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Size distribution and length-weight relationships for some large pelagic sharks in the Indian Ocean. Communication 2. Bigeye thresher shark, tiger shark, silvertip shark, sandbar shark, great hammerhead shark, and scalloped hammerhead shark

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ABSTRACT

Size frequencies and L-W relationships for bigeye thresher shark (*Alopias superciliosus*), tiger shark (*Galeocerdo cuvier*), silvertip shark (*Carcharhinus albimarginatus*), sandbar shark (*Carcharhinus plumbeus*), great hammerhead shark (*Sphyrna mokarran*) and scalloped hammerhead shark (*Sphyrna lewini*) caught during Soviet Indian Ocean Tuna Longline Research Programme (SIOTLLRP) in 1961-1989 are presented.

Sharks are dominated bycatch species in the Indian Ocean tuna longline (LL) fisheries and are important part of non-target catches in purse seine (PS) and gillnet (GILL). However, as it was stated by IOTC working party on ecosystems and bycatch (WPEB), for most of the Indian Ocean shark species basic biological information is not available (IOTC, 2007, 2008; IOTC-WPEB07, 2011). Earlier we presented (Romanov, Romanova, 2009) size frequency distribution and length-weight for several shark species recorded in the LL catches during Soviet Indian Ocean tuna longline research programme (SIOTLLRP), which take place between 1961 and 1989 (Romanov et al., 2006). Here we present a continuation of this work, focusing on another six species: bigeye thresher shark (*Alopias superciliosus*), tiger shark (*Galeocerdo cuvier*) silvertip shark (*Carcharhinus albimarginatus*), sandbar shark (*Carcharhinus plumbeus*), great hammerhead shark (*Sphyrna mokarran*), and scalloped hammerhead shark (*Sphyrna lewini*). All measurements were taken at sea on fresh individuals. All field data were inputted into the database, checked for errors and used here to develop L-W relationships.

Bigeye thresher shark *Alopias superciliosus* Lowe, 1841

Gear: LL

Sample size with FL available $n=201$

Used for L-W calculation:

Females $n=96$

Males $n=89$

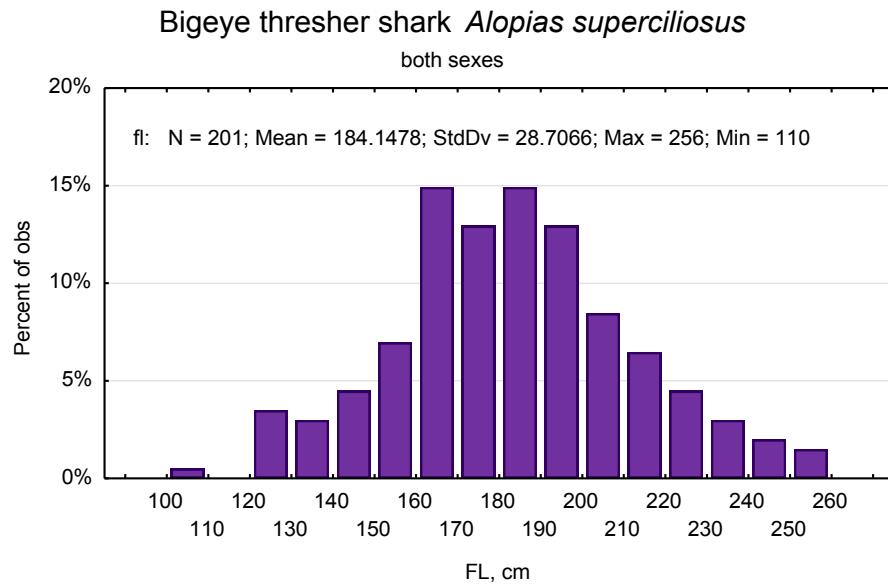


Figure 1. Size frequency distribution of bigeye thresher shark individuals caught during SIOTLLRP (both sexes).

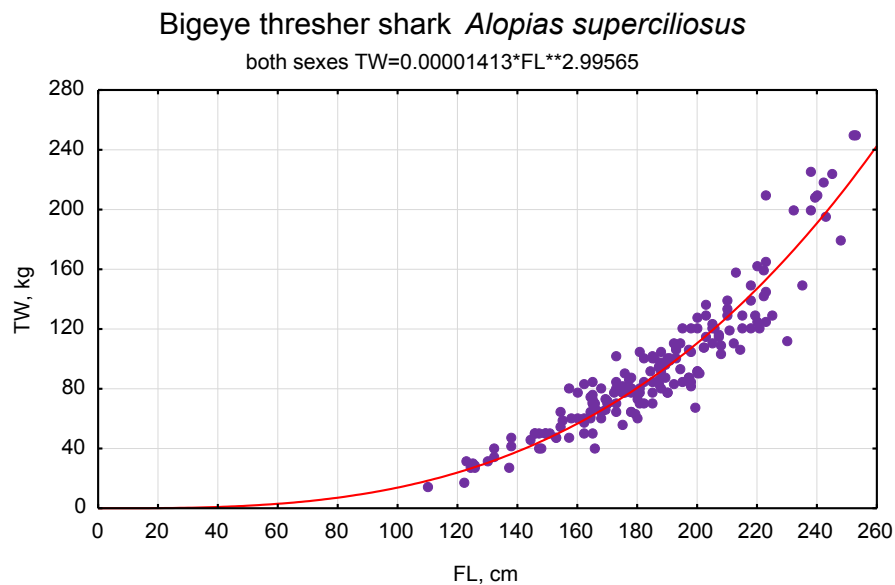


Figure 2. Length-weight scatterplot and relationship for bigeye thresher shark (both sexes, $n=185$)

