were the ones seeing it first-hand. With the trained expertise of underwater naturalists, conservation was just one of the many contributions early sport divers made to the same ocean realm that had stoked their passion for adventure since that first moment they wore a mask and peered beneath the surface.

The Golden Days

As interest in the bounty and beauty of the sea grew, so did the interest in developing new technologies for equipment as well as new uses for divers' underwater observations. These developments and increased attention influenced the various motives for utilizing the skill of sport diving as a tool for understanding and enjoying the underwater world. The largest impact that sport diving had on scientific research was the implementation of the Scientific Diving Program at the Scripps Institution of Oceanography (SIO) in 1953. Conrad Limbaugh, an early sport diver studying marine biology in Los Angeles, came to San Diego in 1951 at the request of Roger Revelle, then Director of SIO, to develop a diving safety course concurrent with Navy Underwater Demolition Team (UDT) standards⁵⁸. With the aid of graduate student Andreas Rechnitzer, Connie went on to train hundreds of divers including many who contributed their oral histories to this project. In the 1950's and 1960's,

⁵⁸ Appendix I: Figure 9

scientific diving in San Diego was greatly intermeshed with the sport diving scene. Connie Limbaugh, Lamar Boren, Bill Batzloff, Jim Stewart, Earl Murray, and Carl Hubbs were all SIO scientific divers as well as active members of the Bottom Scratchers dive club. Of the Addict's dive club, Frank Leinhaupel logged many scientific dives as a graduate student, including dives in the Devil's Hole cave of Nevada where he collected Carl Hubbs' famed blind pupfish and discovered a cavern since dubbed "Leinhaupel's Pool"⁵⁹, while Ron Church did underwater still photography for SIO⁶⁰. Chuck Mitchell, with his beginnings as a spearfisherman, logged hundreds of dives collecting data for Wheeler North's kelp forest monitoring project through SIO and contributed to many research projects over the duration of his still-prevalent career, and Ron McConnaughey drew upon his skills gained from freediving to succeed in live collections for SIO under Bob Kiwala. Multitudes of divers received formal SCUBA training under the SIO pier.

The idea to use diving as a tool for scientific research in San Diego was sparked by the import of the Cousteau/Gagnan Aqua-Lung to the United States in 1949. The first publicly available self-contained underwater breathing apparatus enabled divers to remain underwater for greater lengths of time without the constraints previously experienced by hardhat divers, allowing for more reliable quantitative observations and

⁵⁹ *Celebrated American Caves*, Rutgers University Press. New Brunswick, New Jersey, 1955.

⁶⁰ Appendix I: Figure 19

data collection beneath the surface. With the scientific world backing the art of descent, sport diving was launched into the public sphere, and greater numbers of ocean enthusiasts gained access to the depths that before was reserved for a small number of divers.

Ashleigh Palinkas: So how long was it before you first used scuba?

Ron McConnaughey: Well it was probably 1954 or something like that, give or take a year...It was an introductory course at the YMCA. They wanted to introduce scuba to people who were interested in it. So I got to put [an Aqua-Lung] on in the Plunge and go to the bottom of the Plunge and look at the grate where the water is sucked out and it was great. I loved it!"⁶¹

In 1959, Wheeler North and Connie Limbaugh opened the Diving Locker in Pacific Beach to store dive gear used for SIO research and training. Reiterating the entwined connection between sport and scientific diving in the early days, the Diving Locker came to be the first dive shop in San Diego that provided the general public with access to recreational diving. However, the piloting days of the Diving Locker did not necessarily get off to a prolific start.

Chuck Nicklin: "That was in, wow, that was in 1959...the group [Wheeler] had with Connie and Jimmy [Stewart] and Andy [Rechnitzer] and all these guys. There were eight of them. Scientific diving, they had a [contract] job...they had a little room in the back of an old building down on Cass St. where they kept all their stuff. Well then, all of the sudden they ran out of the contract and they had \$5,000 left and they said they wanted to start a diving business because they were all working out of Scripps here. They said, 'We will call it the Diving Locker' which is what they called it at Scripps. So then they decided that none of them wanted to run it, but they needed someone to run it. Well I'd been diving with Connie and doing some stuff out here so I knew a lot of the guys. So, they proposed either me or Ron Church. Ron Church was really into photography before I was for sure. And we were both up to run that thing. And they finally decided I would run it...and we took the front part of that store at 4825 Cass Street and made it into a diving business. And

⁶¹ Oral History: Ron McConnaughey, Recorded with Ashleigh Palinkas, 18 February 2014

we planned we would open the door of the diving business on the 15th of June, 1959. On the 14th of June 1959, they had the only real shark attack in the history of San Diego and that was in La Jolla Cove on the 14th, the day before the opening of the Diving Locker! We might've sold a snorkel in the next month or two but not much else because the first shark attack in San Diego's history was in La Jolla Cove that Monday.”⁶²

Many early divers including Chuck Mitchell and Frank Leinhaupel remember the death of Robert Pamperin, said to have been lost to a great white shark attack in the Cove. Yet if shark scares or other frighteningly close calls kept San Diego's diving pioneers from exploring the depths, knowledge of our local underwater environment would be nowhere near what it is today.

