

## Distribution of Harvest in the Prince William Sound Spot Prawn Fisheries

Note: In all of the following figures, I use the terms Area 1, 2, and 3 to denote the commercial fishing zones. In the text I refer to them as "districts" at times to avoid confusing them with statistical areas which are denoted in the figures by their identifying six digit number. All catch numbers are in pounds of whole shrimp and are obtained from ADF&G and can be found in the appendices of their 2014 shrimp report.

Figure 1 demonstrates the area breakdown for non-commercial harvest 2012-2014. These years were selected because this time period represents a full cycle of the commercial fishery through all three districts of the Sound so we can compare total harvest distribution. For the non-commercial harvest some stat areas are unfortunately combined because that is the only way I received the data from ADF&G in response to my inquiry and similarly is how it is presented in their report.

Figure 1:  
Total Non-Commercial Harvest 2012-2014 by Stat Area

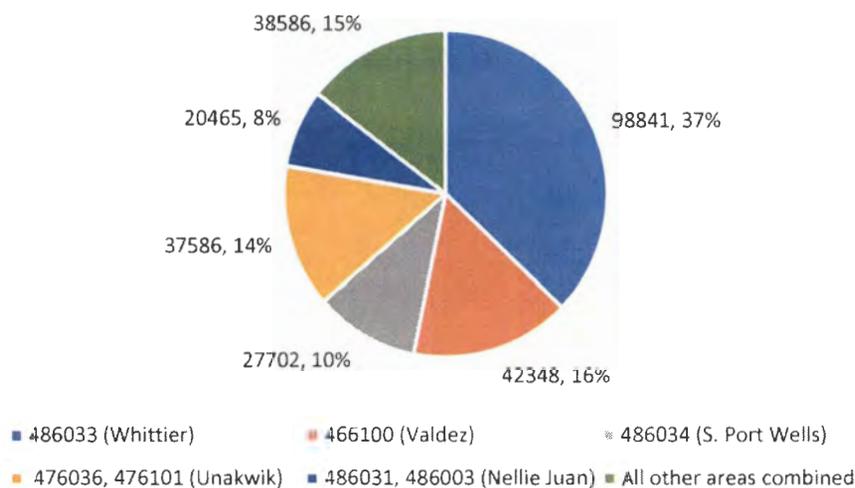
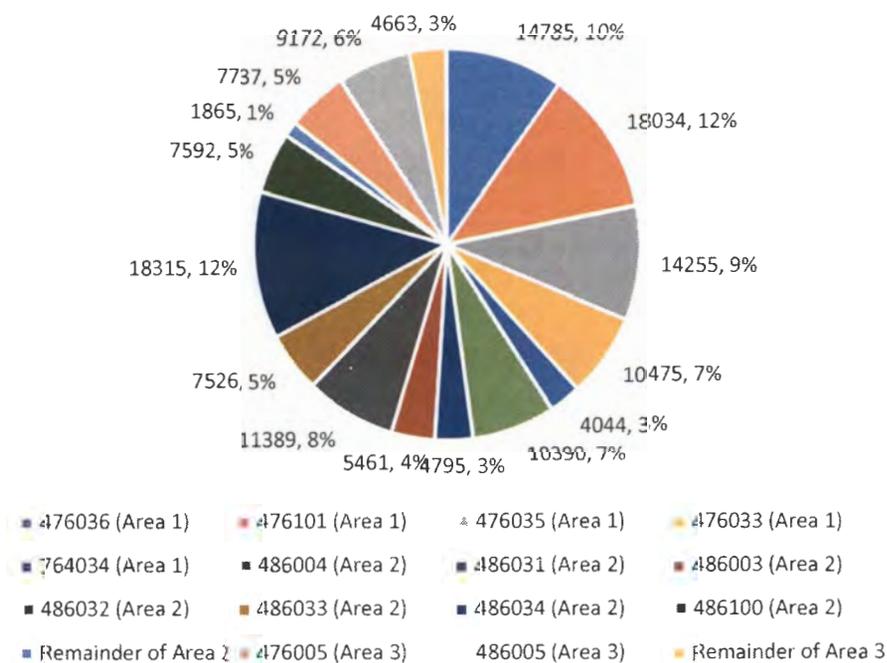


Figure 2 contains the distribution for the commercial harvest. A little bit cluttered, but it gives a very good picture of the fact that the commercial harvest is much, much more spread out. This is presumably the purpose of the rotating fishing areas and it does a very good job of it. Statistical Areas with less than approximately 1% of the total harvest are grouped together in "Remainder of Area 2". And "Remainder of Area 3" respectively.

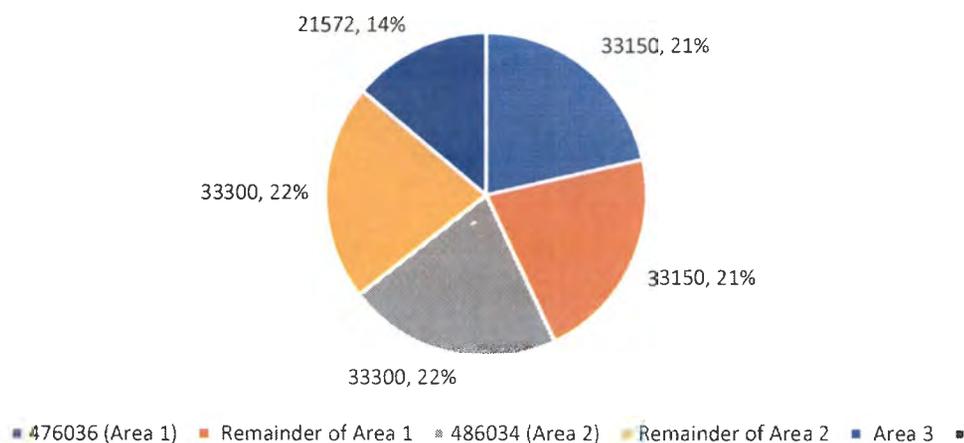
Figure 2:  
Total Commercial Harvest 2012-2014 by Stat Area