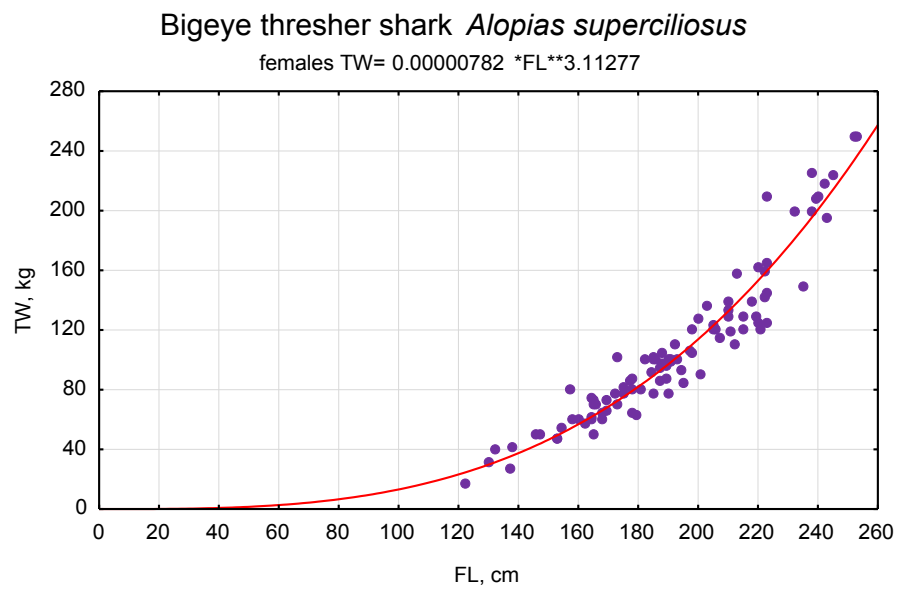


Figure 3. Length-weight scatterplot and relationship for bigeye thresher shark (females, $n=96$)

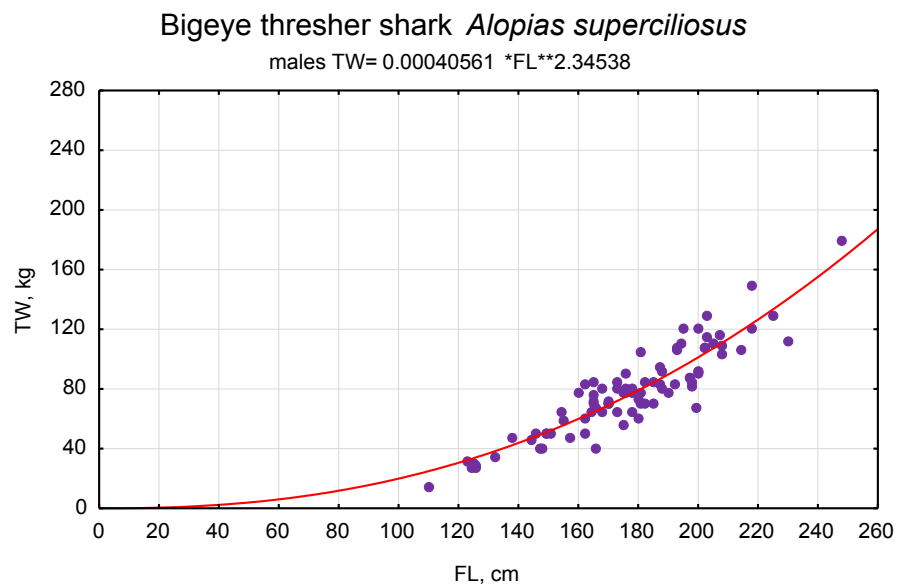


Figure 4. Length-weight scatterplot and relationship for bigeye thresher shark (males, $n=89$)

Tiger shark *Galeocerdo cuvier* (Péron & Lesueur, 1822)

Gear: LL

Sample size with FL available $n=678$

Used for L-W calculation:

Females $n=344$

Males $n=329$

Sex non recorded $n=3$

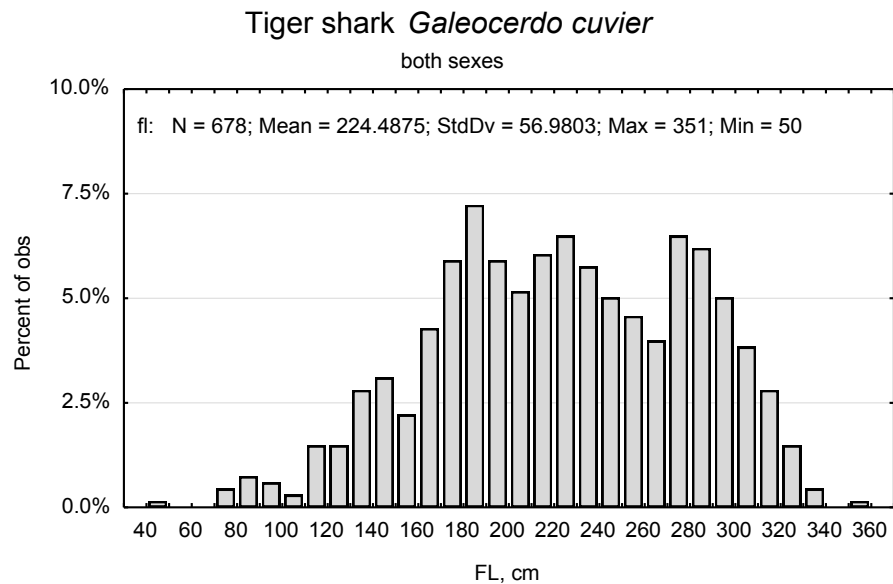


Figure 5. Size frequency distribution of tiger shark individuals caught during SIOTLLRP (both sexes and unsexed individuals).