Chuck Mitchell: “I was diving behind [Jim] Stewart and Earl [Murray] and we were swimming along, 60 feet. It was nine or ten o'clock at night, and I had my light in front of me like this [gestures], and something swirls past me, past my shoulder. Big swirls. And snags my light right out of my hand, okay?”

Ashleigh: Oh, shit.

[Laughter]

Chuck: And I never see it. It was gone in an instant, just—BOOM!

Ashleigh: Oh my gosh, that's so scary. It gives me chills just sitting here!

Chuck: It might not have been “life threatening” but it definitely scared the crap out of me! And almost instantly I'm up between these two guys, you know, they've got lights and I don't. And I didn't know what came by, but it got me. To this day I would like to think it's probably a sea lion or something, but I had no idea. But I didn't go on any night dives for probably maybe two years!...Other than that, there were so few, few and far between.”⁶³

Collections of oral histories for this project always included a discussion of any times these early divers felt scared or threatened underwater. The resulting stories are both thrilling and humbling, and

⁶² Oral History: Chuck Nicklin, Recorded with Paul Dayton, Ashleigh Palinkas and Theresa Sincrope-Talley, 29 January 2013

⁶³ Oral History: Chuck Mitchell, Recorded with Paul Dayton and Ashleigh Palinkas, 06 May 2014

therefore reaffirm the value of archiving them for the public. They will be discussed in further detail within the venues through which these histories will be made accessible to the public. However, these unnerving encounters never hindered the progression of San Diego's underwater explorers. In fact, the development of technology for underwater photography often motivated divers to seek such thrill.

Paul Dayton: "You know there's a story of Jimmy's [Stewart] shark bite out in the islands. And Ron Church was there. Did you hear any gossip on that?"

Chuck Nicklin: No, just that I think the deal was...that they were making pictures. And they were trying to put Jimmy in the picture with a grey reef shark. The grey reef shark got backed into the corner and came back and bit Jimmy on the way out. And Ron was taking the pictures and Jimmy was—it was nobody's fault. I don't think we knew, when the grey reef went like this [gestures] you just had to be careful.

Paul: But he was not trying to hold it's tail.

Chuck: No.

Paul: Jimmy is too smart for that.

Chuck: He was just trying to—yeah, some of that stuff gets blown out of proportion.

Paul: You hear that."⁶⁴

Underwater photography became a major draw for divers to seek experiences beneath the surface because it offered a means to share those experiences with others. Jack Prodanovich developed underwater housings for both still and movie cameras,⁶⁵ and fellow Bottom Scratchers Lamar Boren and Connie Limbaugh were largely influential not only toward the innovation of housing technology but also photographic technique. Addicts member Ron Church is also recognized as a groundbreaking underwater photographer, and early San Diego

⁶⁴ Oral history: Chuck Nicklin, Recorded with Ashleigh Palinkas and Paul Dayton, 29 January 2013

⁶⁵ Appendix I: Figure 10

divers remember him as being generous with his talent and drive. Again, the curiosity and sense of wonder that initially drew divers to the depths over time contributed to skills influential in the evolution of sport diving.

“It was during [his] early years of spearfishing that Church became very observant of undersea life and was able to stalk fish, which greatly helped him later in his breathtaking underwater photography...Ron believed that underwater photography is vitally important as a graphic means of presenting the sea’s ecological state and as the most fascinating experience a diver can enjoy. This to him was the essence and importance of underwater photography.”⁶⁶

The increasingly popular shift toward diving with the goal of shooting pictures rather than the goal of shooting fish was a major turning point in the history of San Diego sport diving and recreational diving across the globe. Not only did it give divers an opportunity to engage with the underwater realm without consumptively effecting it, but over time served to reign in the interest and support of non-divers in ocean conservation and responsible marine stewardship.

Jim Fallon: “...and then when we started diving with Aqua Lungs we’d go off the [La Jolla] Shores out to the canyon edge and that wasn’t spearfishing. Now you’re talking about looking and that was photography and stuff and it was just going out and looking primarily. It was not shooting. We were shooting pictures and that’s it.”⁶⁷

Chuck Nicklin: “And I always tell the story...I’d be in one of these [spearfishing] competitions and win a little gold, a little brass trophy about this big [gestures] and I’d go out there and dive for four hours to win the trophy and then I’d go out and shoot pictures and I found out if I shot pictures and I shot film, they’d pay me a lot of money and send me around the world and that was a lot better! So all of a sudden I became an environmentalist because—well, because I was not shooting fish anymore, I might as well be an environmentalist”.⁶⁸

⁶⁶ Edward C. Cargile, *Pioneers in Diving*, 2002

⁶⁷ Oral History: Jim Fallon, Recorded by Ashleigh Palinkas, 19 March 2014

⁶⁸ Oral history: Chuck Nicklin, Recorded with Ashleigh Palinkas and Paul Dayton, 29 January 2013

