



Protecting *Manx Wildlife*  
for the future

# The Isle of Man Shark Tagging Programme

*End of Year Report 2017*



*Written for:*

*The Department of Environment, Food and Agriculture (DEFA)*

*Written by: Melissa Parsons and Dr Lara Howe*



## Introduction

In May 2013, at the request of the Department of Environment, Food and Agriculture (DEFA), Manx Wildlife Trust initiated a small shark tagging project in the Isle of Man. The present project is a continuation of the previous work, representing the fifth year of the Small Shark Tagging Programme.

The project aims to engage with local anglers to undertake tagging and record subsequent recaptures should they occur. It is hoped that data obtained will provide information on the abundance and distribution of Manx small shark populations, which may be useful in the development of future management plans and conservation activities.

The tagging of small elasmobranchs in UK waters has predominantly been conducted by the UK Shark Tagging Programme, through angler-based projects that aim to increase understanding of the distribution and behaviour of elasmobranch target species (Drake et al., 2005). Furthermore, the Scottish Shark Tagging Programme (SSTP) are responsible for a similar scheme that aims to tag and record data on species occurring in Scottish coastal waters. Whilst the current project is not novel in approach, small shark tagging projects focusing on the Isle of Man specifically have not been previously conducted.

The Isle of Man's close geographical proximity to Scotland and thus the possibility of shark crossover, contributed to the involvement of SSTP. The organisation shared knowledge and resources throughout the process, including the deployment of two officers who trained Manx local anglers in 2013 (funded by DEFA), design of a project logo and the provision of tags/tagging equipment which has continued each year.

The most predominant elasmobranch species caught by anglers in Manx waters are bull huss (*Scyliorhinus stellaris*), spurdog (*Squalus acanthias*) and tope (*Galeorhinus galeus*) and thus these species are currently the only tagged small sharks. Each of these species is a conservation concern, with the bull huss listed as 'near threatened' (Ellis et al., 2009) and both spurdog and tope considered 'vulnerable' (Walker et al., 2006; Fordham et al., 2016) by the IUCN Red List.

## Methodology

Each year the project is advertised locally and interested anglers targeting small sharks are invited to partake in the project. This year 12 anglers were trained to tag small sharks, meaning 52 individuals have been trained since 2013. Overall, 23 anglers administered tags during 2017. Several of these taggings occurred on two organised angling/tagging events whereby MWT sourced a vessel and trained anglers were invited to participate. This was hoped to encourage the anglers to get more involved with the programme.

All trained anglers were given a minimum landing size crib sheet, recording cards and tagging equipment (Appendix 2 and 3). The tagging equipment consisted of a canula with five standard floy tags (Appendix 1) and a micro gun with ten micro tags (for tagging smaller sharks). Tag equipment was replaced in small quantities when required, depending on anglers likelihood of being able to fish.

Information is recorded about the shark at the time of initial capture and tagging, including species, length and sex. Capture location is also noted. Each tag has a unique identification number so that if the shark is recaptured in the future, details can be cross referenced. This provides data on migration distances, site fidelity, sex segregation, growth and other life history traits. Currently, Manx data is stored on the SSTP online database and with MWT.