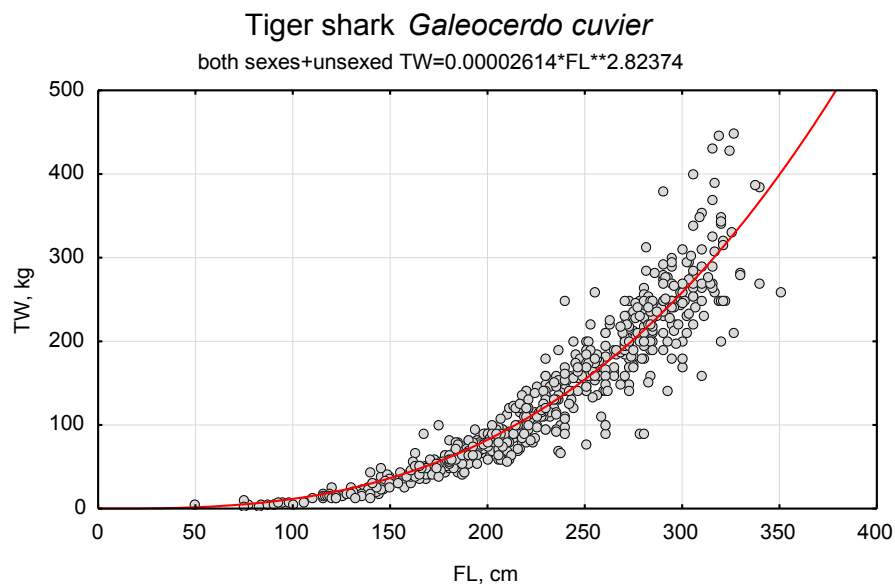


Figure 6. Length-weight scatterplot and relationship for tiger shark (both sexes + unsexed, $n=676$)

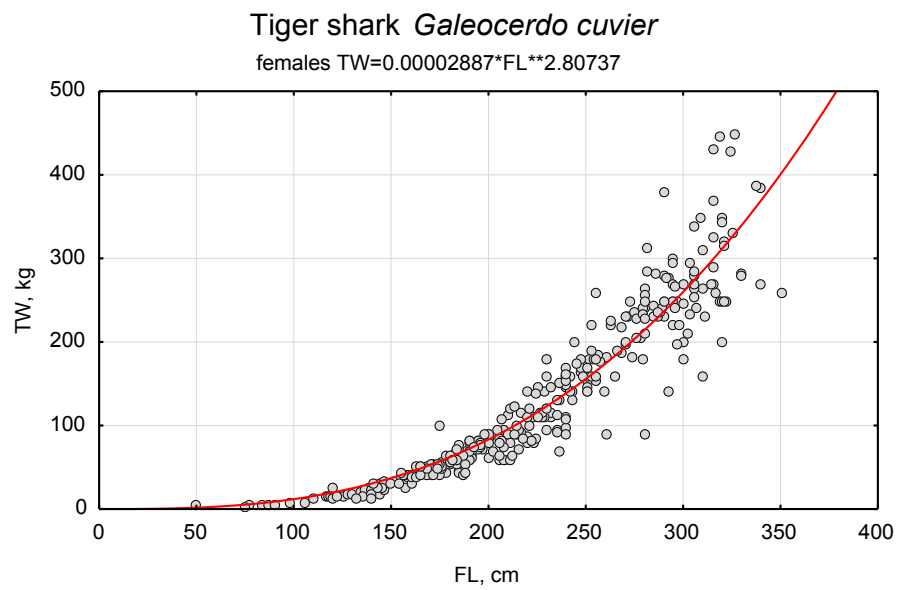


Figure 7. Length-weight scatterplot and relationship for tiger shark (females, $n=344$)

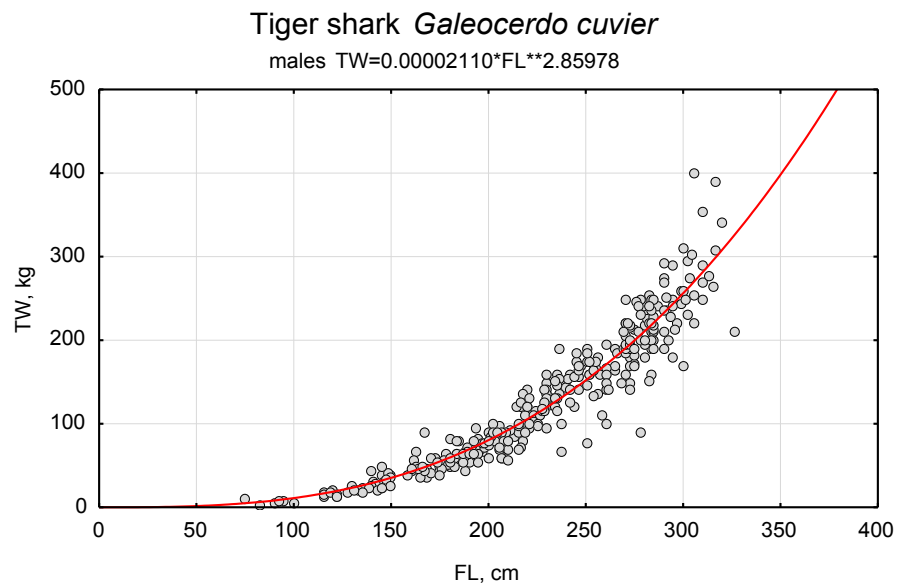


Figure 8. Length-weight scatterplot and relationship for tiger shark (males, $n=329$)

Silvertip shark *Carcharhinus albimarginatus* (Rüppell, 1837)

Gear: LL, PS

Sample size with FL available $n=3721$ (LL: 3700/PS: 21)

Used for L-W calculation:

Sample size total $n=3715$ (LL: 3698/PS: 17)

Females $n=2258$ (LL: 2247/PS: 11)

Males $n=1433$ (LL: 1431/PS: 2)

Sex non recorded $n=24$ (LL: 20/PS: 4)

