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### Title

Locally Landed San Diego: Understanding San Diego's Commerical Fishery and the Possibility of Creating a Community Supported Fishery

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**Locally Landed San Diego**  
***Understanding San Diego's Commercial Fishery and the Possibility of Creating a  
Community Supported Fishery***

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**Spring 2013**  
**MAS in Marine Biodiversity and Conservation**  
**Capstone Project**

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# Locally Landed San Diego

## *Understanding San Diego's Commercial Fishery and the Possibility of Creating a Community Supported Fishery*

### **1.0 ABSTRACT**

*Gaining an understanding of San Diego's commercial fishery is not an easy task. San Diego has had a strong commercial fishery for over a century and was even considered the "tuna capitol of the world" during the mid-1900s due to the booming albacore tuna fishery. Restaurants along the waterways advertise fresh, local seafood to the locals and 32 million<sup>1</sup> tourists that annually visit San Diego when in reality nearly all the seafood being served comes from all over the world and was caught days or months earlier. In this information age, it is time for better communication between all the parties involved from the fishers to the restaurants and stores to the consumer. To facilitate this communication, it is first necessary to gather information about San Diego's fishery including identifying the major players and how they do, or do not, communicate with one another. This project collected information through surveys and numerous personal interviews. It was revealed that San Diego faces many challenges in creating a Community Supported Fishery after the model that others have used but may be successful with alternative models.*

### **2.0 INTRODUCTION**

Community Supported Fisheries (CSF) have grown in number and popularity since the creation of the first one in Port Clyde, Maine in 2007. Currently there are 126 CSFs in the United States and Canada and nearly all have modeled themselves after Community Supported Agriculture (CSA).<sup>2</sup> These models aim to connect farmers and fishers directly with the public and provide them with a weekly "basket" of what is freshest that week.<sup>3</sup> The motivation to create CSFs is to provide benefits to both the fishers, in the form of increased revenue, and to the consumers, by providing a fresh product and creating community engagement.<sup>4</sup>

Creating a CSF is not without its obstacles. To be successful, fishers must cooperate and they are traditionally known as a competitive group that tends to work independently from one another.<sup>5</sup> There is also high level of risk and uncertainty involved in any change a fisher makes to their routine.<sup>6</sup> In some

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<sup>1</sup> SanDiego.org. (2013). San Diego Tourism Research. Retrieved from San Diego.org: <http://www.sandiego.org/industry-research.aspx>

<sup>2</sup> Local Catch. (2013). LocalCatch.org, A Network of Community Supported Fisheries. Retrieved from LocalCatch.org: <http://www.localcatch.org/>

<sup>3</sup> Brinson, A. et al. (2011). Direct marketing strategies: The rise of community supported fishery programs. *Marine Policy*, 542-548.

<sup>4</sup> Holland, D.S. (2007). *Community-based Sectors for the New England Groundfish Fishery*. Portland, ME: National Marine Fisheries Service, Northeast Fisheries Science Center.

<sup>5</sup> McCay, B.J. (2000). *Community-based and Cooperative Fisheries: Solutions to Fishermen's Problems*. Washington: Island Press

communities public knowledge of the local commercial fishery can be very low.<sup>7</sup> This enhances the risk of creating a CSF that will support the necessary amount of customers to make the venture profitable for the fishers.<sup>8</sup>

The primary driving forces CSFs have used to gain community support are promoting that they provide products that are local and sustainable. Using the terms local and sustainable can provide additional problems because their definitions can be subjective. Definitions of local can vary from specific port, to state, to larger coastal region. Sustainability has various meanings including: increased stock abundance, decreased fishing pressure, minimal adverse gear effects, nominal bycatch levels, negligible habitat damage or effective management.<sup>9</sup>

This project was performed to gain a greater understanding of the challenges and achievements of current CSFs and if San Diego's Commercial fishery has the potential to support a successful CSF. Alternative models were also explored based on current limitations. Potential participants were surveyed as well as multiple interviews and meetings attended to gain an understanding of interest levels and obstacles. Existing CSFs were researched as well to understand what they have learned can contribute to the success of a CSF in San Diego.

### **3.0 THE CURRENT STATE OF THINGS**

#### **3.1 Methods**

##### **3.1.1 Surveys**

Gaining an understanding of if a CSF could work in San Diego was done quantitatively by surveying local fishers and restaurants.<sup>10</sup> The CSFs that currently exist are mostly modeled after CSAs which sell directly to the public. There are many challenges San Diego faces to effectively sell to individuals, therefore an alternative model to accommodate these difficulties was explored. A model that would work in San Diego

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<sup>6</sup> Jentoft, S. (2000). The community: a missing link of fisheries management. *Marine Policy*, 53-59.

<sup>7</sup> Aslin, H.J. & Byron, I.G. (2003). Community perceptions of fishing: implications for industry image, marketing and sustainability. *Fisheries Research & Development Corporation*, 1-114.

<sup>8</sup> Brinson, A. et al. (2011). Direct marketing strategies: The rise of community supported fishery programs. *Marine Policy*, 542-548.

<sup>9</sup> Ibid.

<sup>10</sup> See appendix 2 & 3

involves, as a first step, connecting the fishers directly with restaurants and once areas such as infrastructure are improved, eventually connect with the individual. The goal was to survey twenty fishers and twenty restaurants; ten fisher and eighteen restaurant surveys were completed.

There were various reasons more surveys were not completed. The primary was the limited time frame. Respondents appeared much more willing to participate after talking with them in person or having some level of prior relationship. I had volunteered for San Diego Ocean Foundation's Sustainable Seafood Gala and sent the restaurant survey to those twenty participants. Within the first three days, twelve restaurants had responded and after a second reminder, two more completed the survey. Additional restaurants were requested to complete the survey based on internet searches and only two of 36 responded, even after an additional reminder. Given more time, personal visits could have been taken to the restaurants to talk with owners and chefs and this very likely would have garnered better response rates.

This personal touch is also required when working with fishers. Attempting to reach them via e-mail with no prior contact often garners no response, even after multiple attempts. Even when meeting in person, it is very helpful to have another fisher or a person the fishers know and trust make the introductions or they may be unwilling to talk, often claiming to be too busy. I attained half my fishers survey after I was able to connect with Cathy Driscoll of Driscoll's Wharf. Based on some changes at Driscoll's Wharf, she was very difficult to reach and it would have been possible to survey a greater number of fishers if our meeting could have been sooner. She connected me with the dock master who introduced me to fishers at the dock. Given more time, multiple visits would have been possible. This can be time consuming, and a bit intimidating to some, but it is the most effective way to reach fishers.

The Port of San Diego's Commercial Fisheries Revitalization Plan<sup>11</sup> stated that in 2005 San Diego's commercial fishery employed 102 individuals and based on this number 10% of the fisher population was surveyed. Many fishers that were interviewed, including Dave Bassham the dockmaster at Driscoll's Wharf,

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<sup>11</sup> Lisa Wise Consulting, Inc. (2009). Port of San Diego Commercial Fisheries Revitalization Plan, Background and Existing Conditions Report. San Diego: Lisa Wise Consulting, Inc.

reported that the number of fishers actively fishing is closer to 50-60 individuals.<sup>12</sup> This would increase the percent surveyed to 17-20%. Of the 56 restaurant surveys that were sent, 18 were completed or 32%.

### **3.1.1 Meetings**

Nearly all of the fishers and some of the restaurants were met with personally. There were many other meetings attended with a variety of individuals present to assist in gaining an understanding of the industry as a whole.<sup>13</sup> Early information gathering consisted of various methods including: a phone interview with Oren Frey of Local Catch Monterey Bay, attending events such as 'Consider a Fish, Sea Urchin' at Scripps Institution of Oceanography, and volunteering at the San Diego Oceans Foundation Sustainable Seafood Gala. These connections and events helped create a basis of information and facilitated communication with individuals who in turn, connected me with others.

### **3.1.2 Other Resources**

Researching CSFs required different methods than most topics. There is very limited peer reviewed literature on the subject of CSFs most likely because they are a recent creation. However, there is a great deal of literature on CSAs which have been in existence for longer.

A major source of information providing a complete and in depth report on San Diego's commercial fishery is the "Commercial Fisheries Revitalization Plan, Background and Existing Conditions Report" released in October 2009 by the Port of San Diego. It is a 174 page document which compiles information from various sources and individuals and presents a plan for infrastructure changes that support the current fishery and its growth. The report provides a framework of understanding but is already becoming out of date, now almost four years old. It would be more user friendly for general public use, and to keep up to date, if the contained information was converted to information on the port's web page rather than a single, large document.

Although there is not yet much literature about CSFs, there is a wealth of information available on line. This is through individual CSF websites as well as many news articles, blogs and social media pages.

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<sup>12</sup> Bassham, D. (2013, May 9). Dockmaster, Driscoll's Wharf. (G. Rich, Interviewer)

<sup>13</sup> See Appendix 1

Localcatch.org is a wonderful resource which includes listings of all current CSFs within the United States and Canada, links to their webpages and connects these existing CSFs.

### **3.2 The Popularity of Sustainability**

Sustainable is defined as, “of, relating to, or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged”.<sup>14</sup> The initial motivation of this project was a desire to better understand what the country and, more specifically, San Diego are doing in relation to seafood sustainability. A big challenge with sustainability is how difficult it is to define when applying it to fisheries, even within the most advanced academic circles. In an attempt to simplify communicating sustainability to influence consumer behavior two primary methods have evolved: labeling, a leading example being the Marine Stewardship Council (MSC) and sustainability seafood guides, such as the Monterey Bay Aquarium Seafood Watch. In some circles, seafood sustainability has gained a negative connotation because of perceived use as a marketing strategy, lack of area (fishery) specific accuracy and exclusion based on ability to pay for costly ecolabels.<sup>15</sup> This enhances the need to more rigorously define seafood sustainability in a way that is transparent and acceptable to the public.

### **3.3 The Growth of Community Supported Fisheries**

Community Supported Agriculture (CSA) groups have been growing in popularity over the past decade and there are currently 13 active groups in the San Diego area.<sup>16</sup> Modeling themselves after CSAs, Community Supported Fisheries (CSF) have started forming nationwide, with the first one being established in Port Clyde, Maine more than 5 years ago.<sup>17</sup> According to LocalCatch.org, a network of community supported fisheries, CSFs within the United States and Canada have grown to about 30 various groups servicing 126 locations.<sup>18</sup>

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<sup>14</sup> Encyclopaedia Britannica. (2013). Sustainable. Retrieved from Merriam-Webster: <http://www.merriam-webster.com/dictionary/sustainable>

<sup>15</sup> Multiple Interviews (2013). (G. Rich, Interviewer)

<sup>16</sup> Farm Bureau San Diego County. (2013). *San Diego Community Supported Agriculture*. Retrieved from SDFarmBureau.org: <http://sdfarmbureau.org/BuyLocal/Community-Supported-Agriculture.php>

<sup>17</sup> Brown, P. L. (2012, Oct 1). *For Local Fisheries, a Line of Hope*. Retrieved from The New York Times:

[http://www.nytimes.com/2012/10/03/dining/a-growing-movement-for-community-supported-fisheries.html?pagewanted=all&\\_r=0](http://www.nytimes.com/2012/10/03/dining/a-growing-movement-for-community-supported-fisheries.html?pagewanted=all&_r=0)

<sup>18</sup> Local Catch. (2013). *LocalCatch.org, A Network of Community Supported Fisheries*. Retrieved from LocalCatch.org: <http://www.localcatch.org/>



Many of these CSFs have been created in response to a decline in the nation's catch caused by increasing regulations, growing costs of operation and an older generation of fishers retiring without a younger generation replacing them.

Two examples of CSFs created in the last two years in the state of California are Local Catch Monterey Bay<sup>19</sup> and Community Seafood in Santa Barbara<sup>20</sup>. Local Catch Monterey Bay was launched in January of 2012 and students at UC Santa Barbara founded Community Seafood in 2010. Local Catch was co-founded by two students from the Monterey Institute of International Studies with a local restaurant owner helping with the sourcing and processing.<sup>21</sup>

Oren Frey, a co-owners of Local Catch, said the biggest secret to the group's success was the relationship they built with Greg Young, fisherman, processor and owner of Sandabs Seafood and Wine Bar.<sup>22</sup> Young sources the product from the fisherman and processes it - sometimes late into the night - so their weekly deliveries can be made. When asked if following this model is staying true to the CSF because they are not going directly to the fisherman, Oren stated that they had intended to work directly with fishers but to effectively get a weekly product to their customers this was the model that was working.<sup>23</sup>

There are many logistical difficulties that arise when attempting to coordinate multiple fishers and their unpredictable catch which make it difficult to maintain a pleased public. It is understandable that some CSFs are not remaining true to their original intentions of cutting out the middle man and connecting the fishers directly with the public. In addition, processing difficulties often make it necessary to involve a processor to make it possible to prepare the catch down to individual portions.

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<sup>19</sup>Local Catch Monterey Bay. (2013). Local Catch Monterey Bay, Your Ocean, Your Fishery, Your Community. Retrieved from LocalCatchMontereyBay.com: <http://www.localcatchmontereybay.com/>

<sup>20</sup>Community Seafood. (2013). Community Seafood, A Community Supported Fishery in Santa Barbara, CA. Retrieved from CommunitySeafood.com: <http://www.communityseafood.com/>

<sup>21</sup>Frey, O. (2013, Nov 15). Co-Owner, Local Catch Monterey Bay. (G. Rich, Interviewer)

<sup>22</sup>Ibid.

<sup>23</sup>Ibid.

## **4.0 Challenges of Creating a CSF in San Diego**

### **4.1 Infrastructure and Licenses**

There are a number of challenges San Diego commercial fishers face if they desire to sell directly to the public. Currently, there are currently no dock front processing facilities within San Diego available to commercial fisherman. There are four major areas within San Diego County where commercial fishers dock: Oceanside, Mission Bay, Driscoll's Warf (between Harbor and Shelter Island) and Tuna Harbor off of G Street downtown. Some fishers purchase a "Fish Receiver's License", a general license which is not species specific, for an annual fee of \$755.00. As a "commercial fisherman" this license allows fishers "to conduct the activities of a Fisherman Retailer" which in turn gives them a "Multifunction Fish Business License" (\$1,876.50 annually). This is important because "Commercial fisherman licensed as a ... Fish Receiver may sell their catch to anyone."<sup>24</sup> This is how fishers are able to purchase permits allowing them to sell directly to the public for a much lower cost. Yet the provisions under this license are still limiting fishers to only have the ability to sell whole species that do not have to be processed, such as crab or sea urchin, , directly to the public unless they purchase further permits or work with someone that has the needed permits.

