

Additionally, uncertainties in determining the effectiveness of alternative management strategies are likely to remain large without an investment in comprehensive long term research.

The feasibility of alternative procedures to address spatial mixing between eastern and western bluefin

The SCRS examined the feasibility of operating modeling approaches and concluded that operating models appear to be a useful mechanism for evaluating management procedures. A schedule for the development of these activities is given in SCRS/2005/011.

16.5 Review of 5% fin-to-body weight retention ratio for sharks [Rec. 04-10]

Recommendation 04-10 indicates that the SCRS shall review and report back to the Commission in 2005 the revision of the ratio between fins and onboard weight of sharks, if necessary. The SCRS reviewed three SCRS documents presented in recent years (Mejuto and García-Cortés 2004, Santos and García 2005, and SCRS/2005/086) and other available information on this issue. The two first SCRS papers included information taken by observers at sea in the EU fleet, while the last SCRS paper was a review of information available throughout the world.

A number of national or regional regulations have been laid down in recent years to ban or limit finning practices (in which the fins are retained and the rest of the body is discarded), for the purpose of promoting the use of as much of the whole body as possible of the specimens landed, according to FAO initiatives. In keeping with this, several countries have established regulations to reduce finning practices with whole body discard, requiring the necessary equivalences between the fin weight and respective body weight in the landings. However, owing to the different species of sharks that may be caught or targeted by the different fisheries of the world, which are likely to have different fin-to-body weight ratios, and the varying fish preparation and utilization criteria on board the different fleets, it would not appear to be advisable to establish universal fin-to-body weight ratios. Consequently, to be effective, these regulations must take into account the species of sharks and the fleet behavior.

In addition to compliance issues, accurate conversion factors between fin weight and landed or whole body weight could be very useful in future scientific efforts to estimate levels of catches of some of these species from fin landings and fin markets. One such exercise was already undertaken in the 2004 ICCAT assessment of blue shark, where total catches were reconstructed based on data from the Hong Kong shark fin trade. Thus, the accuracy of conversion factors is vital for estimating catches made by international fleets, including catches by national or multinational fleets (which should be accurately reported to the international fisheries bodies) or catches by important foreign fleets into national ports and markets which are normally transfer places to the final destination in Asian markets. Fin-to-body weight ratios can significantly affect the catch estimation and ultimately influence assessment results.

Definition: The commercial fin set is defined as the combination of fins which are kept for commercial purposes by fishermen in each boat/fleet. In the case of the US fleet, it generally consists of the *primary fin set* (first dorsal, two pectoral, and lower lobe of the caudal fin), whereas in the case of the European fleets it includes all the fins, including the entire tail (see **Figure 16.5**, which was extracted from Santos and García 2005).

SCRS/2003/085 used a total of 8000 records of 10 different large pelagic sharks. The fin-to-body weight ratios obtained suggest important differences among the ten more prevalent species in the catch. The largest mean percentage was obtained for the oceanic whitetip shark *Carcharhinus longimanus* with around 16% of the dressed body weight when using the largest sample size of 529 fish, and about 10% when considering round body weight. The mean percentage of fins for over 6,700 individuals of the blue shark *Prionace glauca* was around 14% for dressed body weight and 6.5% for round body weight. If a combination of shark species were to be considered, the percentage would, by necessity, be very close to the values obtained for the blue shark because it is clearly the most prevalent species in the large pelagic system and in the Spanish longline fleet, as well as one of the most prevalent species in the international fin markets from long-distance pelagic fleets. Fin-to-body weight ratios did not vary for a wide spectrum of sizes in *P. glauca* or *Isurus oxyrinchus*. This suggests that it is appropriate to use species-specific mean ratios for all sizes combined or to use threshold values by species or groups of species defined by means of their respective upper confidence limits for compliance purposes. The paper indicated that each national fleet may have different criteria for dressing the fish onboard. As a result, the fin-to-body weight ratios by species could be different, especially among fleets or, to a lesser extent, among boats.