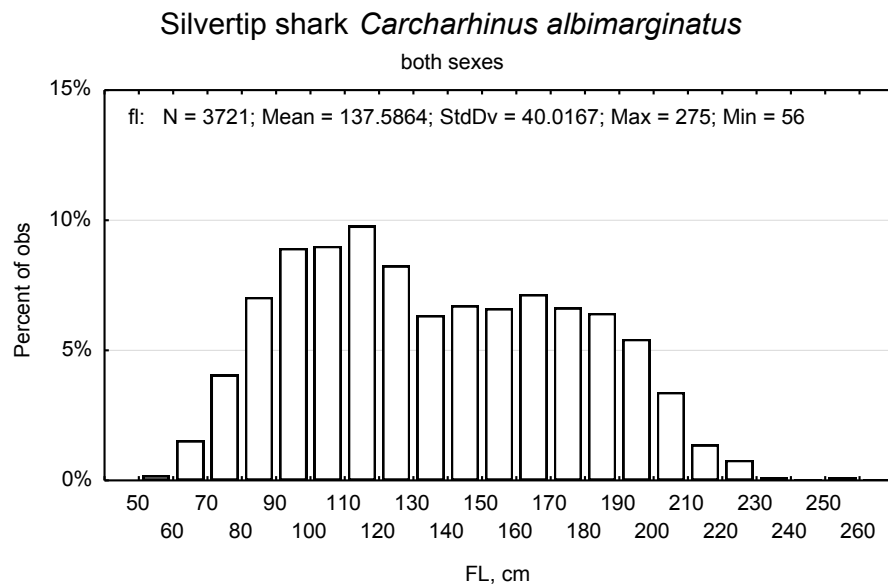


Figure 9. Size frequency distribution of silvertip shark individuals caught during SIOTLLRP (both sexes and unsexed individuals).

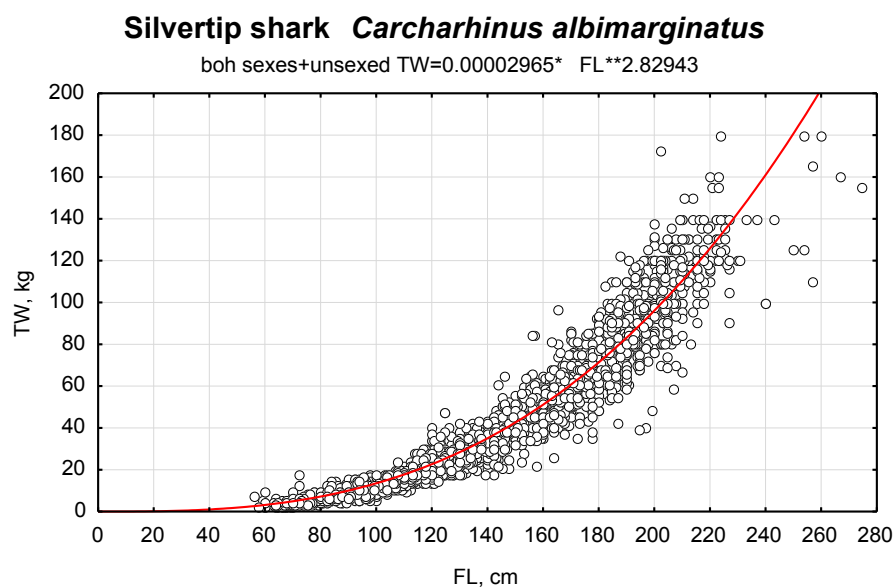


Figure 10. Length-weight scatterplot and relationship for silvertip shark (both sexes + unsexed $n=3715$)

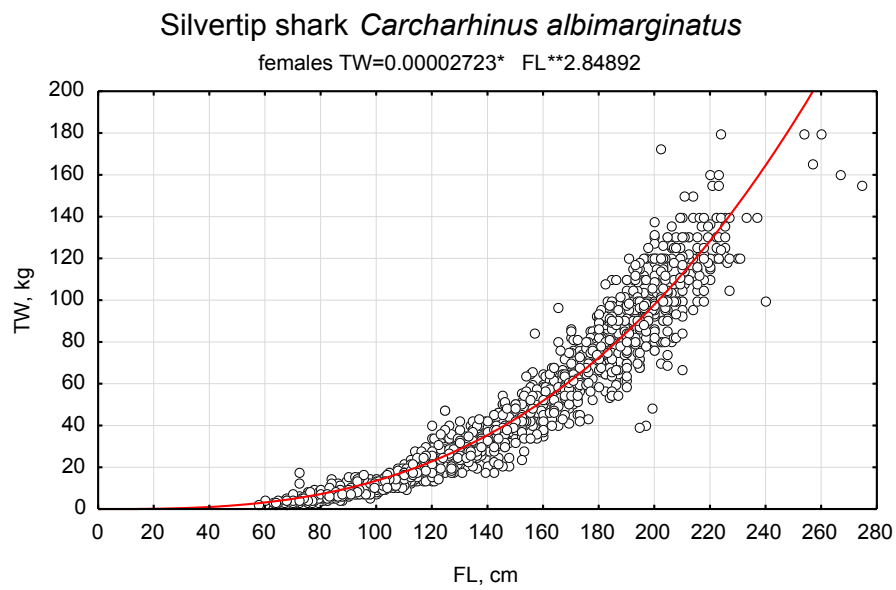


Figure 11. Length-weight scatterplot and relationship for silvertip shark (females, $n=2258$)

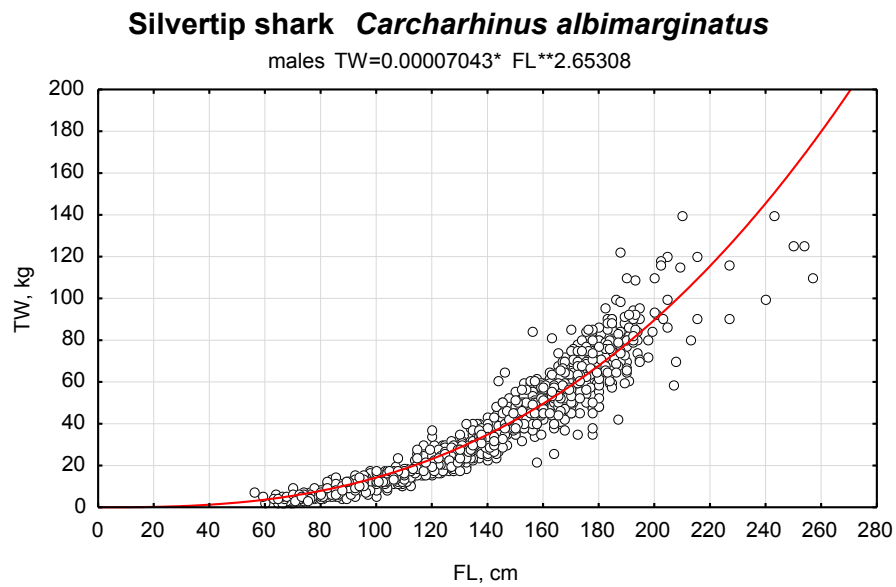


Figure 12. Length-weight scatterplot and relationship for silvertip shark (males, $n=1433$)

