

**REVISION OF HISTORICAL UNITED STATES RECREATIONAL
LANDINGS OF SHORTFIN MAKO (*ISURUS OXYRINCHUS*)
FOR THE PERIOD 2004-2011**

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SUMMARY

New catch estimates (Task I) for shortfin mako (Isurus oxyrinchus) in the United States recreational (RR) fishery have been calculated for the period 2004-2011. These estimates are calculated from data collected through the Marine Recreational Information Program, Large Pelagic Intercept Survey, Southeast Region Headboat Survey, and Texas Parks and Wildlife Department

RÉSUMÉ

Les nouvelles estimations de capture (Tâche I) du requin-taupe bleu (Isurus oxyrinchus) au sein de la pêche récréative (RR) des États-Unis ont été calculées pour la période 2004-2011. Ces estimations sont calculées à partir des données recueillies dans le cadre du Marine Recreational Information Program, Large Pelagic Intercept Survey, Southeast Region Headboat Survey, et Texas Parks et Wildlife Department.

RESUMEN

Se han calculado, para el periodo 2004-2011, nuevas estimaciones de captura (Tarea I) para el marrajo dientado (Isurus oxyrinchus) en la pesquería de recreo estadounidense (RR). Estas estimaciones se calcularon a partir de datos recopilados mediante el Marine Recreational Information Program, la Large Pelagic Intercept Survey, la Southeast Region Headboat Survey, y el Texas Parks and Wildlife Department.

KEYWORDS

Task I, recreational catch estimates

The collection of statistics and estimation of landings is generally more problematic for recreational fisheries in comparison to commercial landings. Recreational anglers tend to be more numerous and more diverse, in terms of effort levels, species targeted, equipment and experience. Landing sites are also more numerous, geographically disperse and frequently inaccessible; there are no central processing points nor is there documentation of financial transactions reflecting the landings, as might be available for commercial fisheries. Surveys are therefore frequently utilized to collect the data necessary to describe and quantify recreational catches. For the United States, the primary survey for the collection of such statistics has been the Marine Recreational Fisheries Statistics Survey (MRFSS). This survey was intended to be comprehensive, including shore-based, inshore and offshore effort in the marine environment. However, this comprehensive nature can pose difficulties when calculating accurate and precise estimates for relatively rare event highly migratory species (such as shortfin mako, *Isurus oxyrinchus*), in part due to the difficulties in achieving sufficient sample size across all appropriate strata.

The United States NOAA Fisheries Service has recently completed an overhaul of this survey. Under this new Marine Recreational Information Program (MRIP), a number of survey design modifications have been implemented which provide improvements to the estimations. A new National Saltwater Angler Registry serves as the frame for effort sampling (as opposed to a random sample of coastal inhabitants); this leads to much more precise estimates for a given level of sampling. Intercept sampling has been stratified so as to collect representative samples across geographic areas and times of day. This avoids some of the biases that may have occurred for rare event species. NOAA Fisheries has now completed a revision of historical landings, consistent

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with the new MRIP estimation scheme, from 2004-2011. As a result, the recreational estimates for shortfin mako emerging from this program are now considered to be sufficiently robust to be used for stock assessment purposes. This paper reports on a submission of Task I landings information for shortfin mako (SMA) from this new historical time series of catch estimates.

The basic estimation approach of the MRIP is to 1) collect effort information from a frame of known anglers, 2) collect catch rate data, and data on whether or not the anglers are on the frame, from intercepts of anglers returning from fishing trips, and 3) multiply stratified catch rates and effort estimates, with frame adjustments, to obtain catch estimates. In addition to the MRIP, catch estimates were calculated from data obtained through several other survey programs. These include:

- *Large Pelagic Intercept Survey (LPIS)*. This survey, conducted during the summer months in the U.S. mid-Atlantic states, targets effort directed at highly migratory species (HMS), using a frame of anglers with HMS permits and defining intercept sampling criteria and sampling according to HMS targeted effort.
- *Southeast Region Headboat Survey (SRHS)*. This is a census of catch from headboats (vessels with the capacity to carry 10 or more anglers), conducted throughout the Southeastern U.S. The catches are reported by the vessel crews, with dockside sampling by port samplers.
- *Texas Parks and Wildlife Department Survey (TPWDS)*. This survey generally captures effort in the inshore waters of Texas, but some HMS are recorded.

The MRIP and LPIS overlap in time and area. In this case, the estimates from LPIS take precedence because the LPIS is designed specifically for characterizing the offshore pelagic rod and reel fishery. Any estimates that might be obtained from the SRHS or TPWDS are additive with the MRIP. The estimates are first calculated in number of fish; stratified (time-area) size samples are used to convert to tonnage. If there are insufficient samples within an area, sizing is done using broader time-area stratification.

The resulting estimates of SMA Task I data are shown in **Table 1**. These have been transmitted to the ICCAT Secretariat. These estimates were not previously available or reported, therefore they should be added into the ICCAT data base as additional landings to the SMA commercial landings which have been previously reported for the U.S. At this time, Task II data have not been prepared, as substantial work is required to review the data, ensure its quality and suitability, and prepare it in the appropriate formats. These data should be made available to the Secretariat when this process is complete.

Table 1. Task I Estimates for Shortfin Mako in the United States Recreational (RR) Fishery, 2004-2011.

<i>Year</i>	<i>Sampling area</i>	<i>Landings (NO discards) in kg</i>
2004	BIL91	3,850
2004	BIL92	328,714
2005	BIL91	2,444
2005	BIL92	279,671
2006	BIL92	256,662
2007	BIL91	2,470
2007	BIL92	155,829
2008	BIL92	156,036
2009	BIL92	162,728
2010	BIL92	167,778
2011	BIL92	171,529