This among many other benefits resulted from the growing availability of scuba technology to the public. Sport diving also contributed to military diving expertise. The US Navy-developed UDT standards were adapted for scientific diving training using the expertise of pioneers right here in San Diego. Safety and training protocol developed at SIO and the American Academy of Underwater Sciences serves as a foundation for diving safety guidelines still in effect even today. Research and technology development endeavors such as Navy Seal protocol and decompression tables remain relevant in the present, and were contributed to by several San Diego sport divers. One major standout is the creation of SEALAB, a series of experimental underwater habitats developed by the US Navy with the aim of testing human viability under pressure of saturation resulting from remaining at great depth for extensive periods of time⁶⁹. This significant interest in remaining at depth over time required a means for staying warm over the duration of experiments. Along with other separate undertakings striving to increase bottom-time in cold temperatures, a boom in dive suit technology occurred. To this, early San Diego diver Dick Long made substantial contributions.

Dick Long: “So anyway, when saturation diving came in, it became mandatory to have a hot water suit. You couldn’t do it any other way. And when the Arab oil embargo came in, they had to develop oil in the North Sea and so then it became “kitty by the door”. I mean, everywhere I went [the US and British Navy] would pick me up in a car or put me up in a hotel. They would feed me and look after me like I was a golden child!

⁶⁹ Appendix I, Figure 12

Ashleigh: Was there—there was nobody else making hot water suits?
Dick: No. Even the people buying them didn't understand them. They just knew that when they did what I told them, it worked."⁷⁰

All of these factors are responsible for the current understanding we air-breathing bipeds have of our blue planet at depth. Although it is impossible to exemplify every contribution of our pioneering San Diego diving predecessors within the limited scope of a Capstone research project, it is nonetheless crucial that they be documented. They will remain the driving force behind continuation of this project as it moves forward into the future.

⁷⁰ Oral History: Dick Long, Recorded by Ashleigh Palinkas, 23 April 2014

The Present Day

Every single person that has contributed to this project, whether alive or passed, deserves magnitudes of astonishing gratitude. Now in 2014, hundreds of sport divers propel beneath the surface driven by many different motives every single day. They've been introduced to the world of diving through manifold avenues and intentions. Yet the immensity of their passion for adventure, engrossing curiosity about sea life, tenacity of human's physical capacities, and enthrall with our ocean realm remains at the heart of every sport diver when they plunge into the depth, both past and present. Divers today have advantages facilitating their underwater exploits that are often taken for granted outside the context of sport diving's history. Stories of champions who pioneered that history should not simply be the focus of this MAS Capstone research project; they should be collected and held in the hearts of divers all over the world upon their every return to the sea. In archiving these stories, the perspectives and innovations of early San Diego sport divers will live on to guide those who follow them.

Dick Long: "I think San Diego should be the diving capitol of the world. We are not, but we should be because we have better water days even over Florida. Florida has some clear water, but they also have times when nobody dives because of the weather. It just beats them up. Harder to dive in a hurricane.

Ashleigh: Right, I think San Diego is the best place to dive. At least that I've ever been.

Dick: We will not run out of things to see in my lifetime."⁷¹

⁷¹ Oral History: Dick Long, Recorded by Ashleigh Palinkas, 23 April 2014

Conclusion

Interactions with the master San Diego sport divers who participated in this project provide an avenue for bringing their stories out of the past and into the present. The act of commemorating the legacy of these skilled watermen is intended to invoke the public to think about what kind of legacy it is they wish to leave for future divers in these local waters, and anywhere else in the world. The magnificent diving to be experienced here in San Diego was a gift bestowed to us by those who were first to explore it recreationally and therefore strive to protect it. Through responsible diving practice and passionate ocean advocacy, San Diegans today are able to give that same gift to those who will dive here long after we make our final ascent. We may be in the same location today that our early sport divers knew and loved, but it is far from being the same place. The ecological environment now is much different from what it was then. However, the opportunity to develop a relationship between sustainable resource management, scientific research, and recreational use is just as important as it was in the early days. Just as Japanese dive masks served as prototypes for the first sport goggles to peer beneath the surface of San Diego, these oral histories serve as prototypes for those who wish to pursue that partnership among stakeholder groups, because the health of San Diego's waters is a common goal shared by us all.

Appendix I: Figures 1-13

Figure 1: San Diego Bottom Scratchers



Jack Prodanovich
Designed & Hand-Crafted
Mask & Goggles
YEAR

Bottom Scratcher designed and built face mask
with eye glasses attached. Tailor made ear
plugs of dental acrylic are fastened to the
head strap. We have used some of these home
made masks for fifteen years.