Now the following two figures are hypothetical for purposes of demonstration. This is a **worst case scenario** of what catch distribution would have looked like if there was a 50% limit on a given statistical area 2012-2014. The only times that this, even theoretically, could have occurred in the given time span was in 2013 in 476036, and 2014 in 486034. These were the first stat areas closed and the ones in which previously (2010 & 2011) the majority of the harvest occurred. It obviously could not have occurred in 2012 as even the 25% rule never kicked in. It should go without saying that a 50% harvest cap on a given statistical area can only occur once per season since fishing occurs in more than 3 stat areas. Now since we cannot accurately model how continued openings in these stat areas would affect the other stat areas (nor is it necessary for purposes of examining the impact of a 50% cap), I will just group the remainder of the district together but in actuality all of these large portions of the harvest (Remainder of

Areas 1 and 2, and all of Area 3) would be broken into multiple individual statistical areas. This makes the first graph not very interesting, although a comparison to the non-commercial harvest distribution is still educational. It is also worth noting that if in the future the commercial fishery actually figures out how to catch shrimp in Area 3 then the percentages for the other areas would go down significantly because this distribution is based on catching the entire quota in Areas 1 and 2, and approximately only one third of it in Area 3. (Because that is what actually happened in 2012.) Fairly obviously, if the entire quota was caught each year even with a 50% limit no statistical area would make up more than 17% of the total harvest.

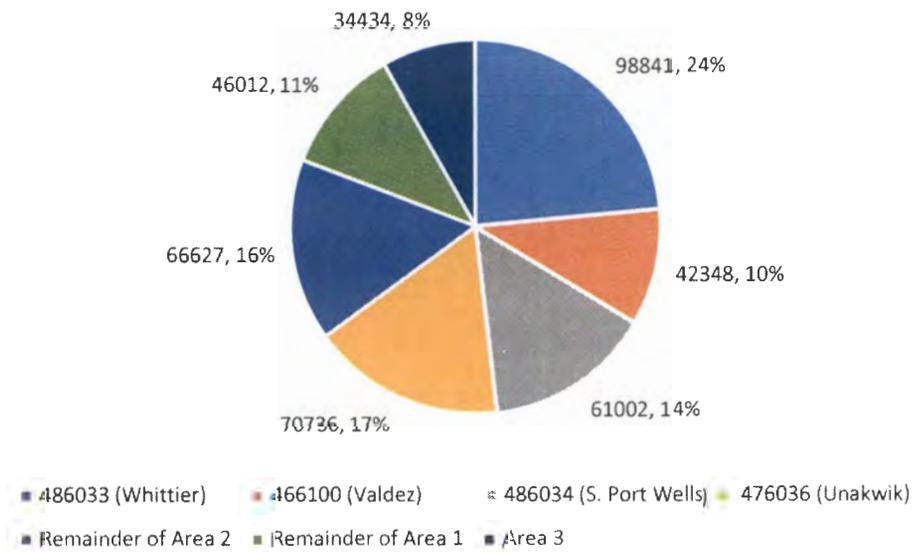
Figure 3:  
Hypothetical Commercial Harvest 2012-2014 by Stat Area  
with 50% cap



Finally, Figure 4 is the total combined harvest break down (commercial and non-commercial) for 2012-2014 in our hypothetical scenario where there was a 50% cap for the commercial harvest in a given statistical area. This is actually beyond a worst case scenario as due to poor non-commercial data I have available we are going to have to include all of the non-commercial harvest from Unakwik (both 476036 and 476101) with the hypothetical commercial harvest from 476036 since we do not know the break down. Also since data is not broken down very well I have to split the “All Other Areas Combined Non-Commercial Harvest” evenly between the three districts which, while regrettable, is close enough for purposes of this figure. (It is evenly split between “Remainder of Area 1”, “Remainder of Area 2”, and “Area 3” and at most introduces an error of 2-3% between those areas.) The non-commercial harvest from the Port Nellie Juan statistical areas is properly included in “Remainder of Area 2”. Additionally it should be noted that a portion of 486033 is open to commercial fishing, but in this model that harvest is included in “Remainder of Area 2”. In fact, it should be obvious that a higher cap of 50% on statistical

area 486034 would reduce any commercial pressure on 486033 which has by far the largest portion of the harvest with non-commercial harvest alone being accounted for.

Figure 4:  
Hypothetical Total Combined Harvest 2012-2014 by Stat  
Area with a 50% commercial cap



In summary, this seems a perfectly reasonable harvest distribution. In particular, it is worth noting that both historical data within the pre-1990 commercial fishery and the departments own surveys (not to mention common sense) indicate that both statistical areas 486034 and especially 476036 are “better” shrimp areas than 486033 and the Whittier area has maintained the rate of harvest shown above for some time. Also as mentioned the only item here of which there is any reasonable expectation of significant change is the Area 3 harvest, which presumably could increase substantially if the commercial fleet is more successful in future seasons and would further spread out harvest distributions.