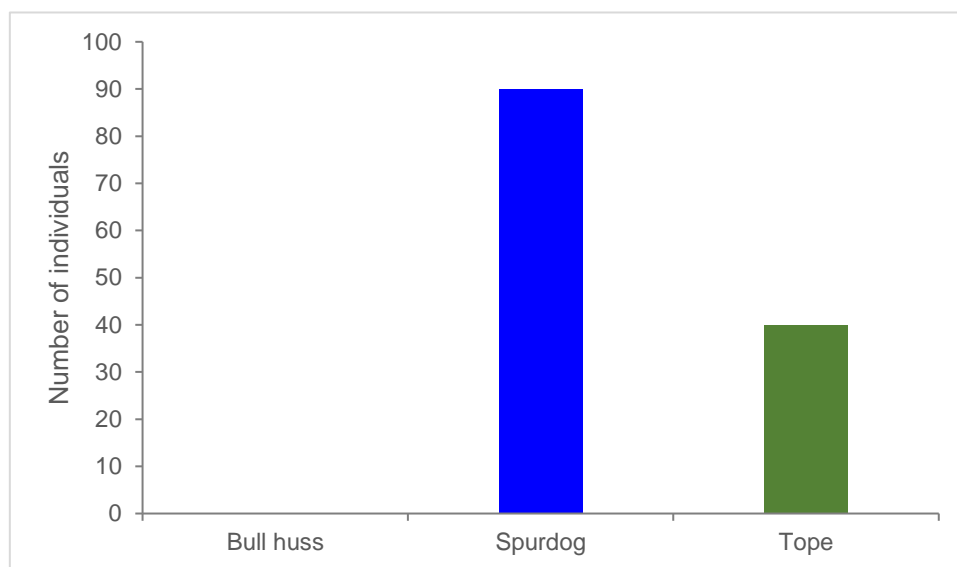
Anglers are able to upload tagging information directly to the SSTP database or submit to the Manx Wildlife Trust. At the end of the season both databases are combined.

## Results

### *Sharks tagged in 2017*

In total, 130 small sharks were tagged in 2017, including 90 spurdog and 40 tope. No bull huss were tagged this year (Figure 1). Length range and average length of tagged spurdog and tope are depicted in Table 1.

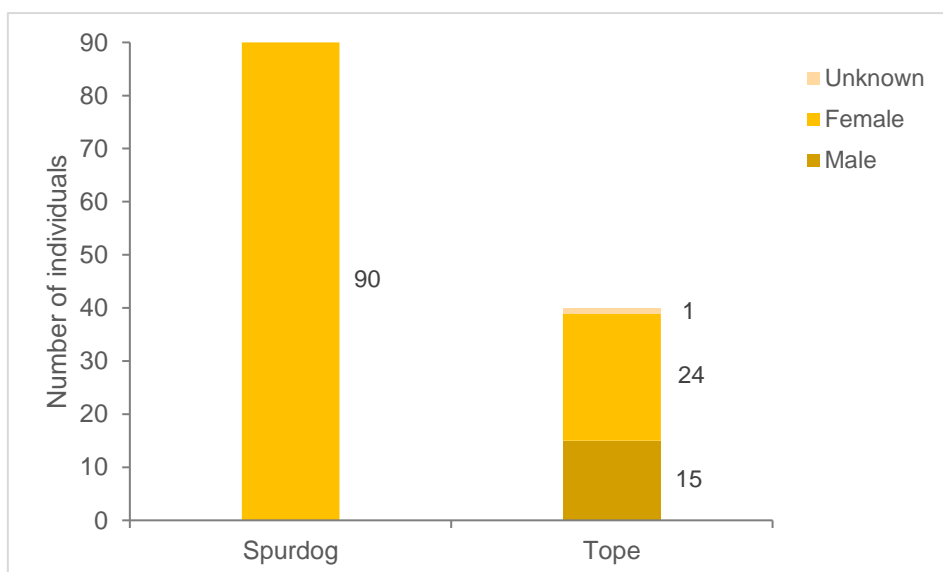
Figure 2 demonstrates that all tagged spurdog were female. When considering sex of tagged tope, the majority of individuals were also female (Figure 2). The range and average length of tagged male and female tope is depicted in Table 2.



**Figure 1** – The number of small sharks tagged in Manx water during 2017.

**Table 1** – The range and average length ( $\pm$  SD) of small sharks (spurdog; N=90, tope; N=40) tagged in Manx waters during 2017.

Species	Length range (cm)	Average length (cm)
Spurdog	74.50-113	100.49 ( $\pm$ 6.76)
Tope	99-168	142.38 ( $\pm$ 14.51)



**Figure 2** – Sex of sharks tagged in Manx water during 2017.

**Table 2** – The range and average length ( $\pm$  SD) of male (n=15) and female (n=24) tope tagged in Manx waters during 2017.