#4



Figure 2: Jack Prodanovich Hand-Crafted Underwater Camera Housing



YEAR

Figure 3: San Diego Bottom Scratchers With Hand-Modified Paddleboards



Jack Prodanovich & Ben Stone
1936



Jack Prodanovich
Casa Cove
1942

Figure 4: San Diego Bottom Scrathers Spear Guns



Jack Prodanovich With
First Spear Gun
1945

Antique B.S.D.C
Speargun
~1940's



Antique B.S.D.C.
Spearguns
~1950 - 1970

Figure 5: National Geographic Magazine, Vol. XCV Number 5. May, 1949.



Figure 6: Jack Prodanovich Spear Points

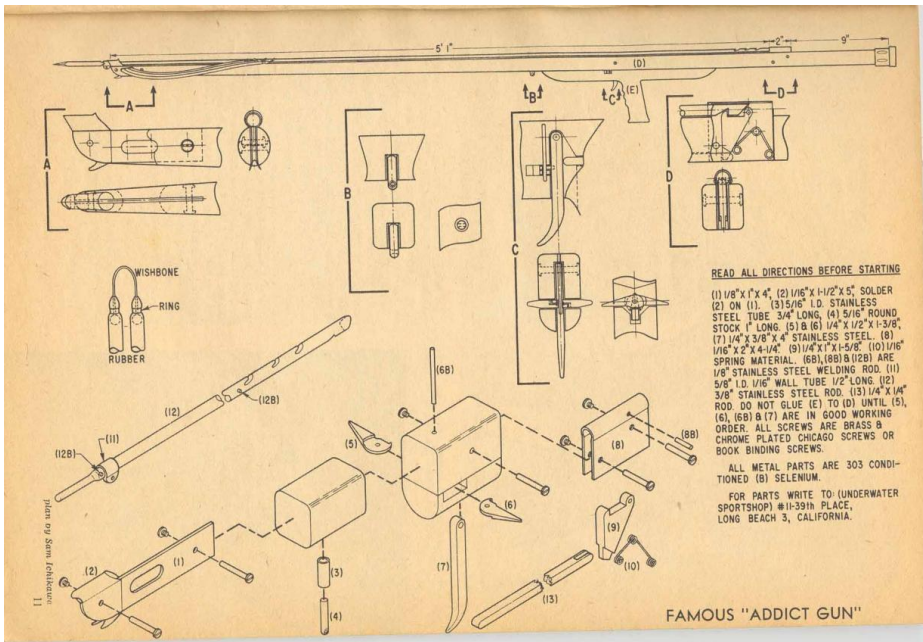


Antique J. Prodanovich
Spear Points



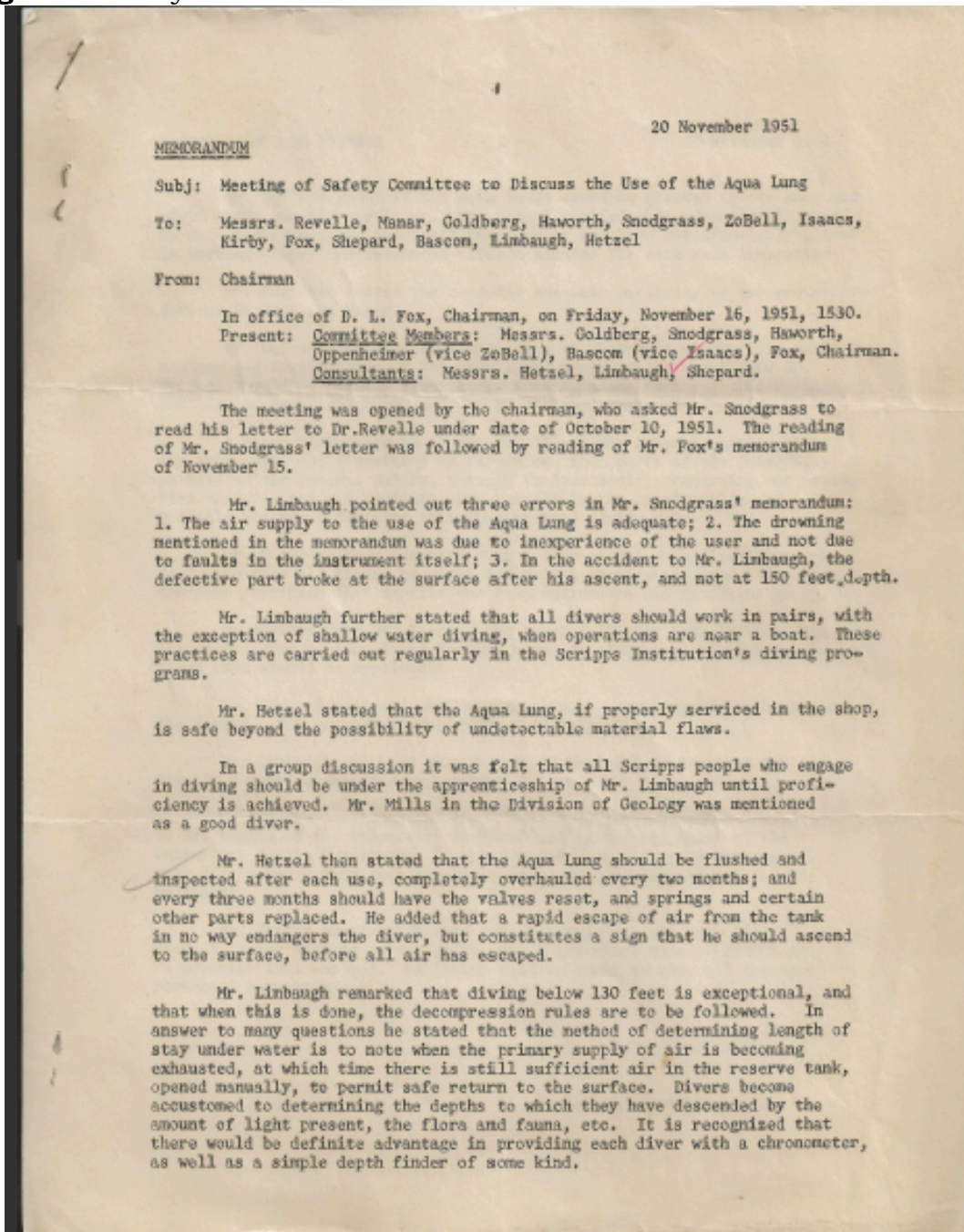
J. Prodanovich with Halibut
La Jolla
1938