Sandbar shark *Carcharhinus plumbeus* (Nardo, 1827)

Gear: LL

Sample size with FL available $n=1615$

Used for L-W calculation:

Females $n=832$

Males $n=783$

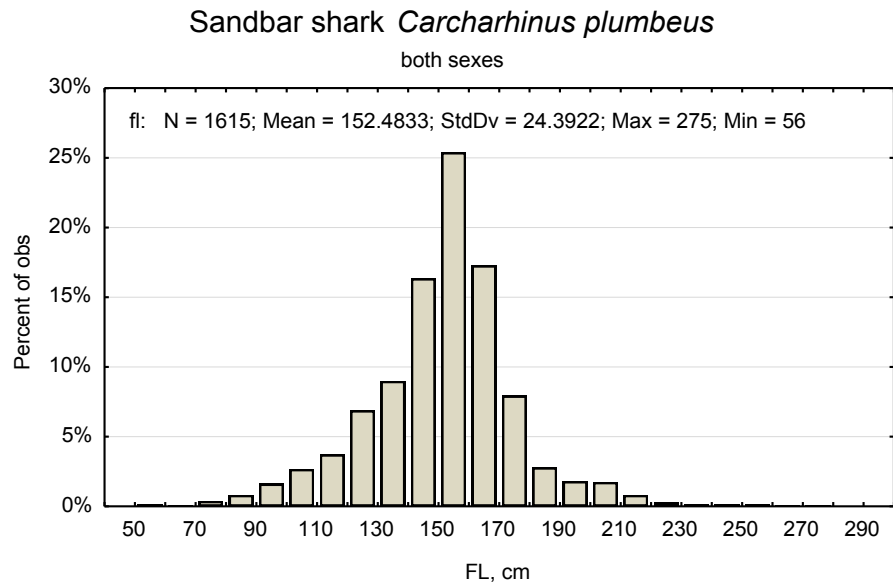


Figure 13. Size frequency distribution of sandbar shark individuals caught during SIOTLLRP (both sexes).

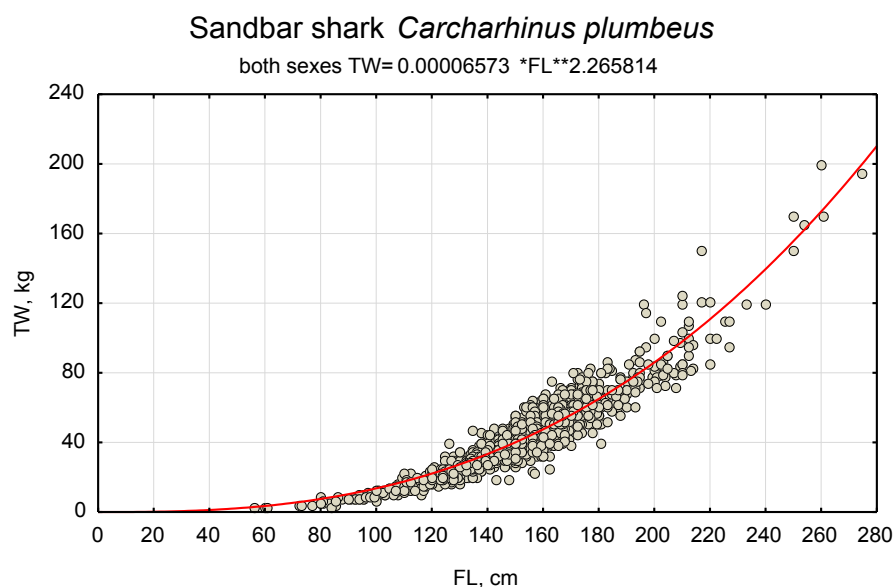


Figure 14. Length-weight scatterplot and relationship for sandbar shark (both sexes, $n=1615$)

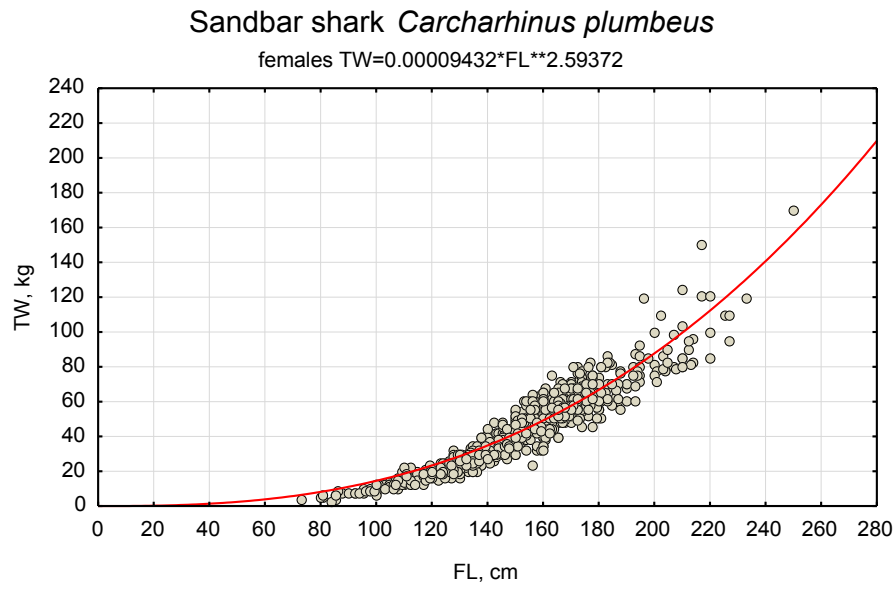


Figure 15. Length-weight scatterplot and relationship for sandbar shark (females, $n=783$)