Purchasing the Fish Receiver's License does not require the health services inspections that other licenses require. Zack Roach has been selling his catch from his boat on Saturday mornings under the provisions of his Fish Receiver's License.<sup>25</sup> His boat is located at Tuna Harbor which is Port of San Diego property, and is not required to have a Hazard Analysis Critical Control Point (HACCP) inspection from the California Department of Health Services (CDHS).<sup>26</sup> CDHS informed Roach that the provisions of HACCP do not cover boat side sales because the transactions occur on private property and it is at the Port's discretion to allow him to sell there.<sup>27</sup> Yet, if Roach or any other fishers were to sell at the top of the dock, which is on public land, at the location of a potential dockside market, the selling area would have to be inspected and could not operate without

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<sup>24</sup> CA Department of Fish and Wildlife. (2013). 2013 Information Guide. Retrieved from Commercial Fish Business License: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=40729&inline=true>

<sup>25</sup>Roach, Z. (2013, May 18). Commercial Fisherman. (G. Rich, Interviewer)

<sup>26</sup> U.S. Department of Health & Human Services. (2013). Seafood HACCP. Retrieved from U.S. Food and Drug Administration: <http://www.fda.gov/Food/GuidanceRegulation/HACCP/ucm2006764.htm>

<sup>27</sup>Roach, Z. (2013, May 18). Commercial Fisherman. (G. Rich, Interviewer)

passing a HACCP inspection. With the current lack of infrastructure, the public areas at the end of the docks are unlikely to pass the inspection based on strict temperature controls that could require refrigeration of all catches.<sup>28</sup>

## **4.2 Regulations**

Meeting with people who have spent a lifetime in the commercial fishery in San Diego makes it is clear that the local fishery has shrunk while the population has grown causing locally caught seafood to become lost within the larger global market.<sup>29</sup> Fishers have adapted but many still express frustration with restrictions placed on the gear they use, what times of year they can fish, where they can fish as well as being required to host federal observers on their vessels.<sup>30</sup> There are often new regulations with each passing year. Some fishers may understand that these regulations are implemented to protect the resource but it often presents a financial hardship if changes are made to what they may have been practicing for years.<sup>31</sup> Increasingly unavailable permits, many of which can only be grandfathered in by purchases made from someone selling them, further inhibits the number of fishers that have access to a given fishery.<sup>32</sup>

San Diego waters are managed by a variety of state, federal and international regulations. The state has primary jurisdiction in the first three nautical miles off the coast in the Exclusive Economic Zone (EEZ) while the federal government exercises jurisdiction from three to 200 nautical miles.<sup>33</sup> There is much cooperation and overlap in management and the Coastal Zone Management Act provides the coastal state with increased authority to influence federal practices beyond three miles.<sup>34</sup> The two primary management bodies that effect San Diego's commercial fishery are the Department of Fish and Wildlife (DFW) at the state level and the National Oceanic and Atmospheric Administration (NOAA) at the federal level.

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<sup>28</sup>U.S. Department of Health & Human Services. (2013). Seafood HACCP. Retrieved from U.S. Food and Drug Administration: <http://www.fda.gov/Food/GuidanceRegulation/HACCP/ucm2006764.htm>

<sup>29</sup> Fishers, S. D. (2013). Fishers. (G. Rich, Interviewer)

<sup>30</sup> Ibid.

<sup>31</sup> Ibid.

<sup>32</sup> California Department of Fish and Wildlife. (2013). 2013-2014 Fees and Descriptions. Retrieved from Commercial Fishing Licenses: <http://www.dfg.ca.gov/licensing/commercial/commdescrip2013.html>

<sup>33</sup> The Resources Agency of California. (1995, Mar). Chapter 3: Ocean Jurisdiction and Management. Retrieved from California's Ocean Resources: An Agenda for the Future: [http://resources.ca.gov/ocean/html/chapt\\_3.html](http://resources.ca.gov/ocean/html/chapt_3.html)

<sup>34</sup> Ibid.

An observed challenge with current jurisdiction in California is the state's vast size. If laid atop the east coast, California would span the coastline of 10 eastern states, from Massachusetts to South Carolina. Smaller state waters on the east coast allow these states to be more specific to the fishing conditions in their waters. Comparatively, the immense area California covers means that state-wide regulations are not necessarily applicable to the entire coastline. This vastness also makes stock assessments a daunting task for any scientist who must use his or her findings to make decisions for over 840 miles of coastline and 3,427 miles of tidal shoreline.<sup>35</sup>

A recent example of regulation changes occurred in early 2013 under the Pacific Coast Groundfish Fishery Management Plan.<sup>36</sup> On December 31, 2012 the National Marine Fisheries Service (NMFS), Northwest Region released a public notice announcing the changes being implemented on the west coast from the Mexican to the Canadian borders as a part of the Pacific Coast Groundfish Fishery.<sup>37</sup> These provisions greatly affected fisherman Zack Roach and the changes allowed him to catch roughly 10% of the blackgill rockfish he had in prior years. He has been the primary fisher (of only a few) in all of San Diego targeting this species and these drastic cuts had drastic effects on his operation.<sup>38</sup> These regulations were implemented based on stock assessments that were created by NMFS of the Northwest Region and were not conducted in San Diego. His is a clear example of the large scope fishery managers must cover, where areas are not fully assessed yet are still being placed under broad regulations that negatively impact fishers.

These regulations can cause challenges for fishers but they have initiated many positive changes from an ecological standpoint. There are hardly any long line fisheries remaining in California because they cannot operate within the 200 nautical mile EEZ. One operation running long line for swordfish out of Ventura, the Ventura II, must take longer trips because of the far distances boats must travel to reach operable waters. The

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<sup>35</sup> InfoPlease. (2013). Coastline of the United States. Retrieved from InfoPlease: <http://www.infoplease.com/ipa/A0001801.html>

<sup>36</sup> Northwest Region, National Marine Fisheries Service. (20113). 50 CFR PART 660, SUBPARTS C - G, Federal Pacific Coast Groundfish Regulations for Commercial and Recreational fishing 3-200 Nautical Miles off Washington, Oregon, and California. Seattle: National Marine Fisheries Service, Northwest Region.

<sup>37</sup> National Marine Fisheries Service, Northwest Region. (2013, Dec 31). Pacific Coast Groundfish Fishery, Public Notice. Retrieved from Commercial and Recreational Fishery Management Measures: [http://www.nwr.noaa.gov/publications/fishery\\_management/groundfish/public\\_notices/nmfs-sea-12-19.pdf](http://www.nwr.noaa.gov/publications/fishery_management/groundfish/public_notices/nmfs-sea-12-19.pdf)

<sup>38</sup> Roach, Z. (2013, May 18). Commercial Fisherman. (G. Rich, Interviewer)

captain has been successful by working with a contact on shore to set up local direct markets and inform the public what has been caught. As a result, most of his catch is sold by the time he hits the dock, including species that might otherwise be considered bycatch and would have been discarded, and the large quantities of discarded bycatch greatly influenced the nearshore ban of longlines.<sup>39</sup> By selling locally he also eliminates shipping transportation and fuel consumption. This scenario is an example of how defining sustainability based strictly on traditional criteria, such as gear type or bycatch, can be problematic. This is an innovative example of how a fisher can successfully work within regulations and still be successful and get a fresh product to the local community.

### **4.3 Permit Challenges**

Navigating through the required fishing permits can be challenging and confusing. There are vessel fees and licenses as well as permits specific to what, how and where species are caught. There are a number of commercial fishing permits that were once issued by the California DFW and now can only be attained by transfer. These transfers can only be performed when strict criteria are met and each transfer has its own set of fees. A California halibut bottom trawl vessel permit transfer can only be completed if the current permit holder is 65 years or older, permanently disabled or is deceased.<sup>40</sup>

The challenges of obtaining the needed permits is reflected in the Pacific Swordfish fishery where there are two catch methods allowed within 200 nautical miles: drift gillnet and harpoon. If a fisher would like to enter the swordfish fishery the only permits available from CA DFW are for the harpoon fishery yet it takes years of practice and knowledge to be a successful swordfish harpooner.<sup>41</sup> The only way to obtain a commercial drift gill net permit, which is for sharks and swordfish, is by permit transfer. Transfer provisions require that the permit must have been held by the current holder for three or more years, have a qualified doctor state that they are suffering from a serious illness or permanent disability, or submit a transfer request

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<sup>39</sup> Bassham, D. (2013, May 9). Dockmaster, Driscoll's Wharf. (G. Rich, Interviewer)

<sup>40</sup> California Department of Fish and Wildlife. (2013). California Halibut Bottom Trawl Vessel Permit Transfer Application. Retrieved from Commercial Fishing Licenses: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=42089&inline=1>

<sup>41</sup> Flynn, M. (2013, May 9). Fisher. (G. Rich, Interviewer)

within six months of death.<sup>42</sup> A transfer fee of \$1,500 must be paid with an additional \$130 if the permit will be used on a different vessel.<sup>43</sup> Many fishers will hold on to their valuable permits using them as assets rather than actually fishing. In addition to fees paid to CA DFW, unless given as an inheritance to family, the fisher holding the license can sell it for prices at their discretion by prices driven by the market and demand. This has been especially true recently with the spiny lobster fishery's skyrocketing value where permits are being sold by holders for \$40,000-\$60,000.<sup>44</sup>

The permits that are currently only transferable have various criteria for when they expire. If not transferred, some expire if annual fees cease to be paid while others will remain through the life of their holder. Fishers that have purchased permits that now can only be transferred may enter the fishery but decided to get out before the required time for a transfer has passed. In all instances if the transfer is not completed following the required criteria, that permit expires and is not replaced by CA DFW. All of these costs and limitations can make it nearly impossible for someone to enter the fishery and causes much of San Diego's commercial fisheries to be underutilized.

#### **4.4 Species Limitations**

The perception that there are limited species that are commercially viable within San Diego's waters is overshadowed not by what could be caught but by what is allowed to be caught. Many of the local fishers say they would fish more and for a larger variety of species if regulations were not so strict and permits so difficult to acquire. There is also a seasonality that is influenced by the regulations of some fisheries, another factor that makes availability challenging.<sup>45</sup>

Another aspect of species limitations is that there are some possible fisheries which are underutilized by the public and not commonly consumed. Although it has grown in popularity over the years, sea urchin, or uni, is a key example. San Diego is one of the largest global fisheries for sea urchin and although it has

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<sup>42</sup> California Department of Fish and Wildlife. (2013). Commercial Drift Gill Net Shark and Swordfish Permit Transfer Provisions. Retrieved from Commercial Fishing License: <http://www.dfg.ca.gov/licensing/commercial/driftgillsharkinfo.html>

<sup>43</sup> Ibid.

<sup>44</sup> Flynn, M. (2013, May 9). Fisher. (G. Rich, Interviewer) & Bassham, D. (2013, May 9). Dockmaster, Driscoll's Wharf. (G. Rich, Interviewer)

<sup>45</sup> San Diego Fishers Survey. (2013). Locally Landed. San Diego.

experienced a growing local market, much of the product is still exported.<sup>46</sup> Fishers have made considerable effort to ensure the survival of their fishery, such as creating the California Sea Urchin Commission where they are attempting to work together and with regulators.<sup>47</sup> On the consumer side, there has been increased local use of urchin, especially in sushi restaurants. Chef Robert Ruiz has been actively participating with the local fishers to inform diners that the uni (sea urchin) they are consuming are local species. He prints QR Codes (Quick Response Codes, bar codes readable by smart phones) on edible rice paper and has been cooperating with students from Scripps Institution of Oceanography to communicate information about the local fishery with consumers.<sup>48</sup>

The Commercial Fisheries Revitalization Plan, Background and Existing Conditions Report lists the top nine commercially landed species in San Diego as: swordfish and shark (thresher and shortfin mako), California spiny lobster, albacore tuna, California halibut, sea urchin, rock crab and spot prawns.<sup>49</sup> The CA DFW lists 63 vertebrate species (19 rockfish) and 22 invertebrates (eight crab) that were landed in San Diego in 2011.<sup>50</sup> These numbers show that there are a variety of species being caught within San Diego and that the possibility exists for what is caught locally to be available locally rather than shipped to other locations.

#### **4.5 Lack of Community Communication**

There appears to be a general lack of communication between the local commercial fishery and local residents and restaurants. Local chefs have expressed an interest in buying more local seafood but did not know where to start.<sup>51</sup> Even though the internet can provide nearly limitless information immediately, this information is not easy to find because it is not centralized. When learning about the commercial fishery it is challenging to understand all the players and how they fit together. When a conversation is started, it is clear

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<sup>46</sup> Lisa Wise Consulting. (2008). San Diego Sea Urchin Project, The San Diego Waterman's Association. San Diego: California Coastal Conservancy.

<sup>47</sup> California Sea Urchin Commission Meeting. (2013, Jan 26). San Diego.

<sup>48</sup> Ruiz, R. (2013). Chef, Harney Sushi. (G. Rich, Interviewer)

<sup>49</sup> Lisa Wise Consulting, Inc. (2009). Port of San Diego Commercial Fisheries Revitalization Plan, Background and Existing Conditions Report. San Diego: Lisa Wise Consulting, Inc.

<sup>50</sup> California Department of Fish and Wildlife. (2012, Sep 13). Monthly Landings in Pounds in the San Diego Area During 2011. Retrieved from Final 2011 California Commercial Landings:

<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=57110&inline=true>

<sup>51</sup> McCarthy, R. (2012, April). Chef. (G. Rich, Interviewer)

that many of the fishers, restaurants and distributors have been approached by everyone from port employees to students to curious tourists asking questions about what is local and where to purchase it. Even a basic Google search takes a variety of directions causing a person to have to invest substantial time in research and reading to understand the big picture. This lack of information spurred the creation of seafood buying guides which are a great resource but the scope of information most provide inhibit them from being precisely area specific.

## **5.0 Some Innovative Fishers**

### **5.1 Websites and Direct Selling**

Few fishers in San Diego have created websites which reach directly to the public and facilitate selling product directly. Captain John Law of Wild West Commercial Fishing is an example of a fisher who has built his own website. His website covers a bit about himself, the variety of species he catches, its seasons, and where you can get his catch. He has a Fish Receivers license which allows him to sell all of his catch directly to local markets, restaurants and the public.<sup>52</sup>

### **5.2 Social Media and Dockside Sales**

Zack Roach who works with Pete Halmay and Luke Halmay selling from their boats on Saturdays, are examples of fishers who use social media to reach out to the public through their Facebook pages. Roach puts announcements for what he will be selling on the Facebook page “The Fish Addiction”<sup>53</sup> named after his boat, while the Halmay's supplement these announcements as well as share fisheries news on their Facebook page “San Diego Fisherman’s Working Group”.<sup>54</sup>

### **5.3 Delivering Product and Community Involvement**

Matt Pressly, a sea urchin diver, has worked hard over the years to build a base of customers within San Diego. He calls his small SUV the “Urchin Mobile” and after an early morning start full of diving for

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<sup>52</sup> Captain John Law. (2013). Wild West Commercial Fishing. Retrieved from WildWestFish.net: <http://www.wildwestfish.net/>

<sup>53</sup> Roach, Z. (2013). The Fish Addiction. Retrieved from Facebook: <https://www.facebook.com/TheFishAddiction?fref=ts>

<sup>54</sup> Halmay, P. (2013). San Diego Fishermen's Working Group. Retrieved from Facebook: <https://www.facebook.com/pages/San-Diego-Fishermens-Working-Group/100773763351039?fref=ts>



urchins, he spends the afternoons and evenings delivering what he has caught to local restaurants. He expressed great interest in anything that would aid connecting fishers with the public but said he didn't have more time left in the day to do so himself. Many other fishers are deterred from this method of sale, although collectively the urchin fishers share a Commercial Fish Business License. Pressly says that it is worth it to spend the extra time selling directly when he can get a price that is three to five times greater from the restaurant than the processor. He has also been actively working to build unity within urchin fishers with the hopes of setting price minimums and working with DFW to self-manage their fishery. He participates as a commissioner for the California Sea Urchin Commission<sup>55</sup> and is great example of a fisher who has been making the best of what he loves doing but also demonstrates the immense amount of work and time involved to do so.<sup>56</sup>

#### **5.4 Fishing Multiple Species and Building Other Skills**

Mike Flynn, Captain of the F/V Baby Joe, fishes a variety of species throughout the year to keep his operation running. He worked for 20 years as a deck hand before owning his own boat. He understands the large learning curve that exists to be successful in various fisheries. He had a mentor and after years of learning and hard work with him, he was one of the few fishers who were able to secure some permits that it had become possible to acquire only via transfer. He has built relationships with some local restaurants to sell directly to them and currently catches: swordfish, sea bass, halibut, albacore tuna, Bluefin tuna, mako shark and thresher shark. During the slow fishing times he supplements his work and income with his welding work he does and was recently building a bait tank for a new Albacore tuna fisher.<sup>57</sup>

#### **6.0 Exploring Alternative Models of CSFs for San Diego**

San Diego is host to a fishery that is decreasing in vessel effort but those still participating exhibit a passion for their trade and a desire to not let it disappear. In many ways it appears that if things continue in

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<sup>55</sup> Greenburg, J. (2013). Contact us. Retrieved from California Sea Urchin Commission: [http://www.calurchin.org/calurchin\\_aboutus.html](http://www.calurchin.org/calurchin_aboutus.html)

<sup>56</sup> Pressly, M. (2013). Urchin Fisher. (G. Rich, Interviewer)

<sup>57</sup> Flynn, M. (2013, May 9). Fisher. (G. Rich, Interviewer)

the direction they have been over the past 50 years, the commercial fishery could be extinct within the next couple of decades. The fishers cannot keep their way of life alive to pass on to future generations on their own. If the community of San Diego values this part of their history, it is time to get creatively involved to ensure its place in the future.