Figure 7: Frank Leinhaupel's Collection: Antique Original Addict's Guns



Original Addict Gun
 Prototype Plans

Figure 8: Early SIO Documents



Mr. Shepard asked if the Aqua Lungs could be checked in the shop and given their monthly servicing. Mr. Hetsel replied that arrangements could be made for such work, after all instruments had been satisfactorily placed in working order. He estimated fifteen minutes for each such inspection.

Dr. Fox then stated the need for adequate publicity to our protective devices through Lon Manar.

Mr. Hetsel estimated that the costs to procure equipment for maintenance and modification of the Aqua Lungs would run to about \$400.00. Springs should be renewed every three months, along with 2 rocker springs, the high pressure diaphragm, and other necessary parts.

A group discussion then ensued. It was the general opinion that the group urge the importance of informing other parts of the University, as well as the general public, through various media, concerning our protective measures and our findings with respect to the construction and possible hazardous features of self-contained diving units.

Mr. Goldberg then proposed that a list of all authorized divers be kept, and that all divers be given a physical examination, possibly through the same physician that handles the examinations in his Radiation group.

On advices from Mr. Bascom, the group felt that consultation with the navy diving personnel and doctors might disclose some special examinations that should be applicable.

Mr. Shepard proposed that extrahazardous insurance be taken out on the divers. The group concurred with this suggestion.

Mr. Linbaugh proposed that first aid training be required for all divers, a very necessary requirement.

Mr. Goldberg recommended that these minutes be possibly presented to Dr. Donald of the University hospital and to Colonel Haley of the University Safety Committee. It was decided that the group recommend that the Director take such immediate steps in this direction as may be necessary.

Mr. Bascom proposed that he get speakers from the Navy Diving Group to speak with us on our problems. A tentative date of 1500 Monday, 26 November 1951 was set. Publicity will be given so that all interested personnel may attend.

E. D. Goldberg, Secretary

D. L. Fox, Chairman

November 3, 1953

MEMORANDUM

To: Division Heads
From: Conrad Limbaugh and Admiral Wheelock

Due to the increased number of accidents among amateur aqua-lung users, the established diving rules must be enforced.

All persons diving with University diving equipment or from Scripps boats or in connection with any Scripps Institution of Oceanography projects must hold certificates certifying that they have passed the S.I.O. diving training course.

Persons now holding certificates are:

David Arthur	Conrad Limbaugh
Warren W. Beckwith, Jr.	Ray McAllister
Robert Bierl	John McGowan
David Buschman	Dave Moore
Ben Cox	Walter Munk
Robert Dill	Earl Murray
Charles Flemming	Ken Norris
Robert Gilkey	Norris Rakestraw
Raymond Gilmore	Andreas Rechnitzer
Gordon Groves	Walter Scott
Sam Hinton	George Shumway
Robert Huffer	Frank Snodgrass
Lewis Kidd	Warren Wooster
Donald Lear	

No violations of safety rules will be tolerated. Intentional violations will be considered sufficient grounds for suspending a diver from further diving operations.

All present card holders are required to begin a refresher course before January 1, 1954.

All divers must keep a record of the date, duration of dive, and depth of dive.

A bulletin board space concerning diving activities will be found in the Scripps Building, downstairs.