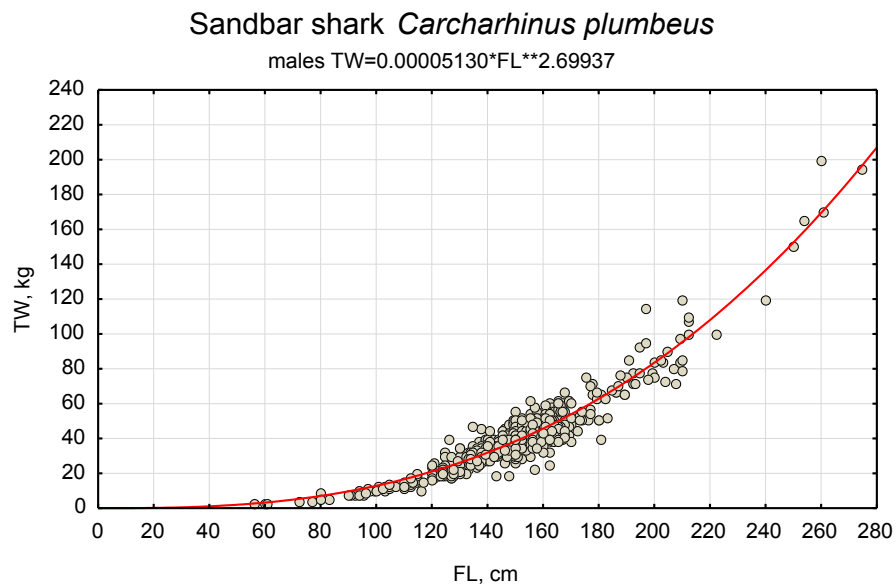


Figure 16. Length-weight scatterplot and relationship for sandbar shark (males, $n=832$)

Great hammerhead shark *Sphyrna mokarran* (Rüppell, 1837)

Gear: LL

Sample size with FL available $n=143$

Used for L-W calculation:

Females $n=39$

Males $n=102$

Sex non recorded $n=2$

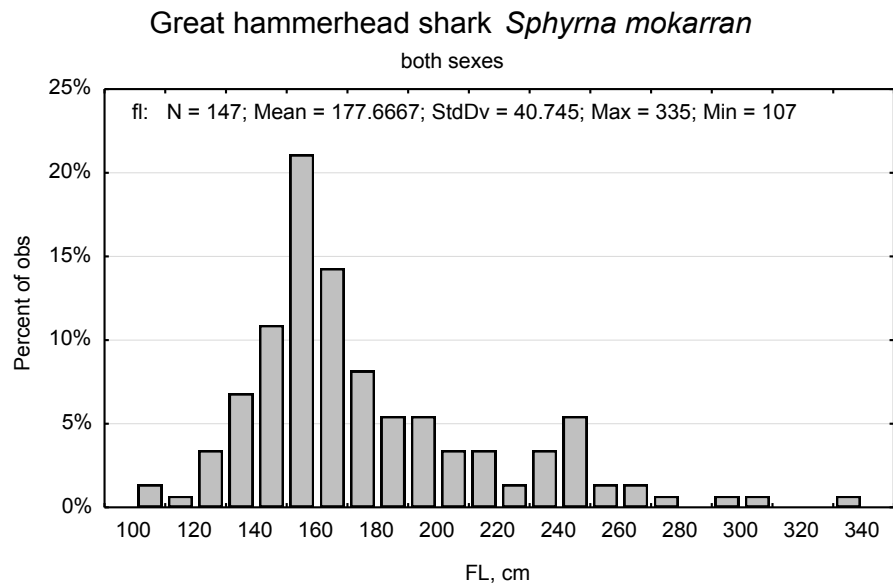


Figure 13. Size frequency distribution of great hammerhead shark individuals caught during SIOTLLRP (both sexes and unsexed individuals)

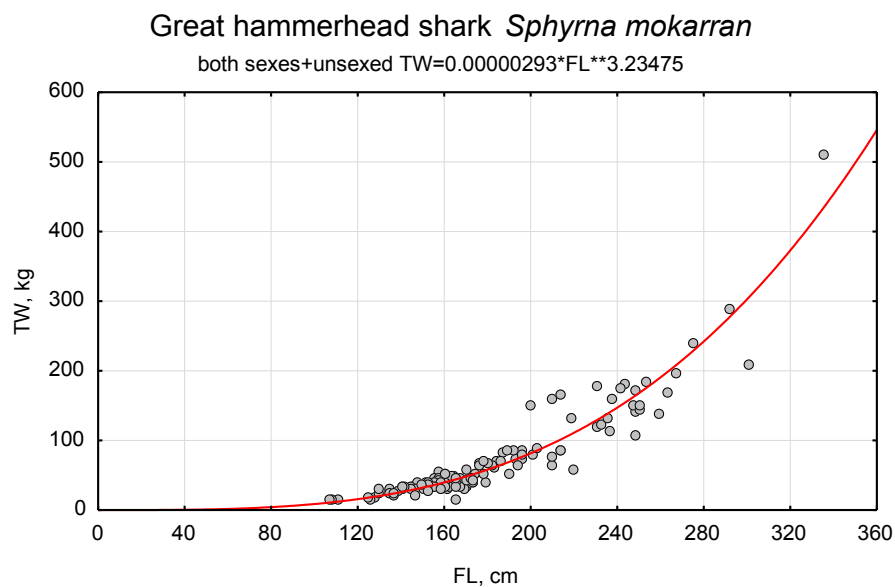


Figure 14. Length-weight scatterplot and relationship for great hammerhead shark (both sexes + unsexed, $n=143$)

