

Sablefish Conversion Factor Accuracy

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Result Summary: In 2010, Oregon underestimated sablefish landings by approximately 12,389 lbs. It is recommended to either modify how tickets are being entered or change the conversion factor to include explanatory variables.

The data section of the Marine Resource Program identified significant errors between the original measured round weight and dressed weight converted back to a round weight. The actual round weight is measured and recorded on each ticket by the Hallmark Fisheries dealer (1505). The fish are then sorted into size grades (01-04) and dressed. The dressed weight for each grade is then recorded for data entry. After these data are entered into the mainframe, an established conversion factor of 1.6 is applied to the dressed weight for each grade. The sum of dressed weight values converted to round should equal the actual measured round weight noted on the tickets, however we find that this is rarely the case.

We looked into this issue by evaluating the difference between original round weights (measured on offload and noted on the tickets) and the converted dressed weight for all available tickets in 2010. We found a significant range in the conversion accuracy. Upon initial investigation, it appeared that there was a seasonal influence on the accuracy of conversion (Figure 1). There is a smaller range of differences between measured values and converted values early in the season. We also investigated whether this issue was port specific or if it was consistent across ports with sablefish landings. The data collected at five different ports appear to be consistent in the amount of variation, therefore the issue does not appear to be localized to a single port (Figure 2). There also does not appear to be any difference in the conversion accuracy between smaller and larger landings (Figure 3) or the percentage of large fish within a landing (Figure 4).

The sablefish condition factor appeared to show a seasonal trend. The factor was lower early in the season, while later in the season, the condition factor was greater than one (Table 1). We looked into this in more detail to determine the cause. Since the data was not normally distributed a non-parametric Kruskal-Wallis test was used to analyze the differences in condition factor. The simple model showed significant differences ($p < .05$) with each of the explanatory variables of year, month, and sex. More complex additive and multiplicative generalized linear models, with an inverse Gaussian error distribution, did not show significant effects with all the

factors included, although if year was excluded, there were overarching significant differences in month and sex. This would suggest that conversion factor could be applied more accurately if it was based on sex and month. The haphazard sampling of sablefish weights creates inconsistent time periods to compare which contributes to the noise in the more complex models. To look at this issue in more detail it is recommended to sample sablefish weights with a set number of samples each month within a year or though out several years.

The conversion factor inaccuracy may cause large under-estimations of Oregon's sablefish landings. In 2010, Oregon underestimated sablefish landings by 12,389 lbs. It is recommended to either modify how data are recorded and entered on tickets, or modify the conversion factor to include sex and seasonality variables. For example, each dealer could be required to record the measured round weight for sablefish landings on each ticket, which could then be passed on to data entry for an accurate record of sablefish pounds landed instead of relying on an imperfect conversion factor applied to dressed fish. The sex/seasonality issue could be investigated further by taking sablefish weights consistently among months within a year.

Table 1. The average condition factor for sablefish by month with all samples and years combined.

Month	Average K
1	0.992423387
3	0.937868688
4	0.942159745
5	0.96465122
6	0.993857258
7	1.006249673
8	0.984654505
9	1.037815325
10	1.04860119
11	1.008272785
12	0.993065959