### **6.1 CSA to CSF**

The new Community Supported Fisheries (CSFs) across the country have been modeling themselves after Community Supported Agriculture (CSAs) groups. Farming is inherently different from fishing and copying the CSA model presents some difficulties. Agriculture is relatively predictable, the farmed products are easily divided into individual portions and produce is not as perishable as seafood. These differences make it more logical to adjust the CSF to fit the nature of the fishery rather than try to force it into a mold that works for a completely different industry. This is especially true for a fishery like that in San Diego that already has numerous difficulties to overcome such as lack of infrastructure, segregated ports, strict regulations and an unaware public.

The availability of species highlights another characteristic that differentiates fisheries from agriculture. In a CSF, if desired products are not available when consumers wanted them, it could be bad for business and a potential reason for not retaining customers that don't understand the nature of the fishery. The currently small, limited San Diego fishery would be hard pressed to keep a large number of individuals provided with a consistent product making it necessary to create an alternative model CSF to be successful.

### **6.2 One Step at a Time**

The levels of technology we have available make it possible to explore new innovative models of CSFs. Without the existence of properly inspected processing plants it would be nearly impossible for fishers to make their catch into portions that can be sold to the individual. Processing challenges make it a reasonable first step to directly market to restaurants that have kitchen facilities where they can do their own processing. Based on much of the feedback from local restaurants there is a great deal of interest in connecting with

fishers and willingness to serve fresh, local seafood.<sup>58</sup> Without large investments of time, it is difficult for restaurants to acquire a clear, accessible way to contact fishers and to gain an understanding of the local fishery based on the limited available information. Even if relationships are established it can be challenging to maintain connections and transport the products can present further complications.<sup>59</sup>

It may take time and proven success to increase fishers' participation in a Community Supported Fishery but building support and relationships is the first step in creating a direct connection between them and the public. Many logistical items would need to be resolved involving who would administer the website and how the product would get from the docks to customers. To ultimately be successful on a larger scale, there would also be the need to build infrastructure for processing. The only way to reach these larger scale goals is one step at a time.

### **6.3 Alternate Models**

Adjusting the CSF model to overcome these challenges could involve an arena, in the form of a website, for real time communication between the fishers and restaurants which would be successful in San Diego based on information gathered in the survey responses and interviews. Participating fishers would post their catch and a notification would be sent to participating restaurants, allowing chefs and owners to make purchases they know are fresh. The benefit for the fisher is increased sales margins by selling a portion of their catch close to market price. The remaining product will still be sold to processors and distributors, at least in the beginning, who pay a lower price, but overall they have received better value for the entire catch. In addition to knowing the freshness of the product, the restaurant benefits by setting themselves apart in their support of local business and sustainable behavior. Those dining out at participating locations gain confidence about their involvement in the local community, an increased understanding of the local fishery and a delicious meal.

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<sup>58</sup> San Diego Restaurant Survey. (2013). Locally Landed. San Diego.

<sup>59</sup> Rivellino, E. (2013, Apr 30). Sea Rocket Bistro Owner. (G. Rich, Interviewer)

This model would be the most likely to succeed in San Diego because it addresses all the current obstacles faced. It unifies the segregated landing areas into one digital location and by beginning with restaurants; it is comfortable for fishers because many of them already sell directly to restaurants. It also removes the required weekly delivery with a variety of product from week to week which would be difficult to fulfill based on limited variety in large quantities. A real time environment allows the fisher to communicate with the restaurant what they have that day and this in turn allows the chef to feature a daily special of that catch. It takes the pressure of the fisher to catch a certain amount of a certain item and gives the opportunity for the chef to be creative. The majority of fishers and restaurant respondents expressed a desire to connect with each other and a willingness to participate if that arena was created.

The website would go beyond being a connection between restaurants and fishers, it would be a place for the public to begin to be engaged. As a part of this project, species pages were designed for Pacific sardine, Pacific swordfish and albacore tuna.<sup>60</sup> The information they contain would be available on the web page and hard copies made for the participating restaurants and markets to be distributed to the public. They are a quick reference with a summary of sustainability ratings, information relative to San Diego's fishery, fun facts and recipes. To gain credibility they would be vetted and peer reviewed by professionals and scientists within that fishery.

A similar real time environment was recently created on the east coast in Boston, MA called Red's Best. Their Facebook page boasts, "Dayboat seafood right from American fisherman to you. No customer too small."<sup>61</sup> They are a network of fisherman, with no one gaining more representation than another, where they can share their profiles and get products directly to customers. They include information on how to get their product at farmers market, wholesale from boats, home delivery club links and purchasing directly through

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<sup>60</sup> See Appendix 4

<sup>61</sup> Red's Best. (2013). Red's Best. Retrieved from Facebook: <https://www.facebook.com/pages/Reds-Best/173864275958770>

the website. It is also highlighted who the fishers are as well as the traceability of their products with QR codes.<sup>62</sup>

Future of Fish (FoF) is a nonprofit working with entrepreneurs starting market driven initiatives in support of sustainability and traceability.<sup>63</sup> Jared Auerbach, who founded Red's Best and designed the innovative platform it runs on, is among ten entrepreneurs working with three strategic partners which currently comprise Future of Fish. FoF is a perfect example of creative solutions within fisheries and their assistance could be the solution for creating a Community Supported Fishery within San Diego. Their "approach to system change is to help develop and support leaders working to address multiple breakdowns in the system" and by "representing all levels in the seafood supply chain, (they) are able to foster greater change than any one individual or organization could accomplish alone".<sup>64</sup>

## **7.0 Heading in the Right Direction**

The San Diego community has been experiencing a growing interest in local fisheries and has taken some measures to keep it alive. There appears to be a combination of factors that have attributed to this change. The 1990s and early 2000s have seen a steady decline in fisheries, caused largely by an increase in regulations and general public dislike and criticism of fishing practices.<sup>65</sup> A growing understanding of what is required to provide the food we enjoy combined with a nostalgic desire to keep a part of national history alive has inspired the idea of sustainable and local fisheries.

There have been some key players that started this movement within San Diego, most of them with an investment in the industry. Pete Halmay has been an urchin fisherman in San Diego throughout his life. He founded San Diego Fisherman's Working Group<sup>66</sup> with the intent to build cooperation amongst fishers and

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<sup>62</sup> Red's Best. (2013). Seafood Shop by networked fisherman. Retrieved from Red's Best.com: <http://www.redsbest.com/shopreds/>

<sup>63</sup> Future of Fish. (2013). The future of wild fish depends on innovation. Retrieved from Future of Fish.org: <http://www.futureoffish.org/>

<sup>64</sup> Future of Fish. (2013). The future of wild fish depends on innovation. Retrieved from Future of Fish.org: <http://www.futureoffish.org/>

<sup>65</sup> Lisa Wise Consulting, Inc. (2009). Port of San Diego Commercial Fisheries Revitalization Plan, Background and Existing Conditions Report. San Diego: Lisa Wise Consulting, Inc.

<sup>66</sup> Pete Halmay. (2013). San Diego Fisherman's Working Group. Retrieved from Community Fisheries Network: <http://www.communityfisheriesnetwork.org/SDFWG.html>

with an ultimate goal to create a dockside market at Tuna Harbor.<sup>67</sup> At Driscoll's Wharf, Cathy Driscoll has been very active in making improvements for the fishers docked there. She secured two grants from the California Coastal Commission for a new crane to assist with off-loading catch and a badly needed ice machine.<sup>68</sup> They both worked with the Port of San Diego on the "Commercial Fisheries Revitalization Plan, Background and Existing Conditions Report"<sup>69</sup> along with others in the fishing community: Scott Breidenthal, Bruce Cummings, Cathy and Tom Driscoll, Kelly Falk, August Felando, Peter Foltz, Pete Halmay, Jonathan Hardy, Scott Hawkins, Mitch Hobron, Deborah Ruddock, Matt Valerio, Maryanne Kind, Tina Pierce, and Dave Rudie. The plan is a very inclusive summary of the status of San Diego's fishery and what the needed improvements are to maintain the fishery which generated an average of over \$8 million annually between 1985 and 2009.<sup>70</sup>

Since the plan was created in 2009, there has continued to be efforts to have the items that were laid out in the plan enacted. Last year, another MAS MBS student, Kristen Anderson did her capstone working with Pete Halmay to develop a business plan for a dockside market. This year there have been numerous meetings involving various individuals from the industry, NOAA, CA DFW, local universities, non-profit organizations and local business planning collaborative efforts.

At Driscoll's Wharf, Cathy Driscoll recently signed a contract with Catt White, who manages three farmer's markets in Little Italy, North Park and Pacific Beach.<sup>71</sup> Last year White, with her business partner Dale Steel, successfully opened San Diego Public Market<sup>72</sup>, a two acre market in Barrio Logan they want to rival the likes of Pike's Place in Seattle.<sup>73</sup> Driscoll and White plan to launch a farmer's market in the parking lot adjacent to Driscoll's Wharf in June 2013 on Wednesday nights. There will be an area for local fishers to sell their catch

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<sup>67</sup> Halmay, P. (2013, Jan 5). Commercial Fisherman. (G. Rich, Interviewer)

<sup>68</sup> Driscoll, C. (2013, May 6). Owner, Driscoll's Wharf. (G. Rich, Interviewer)

<sup>69</sup> Lisa Wise Consulting, Inc. (2009). Port of San Diego Commercial Fisheries Revitalization Plan, Background and Existing Conditions Report. San Diego: Lisa Wise Consulting, Inc.

<sup>70</sup> Ibid.

<sup>71</sup> Farm Bureau San Diego County. (2013). San Diego County Certified Farmers' Markets. Retrieved from [sdfarmbureau.org: http://sdfarmbureau.org/BuyLocal/Farmers-Markets.php](http://sdfarmbureau.org/BuyLocal/Farmers-Markets.php)

<sup>72</sup> San Diego Public Market. (2013). Retrieved from San Diego Public Market.com: <http://sandiegopublicmarket.com/>

<sup>73</sup> Hall, M. T. (2012, Aug 17). Dream of San Diego Public Market bearing fruit. Union Tribune, pp. <http://www.utsandiego.com/news/2012/Aug/17/dream-of-san-diego-public-market-bearing-fruit/>.

at booth spaces with a special rate. Driscoll aims to host a market that will bring customers to the docks creating an increased awareness of the local fishery. She feels her cooperation with White, who has a proven success record with markets, is imperative for the success of her Fisherman's Farmers Market. It is also her belief that based on the availability of product in San Diego's fishery there is a need for supplemental, consistent products available to draw repeat customers and when there is fresh, locally caught fish available; the public will be there to buy it.<sup>74</sup>

## **8.0 Looking to the Future**

The commercial fishery in San Diego has faced many challenges but with the recent outreach and interest there is starting to be a glimmer of hope that their industry will survive. There are still many things that can be done and this will only be accomplished if interest remains high.

Many port cities have one area where all the fishing boats dock. This alone is helpful to facilitate cooperation between fishers and be highly visible to the public. San Diego's fishery is very segregated with some level of animosity between those at Driscoll's Wharf and Tuna Harbor.<sup>75</sup> Even furthering this separation, there are fishers docked in Mission Bay and Oceanside. An example of the difficulties this segregation causes is, for the purposes of this project, it was very difficult and time consuming to gather information because fishers are docked miles apart and within each harbor other vessels are mixed within the commercial fishing boats. Say, for example, all the tuna fishers were docked together and all the urchin fishers together, it would be easier to see and understand the extent of the fishery. Few fishers are willing to move so this is not something that may not change within San Diego.<sup>76</sup> A possible solution is to have a location, in the form of a website, where all the information about the fishery is available, San Diego's cyber fishing dock.

There are many residents and visitors in San Diego who actively try to find where to purchase local seafood. What Red's Best is doing in Boston is a great example of what could be successful in San Diego. The primary goal would be to connect local fishers with potential buyers. A real time environment would be ideal

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<sup>74</sup> Driscoll, C. (2013, May 6). Owner, Driscoll's Wharf. (G. Rich, Interviewer)

<sup>75</sup> Fishers, S. D. (2013). Fishers. (G. Rich, Interviewer)

<sup>76</sup> Ibid.

based on the nature of the fishery. Fishers could post what they have caught to an accumulated database of restaurants and individuals who can meet them at the dock to collect their purchases. It would be important to include an element of education for those information seekers that desire to know what is caught locally and who is catching it. This would involve profiles on the fisherman, what they catch and how they catch it. It would be a place for restaurants that are supporting and serving local seafood can get credit for their efforts and stimulate business to support them. There would be species profiles so there can be a better understanding of what is fished in local waters. It would also be a forum for the public to communicate and for restaurants and individuals to share recipes.

There are many other unfilled areas of possible outreach. Species card and pages that can be distributed at fish markets and special events should be implemented in conjunction with a website. (See enclosures) It is imperative that the cooperation that has begun over the past few years continues if a Community Supported Fishery in San Diego will ever be possible. There are many individuals and organizations that are interested in supporting a local and sustainable fishery. Sustained excitement and involvement of these players will contribute to a thriving fishery in San Diego and an educated public that can connect to create an environment of consumerism that ultimately is healthy for our offshore ecosystems and species. There are still many challenges to overcome but things are hopeful and within the next few years it may be easier for San Diego visitors and residence to eat seafood that is locally landed.