Species	Males		Females	
	Length range (cm)	Average length (cm)	Length range (cm)	Average length (cm)
Tope	99-162	137.33 ( $\pm$ 16.98)	115-168	145.59 ( $\pm$ 12.41)

#### *Distribution of sharks tagged in 2017*

Sharks were predominantly tagged off the south coast of the Isle of Man. At several locations more than one small sharks was tagged. For example, in an area southeast of Castletown 51 spurdog and 1 tope were caught. Spurdog were exclusively caught off the south and east coasts of the island. An individual male tope (tag number: 18469) was tagged outside of Manx waters, off the southwest coast of Scotland.

#### *Recaptures*

In 2017 no recaptures were made.

#### *Comparison of sharks tagged 2013-2017*

In total, 240 small sharks have been tagged since 2013 (Table 3). This year, a substantial number of spurdog were tagged, making 2017 the first year where tope has not been the most tagged species. However, more tope were also tagged during 2017 compared to any previous year. Overall tope is still the most tagged species with 121 individuals tagged since 2013, compared to 102 tagged spurdog. No bull huss were tagged during 2017, making it the third consecutive year during which no tagging of this species occurred. It is possible that this may reflect a local decline in bull huss. Since 2013, 52 anglers have been trained to tag small sharks. This year, 23 anglers fitted tags, equating to 44.23% of all trained individuals. Considering both the number of individuals tagged and angler participation, 2017 has been

the most successful year of the programme thus far. This is thought to predominantly be a result of the two MWT organised angling trips that occurred this year for the first time.

**Table 3** - The number of small sharks (per species) tagged in Manx waters 2013-2017.

Species	Year				
	2013	2014	2015	2016	2017
Bull huss	16	1	0	0	0
Spurdog	6	1	1	4	90
Tope	28	21	20	12	40
	<b>50</b>	<b>23</b>	<b>21</b>	<b>16</b>	<b>130</b>

The length of tope captured between 2013 and 2017 has remained relatively consistent, with small fluctuations (Table 4). Average length of captured tope was greatest this year and represents a value similar to that obtained during the programme pilot year (2013). Spurdog average length was greatest in 2016 (Table 5), though similarly, length values are fairly consistent between years.

**Table 4** – The length range (cm) and average length (cm) of tope tagged in Manx waters 2013-2017.

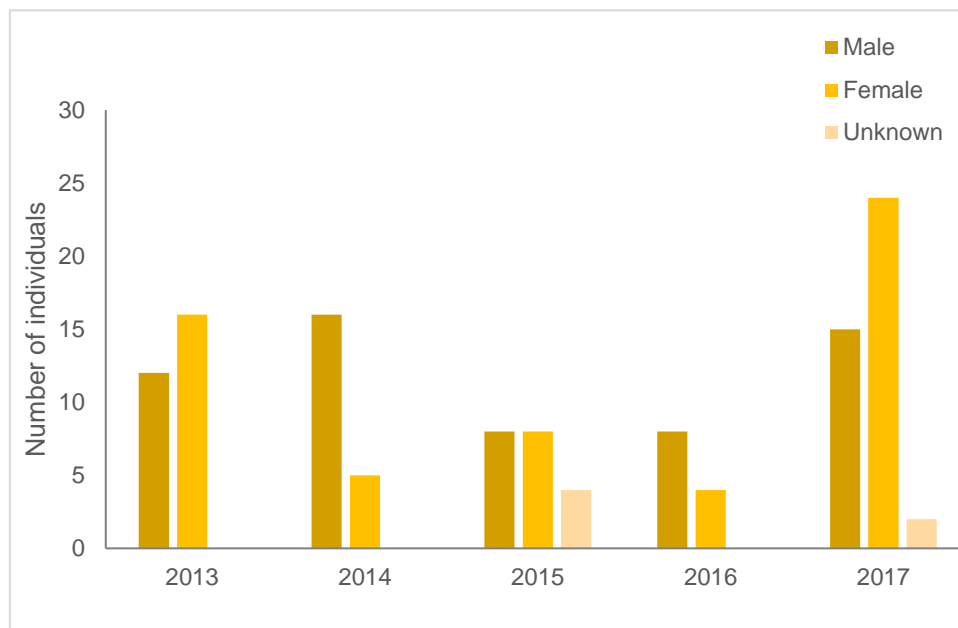
Year	Length range (cm)	Average length (cm)
2013	110-156	141.71(±12.32)
2014	94-145	124.95 (±14.95)
2015	80-153	122.00 (±24.10)
2016	89-157	130.70 (±24.07)
2017	99-168	142.38 (±14.51)