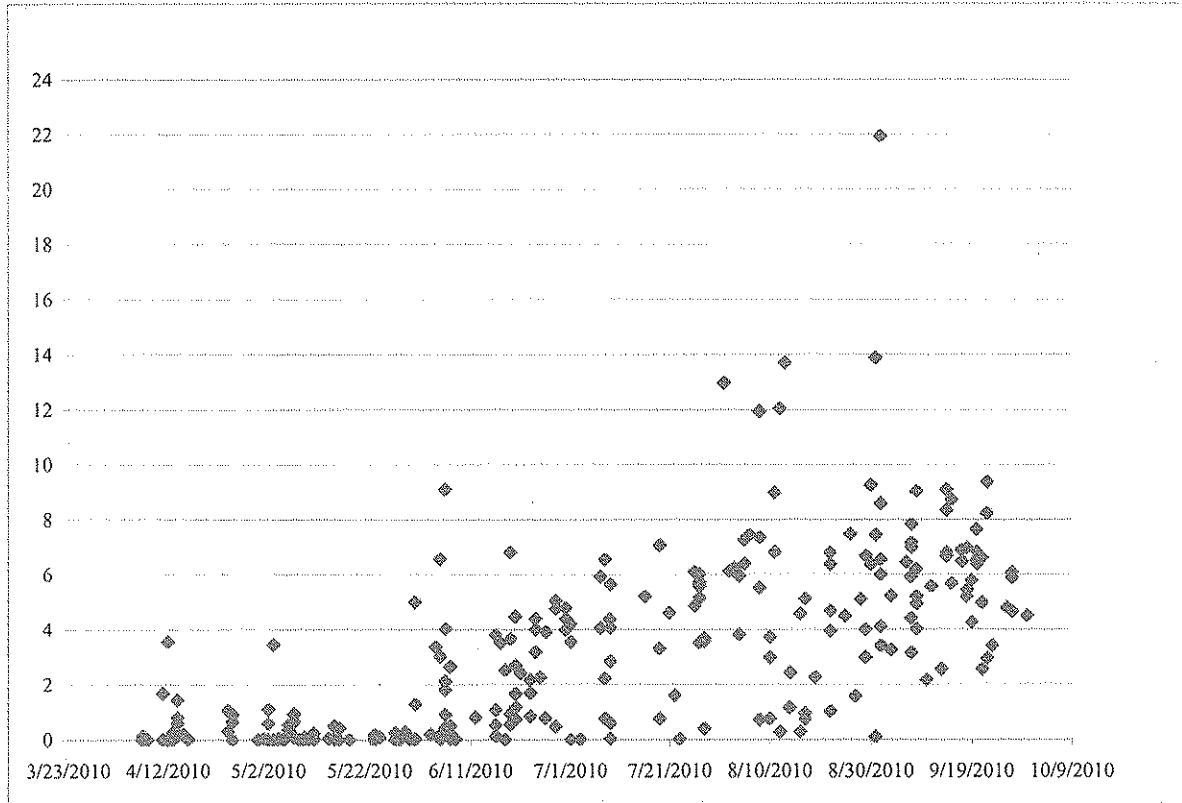


Figure 1. Percent difference between measured round weight and the sum of converted dressed weights for all grades during April through September 2010.

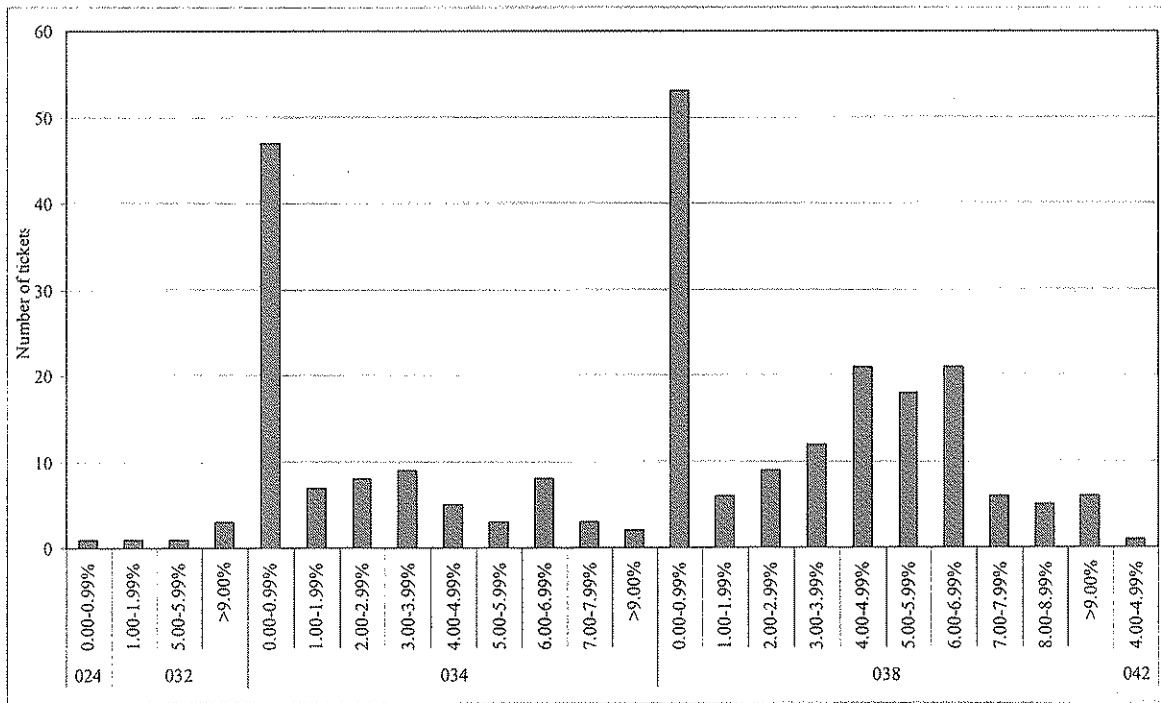


Figure 2. The number of tickets corresponding to the percent difference between measured round weight and converted dressed weight during April through September 2010 for landings in Newport (024), Winchester Bay (032), Coos Bay (034), Port Orford (038), and Brookings (042).