Figure 10: First San Diegan Hand-Crafted Underwater Movie Camera Case – S.D.B.S.C ~1950's



Figure 11: SeaLab Reunion Roster

<u>SEALAB REUNION ROSTER</u>		
(Rev. 19 Apr 93)		
Aichele, Fred	2101F Kelley Ct, Pittsburg, CA 94565	415/439-7227
Anderson, Lester	Box 216, Weldon, IL 61882	217/736-2369
Aquadro, Charlie	313 Ann St, Beaufort, NC 28516	919/728-4896
Armstrong, Bill	5529 Boulder Blvd, Sarasota, FL 34233	813/378-5650
Bachrach, Art	PO Box 3600, Taos, NM 87571	505/758-1512
Banks, Bruce	40 Howland Ave, Jamastown, RI 02835	401/423-2719
Barnes, Jack	PO Box 27371, Prescott Valley, AZ 86312-7371	602/772-2470
Barth, Bob	3708 Shoreline Circle, Panama City, FL 32405-1212	904/785-9913
Barth, Dale	407 Tarpon St, Panama City Bch, FL 32413	904/234-7833
Bates, Joe	4041 S. Bells, Harvey, LA 70058	504/341-7395
Benesch, Paul	1017 Britton Rd, Lynn Haven, FL 32444	904/271-5123
Blackburn, Richard	Trident Hotel, Madras, India	91-442844747
Bladh, Jim	1300 Crystal Dr, Apt 307, Arlington VA 22202	703/486-0955
Bond, George Jr.	118 Hudson Dr, Hendersonville NC 28739	704/693-1119
Bornholdt, Bob	1012 Calle Mesita, Bonita, CA 91902	619/267-7503
Bornmann, Bob	11569 Wood Hollow Ct, Reston, VA 22091	703/620-9483
Bradley, Mark	9316 Fallsbridge Ln, Potomac, MD 20854	301/299-8826
Brewer, Glenn (Tex)	305 Beauregard Blvd, Fayetteville, GA 30214	404/461-2528
Briere, Mike	775 N. Longwood Circle, Panama City FL 32405-3816	904/769-4385
Bruhmueller, Bill	2159 Briarwood Circle, Panama City, FL 32405	904/769-2651
Bullock, Steve	124 Sylvan Ct, Alexandria, VA 22304	703/590-5242
Buski, Frank	2000 S. Eads St, Apt 1010, Arlington, VA 22202	703/271-9366
Campoll, Bernie	2400 Beech St, Panama City Bch, FL 32407	904/234-8202
Cannon, Mary Lou	2080 Honey Springs Rd, Jamul, CA 91935	619/468-3439
Carpenter, Scott	PO Box 3161, Vail, CO 81658-3161	303/476-3780
Clark, D. J. (Nobby)	Rockwater Offshore, 45 Shipyard Rd, Singapore 2262	
Coffman, Bill	5333 Lansing Strau, Tucson, AZ 85706	602/889-9116
Coggeshall, Charlie	2127 Esplanade Ave, New Orleans, LA 70119	504/944-5650
Collins, Fred	5960 Keel Dr, Pass Christian, MS 39571	601/255-7002
Cooper, Dick	58 Wintechog Hill, N. Stonington, CT 06359	203/535-2131
Cowgill, Dave	403 Azalea St, Panama City Bch, FL 32407	904/234-8342
Coyle, Art	638 Lummisford Ln, Columbus, OH 43214	
Croft, Bob	3211 W. Valleyview Dr, Allegheny, NY 14706	716/372-6101
Crotts, Harry	2042 Shamrock Lane, Lynn Haven, FL 32444	904/265-4076
Culpepper, Bill	Star Rt Box SF-19, Vernon, FL 32462	904/231-4612
Dare, Harry	512 Lehigh St, Blackwood, NJ 08012	609/227-3158
Dietrich, Al	3726 Lockwood Lane, Annandale, VA 22003	703/941-2435
Draper, Don	11407 Hwy 2301, Youngstown, FL 32466	904/722-9938
Duff, Charlie	Rt 3 Box 170, Wallace, NC 28466	919/285-5977
Eaton, Annie	2121 Hentz Dr, Panama City, FL 32401	904/785-8140
Festag, Al	Rt 2 Box 487, Licking, MO 65542	314/674-3922
Carrahan, Dick	4951 Swinton Dr, Fairfax, VA 22032	703/764-9714
Gholean, Bill	5689 Saffron Ln, Woodbridge, VA 22193	703/878-6593
Gibson, Crowder	3910 Verona Circle, Panama City, FL 32405	904/265-8069
Goodwin, Jim	936 Texas St, Sturgeon Bay, WI 54235	
Gross, Charlie	Route 4, Box 17, Salisbury, MD 21801	410/749-9009
Hallanger, Larry	2111 Eisenhower Ave, #200, Alexandria, VA 22314	703/690-5878
Halwachs, Jim	3162 Woodvalley Rd, Panama City, FL 32405	904/784-0860
Harrell, Martin	658 Benfield Rd, Severna Pk, MD 21146	410/987-9232
Harter, John	3422 49th St, Metairie, LA 70001	504/834-6439
Heckert, Paul	714 Florida, Panama City, FL 32401-2339	904/763-3121
Holmes, Tom	302 South Glades Trail, Panama City Bch, FL 32407	904/233-6335
Hodges, Bobby	55 Bank St, New London, CT 06320	203/464-6890