Information from at-sea observers in the Portuguese surface longline fleet was provided in Santos and García 2005.

A total of 99 blue shark individuals were sampled. Individual round weight and individual fin weights were measured. The mean wet fin weight (all fins combined; Figure 1) to round body weight percentage was 6.6%.

SCRS/2005/086 a preliminary re-assessment of the validity of the 5% fin-to-dressed carcass weight ratio for sharks. The main point of this document, which conducted a review based on various fishery-dependent and fishery-independent sources that included the two documents summarized above, was to emphasize that the fin-to-weight ratios are highly variable, depending on the species, fin set used, and fin cutting technique. The main conclusion was that when using the primary fin set (composed of the first dorsal, two pectoral, and lower lobe of the caudal fin; **Figure 16.5**), as is traditional in the USA, the 5% fin-to-dressed weight ratio is generally an upper limit that is not inappropriate. However, different ratios may be appropriate for other fleets/nations that keep a different set of fins (especially those that keep the whole caudal fin as is the case in the Spanish and Portuguese surface longline fleets) or even use different cutting techniques. The paper emphasized the importance of clearly stating which fins and body weight are used in the calculation of ratios. The paper also identified some potential management alternatives, such as the use of species-specific ratios or grouping of species with similar ratios to facilitate management and reduce finning. Development of species-specific ratios was deemed especially important when used in the estimation of total catches. The document concluded by stating that the only way to avoid finning was to land sharks with all fins attached.

Conclusions

European longline fleets

Results from large sample sizes in European (both Portuguese and Spanish) surface longline fleets, indicate that for blue shark *Prionace glauca* the average percentage of all commercial fins is around 6.5% of the total round body weight and around 14% of dressed body weight, according to the dressing criteria used in both fleets. These results are consistent for all size categories. If a combination of shark species were to be considered, the percentage would necessarily be very close to the values obtained for the blue shark because it is clearly the most prevalent species in the landings of the EU surface longline fleet. However, for compliance purposes, it could be more appropriate to use threshold values by species as blue shark, or groups of species, defined by means of their respective upper confidence limit values or other metrics.

U.S. fleet

Summarized results from several studies conducted in the USA, which include a wide variety of species, mostly large coastal sharks, many of the genus *Carcharhinus*, revealed that the ratio of wet fin to dressed weight rarely exceeds 5% (only in the case of the sandbar shark *Carcharhinus plumbeus*, which is one of the main species caught by the U.S. bottom longline fleet). The fins retained in U.S. fisheries generally consist of the first dorsal, two pectoral, and lower lobe of the caudal fin only. The aggregated wet fin to dressed body weight ratio obtained from the bottom longline directed shark fishery observer program for all species combined and averaged over six years of data (n>27000) was 4.9%. Aggregated data from limited additional sampling of a single commercial fishing vessel targeting large coastal sharks resulted in a very similar ratio (4.5% of wet fin to dressed carcass weight). It must be pointed out that the averages derived in several studies in the USA represent unweighted means, i.e., they were not weighted by the relative contribution of each species in the catch. In all, based on the available data, the 5% ratio presently in effect in the United States appears to be an upper limit, with most species exhibiting lower ratios (with the notable exception of the sandbar shark). This means that finning can occur when species with lower ratios are caught. Use of species-specific values or values for groups of species with similar ratios would be preferable but may be hard to implement from a management perspective. The preferred alternative to avoid finning and circumvent the imposition of ratios would be to land shark carcasses with fins attached.

General conclusions

The different criteria for cutting fins, dressing the fish, and drying the fins onboard by the different fleets, as well as the fins or part of fins that are retained, explain the vastly different ratios obtained for the same species when comparing European fleets, US fleets, and other ratios reported in the literature from other fleets. It also makes it very difficult and inaccurate to apply a single, universal numerical ratio without full knowledge of the methods used by each fleet, particularly when this ratio is defined in terms of weights that have already been processed

(dressed, gutted, etc.), or fins in varying stages of drying, or when only some of the fins or parts of fins are included in the calculations.