**APPENDIX 1 - Meetings**

<b>Oren Frey</b>	Local Catch Monterey Bay (CSF)
<b>Natalie Webster</b>	American Tuna
<b>Theresa Talley</b>	CA Sea Grant
<b>Catt White</b>	San Diego Farmer's Markets
<b>Dave Rudie</b>	Catalina Offshore Products
<b>Tom Barnes</b>	CA Dept of Fish and Wildlife
<b>Kristen Goodrich</b>	Tijuana Estuary
<b>Joe Principato</b>	Chesapeake Fish Co
<b>Katie Semon</b>	Louisiana Wildlife and Fisheries
<b>Rob Ruiz</b>	Harney Sushi
<b>Saki Miwata</b>	True World Foods
<b>Bill Riedy</b>	The Maritime Alliance
<b>Cathy Driscoll</b>	Driscoll's Wharf
<b>Elana Rivellino</b>	Sea Rocket Bistro
<b>Bruce Bulcao</b>	The Fishery – Fresh fish buyer
<b>Davey Bassham</b>	Driscoll's Wharf – Dockmaster
<b>Sam Harrod</b>	San Diego Ocean's Foundation

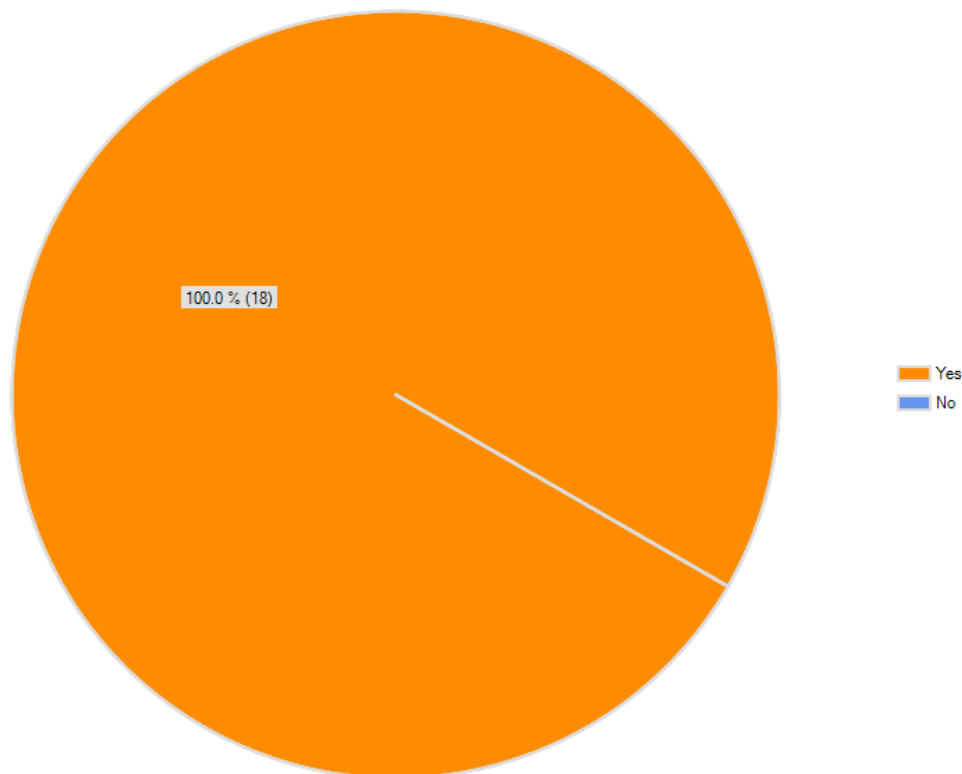
## APPENDIX 2 – Restaurant Surveys

### Restaurant Survey Results

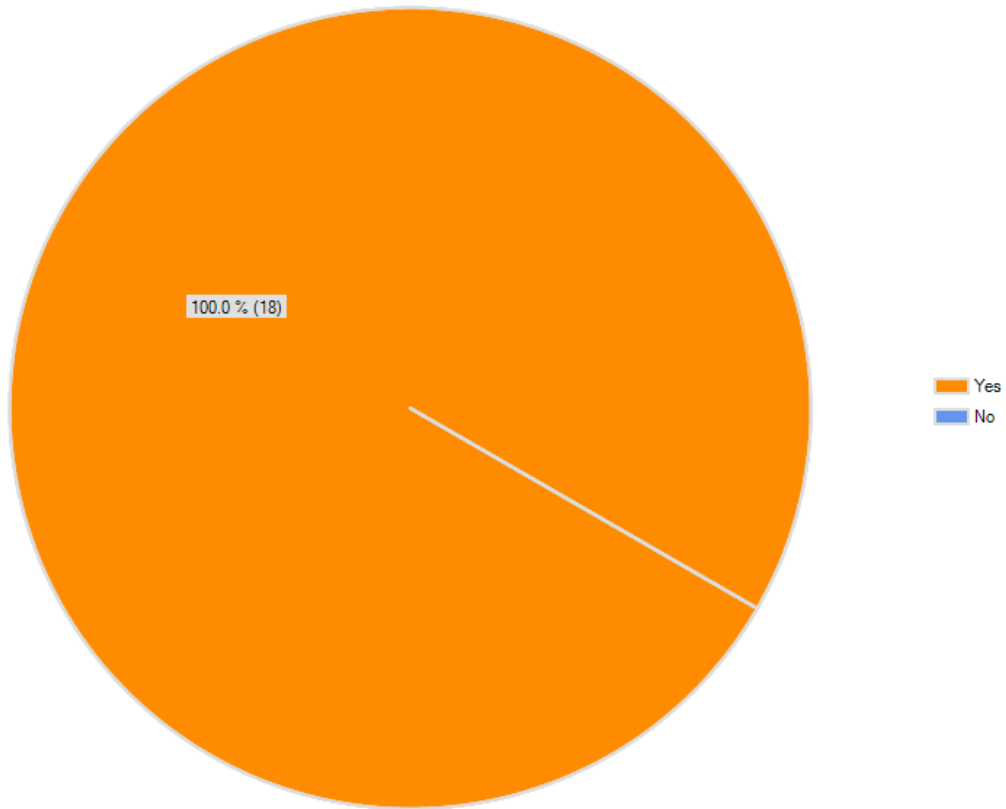
#### 1) Your name and name of restaurant/ business.

1	Bruce Bulcao Fresh Buyer Paul Arias Exec. Chef	The Fishery
2	Olivier Bioteau	Farm house cafe
3	Marguerite Grifka	
4	Katie Grebow	Cafe Chloe
5	Andrew Spurgin	Andrew Spurgin™
6		Hilton Bayfront
7	Robert Ruiz	Harney Sushi
8	Jeff Rossman	Terra American Bistro
9	Dawn Parks	The Wild Thyme Company, Catering and Events
10	Elena	Sea Rocket Bistro
11	Chef Ricardo Heredia	Alchemy Restaurant
12	Trish Watlington Owner	The Red Door Restaurant and Wine Bar The Wellington Steak and Martini Lounge
13	Tommy Fraioli, Executive Chef	Sea Rocket Bistro
14-18	No response	

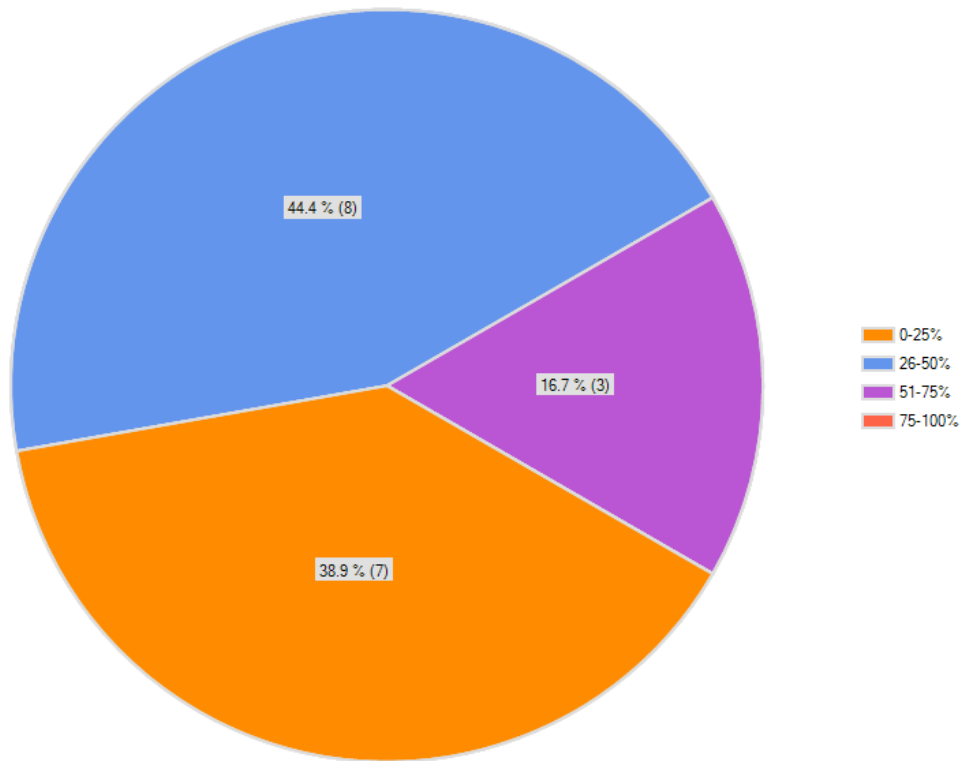
#### 2) Are you interested in using sustainable seafood?



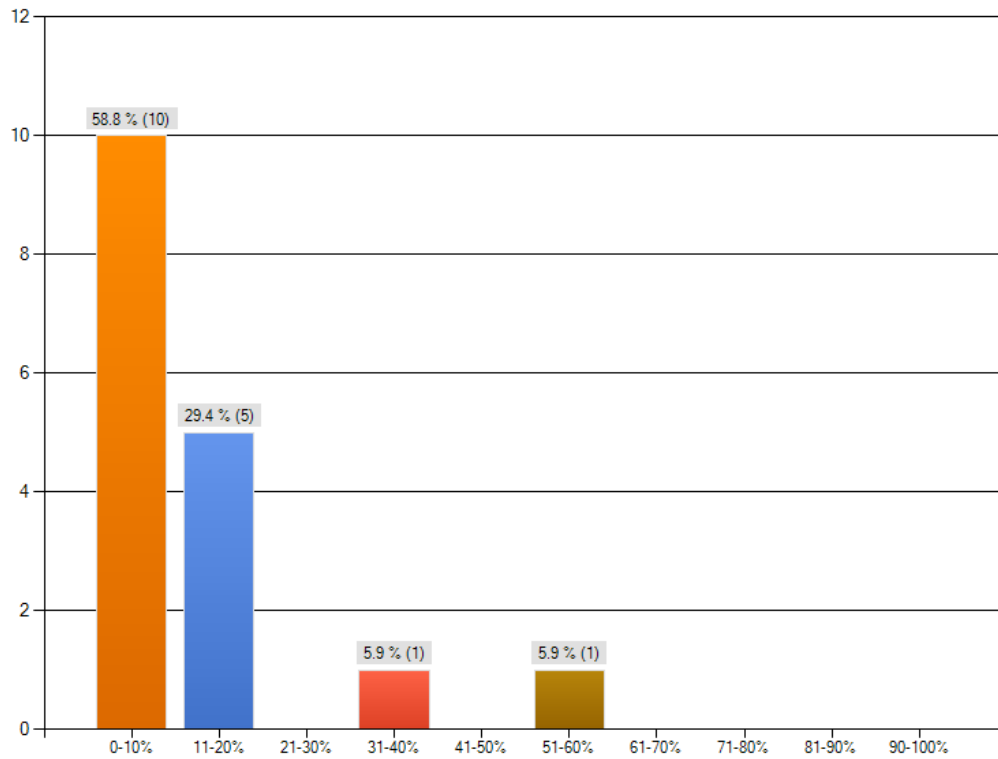
### 3) Are you interested in locally caught seafood?



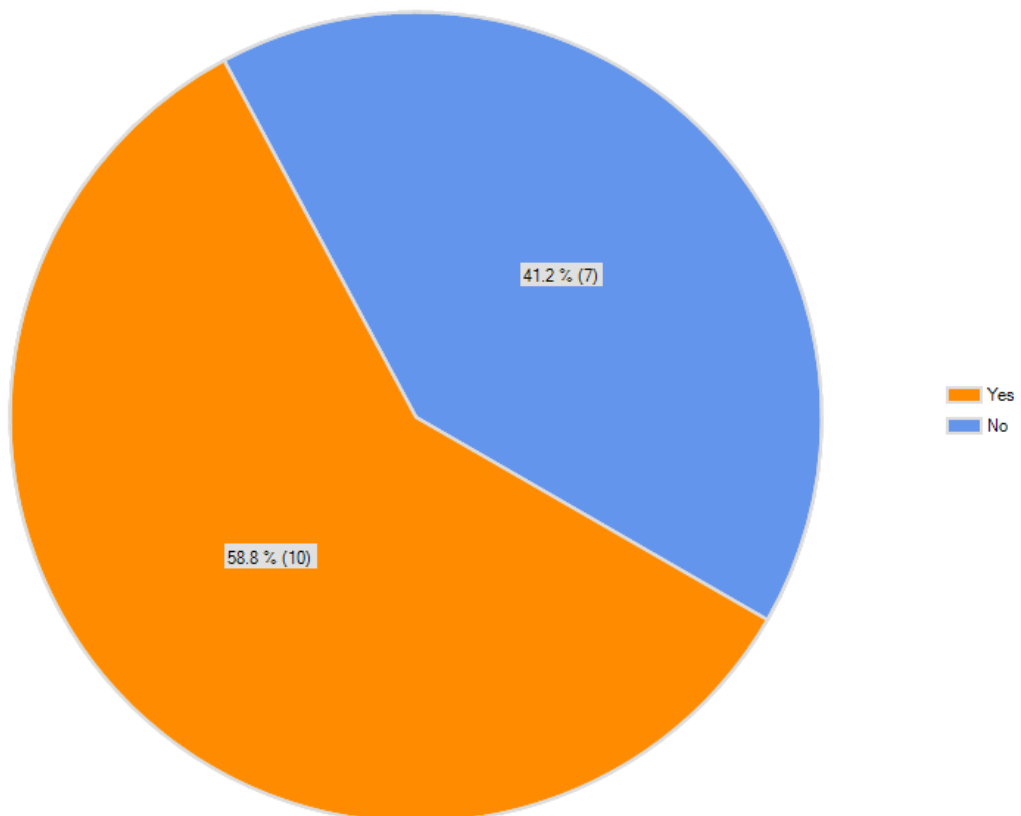
### 4) What percent of food costs do you spend on seafood?