**Table 5** – The length range (cm) and average length (cm) of spurdog tagged in Manx waters 2013-2017. Values for 2014 and 2015 have been omitted as only one individual spurdog was tagged in each of these years.

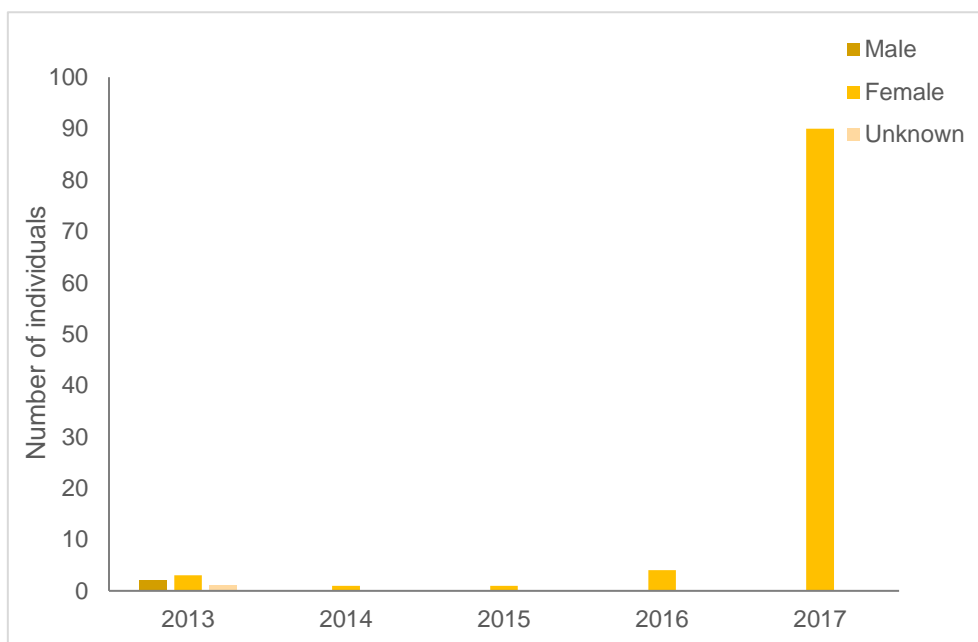
Year	Length range (cm)	Average length (cm)
2013	75-107	94.17 (±11.92)
2016	101-108	104.00 (±3.16)
2017	74.50-113	100.49 (±6.76)

There is no distinct pattern in annual sex ratio of tagged tope (Figure 3). Whilst females were more frequently tagged during 2017 and 2013, and males during 2014 and 2016, there values are very similar and do not provide substantial data to investigate sex ratio. When considering

spurdog, females have been the most tagged sex (Figure 4). Between 2014 and 2017 only females were tagged, though values are very low. Sharks are known to form single-sex aggregations as a result of differing behavioural strategies (Jacoby et al., 2012), and thus it is possible that the results obtained reflect this behavioural pattern. Despite this, no strong conclusions can be drawn about the sex ratio of small sharks tagged in Manx waters based solely on the data obtained thus far during the programme, particularly as the number of individuals tagged and sexed is so low.