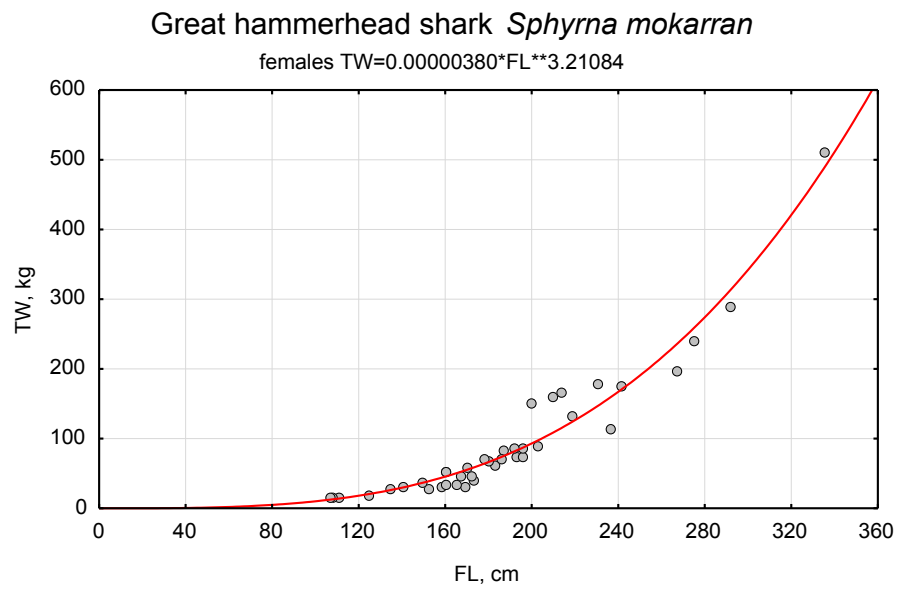


Figure 15. Length-weight scatterplot and relationship for great hammerhead shark (females, $n=39$)

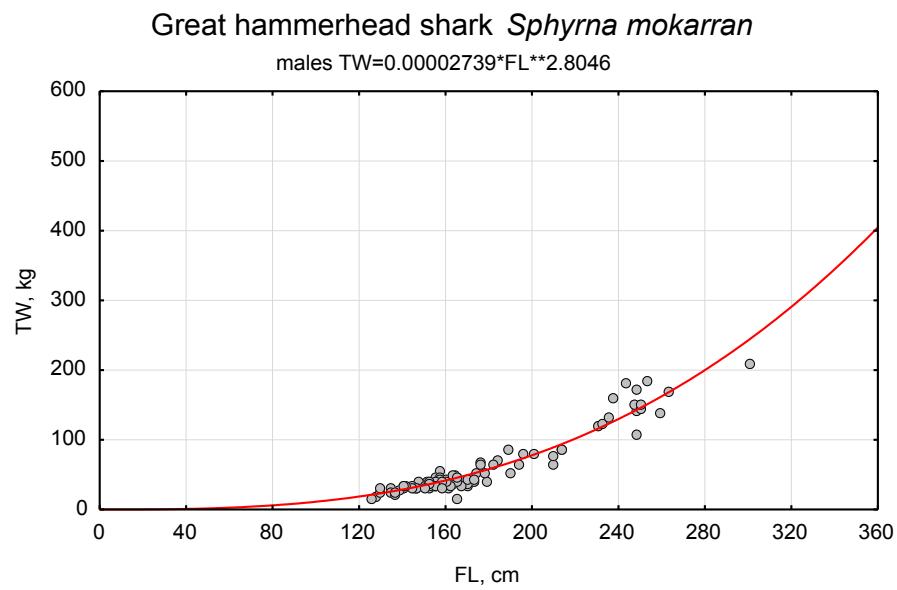


Figure 16. Length-weight scatterplot and relationship for great hammerhead shark (males, $n=102$)

Scalloped hammerhead shark *Sphyrna lewini* (Griffith & Smith, 1834)

Gear: LL

Sample size with FL available $n=241$

Used for L-W calculation:

Females $n=161$

Males $n=35$

Sex non recorded $n=1$

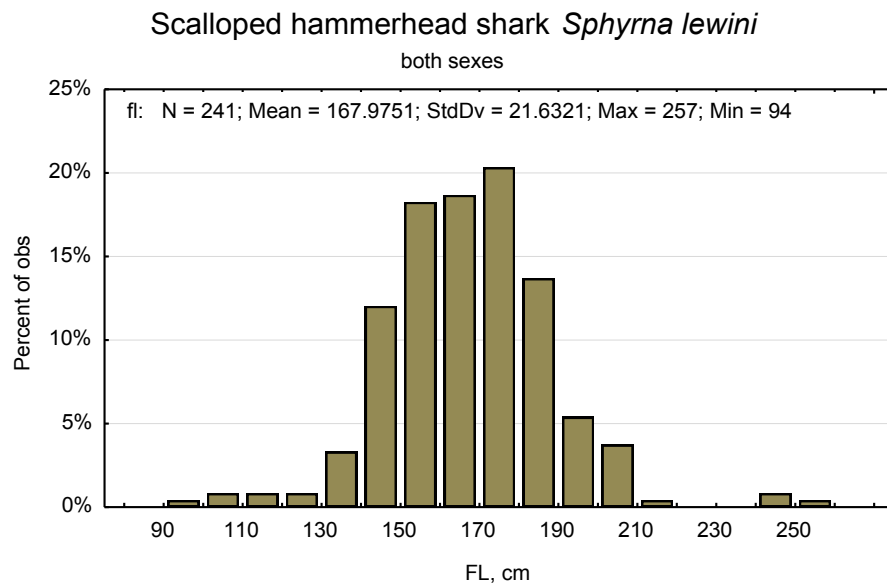


Figure 17. Size frequency distribution of scalloped hammerhead shark individuals caught during SIOTLLRP (both sexes and unsexed individuals)