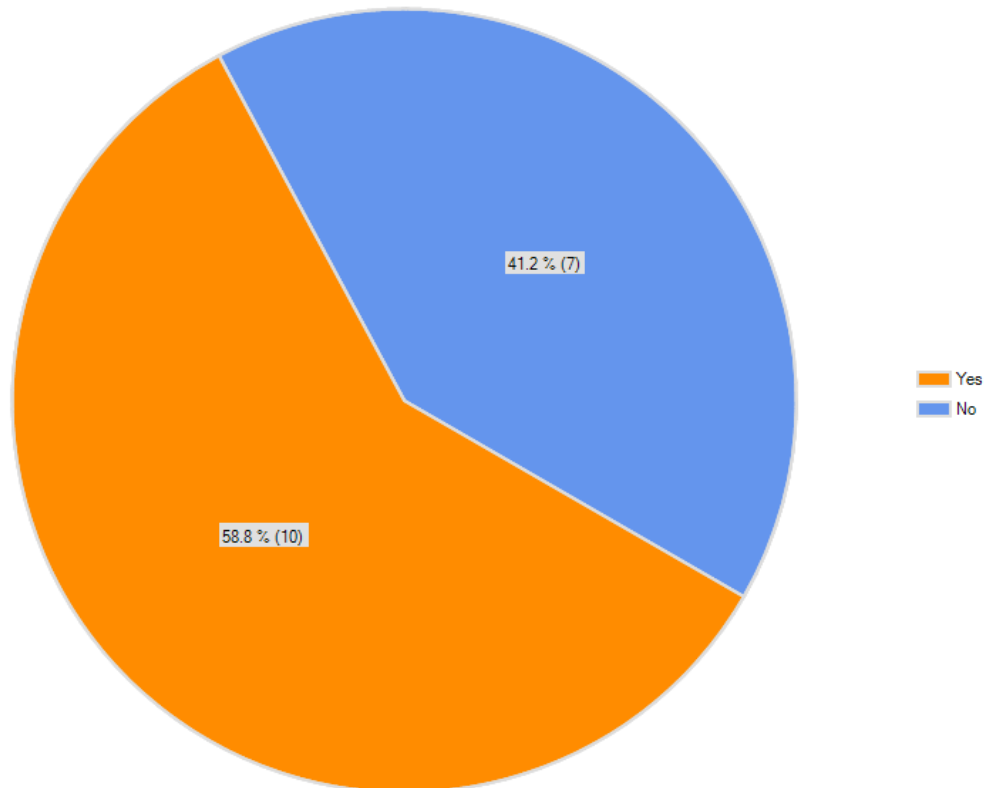
5) How much more would you pay for local, freshly caught seafood per month?(percent more than currently paying)



6) Do you do a daily food special?



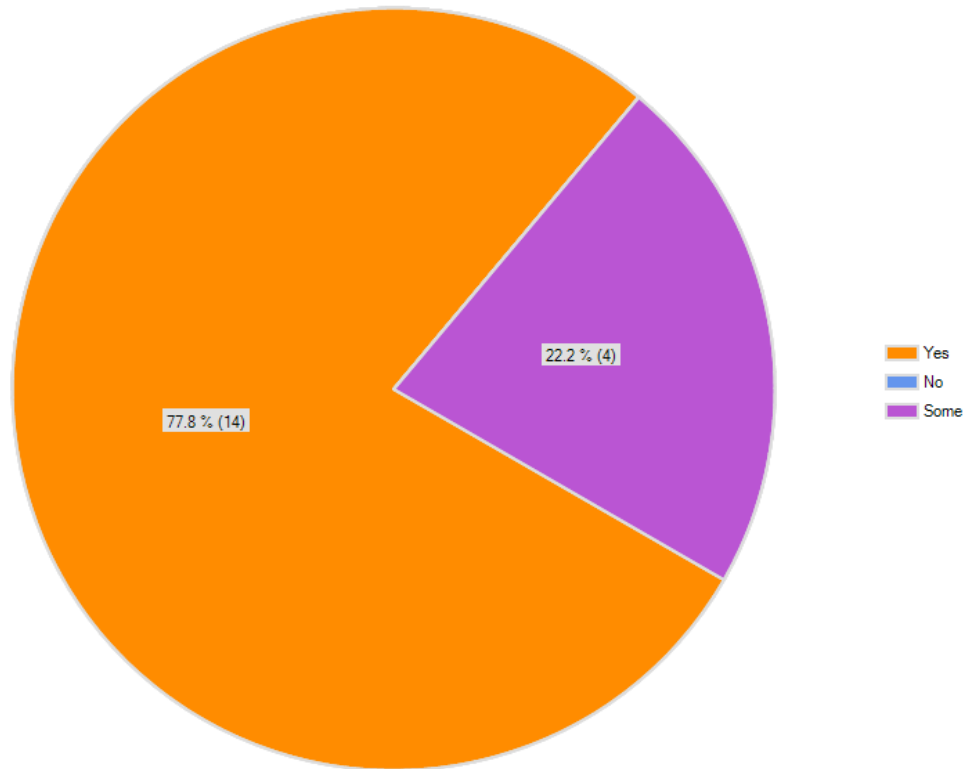
**7) Would you be interested in doing daily specials that feature seafood that is caught by local fishers?**



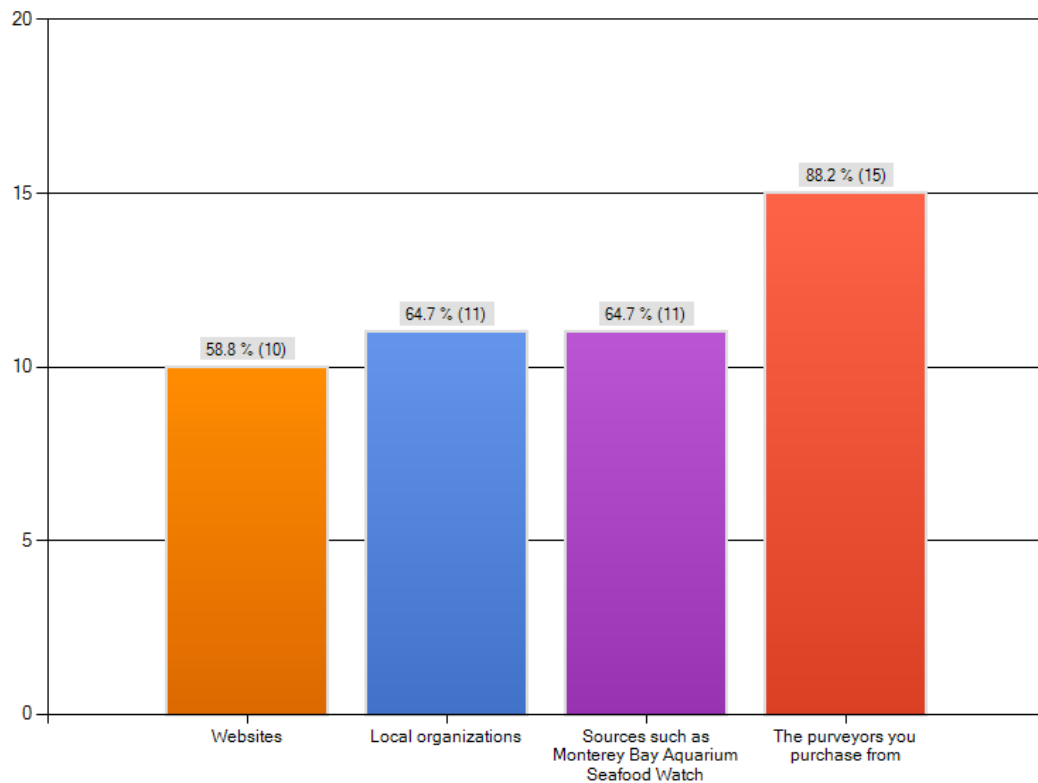
**8) Who is (are) the food distributor(s) you buy seafood from?**

There many but these are a few: Di Carlo Seafoods - Ocean Crystal - Taiwan Seafoods
pacific shellfish Catalina offshore,JFC
catalina, better half shell
Catalina Offshore
Pacific Shellfish Better Halfshell Catalina occasionally Chesapeake Fish occasionally
Catalina Offshore Santa Monica Seafood Peter Halmey Matt Pressly
Santa Monica
True World Foods Garden & Isle Seafood (HAW) Catalina Offshore products
Pacific Shellfish Catalina Offshore
Catalina Offshore, Ingardia Brothers and Santa Monica Seafood.
Catalina Offshore, Everingham Bros, Urchin Divers, Chesapeake Fish (in the past), John Law of Wild West Fishing (in the past), other miscellaneous local fishermen of yellowtail, halibut, cod, lobster, shark
Better 1/2 shell Premier Meats San Diego Sea Food
Catalina Offshore Leong Kuba Tru World
Pacific shellfish. Catalina offshore. Various local fisherman in point loma
santa monica,pac shell, catalina
Catalina Offshore Products - ALL of our seafood is local
Tommy Gomes at Catalina offshore

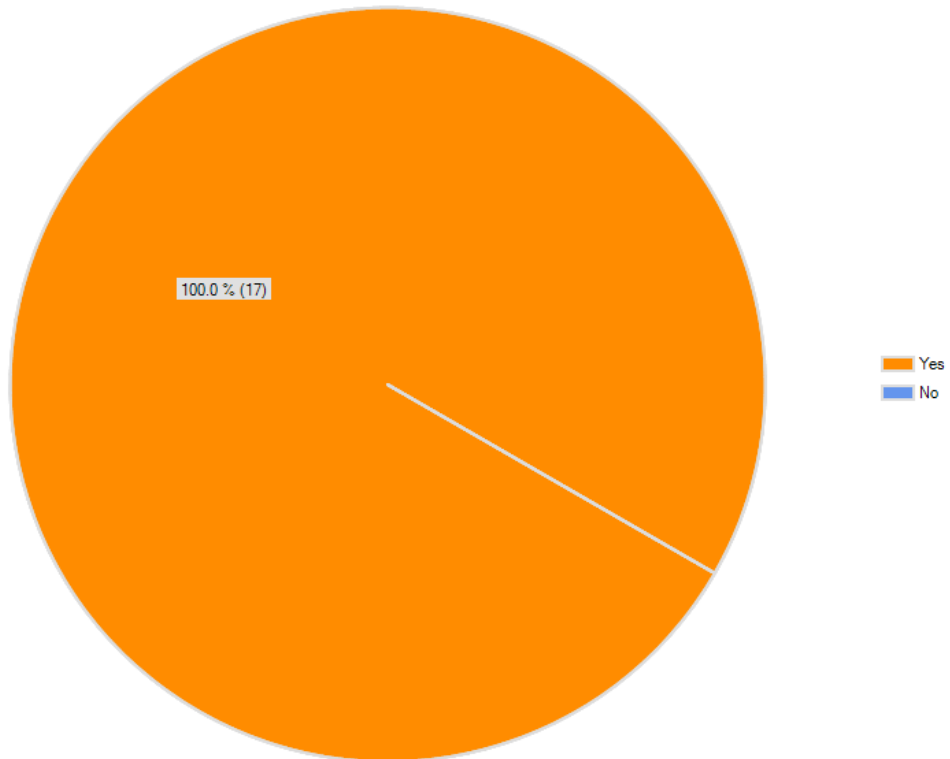
**9) Do you know where (globally) your seafood purchases were caught and processed?**



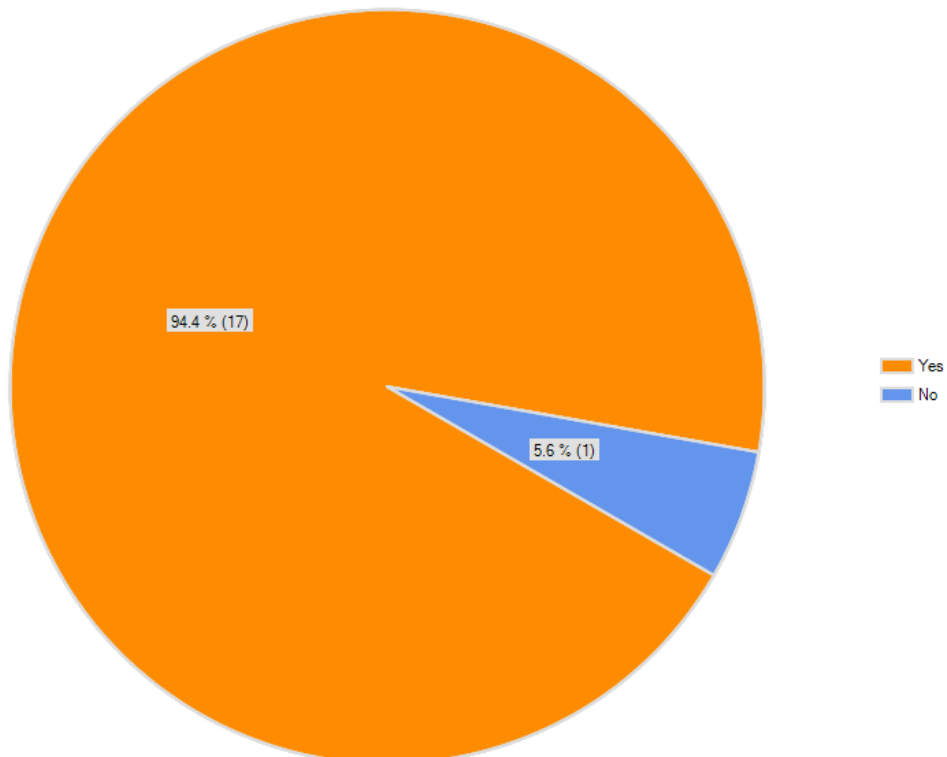
**10) Where do you get information about sustainable seafood?**



**11) Would you visit a web site that had information about sustainable and local seafood available in San Diego?**



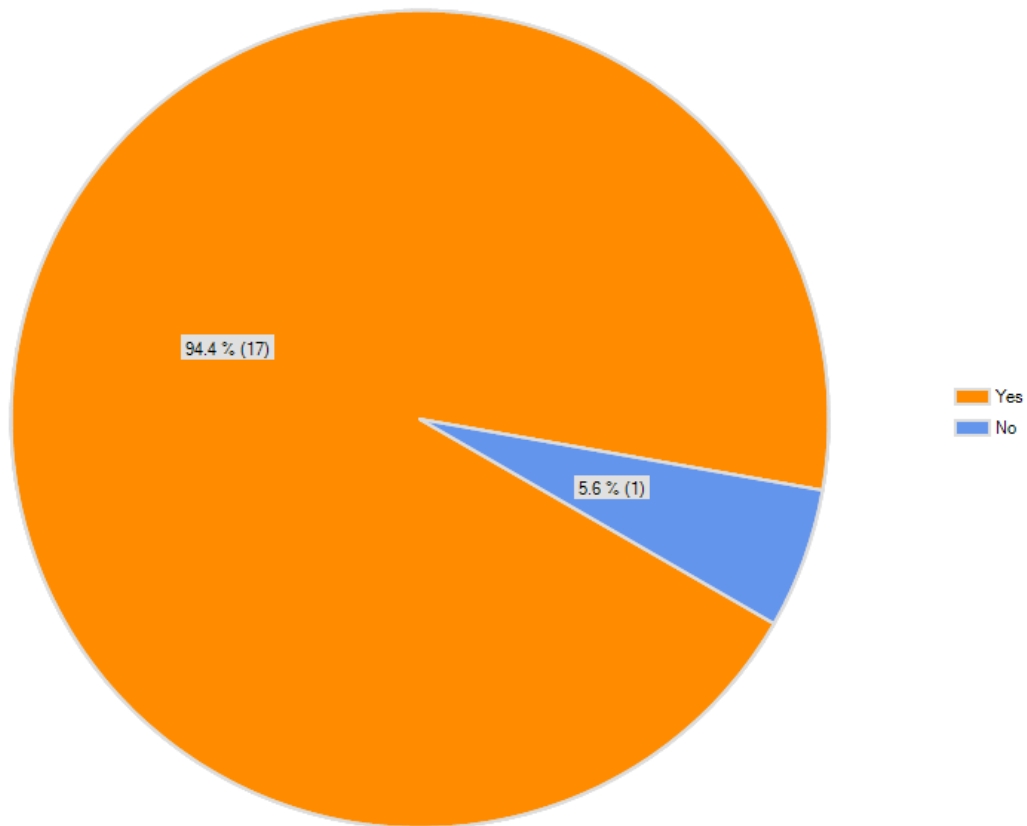
**12) Would you like to connect directly with local fisherman to purchase their catches?**