**Figure 3 - Sex of tope tagged in Manx waters 2013-2017.**



**Figure 4 - Sex of spurdog tagged in Manx waters 2013-2017.**

More individuals were tagged off the west coast of the Island this year, compared to the previous three years. Despite the capture of bull huss in this area during 2013, none were tagged during 2017, possibly providing evidence that this population may have undergone a decline. Spurdog have consistently been captured off the east/southeast coast of the Island, perhaps implying this area is important for the Manx spurdog population. If this is the case, greater protection of this area may be necessary, particularly if this is found to be an important breeding area. Both this year and 2016, waters in relatively close proximity to the Calf of Man have been successful for tope tagging. It will be of interest to see how important this area appears to be in upcoming years, measured by number of individuals tagged. However, it should be noted that the high density this year is attributed to the organised angling trips which departed from Port St Mary and involved several anglers fishing simultaneously in this region, in contrast to the more opportunistic angling opportunities that typically occur.

### Conclusions and recommendations

In total, 240 small sharks have been tagged since 2013. This year has been the most successful of the past five years, with 54.17% of all sharks tagged since 2013 tagged during 2017. It appears that the provision of organised group angling opportunities increased angler participation and thus the number of sharks tagged. Therefore, it may be important to conduct similar angling trips in upcoming years, in order to retain a high level of tagging and ultimately programme success. It may be useful to do this in a variety of areas, in order to determine whether the south coast is truly a more densely populated area or if the results obtained are simply reflective of effort. It is interesting to note that spurdog was the most frequently tagged species this year, whereas it has been tope during previous years. It is uncertain whether the data obtained is reflective of true population size.

Unfortunately no recaptures occurred this year and there has still only been one known recapture since 2013, occurring in 2014, a tope tagged in Scotland. However, it is hoped that following such successful tagging this year, more recaptures may occur during 2018. Both additional tagging and the capture of previously tagged individuals (recaptures), through continuation of the programme in subsequent years, are necessary to obtain substantial information about the distribution and population structure of small sharks in Manx waters.

The Manx Wildlife Trust is grateful for the support of this programme and is optimistic concerning the potential for future data collection.

### References

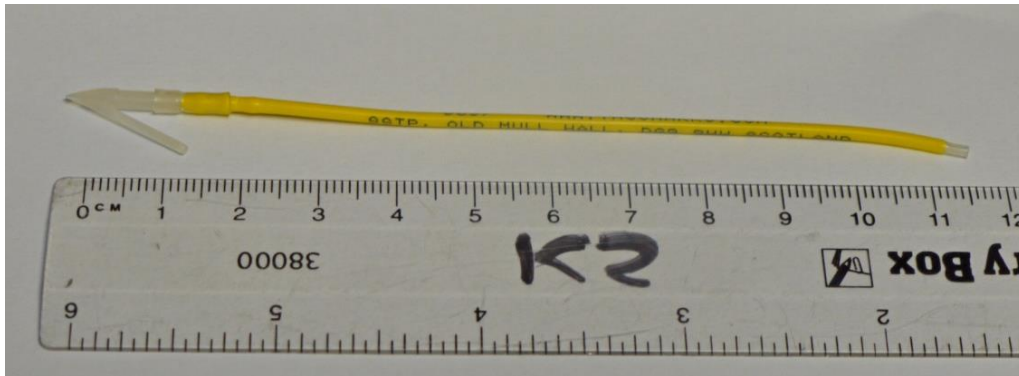
- Drake, S.C., Drake, J.A. & Johnson, M.L. (2005). 2000+ UK Shark Tagging Program: An Angler Led Shark-tagging Initiative in UK Coastal Waters. *Journal of Northwest Atlantic Fishery Science*, 28, pp. 233-238.
- Ellis, J., Serena, F., Mancusi, C., Haka, F., Morey, G., Guallart, J. & Schembri, T. (2009). *Scyliorhinus stellaris*. *The IUCN Red List of Threatened Species* 2009: e.T161484A5434281. <http://dx.doi.org/10.2305/IUCN.UK.20092.RLTS.T161484A5434281.en>. Downloaded on 04 March 2019.
- Fordham, S., Fowler, S.L., Coelho, R.P., Goldman, K. & Francis, M.P. (2016). *Squalus acanthias*. *The IUCN Red List of Threatened Species* 2016: e.T91209505A2898271. <http://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T91209505A2898271.en>. Downloaded on 04 March 2019.