SEALAB REUNION ROSTER

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Horning, Jack	2626 Capital Med Blvd, Tallahassee, FL 32308	904/222-9298
Hough, Doug	3100 Country Club Dr, Lynn Haven, FL 32444	904/265-3133
Hurley, Chips	1202 Blue Quail Rd N.E., Albuquerque, NM 87112	505/291-1318
Huss, Sam	3718 Hiway 389, Panama City, FL 32405	904/769-1124
Janes, Tom	4031 Post Gate Terrace, #102, Silver Springs, MD 20906	
Jenkins, Tom	110 West Miami, DeGraff, OH 43318	
Jenkins, Wally	7213 Emerson Dr, Panama City Bch, FL 32408	904/234-5724
Jensen, Duane (Twang)	102 Live Oak Dr, Belle Chasse, LA 70037	504/392-1080
Johler, Fred	411 Marion Oaks Dr, Ocala, FL 34473	904/347-0874
Johnson, Charlie	37 Willow Dr, Randolph, NJ 07865	201/386-4921
Kelly, Tom	2801 W. 12th St, Panama City, FL 32401	904/784-0918
Kennedy, Charlie	9015 Laird St, Panama City Bch, FL 32407	904/234-6920
Kleckner, John	17 Jalan Haji Salam Bedock 1647 Singapore ROS	65/241-3200
Kohl, Moose	38 Taylor St, Waupun, WI 53963	414/324-2650
Krasberg, Alan	100 Clement Dr, Wirtz, VA 24184	
Krepp, Marty Sr., M.D.	Naval Hospital, Patuxent River, MD 20670	301/826-1490
Krepp, Marty Jr.	7104 Big Daddy Dr, Lot E9, Panama City Bch, FL 32407	904/234-1847
Kunz, Herman	2131 Cascade Way, Longview, WA 98632	206/425-8376
Lafferty, Cyril	Fendale, Pembroke Rd, Woking Surrey GU227D4 UK	
Lavoie, Ray	PO Box 77, Edgewood Dr, Harmony, RI 02829	401/949-1119
Liebold, Bill	PO Box 1026, Pauma Valley, CA 92061	619/742-3657
Linaeweaver, Paul	4909 Baseline Ave, Santa Ynez, CA 93460	805/688-8361
Lukeman, Bill	8 Bally Haly Place, St Johns Newfoundland A1A2B4	709/579-0143
Lyons, John J. (Shorty)	East 568 Birkshire Ln, Waupaca, WI 54981	715/258-2789
MacKinnon, Mal	PO Box 9910, Alexandria, VA 22304	703/370-7333
McCafferty, David	5261 Mt Alifan Dr, San Diego, CA 92111	619/278-3782
McCarthy, Jim	215 Sunset Ln, Panama City Bch, FL 32407	904/234-5489
McDonnell, Jeff	91 Jayne Ct, Steilacoom, WA 98388-1411	206/589-1722
McCraw, Eugene	6503 Ansons Ln, Youngstown, FL 32466	904/722-4766
Mantall, Frank	3 Heatherstone, Lafayette, LA 70508	318/988-1706
Hanlove, John	E. 220 Dawn Dr, Allyn, WA 98524	206/275-6097
Marsh, Bill	1633 Knollwood Ave, San Jose, CA 95125	408/265-2145
Maughmer, Earl	Box 216, H.C.65, Alpine, TX 79830	915/371-2316
Mazzone, Walt	5156 Pacifica Dr, San Diego, CA 92109	619/274-9376
Meeks, Bill	Local 54, Nueva Andalucia, Marbella, Malaga, Spain	34-52/776992
Herriman, Bob	153 Willowbrook Dr, Gretna, LA 70056	504/394-5709
Mesplay, Bill	Rt 1, Box 330, Winslow, AR 72959	501/839-3490
Miller, Jim	Rt 3 Box 295C, Big Pine Key, FL 33043	305/872-4003
Mills, Bud	122 S. Fork Dr, Youngsville, LA 70592	318/856-8467
Mittleman, John	400 S. MacArthur Ave, Panama City, FL 32401	
Moore, Keith (Omar)	1987 Londontown Ln, Titusville, FL 32796	407/264-1877
Morey, Jack	333 Chamounix Rd, St. Davids, PA 19087	301/287-9299
Morgan, Bev	425 Garden St, Santa Barbara, CA 93101	805/965-8538
Mulally, Bob	1021 Hubbard St, Waveland, MS 39576	601/467-6086
Mullikin, Hyrum	Rt 4, Box 178B, Milton, FL 32583	904/626-1682
Mullin, Jim	306 Ashland Dr, Thibodeaux, LA 70301	
Myers, Jay	328 Greenwood Cir, Panama City Bch, FL 32407	904/234-3282
Naquin, John	9802 Luke Ct, Upper Marlboro, MD 20772	301/599-6484
Nelson, Art	9161 Russell Ave, Garden Grove, CA 92644	714-530-8025
Nicholson, Wm. (Mac)	4000 Towerside Terrace, #2307, Miami FL 33138	
Ockwig, Norma	759 W. 4th Ave, Escondido, CA 92025	619/746-3834
Odom, Tom	Bay Point, Box 27097, Panama City, FL 32411	904/234-0252