**13) How many extra hours a week would you have to purchase, promote and educate about local and sustainable catches you use?**

1 to 3
I having been pushing the Sustainable Seafood boat for 20 years, I have lectured to 1,000's of people nationwide, and started a not-for-profit adreeses this, so I am committed to spend the time that I have
none
Very minimal time available, I need my purveyors to help with education, etc.
have been doing this for countless hours for 5 years

**14) Would you be willing to contribute recipes to a sustainable seafood website or events?**





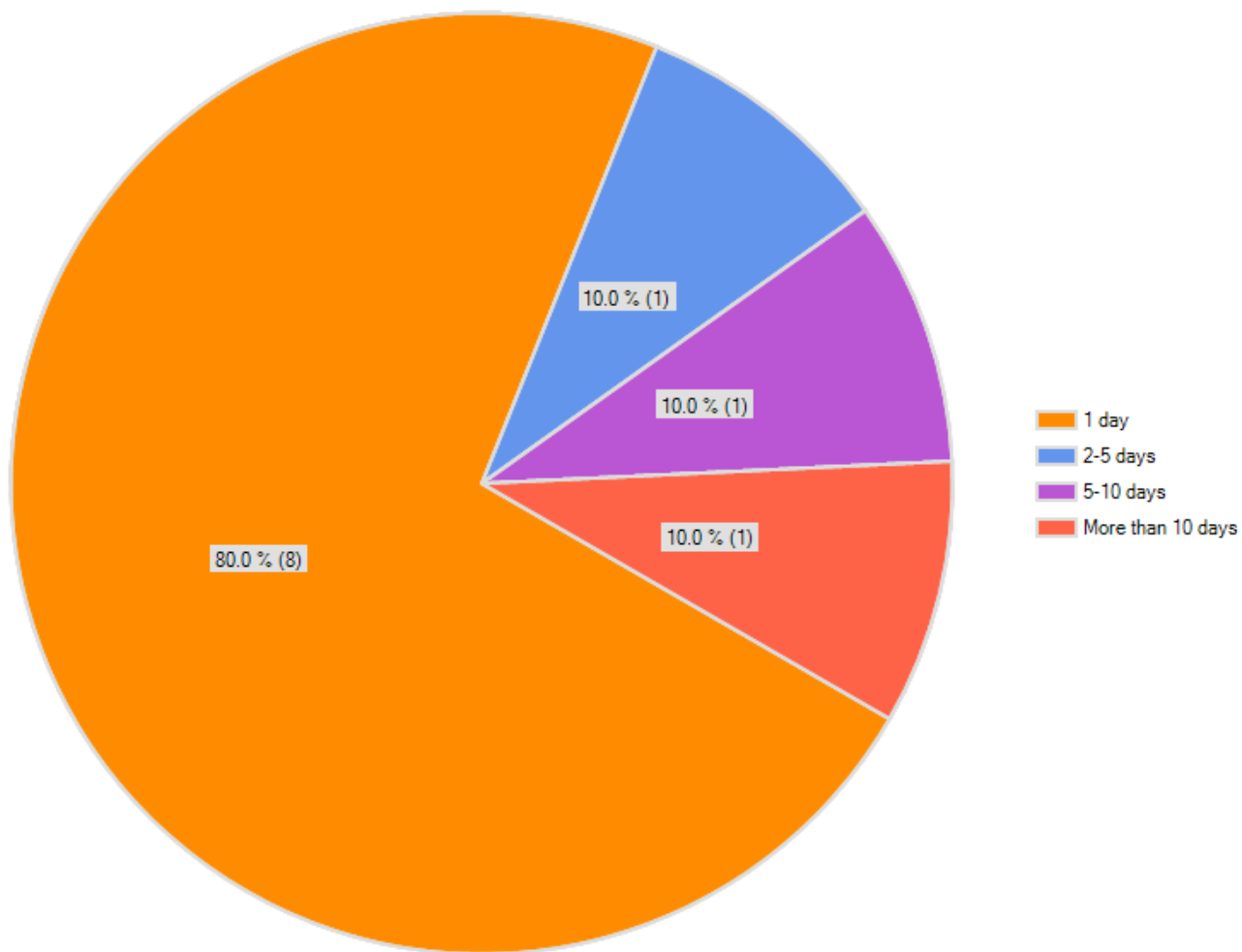
## APPENDIX 3 – Fisher Surveys

### Fishers Survey Results

#### 1) Fisher name and name of vessel

1	Pete Halmay	Erin-B / Fisherman's Working Group
2	John Law	Wild West Commercial Fishing
3	Gary Harle	Victoria Anne
4	Olivia Osman	Robbie's Fresh Fish
5	Mike Flynn	Baby Joe
6	Scott Hawkins	Jody H
7	Mitch Hobron	Taxi2
8	Matt Pressly	Whitey
9	Luke Halmay	Erin-B
10	Zack Roach	The Addiction

#### 2) Average Trip Length



### 3) Species Caught

1	Pete Halmay	red sea urchin
2	John Law	lobster, rock crab, Kellet's whelk, sheephead, California halibut, lingcod, rockfish, thresher shark, mako shark, yellowtail, barracuda
3	Gary Harle	red sea urchin, sheephead, rockfish, lingcod
4	Olivia Osman	California halibut, rockfish, seabass, yellowtail, dorado
5	Mike Flynn	swordfish, seabass, California halibut, albacore tuna, mako shark, thresher shark, bluefin tuna
6	Scott Hawkins	albacore tuna (poll and troll)
7	Mitch Hobron	red sea urchin
8	Matt Pressly	red sea urchin
9	Luke Halmay	red sea urchin, top snails, starfish (for scientists)
10	Zack Roach	blackgill rockfish (much less than years past because of regulation changes), black cod (sablefish), rock crab, California king crab, California halibut, swordfish

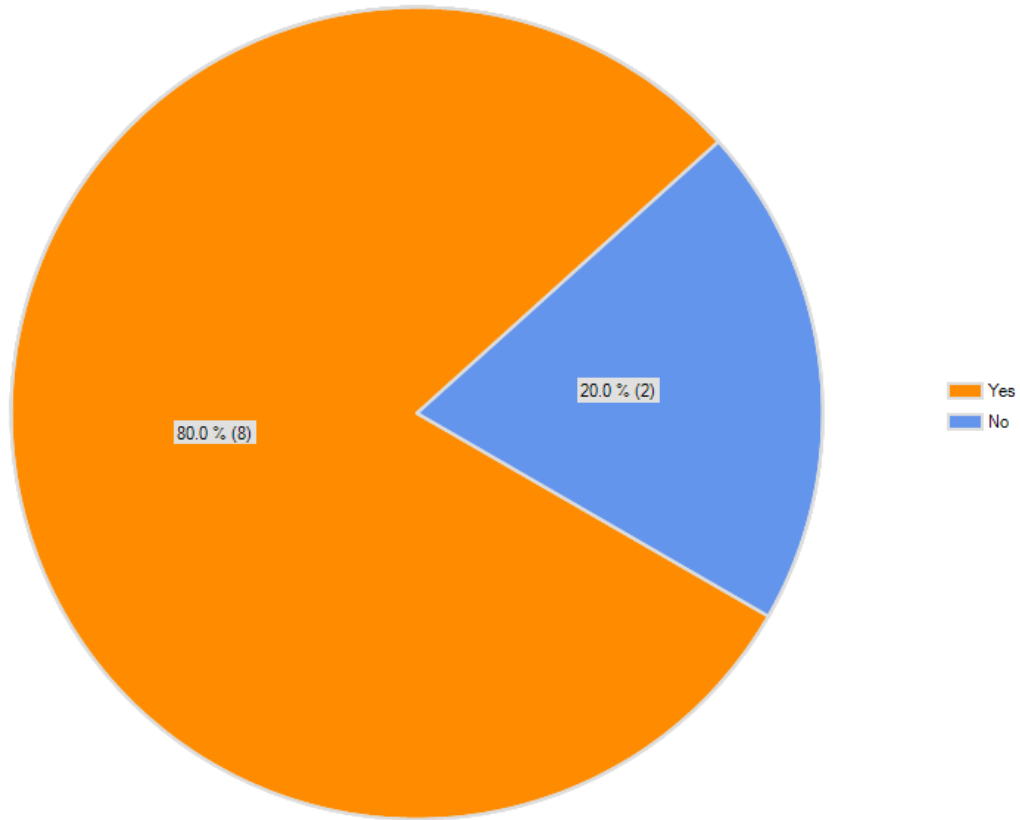
### 4) What other species would you catch if you knew you could sell them?

1	Pete Halmay	No response
2	John Law	Skates, Rays, Misc. Bottomfish, Mackerel.
3	Gary Harle	turbin snail, mako shark
4	Olivia Osman	The issue for local fisherman is not what we can sell or can't, it's affording the regulation licenses.
5	Mike Flynn	Currently catch as many as can
6	Scott Hawkins	maybe swordfish
7	Mitch Hobron	No response
8	Matt Pressly	Turban snails, purple sea urchin
9	Luke Halmay	Kellet's Whelk, would do more hook and line with rockfish, etc
10	Zack Roach	sheephead and lobster (permits are limiting)

### 5) What species do you not catch because the licensing/regulations are too expensive/restrictive?

1	Pete Halmay	groundfish
2	John Law	spot prawns
3	Gary Harle	Lobster, crab and Sea Bass
4	Olivia Osman	sculpin, lobster, shrimp, swordfish, assorted rockfish
5	Mike Flynn	rock cod - regulations are too restrictive
6	Scott Hawkins	rock cod, if could hook and line again
7	Mitch Hobron	sea cucumbers, lobsters
8	Matt Pressly	sea cucumbers, lobster
9	Luke Halmay	Blackgill rockfish
10	Zack Roach	sheephead, lobster and previous amounts of blackgill rockfish

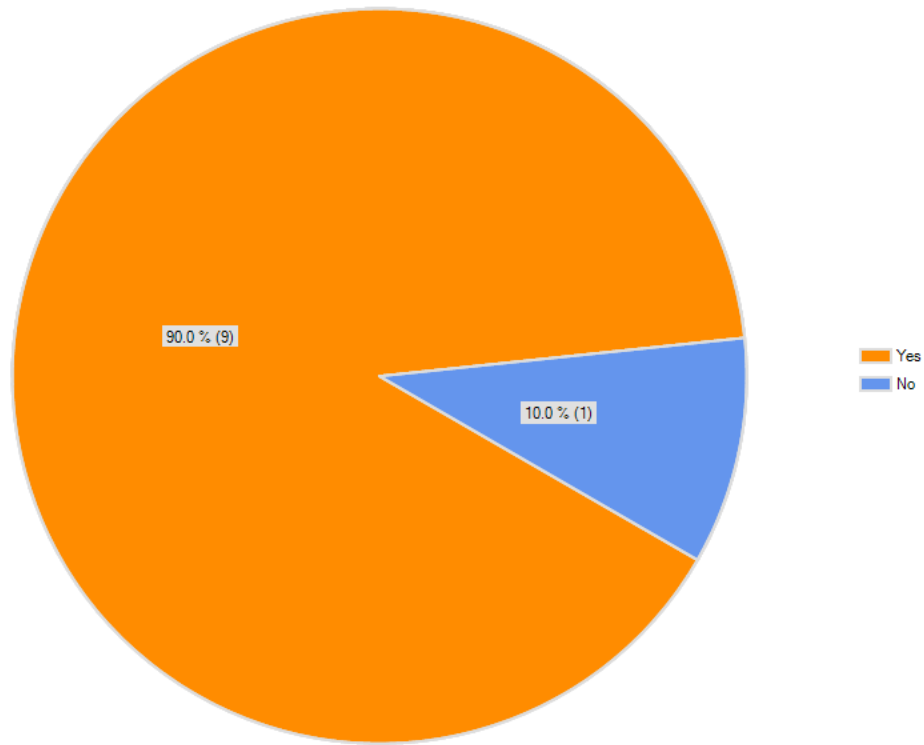
6) Do you sell directly to any restaurants? If so, which restaurants?



#### Restaurants Listed

- China Bistro (numerous other Asian restaurants)
- Bacci
- Sea Rocket Bistro
- Hilton Waterfront (Chef Patrick)
- Nobu
- P.B. Sushi
- Wa Sushi
- Ogawashi
- Mura Sushi
- The Fish Market
- Poppa's Fresh Fish
- Dry Dock Fish Co.