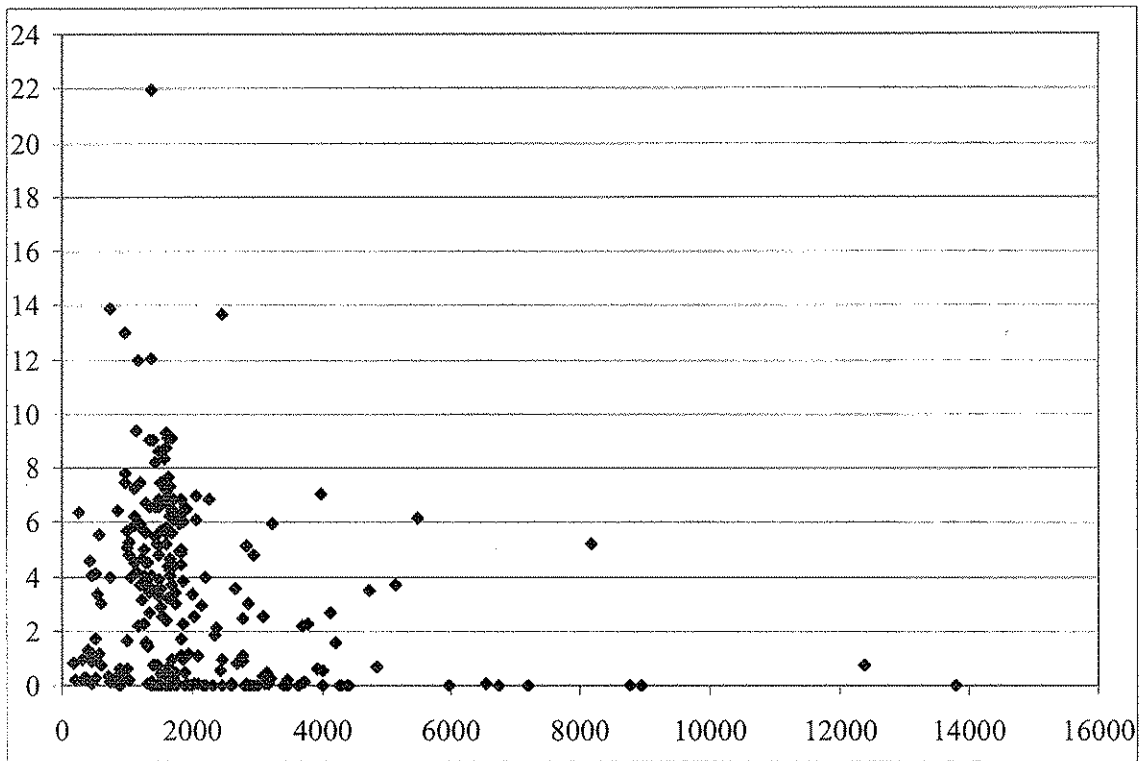


Figure 3. Percent difference between measured round weight and the sum of converted dressed weights for all grades versus the size of catch (lbs.) during April through September 2010.

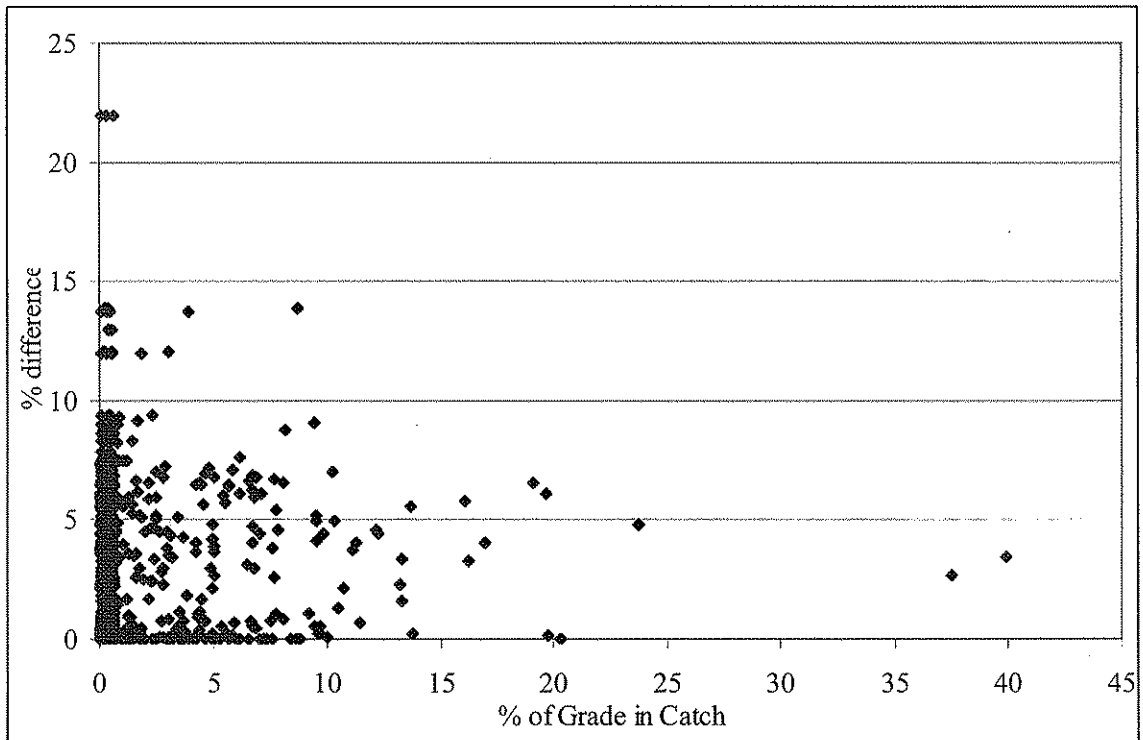


Figure 4. Percent difference between measured round weight and converted dressed weight for grade 4 during April through September 2010.