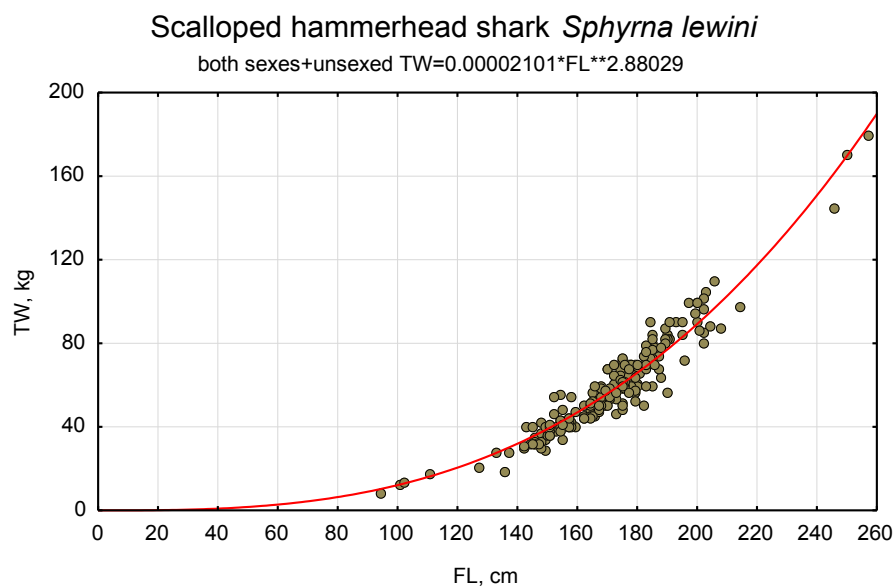


Figure 18. Length-weight scatterplot and relationship for scalloped hammerhead shark (both sexes + unsexed, $n=197$)

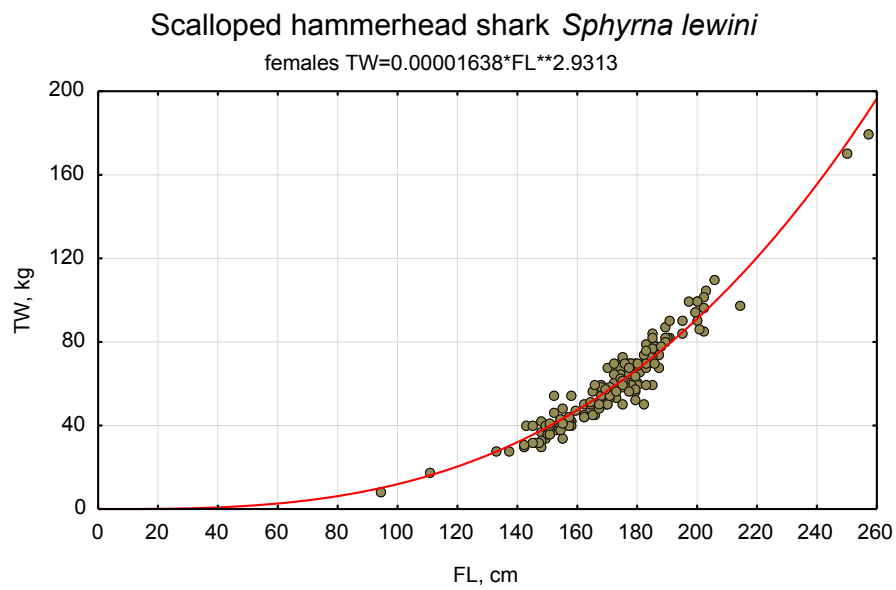


Figure 19. Length-weight scatterplot and relationship for scalloped hammerhead shark (females, $n=161$)

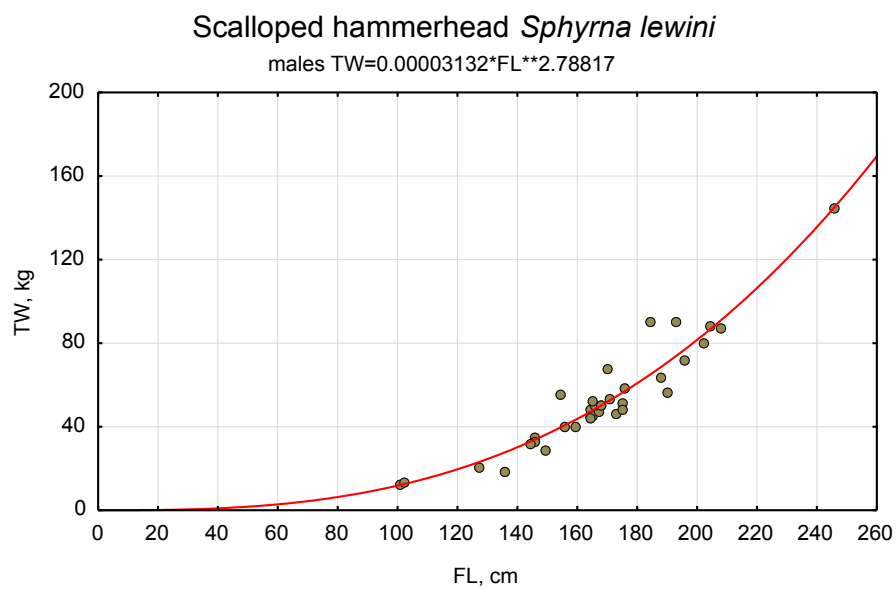


Figure 20. Length-weight scatterplot and relationship for scalloped hammerhead shark (males, $n=35$)

REFERENCES

- IOTC, 2007.** IOTC. Report of the Third Session of the IOTC Working Party on Ecosystems and Bycatch (previously the Working Party on Bycatch) Seychelles, 11-13 July 2007. 39 p.
- IOTC, 2008.** IOTC. Report of the Fourth Session of the IOTC Working Party on Ecosystems and Bycatch Bangkok, Thailand 20-22 October 2008. 23 p.
- IOTC–WPEB07 2011.** Report of the Seventh Session of the IOTC Working Party on Ecosystems and Bycatch. Lankanfinolhu, North Malé Atoll, Republic of Maldives, 24–27 October 2011. IOTC–2011–WPEB07–R[E]: 99 pp.
- Romanov, E., Romanova, N., 2009.** Size distribution and length-weight relationships for some large pelagic sharks in the Indian Ocean. IOTC-2009-WPEB-06, 12 p.
- Romanov, E., Sakagawa, G., Marsac, M., Romanova, N., 2006.** Historical database on Soviet tuna longline tuna research in the Indian and Atlantic oceans (first results of YugNIRO-NMFS data rescue project). IOTC-2006-WPTT-10, 32 p.