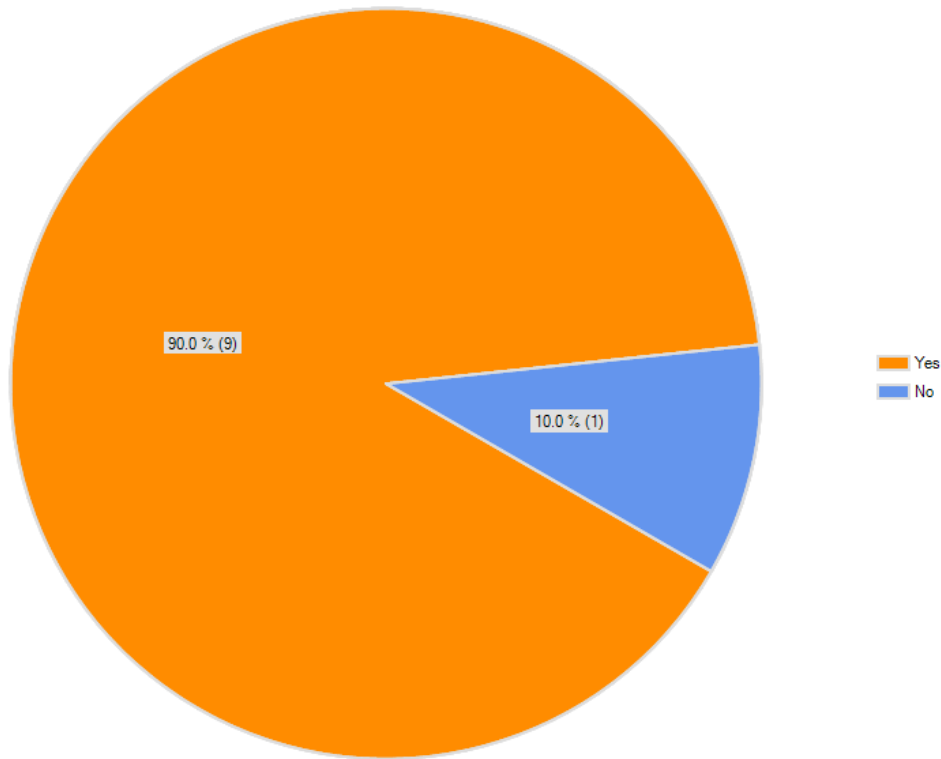
**7) Would you sell directly to restaurants if you could easily connect with them?**



**8) What are your processing difficulties with selling directly?**

Where the product can be sold without health inspections. Currently does weekly sales off of boat
Time consuming, uneducated public
No building that is HAACP approved
what the actual laws are - health department/ clean facilities can go direct to consumer but not restaurant
Smaller portions of swordfish, sea bass would move better, processing smaller portions is a problem
packaging and consumer awareness
Working from boat and home. I'm working on trying to get space at fish wholesale plant to do a legal process on my catch.
Most Chefs say that they want to work with local fishermen and buy direct but in reality the inconsistent supply and short notice turn them off. Also many of the higher end restaurants are corporate owned and without million dollar liability insurance they will not buy from you. California also requires a fish receiver's license to sell direct at a cost of over \$700 per year. Additional licensing for city permits adds several hundred dollars to the cost. Restaurants rarely pay on delivery and the usual waiting time is 30 to 45 days.
none

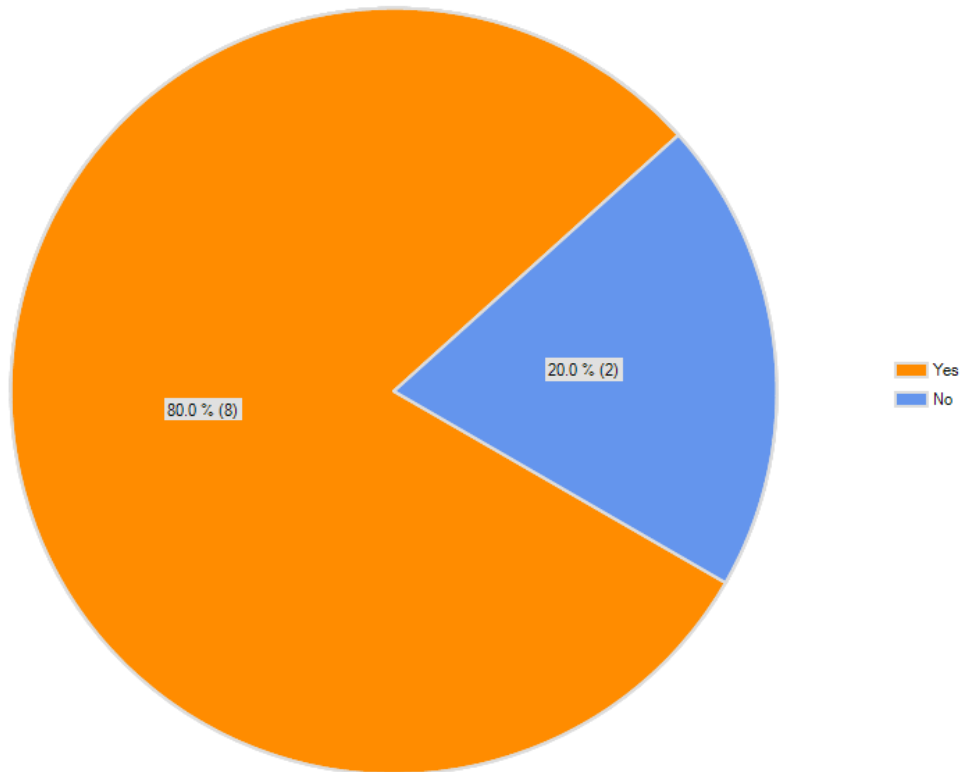
**9) Would you be willing to participate in a community supported fishery where your catch is sold directly to the public on a weekly or monthly basis?**



**10) What do you think the benefits and drawbacks to a community supported fishery would be?**

Benefits - would make more money selling product directly Drawbacks - public awareness is low
Drawbacks - it could turn into another middle man, competition could cause price cutting
more money shortage of time
direct selling to consumers - benefit delivery is time consuming - drawback
refrigeration on boat want to go home when back in port after being gone for so long need the infrastructure
beneficially - economical, drawbacks - time consuming on already busy, tight schedule
Benefits: local fisherman being supported and able to sustain a livelihood
The benefits would be to be able to market for high value and to be able to sell fish in small quantity that might otherwise not be worth the trouble to catch. Drawbacks are that without perfect handling of the catch and the ability to communicate with people directly some if not most fishermen would fail.
A steady supply of a wide variety of fish

**11) Do you think a community supported fishery could be successful in San Diego?**



**Why?**

If people were aware they probably would participate
Could be but only to a certain extent and there would be species limitations.
The public is ready for it, ie farmer's markets
Fresh seafood is desired
diversity of fish consuming nationalities
If it was directed by the right fishermen
It works in many harbors in California and the fishermen from these harbors that I have spoken with cannot believe that we do not have such a market here. Final note: I would not participate in any market that also sold fish from a processor that was imported or farmed.

## Locally Landed San Diego Pacific Sardine – *Sardinops sagax*



### Current Sustainability Ratings<sup>1</sup>

www.fishchoice.com

Name	Caught	Wild/Farmed	Method	Seafood Watch	Blue Ocean Institute	FishWise	SeaChoice	Ocean Wise	Certifications
Sardines, Pacific	San Diego, California	Wild	Roundhaul gear (Purse Seine)	● Best Choice	● Green	● Best Choice	● Best Choice	● Recommended	● MSC Certified

### Sustainability Factors<sup>2</sup>

www.fishwatch.gov

<b>Population</b>	Abundant	Not overfished
<b>Fishing Rate</b>	Sustainable	No overfishing
<b>Habitat Impacts</b>	Minimal	Sardines are fished near the surface using Roundhaul gear and has little impact on surrounding habitat
<b>Bycatch</b>	Insignificant	Roundhaul or purse seine gear generally has low levels of bycatch. The most common bycatch is another species that school with sardine.

### Where do they live and how are they fished?

Pacific sardine are a highly migratory species that can be found from British Columbia to Mexico and are typically in large schools. Their presence along the California coast is largely influenced by ocean conditions, most notably by temperature.<sup>3</sup> Sardines tend to favor comparatively warm temperatures and when the water cools they are believed to move southward and reproduce at a slower rate.<sup>4</sup>

Pacific Sardines are caught using Roundhaul gear which includes purse seines, drum seines, dip nets and lampara nets.<sup>2</sup> Roundhaul gear are nets that encircle a school of fish then the bottom is closed and the catch is hauled on board.<sup>5</sup>



Sardine being brought in by net.<sup>6</sup>

### Sardines Past and Present

Pacific Sardines did not become a large part of the U.S. commercial fishery until the early 1900s. The demand for canned food increased during World War I and at that time there was an abundance of sardines off the coast of California. The fishery crashed in the 1940s after it had grown to a wide-open fishery and during a time of changing ocean conditions. It became known as a “boom and bust” fishery based on these dramatic swings in abundance.<sup>3</sup> In response to the sardines near disappearance there were various closures of the fishery from the late 1960s to the mid-1980s<sup>4</sup> and it did not reappear in California’s waters until the 1980s.<sup>3</sup>

There are currently no commercial fishers out of San Diego that primarily fish sardines. The biggest fisher of sardines is Everingham Brothers Bait Company that own the bait barges in San Diego and Mission Bays.<sup>7</sup> This makes it a very underutilized fishery within San Diego with potential to grow with increased consumer interest. Sardines are delicious and commonly enjoyed around the world.

### Fun Facts!

- An adult dusky shark was found with 621 sardines in its stomach.<sup>8</sup>
- “Packed like sardines” is said in crowded situations based on the close packing of sardines in cans.
- The Pacific sardine can be found in schools of up to 10 million fish<sup>9</sup>.
- Sardines can live up to 14 years but 90% of the population is younger than 6 years.<sup>9</sup>

- Recipes on Back -

## Pacific Sardines Monterey Style<sup>10</sup>

### Ingredients

1 1/2 pounds fresh sardines, cleaned  
6 sprigs fresh parsley, fried  
2 lemons, quartered  
Salt to taste  
2 cups frying oil  
**Batter Mix**  
3/4 cup flour  
2 tablespoons olive oil  
1 cup warm water  
2 egg whites, beaten stiff  
1/2 teaspoon salt

### How to make it

- Combine Blend flour, oil, water, and salt.
- Fold egg whites into batter.
- Dip sardines into mixture, one by one, then place into 350 °F frying oil.
- Drain on platter and sprinkle with salt.
- To serve, place sardines on a plate, sprinkle with fried parsley, garnish with lemon.

## Portuguese Sardine and Potato Salad with Arugula<sup>11</sup>

### Ingredients

1 1/2 pounds fingerling potatoes, halved lengthwise  
5 tablespoons extra-virgin olive oil, divided  
1 teaspoon kosher salt, divided  
3 tablespoons fresh lemon juice  
2 tablespoons minced shallots  
1/4 teaspoon smoked paprika  
1 large garlic clove, minced  
8 fresh whole sardines (about 1 pound)  
5 ounces baby arugula  
8 lemon wedges  
Freshly ground black pepper

### How to make it

- Preheat oven to 400°.
- Combine potatoes, 1 tablespoon oil, and 3/8 teaspoon salt on a baking sheet coated with cooking spray; toss well to coat.
- Bake at 400° for 15 minutes.
- Stir potatoes; bake an additional 10 minutes or until golden brown and tender.
- Combine 2 tablespoons oil, juice, shallots, paprika, garlic, and 1/4 teaspoon salt in a large bowl, stirring with a whisk. Add hot potatoes to bowl; toss to coat.
- Heat a large nonstick skillet over medium-high heat.
- Pat sardines dry with paper towels; sprinkle with remaining 3/8 teaspoon salt. Add remaining 2 tablespoons oil to pan; swirl to coat. Add sardines to pan; cook 3 minutes on each side or until crisp and done.
- Arrange about 1 1/2 cups arugula on each of 4 plates. Remove potatoes from dressing with a slotted spoon; arrange about 3/4 cup potatoes on each serving.
- Drizzle remaining dressing; top each with 2 sardines. Garnish with lemon wedges; sprinkle with pepper.



## Alton Brown's Sardine-Avocado Sandwich – “The Sardicado”<sup>12</sup>

### Ingredients

2 (3.75-ounce) tins sardines in olive oil  
2 tablespoons finely chopped parsley  
1 tablespoon vinegar  
Zest from one lemon  
The leftover lemon cut into 4 wedges  
Freshly ground black pepper  
4 slices good bread  
1 ripe avocado  
Sea salt

### How to make it

- Drain the oil from 1 tin of sardines into a small bowl and set aside.
- Drain the oil from the second tin into another small bowl and mix it with 1 tablespoon of parsley, vinegar, lemon zest, and black pepper. Add the sardines and stir. Let sit for a bit so the flavors marinate.
- Toast your bread in a normal toaster or heat the oven to the broiler setting on high and place oiled-swiped bread (using the remaining sardine oil) on the rack. Only keep them in there for 2 to 3 minutes, otherwise they will go from golden brown and crisp to charred.
- Halve the avocado and remove the pit. Smoosh the flesh in each half with a fork. Spread evenly onto the toasted bread, then top with a nice scoop of the sardine mixture.
- Pour any remaining sardine oil dressing on top and garnish with the remaining parsley. Season with sea salt and a nice big squeeze from the lemon wedges

### Sources

<sup>1</sup>FishChoice. (2013). *Pacific Sardine*. Retrieved from FishChoice: <http://www.fishchoice.com/SEARCH-Seafood/Search-Results/Product-Detail/tabid/68/ProductId/258/Default.aspx>

<sup>2</sup>NOAA. (2013). *Pacific Sardine*. Retrieved from FishWatch U.S. Seafood Facts: [http://www.fishwatch.gov/seafood\\_profiles/species/tuna/species\\_pages/pacific\\_sardine.htm](http://www.fishwatch.gov/seafood_profiles/species/tuna/species_pages/pacific_sardine.htm)

<sup>3</sup>Love, M. (2011). *Certainly More Than You Want to Know About The Fishes of The Pacific Coast*. Santa Barbara: Really Big Press.

<sup>4</sup>CA Department of Fish and Wildlife. (2011). *Pacific Sardine, Sardinops sagax*. Retrieved from Status of the Fisheries Report: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=65547&inline=true>

<sup>5</sup>University of California. (2013). *Kinds of Roundhulls*. Retrieved from CaliSphere: <http://content.cdlib.org/view?docId=kt3z09n6cs&doc.view=frames&chunk.id=d0e88&toc.d>

<sup>6</sup>Oregon Coastal Zone Management Association. (2013). *About Oregon Fisheries*. Retrieved from Oregon Ocean Fisheries, A Conservation Story: <http://www.oczma.org/themovie.php>

<sup>7</sup>Everingham Brothers. (2013). *Everingham Bros. Bait Co*. Retrieved from baitbarge.com: [http://www.baitbarge.com/Ebbco\\_Web\\_Site/Home.html](http://www.baitbarge.com/Ebbco_Web_Site/Home.html)

<sup>8</sup>Wild Ocean. (2013). *Sea Fun Facts*. Retrieved from Wild Ocean: <http://www.wildoceanfilm.com/RESOURCES/Resources/Sea%20Fun%20Facts.pdf>

<sup>9</sup>Cabrillo Marine Aquarium. (2013). *Cabrillo Marine Aquarium*. Retrieved from Pacific Sardine: <http://www.cabrillomarineaquarium.org/exhibits/social-species-details.asp?id=21>

<sup>10</sup>Chef Robert Mancuso. (2013). *Pacific Sardines Monterey Style*. Retrieved from FishWatch: [http://www.fishwatch.gov/eating\\_seafood/recipes/pacific\\_sardines\\_monterey\\_style.htm](http://www.fishwatch.gov/eating_seafood/recipes/pacific_sardines_monterey_style.htm)

<sup>11</sup>My Recipes. (2013). *Portuguese Sardine and Potato Salad with Arugula*. Retrieved from MyRecipes.com: <http://www.myrecipes.com/recipe/portuguese-sardine-potato-salad-5040000122934/>

<sup>12</sup>Alton Brown. (2013). *Serious Eats*. Retrieved from Alton Brown's Sardine-Avocado Sandwiches: <http://www.serious eats.com/recipes/2010/01/alton-browns-diet-weight-loss-sardine-avocado-sandwiches.html>

<sup>13</sup>Mira. (2013). *Sardine Fishing*. Retrieved from Mira: <http://miraimages.photoshelter.com/image/I0000sk0k3pKqQeA>



Vessel bringing in their sardine catch<sup>13</sup>



# Locally Landed San Diego Pacific Swordfish – *Xiphias gladius*



## Current Sustainability Ratings<sup>1</sup>

www.fishchoice.com

Name	Caught	Wild/ Farmed	Method	Seafood Watch	Blue Ocean Institute	SeaChoice	Ocean Wise	NOAA Fish Stock Sustainability Index
Swordfish, Pacific	San Diego, California	Wild	Harpoon	Best Choice	Green	Best Choice	Recommended	4 out of 4
Swordfish, Pacific	San Diego, California	Wild	Drift Gill Net	Good Alternative	Green	Some Concerns	Not Recommended	4 out of 4

## Sustainability Factors<sup>2</sup>

www.fishwatch.gov

<b>Population</b>	Abundant	Not overfished
<b>Fishing Rate</b>	Sustainable	No overfishing
<b>Habitat Impacts</b>	Minimal	Fishing gear is in open waters and does not touch the seafloor
<b>Bycatch</b>	Varies	Varies with type of gear used. The harpoon fishery has no bycatch, drift gillnets can have bycatch and to minimize that these fisheries have very strict regulations.

