



## Summary Report on 2006 Recreational Surveys Sampling Changes

### I. CALIFORNIA - By California Department of Fish and Game

#### Field Survey Methods

No changes were made to the field survey methods in 2006.

#### Estimation Procedures

Errors were found and corrected in the computer programs to estimate catch and effort at man-made structures, secondary sites for private and rental boats, and beaches and banks. The changes that were made are described below.

#### (1) Man-made structures:

- A. A step in the estimation program calculates mean angler-trips per angler-hour by month/district/kind-of-day/cluster stratum. Trip-type and water area (ocean within 3 miles or inland marine waters) domains were mistakenly included in the stratum definition for the calculation. The mistake in stratification effected a subsequent calculation of mean angler-trips per day (*Angler-trips per day = angler-hours per day x mean angler-trips per angler-hour*). The impacts of the error on the estimates of mean angler-trips per day were inconsistent and unpredictable.
- B. One of the steps in estimating CPUE is to sum the number of sampled anglers by district, month, trip-type, and water area. The program also mistakenly summed the number of sampled anglers by species which caused an error in the CPUE estimates and subsequent catch estimates. The results of the mistake on the estimates for CPUE and catch were inconsistent and unpredictable.

(2) Secondary sites for private and rental boats: The same two errors that occurred in the estimation program for man-made structures occurred in the estimation programs for secondary sites for private and rental boats with the same results.

(3) Beaches and banks: If no weight observation exists for a taxon in a mode/month stratum, the estimation program pools the weights for that taxon from other modes

that month. Typically, only unobserved catch (*i.e.*, B fish) at taxonomic levels higher than species (*e.g.*, genus and family) and rare fish do not have weights after pooling occurs. A programming error resulted in the elimination of catch estimates (in number of fish) for taxon with no mean weight after pooling. This error primarily impacted the estimates of unobserved catch that were reported at the genus or family levels and rare fish.

## **II. OREGON - By Oregon Department of Fish & Wildlife Marine Resource Program**

### Changes in Oregon Recreational Boat Survey (ORBS) Methodology

#### Introduction

In October, 2006 the RecFIN Technical Committee established a process for communicating changes in sampling programs designed to determine effort and catch in west coast marine sport fisheries. Notification is required for all changes that affect: estimates back in time, a time series, sampling procedures, estimation procedures, variance computations, and sampling frames or coverage. This process was to start with a report on each sampling program due March 1, 2007 which summarized qualifying changes that occurred in the 2006 calendar year. As the Oregon Shore and Estuary Boat Survey (SEBS) was not conducted in 2006, this report focuses on the Oregon Ocean Recreational Boat Survey (ORBS).

#### Discussion

Only one change in ORBS methodology was designed in 2006 and incorporated in January, 2007. The change was a modification in the method to estimate effort and catch (both landed and discarded) during unsampled periods. This was not considered to be a major modification as the portion of annual effort and catch occurring in the unsampled frame is less than 10 percent of the annual estimates of impacts on groundfish stocks, and a much smaller portion of estimated harvest of other important species such as salmon and Pacific halibut due to the timing of their limited seasons.

#### Previous Methodology

The impetus for this change reflected concern that there was a lack of consistency between the inseason and postseason estimation methodology, as the two methods were different. This often resulted in an undesirable shift of estimated impacts when total harvest is calculated postseason. For example, a fishery may be restricted due to the inseason estimate showing the quota had been attained. The postseason catch estimates may indicate the quota had not been attained and the fishery was restricted prematurely. Of course, the opposite could also happen where the fishery was not restricted inseason when it should have been.

The inseason approach used in past years to estimate effort and catch during unsampled periods was based on the previous year's monthly estimate by port, boat type, and species. Postseason, the approach was to adjust those estimates based on the effort and catch observed during the sampled period by port and incorporating temporal patterns observed during a three-year study conducted during the late 1990s and early 2000s. The temporal patterns were based on sampling in four major ports (Depoe Bay, Newport, Charleston and Brookings) with the results applied to all ports.

### Current Methodology

The methodology implemented for 2007 is based on relating the effort and catch by boat type in an unsampled port to the effort and catch by boat type in sampled port(s) during that month. It compares the relative level of angler trips and catch between ports during periods when all ports are sampled, generally June through September. In order to provide estimates during the winter period (November through February), sampling will occur in one to three ports year round. By sampling year round on an annual basis, we are addressing the variable weather influence on fishing opportunity.

To estimate angler trips in an unsampled port, an effort relationship was developed between observed effort in each of the ports and the Oregon coastwide effort as a whole during the summer sampling period (generally June through September). This relationship was based on a three year running average that included the most recent sampled period. During periods in which no sampling is conducted in a port, the proportion of coastwide effort attributed to that port is divided by the proportion of effort attributed to the ports that were sampled in that period. This unsampled to sampled relationship is applied to the estimated effort for the sampled ports, resulting in the number of angler trips that is estimated to have occurred in the unsampled port (see example below).

The bottomfish catch per angler (CPUE) and species composition in unsampled ports by boat type are based on the average observed during the most recent sampled period in each port. Thus, sampling conducted during the summer sampling period (generally June through September) would be used to determine both CPUE and species composition for the period when sampling terminates for that year until sampling is resumed the following year. CPUE was determined using only data collected on bottomfish trips and the catch of salmon, halibut, tuna, and bait species were not included. Salmon and halibut would be closed during unsampled periods and tuna are not seen in the winter months.

To estimate species level impacts in unsampled ports by boat type, the CPUE observed during the most recent sampling period (as described in previous paragraph) is applied to the estimated effort (process described above), resulting in estimated bottomfish impacts. The estimated bottomfish impacts are then parceled out by species using a port and boat type specific species composition, developed from the most recent sampling period.

No change was made in the methodology used to determine average weight and discard mortality rates.

Example of revised method to determine catch in an unsampled port :

Newport and Brookings are sampled year round and angler effort during the period from November through February in all other ports is estimated based on the fisheries in these two sampled ports. Calculate the catch in Depoe Bay in December in the charter fishery. (Note: the example does not use real data)

The June-Sept charter effort in Depoe Bay is 25% of the combined Newport-Brookings charter based angler trips. The prior March through October average CPUE out of Depoe Bay is 5 fish per angler in the charter fleet. The prior March through October species composition in the charter fleet for Depoe Bay shows that black rockfish comprise 85% of the catch, lingcod is 10%, and blue rockfish is 5%. In December, an estimated 100 angler trips on charter vessels were taken out of combined Newport-Brookings.

Step 1 (calculate the December effort in Depoe Bay):

100 combined Newport-Brookings December angler days \* 0.25 Depoe Bay = 25 Depoe Bay December charter angler trips

Step 2 (calculate the total catch in Depoe Bay):

5 fish per angler \* 25 angler days = 125 total fish landed on Depoe Bay charter vessels in December

Step 3 (calculate landings by species in Depoe Bay on charter vessels in December):

125 total fish \* 0.85 black rockfish = 106.25 black rockfish

125 total fish \* 0.10 lingcod = 12.5 lingcod

125 total fish \* 0.05 blue rockfish = 6.25 blue rockfish

**III. WASHINGTON**            By Washington Department of Fish and Wildlife

No changes were made to field survey methods or estimation procedures in the Puget Sound Boat Survey or the Ocean Sampling Program during 2006.

Submitted by:  
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