The lack of precaution in making these comparisons has, on occasion, led to incorrect conclusions or inferred apparent numerical discrepancies among authors that might not exist. Apart from minor methodological differences among authors, these apparent numerical inconsistencies in the ratio of fin weight to body weight are more likely to be an indication that the different authors/fleets are not using the same fins, or cutting the fins or dressing the animals in the exact same way. An example is that the weight of shark fins has often been cited as only accounting for 1 to 5 percent of the dressed body weight, but this range only applies to *the primary fin set* (first dorsal, two pectoral, and lower lobe of the caudal fin) for a large group of species. When considering *all commercial fins* in oceanic large pelagic sharks this ratio can reach 14% of the dressed body weight, as found for the blue shark in the European surface longline fleet.

The SCRS thus recommends that conversion factors between fins and body weights be developed and implemented on a species- and/or fleet-specific basis.

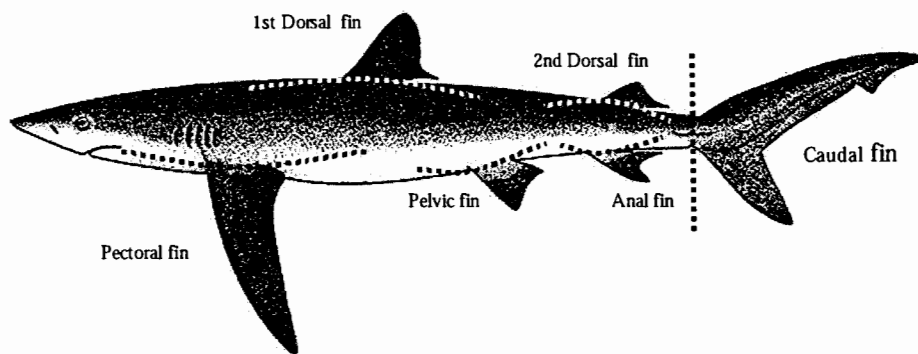


Figure 16.5. Shark fin nomenclature as reported in Santos and Garcia 2005. Pectoral and pelvic fins are paired fins. The exact cutting procedure may vary by fleet.

16.6 Review of shortfin mako assessment [Rec. 04-10]

The Commission directed in [04-10] that in “2005, the SCRS shall review the assessment of shortfin mako sharks (*Isurus oxyrinchus*) and recommend management alternatives for consideration by the Commission.” This review was undertaken as the Committee cannot rule out the possibility that the current shortfin mako shark biomass in the North Atlantic is below the biomass that can support MSY. Should the Commission wish to improve the status of this stock, measures to reduce fishing mortality should be taken. Shortfin mako sharks are taken in a broad range of fisheries, both as targeted catch and as by-catch in multi-species fisheries, and our knowledge of overall catch levels is inadequate. As such, there is no basis for recommending catch limits for this stock. Although technical measures such as modifications to fishing gear, restrictions on fishing areas and times, minimum or maximum sizes for allowable retained catch might prove beneficial, without more detailed information gathered through research programs designed to estimate the potential benefits of such measures, the Committee recommends that reductions in fleet capacity and effective effort could provide the most direct benefit to shortfin mako sharks.

16.7 Review and Prioritization of Proposed Bluefin Tuna Research Program

Following from the 3rd Meeting of the Working Group to Develop Integrated and Coordinated Atlantic Bluefin Tuna Management Strategies (Fukuoka, Japan, April 20 to 23, 2005), at which it was recommended “that the research efforts needed to be better harmonized and coordinated and that the SCRS should establish priorities within its proposed research program and in this regard should inform the Commission on the feasibility of operational models to take account of mixing,” a previous research plan (Anon 2004a) was reviewed in the context of ongoing and recent national and BYP-sponsored bluefin research as well as new research activities reported at the meeting.