State of California - Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
350 Harbor Blvd.,
Belmont, CA 94002
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EDMUND G. BROWN JR., Governor
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Annual Summary of CPFV Morning Star Halibut Catch 2013

Summary: Department marine biologist Kristine Lesyna collected information on length, weight, gender, and age from all California halibut encountered while sampling onboard the CPFV Morning Star in San Francisco Bay from May to September 2013. Lesyna also collected sublegal-sized halibut (under 22 inches) for a maturity study. This information will help the Department monitor the halibut resource in central California and determine size and age at first maturity for this species.

Methods: Each halibut was measured to the nearest mm (fork length) and weighed to the nearest tenth of a kilogram; gender was determined and otoliths were removed. Sublegal-sized and some legal-sized halibut additionally had their gonads removed which were ultimately sectioned, stained, and placed on microscope slides to analyze for stage of maturity and fecundity (total number of eggs) estimates. Ages were determined by examining thin sections of otoliths using a high-magnification microscope. Thin sections, which are cut with a special precise laboratory saw and then polished, reveal ring-like deposits which indicate annual growth.

Results: Over the course of nine onboard trips, 41 legal-sized halibut and 11 sublegal-sized halibut were sampled. Figure 1 shows the age frequency from 40 legal-sized halibut sampled from the Morning Star this season. One otolith pair from a legal-sized halibut could not be aged due to crystallization which often causes the outer rings to be blurred. The 11 sublegal-sized halibut will be aged in the near future and the information will be included in the maturity study. These fish are estimated to be 3-5 years old based on length and sex. Of the sublegal-sized fish collected, eight were males which ranged in size from 421 mm (~16.5 inches) - 511 mm (~20.1 inches) fork length. All of these males were mature with running milt (spawning). The three females ranged in size from 472 mm (~18.6 inches) - 522 mm (~20.5 inches) fork length. None of these females were mature at the time of capture.

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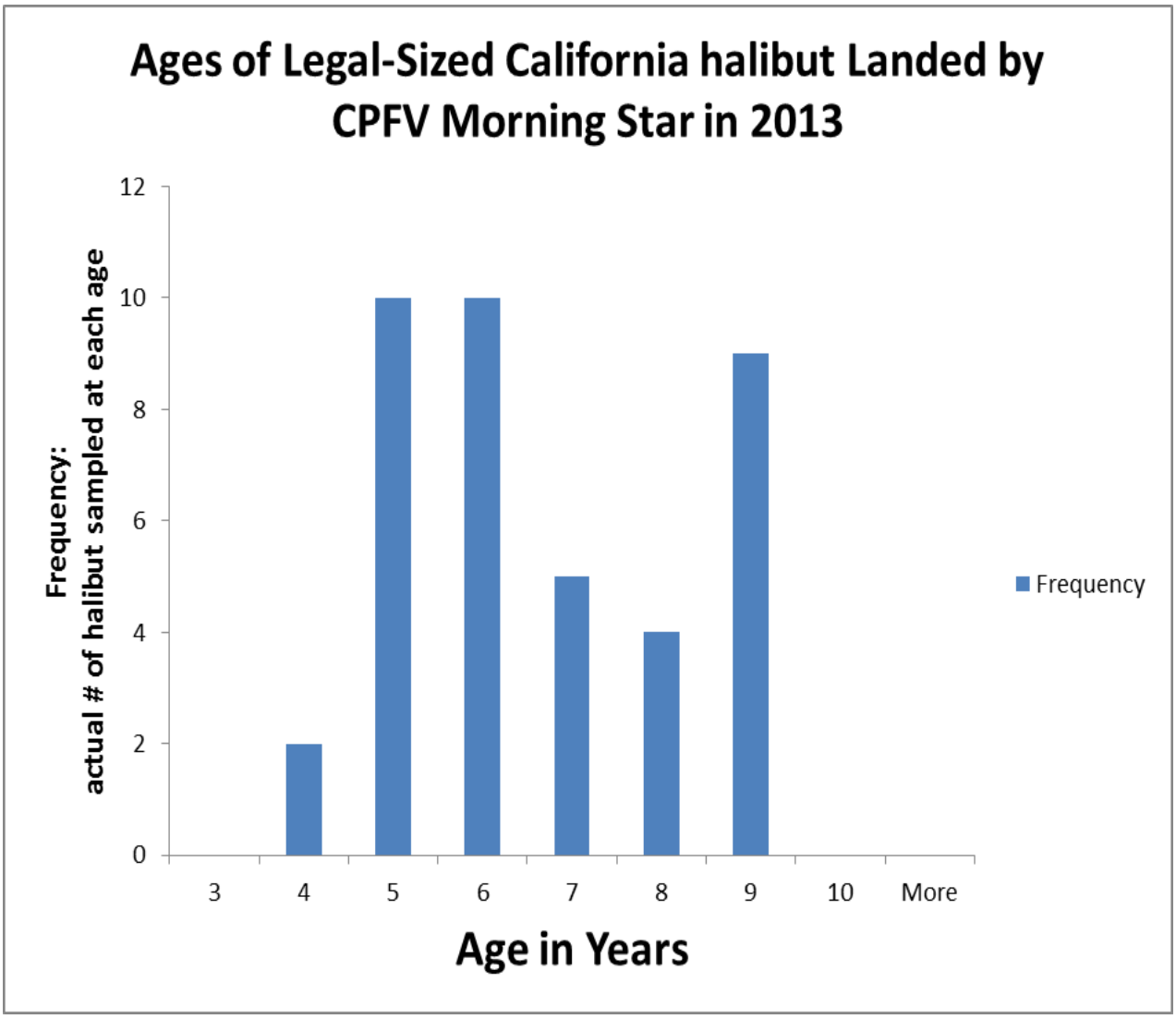

Figure 1. Age frequencies of legal-sized halibut collected by CDFW from the Morning Star in 2013.

Conclusion: The majority of the legal-sized halibut collected from the Morning Star this season were 5, 6, and 9 year olds from the 2008, 2007, and 2004 year classes respectively. A year class is defined as all fish born during one year. A year class will begin to start showing up in the fishery at a legal size of 22 inches at approximately 4-5 years of age. Typically, but not always, females will grow at a faster rate than males of the same age, which is why it is important to determine gender of fish aged. The eight male halibut collected from the Morning Star that were less than 22 inches were mature, however the three females were not mature at the time of capture. Results are inconclusive at this time regarding whether these females had spawned earlier in the season. The two sublegal-sized females collected from the Morning Star in 2012 were proven to be mature at the time of capture through the use of histology (the study of the microscopic structure of tissues). These females displayed post-ovulatory follicles, which indicate that a fish has already spawned that season. The sublegal-sized females from 2012 were 526 and 527 mm fork length which is approximately 20.7 inches.

Figure 2. Halibut caught onboard the CPFV Morning Star. Photo credit: Kristine Lesyna, CDFW.

Future Work: The Department will continue to collect halibut for the study through June 2014 to obtain a sufficient sample size to make conclusions about the relationships

among age, length, and sexual maturity. At the time of this report, 177 halibut collected from various sources have been used for the study. The goal is to verify that the current minimum legal size is appropriate, in that it allows halibut to reproduce at least once before being susceptible to take in the fisheries. We will compare our results of length- and age-at-maturity with those from historical studies from southern California.