(Rev. 04/19/93)

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Quirk, John	812 Moore Circle, Panama City, FL 32401	904/763-1557
Reaves, John	541 W. Broad St, Eufaula, AL 36027	205/687-2608
Reedy, Jack	106 Evergreen St, Labadieville, LA 70372	504/526-4686
Reuhl, Jerry	CalDive, 13430 N.W. Freeway, #350, Houston TX 77040	713/690-1818
Ringelberg, Jack	1654 Government St, Mobile, AL 36604	205/476-5639
Risk, Don	PO Box 6875, Incline Village, NV 89450	702/849-1417
Rivera, Julio	111 Lands End Rd, Greenville, DE 19807-2519	302/995-7473
Rodecker, Don	1720-130 Ave NE, Suite 103, Bellevue, WA 98005	206/881-9282
Rogers, Buck	103 Barkley, Pass Christian, LA 39571	601/452-9721
Ruden, Pete	5 Farcroft Ct, Gaithersburg, MD 20879	301/530-4062
Scalll, Frank	36 Thurston Point Rd, Gloucester, MA 09130	508/283-6085
Schleight, Bill	Norvald Praffjords GI-7A, 4041 Hafsfjord, Norway	44-4-551450
Schmitt, Jack	405 Bayshore Dr, Panama City Bch, FL 32407	904/234-9276
Searle, Bill	808 Timber Branch Ply, Alexandria, VA 22302	703/549-7775
Sheats, Bob	21992 State Hwy 3 NW, Poulsbo, WA 98370	206/779-3280
Sheats, Carl	50 Largent Ln, Port Angeles, WA 98362	206/452-4895
Sheats, Phillip A.	395 Mosher Canyon Rd, Bremerton, WA 98310	206/792-9298
Sheehan, Marty	821 West 8th St, Panama City, FL 32401	904/785-2855
Shipp, Gene	10715 Cherry Hills Dr, Cherry Valley, CA 92223	909/769-1262
Smith, Doug	2610 Marin Ave, Berkeley, CA 94708	510/527-4583
Snell, Billy	2220 Dorothy Ave, Panama City Bch, FL 32408	904/234-3077
Stancil, Dave	US Divers, 3323 W. Warner, Santa Ana, CA 92704	714/540-8010
Stackel, R. J.	4315 Brook Forest Dr, Panama City, FL 32404	904/785-8909
Stevens, Bob	GSA Marine Svce, 759 Parkway St, Jupiter FL 33477-4567	407/746-7946
Stewart, Jim	Scripps Institute, Mail Code 0210, LaJolla, CA 92093	619/534-4445
Stout, John (Stinky)	Box 968, Cottage Grove, OR 97425	503/942-2960
Sullivan, Dave	253 Scooter Dr, Panama City Bch, FL 32408	904/235-4271
Taylor, Jim	851 Belle Meade Blvd, Gretna, LA 70056	504/393-1773
Thomas, Tony	6719 Broward St, Panama City Bch, FL 32407	904/235-4640
Thompson, Bob	PO Box 1266, Running Springs, CA 92382	714/867-3985
Tolbert, Bill	2236 W. 33rd St, Panama City, FL 32405	904/763-4445
Tolley, Jim	16428 Castille Ave, Panama City Bch, FL 32407	904/234-5519
Tonsky, Jack	8900 Kingsmill Rd, Las Vegas NV 89134-8620	702/255-8041
Tuckfield, Cyril	411 Third St, Key Largo FL 33037	305/451-5373
Vendetto, Bob	501 Corpus Christi Dr, Houma, LA 70360	504/851-1849
Vorosmarti, Jim	16 Orchard Way So, Rockville, MD 20854	301/762-6957
Wallace, Ken	2186 Atkinson Rd, Biloxi, MS 39531	601/388-6427
Ward, Ben	14750 Beach Blvd, #17, Jacksonville, FL 32250	904/223-1618
Wells, Morgan	NOAA-EDU, BLDG 1519, Ft Eustis VA 23604	804/878-4092
Wells, P. A.	4345 Thomas Dr, Panama City Bch, FL 32408	904/234-5664
Whitaker, Ed	666 Washington Dr, Fairhope AL 36532	205/928-2453
Winters, Bill	268 Firethorn Dr, Gretna, LA 70056	504/391-3332
Woodward, Woody	3813 Lowe St, Panama City, FL 32405	904/785-7215
Wyatt, Frank	3350 Sparrow Dr, Alexandria, VA 22306-2982	
Wyman, David	798 Wood Ave, Panama City, FL 32401	904/769-6280