## California Swordfish Fishery History

Swordfish can be found from the cold ocean floor, where they sometimes feed, to the surface, where they come to warm up.<sup>3</sup> Their behavior of being at the surface allows for harpoon fishing that began in San Diego in the 1920s and continues today. In the 1970s, spotting planes began being used and increased the efficiency of finding the fish. Shortly after planes began being used, drift gill-netters that were targeting thresher and mako sharks started to catch swordfish. This is a very effective method but can have negative impacts because of bycatch.<sup>3</sup> The efficiency of the gill nets caused a shift in the fishery away from harpooning although locally it still remains a part of the fishery.<sup>4</sup>

## Fishing Swordfish in San Diego

In San Diego, the harpoon swordfish fishery is one of the few that is not limited entry for new fishers and about 50 local fishers have a permit while 15-20 use it.<sup>5</sup> The negative impacts of bycatch in drift gillnets has caused stricter regulations and currently around 35 San Diego fishers have drift gillnet permits and only around a dozen use them.<sup>5</sup> Longline fishing is illegal on the West Coast and vessels must go 300 miles offshore to the high seas to fish in this manner and there are no vessels home ported in San Diego that longline fish.<sup>5</sup> The fishing season generally runs in the warmer months of the year from July until October.



Largest recorded swordfish caught in 1953 by Lou Marron.<sup>6</sup>

## Fun Facts!

- The largest swordfish ever caught weighed 1,182 pounds!<sup>6</sup>
- Live swordfish are purple.<sup>3</sup>
- Swordfish's scientific name means sword sword, Xiphias(sword in Greek) gladius(sword in Latin).<sup>3</sup>
- They have modified eye muscles that retain heat and in turn heat the swordfish brain and eyes.<sup>3</sup>
- Swordfish are the only species of fish in their family Xiphiidae.<sup>3</sup>

- Recipes on Back -

## Grilled Swordfish Sicilian Style<sup>7</sup>

### Ingredients

3 Tbsp. extra- virgin olive oil  
1 garlic clove, peeled, minced  
2 Tbsp. lemon juice  
3/4 tsp. salt  
1/8 tsp. black pepper  
3 Tbsp. capers, drained  
1 Tbsp. oregano or basil, freshly chopped  
1 1/2 lb. swordfish fillets (3/4 inches thick)  
1 lemon slices (optional)

### How to make it

- Heat olive oil in small saucepan over low heat.
- Add garlic, cook one minute.
- Remove from heat and cool slightly.
- Whisk in lemon juice, salt, and pepper until salt is dissolved. Stir in capers and oregano.
- On pre-heated grill place swordfish on oiled grill over medium heat.
- Grill 7 to 8 minutes, turning once or until fish is cooked in the center.
- Serve fish with lemon juice mixture.
- Garnish with lemon slices.

## Charcoal Grilled Swordfish Steaks with Avocado, Fresh Crab, Red Chile and Cilantro Vinaigrette<sup>8</sup>

### Ingredients

8 oz each Swordfish Steaks, ¾ thick, no skin, no bloodline  
Kosher salt, to taste  
Fresh cracked pepper, to taste  
1 each avocado, peeled ½ diced  
1 tablespoon red onion, finely diced  
2 tablespoons of cilantro, chopped  
1 tablespoon red pepper, very finely diced  
1 teaspoon Serrano pepper, very finely diced  
4 tablespoons of rice wine vinegar  
6 tablespoons of olive oil  
1 tablespoon of sambal chili sauce  
1 tablespoon of fresh lime juice  
4 oz of fresh crab meat, no shells



### How to make it

- Season Swordfish with salt and pepper, and brush lightly with some olive oil.
- Grill Swordfish 4 minutes on each side over charcoal fire to desired doneness (medium-medium rare is preferable).
- Combine avocado, onion, cilantro, peppers, vinegar, 4 tablespoons of olive oil, sambal and lime juice. Season with salt to taste.
- Place Swordfish in center of hot plate.
- Place avocado mixture on top of swordfish.
- Place fresh crab on top of avocado mixture.

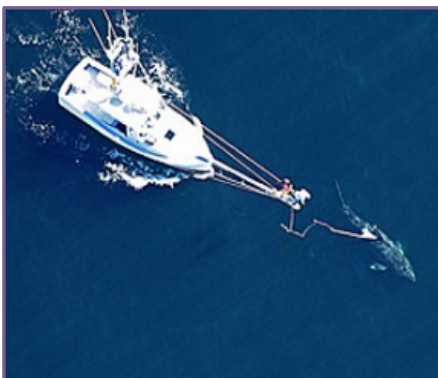
## San Diego Chargers: Swordfish Tacos Recipe<sup>9</sup>

### Ingredients

One swordfish steak  
Smoked Paprika  
Salt and pepper  
Olive oil  
Tortillas  
Peach Habanero Salsa\*  
Cilantro (roughly chopped for topping)  
Green Onion (finely chopped for topping)  
Mesquite woodchips  
1-2 limes  
Cabbage Topping:  
1/4 of a head of cabbage  
Juice of one lime  
1-2 tbsp of olive oil  
Salt and pepper

### How to make it

- Set-up your grill for direct grilling, preheat to high, and presoak your woodchips (if necessary).
- Rinse the 1/4 head of cabbage and slice thinly.
- In a small bowl or serving dish, mix together the cabbage, lime, and olive oil. Salt & pepper to taste.
- Rinse and pat dry the swordfish. Sprinkle olive oil over one side, followed by a generous dosing of smoked paprika, salt, and pepper. Rub the spices into the steak and repeat for other side.
- Lightly oil the grill grate with a paper towel or cloth. Add the woodchips to the coals, smokerbox, etc. Place your swordfish steak on the grill grate, close the lid and let the smoke do its work (add more woodchips as necessary to keep a constant flow of smoke).
- To get those great grilling marks remember to do a quarter turn of the steak after about 2 minutes.
- Cook each side of the swordfish until the desired wellness has been reached (when the steak is slightly firm to the touch for me).
- Remove the swordfish from the grill. Allow the meat to rest for a few minutes, then hack it up into manageable pieces for your tacos.
- Create your tacos by topping the swordfish with the peach habanero salsa (or salsa of your choice),



A vessel harpooning a swordfish.<sup>10</sup>

### <sup>6</sup>Sources

<sup>1</sup> FishChoice. (2013). *Swordfish*. Retrieved from FishChoice: [http://www.fishchoice.com/seafood-search?field\\_seafood\\_species\\_terms\\_tid\\_1=1602](http://www.fishchoice.com/seafood-search?field_seafood_species_terms_tid_1=1602)

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<sup>3</sup> Love, M. (2011). *Certainly More Than You Want to Know About The Fishes of The Pacific Coast*. Santa Barbara: Really Big Press.

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<sup>5</sup> Flynn, M. (2013, May 9). Fisherman. (G. Rich, Interviewer)

<sup>6</sup> Skinnaz. (2013). *What Were the Largest Fish Ever Caught?* Retrieved from Hubpages.com: <http://skinnaz.hubpages.com/hub/What-Were-The-Largest-Fish-Ever-Caught>

<sup>7</sup> Trattoria Bella Vita, La Jolla. (2013). *Restaurant Recipes*. Retrieved from SanDiegoRestaurants.com: <http://www.sandiegorestaurants.com/recipe.cfm/restaurant/1587>

<sup>8</sup> Maria Desiderata Montana. (2012). *Summer Swordfish Recipe and Grilling Tips from Chef McCarthy at Eddie V's Prime Seafood*. Retrieved from San Diego Food Finds: <http://sandiegofoodfinds.com/summer-swordfish-recipe-and-grilling-tips-from-chef-mccarthy-at-eddie-vs-prime-seafood/>

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# Locally Landed San Diego Pacific Albacore Tuna - *Thunnus alalunga*



## Current Sustainability Ratings<sup>1</sup>

[www.fishchoice.com](http://www.fishchoice.com)

Name	Caught	Wild/Farmed	Method	Seafood Watch	Blue Ocean Institute	FishWise	SeaChoice	Ocean Wise	Certifications
Tuna, Albacore	San Diego, California	Wild	Troll and Pole	Best Choice	Green	Best Choice	Best Choice	Recommended	MSC Certified

## Sustainability Factors<sup>2</sup>

[www.fishwatch.gov](http://www.fishwatch.gov)

<b>Population</b>	Abundant	Not overfished
<b>Fishing Rate</b>	Sustainable	No overfishing
<b>Habitat Impacts</b>	Minimal	All fishing gear used to catch albacore are deployed in open waters and do not contact the seafloor
<b>Bycatch</b>	Insignificant	Troll and pole fishing methods have insignificant levels of bycatch

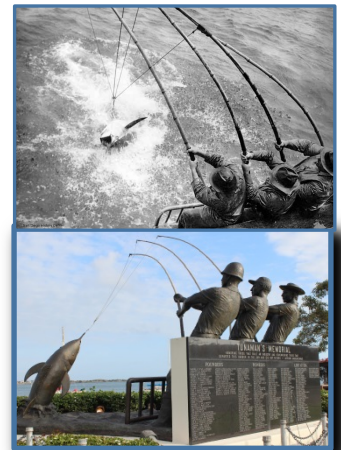
## Where do they live and how are they fished?

Albacore tuna is a schooling species that can travel long distances across oceans and are fished by many nations. Fishers from San Diego catch albacore on the surface by trolling, which involves driving slowly with a series of fishing lines pulled through the water by the vessel.<sup>3</sup> Some fishers use jack polling and have live bait tanks from which they toss the bait (anchovies, sardines or squid) over the side to entice the tuna to come eat. Once there is a bite on the line the catch is reeled in by hand. San Diego fishers usually fish albacore from June until October.<sup>4</sup>

## Albacore tuna and San Diego: A long history

The Albacore tuna fishery began in San Diego over 100 years ago. During the mid-1900s, San Diego became known as the “Tuna Capitol of the World” because of their booming albacore fishery. The soft, white meat produced when Albacore is canned and cooked in its own juices made it an instant canning success and today that is still the method by which it is most widely consumed. Within San Diego, albacore had dramatic cultural influences for the Italian, Portuguese and Japanese communities.<sup>5</sup>

In San Diego there are currently 10-15 vessels that fish for albacore.<sup>6</sup> American Tuna in San Diego was created by local fishers and this cooperation made it possible for them to receiving a Marine Stewardship Council certification. Their products can be found locally at Whole Foods and Jimbo’s Naturally. Fresh albacore can be found from spring to fall and year round it is available canned and frozen.<sup>7</sup>



Early albacore fishing with bamboo poles (above)<sup>5</sup>  
Tunamen's Memorial on Shelter Island (below)<sup>8</sup>

## Fun Facts!

- Albacore are nicknamed ‘longfin tuna’ because of their very large pectoral fin.<sup>4</sup>
- They can reach speeds of over 50 miles (80 km) per hour for short bursts.<sup>4</sup>
- Unlike most fish they have a circulatory system that allows them to regulate their body temperature.<sup>4</sup>
- On a daily basis they can eat up to 25% of their body weight.<sup>4</sup>
- Albacore travel in schools that can be up to 19 miles wide.<sup>2</sup>

- Recipes on Back -

## Pacific Fleet Tortilla Wrap<sup>9</sup>

### Ingredients

1 can Albacore Tuna  
8 ounces cream cheese, softened  
4 tbsp. salsa  
1 bunch fresh cilantro chopped  
2 tablespoons lime-juice  
¼ tsp. Ground cumin  
Wasabi or hot sauce if desired  
8-12" flour tortillas.

### How to make it

- Combine ingredients
- Spread about two tbsp. of tuna mixture over tortilla then roll the tortilla up tightly.
- Refrigerate for 2 to 3 hours then slice into bite size pieces and serve.

## Albacore Tuna Tataki with Citrus-ginger Sauce<sup>10</sup>

### Ingredients

3 Albacore tuna fillets  
4 tbsp. sesame seeds  
Salt & fresh ground pepper and oil for searing

### Citrus-ginger Sauce :

2 tablespoons honey (or more to taste)  
4 tablespoons soy sauce  
few drops of sesame oil  
Juice of 1 orange, ½ lemon and 1 lime  
2 tablespoons saké  
2 thin slices of ginger

### Salad Garnish:

Shaved cucumber, sliced avocado, frisee lettuce, thinly sliced green onions



### How to make it

- Combine all sauce ingredients; set aside, the sliced ginger will infuse into the sauce.
- Pour the sesame seeds onto a plate. Season the tuna with cracked black pepper and salt then coat the tuna in the sesame seeds, pressing lightly so they stick to the tuna.
- Place a sauté pan over high heat. Add oil and sear tuna on both sides, 1 min per side.
- In a bowl combine cucumber, green onions and frisee then toss with some of the citrus-ginger sauce.
- Slice the chilled tuna across the grain.
- Place some of the dressed greens on 4 plates. Top with sliced tuna fanning it into 3-4 pieces per plate, garnish with avocado and drizzle with the citrus-ginger sauce.

## Open Face Tuna Burgers<sup>9</sup>

### Ingredients

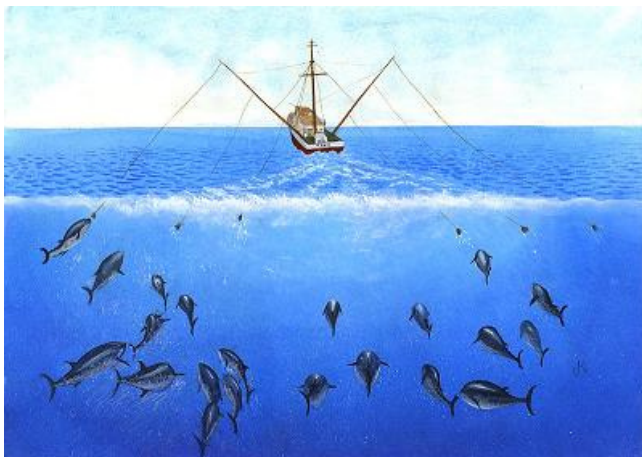
2 cans troll-caught albacore, flaked  
½ cup finely chopped green onions  
1 cup fresh breadcrumbs, packed down  
¼ cup yellow cornmeal  
8 tablespoons mayonnaise  
1 large egg, beaten to blend  
1½ tablespoons Dijon mustard  
4 slices toasted wheat, rye or sourdough bread  
4 small lettuce leaves  
4 large slices tomato  
1 tablespoon olive oil

### How to make it

- Combine albacore in large bowl; break up with a fork.
- Mix in green onions, breadcrumbs, cornmeal, 4 tablespoons mayonnaise, egg and mustard. Season with salt and pepper.
- Shape mixture into four ¾" thick patties. Arrange bread on 4 plates.
- Spread each slice with 1 tablespoon mayonnaise; then top each with lettuce and tomato.
- Heat oil in skillet over medium-high heat. Add albacore patties and cook until firm to touch and heated through, about 4 min per side.
- Place patties on the bread slices and serve.

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Vessel troll fishing for albacore tuna <sup>11</sup>

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