- Jacoby, D.M., Croft, D.P. & Sims, D.W. (2012). Social behaviour in sharks and rays: analysis, patterns and implications for conservation. *Fish and Fisheries*, 13, pp.399-417.
- Walker, T.I., Cavanagh, R.D., Stevens, J.D., Carlisle, A.B., Chiamonte, G.E., Domingo, A., Ebert, D.A., Mancusi, C.M., Massa, A., McCord, M., Morey, G., Paul, L.J., Serena, F. & Vooren, C.M. (2006). *Galeorhinus galeus*. *The IUCN Red List of Threatened Species* 2006: e.T39352A10212764. <http://dx.doi.org/10.2305/IUCN.UK.2006.RLTS.T39352A10212764.en>. Downloaded on 04 March 2019.




## Appendices

### Appendix 1: Streamer floy tag used to tag small sharks.



### Appendix 2: Tagging guidance crib sheet.

#### SSTP Floy Dart Tagging Guidelines



Floy dart tags are inserted using a sharp, clean canula.

1. Insert the tag into the canula (take a note of the tag number)
2. Insert the canula at an angle of 45° to a depth of around 35mm with the tag barb pointing upwards
3. Twist the canula at least 90° to anchor the tag
4. Remove the canula and give the tag a short tug to set the barb


Submit your data to Eleanor – [eleanor@manxwt.org.uk](mailto:eleanor@manxwt.org.uk) or drop in at 7-8 Market Place, Peel, IM5 1XF or online at: [www.tagsharks.com](http://www.tagsharks.com)

These tagging guidelines are for floy darts and canulas **ONLY**.

SSTP minimum sizes are set to protect fish, if for any reason you are unsure about tagging please **do not tag the fish!**

SSTP Floy Dart Minimum Tagging Sizes	
Common Skate (wingspan)	55cm (5.3lb)
Tope	100cm (10.0lb)
Spurdog	90cm (6.4lb)
Smooth-hound	100cm (6.5lb)
Bull Huss	100cm (7lb)
Rays (wingspan)	50cm (5.25lb)

#### SSTP Micro-Tag Guidelines



Micro-tags are inserted using a tagging gun. When not in use we recommend that you use the needle guard to prevent injury!

1. Fit a strip of micro-tags into the tagging gun
2. Insert the needle at an angle of 45°
3. Push the trigger to insert a single tag into the fish
4. Remove the needle and give the tag a short tug to set the barb

Submit your data to Eleanor – [eleanor@manxwt.org.uk](mailto:eleanor@manxwt.org.uk) or drop in at 7-8 Market Place, Peel, IM5 1XF or online at: [www.tagsharks.com](http://www.tagsharks.com)

These tagging guidelines are for tagging guns and micro-tags **ONLY**.

SSTP minimum sizes are set to protect fish, if for any reason you are unsure about tagging please **do not tag the fish!**

SSTP Micro-Tag Minimum Sizes	
Common Skate (wingspan)	Canula
Tope	65cm (2.8lb)
Spurdog	65cm (2.3lb)
Smooth-hound	70cm (2.2lb)
Bull Huss	65cm (2.5lb)
Rays (wingspan)	35cm (2.1lb)

### Appendix 3: Record card.

Please send details to Eleanor by email: [eleanor@manxwt.org.uk](mailto:eleanor@manxwt.org.uk)  
 Or drop in/post to: 7-8 Market Place, Peel, IM5 1XF

Name/s: \_\_\_\_\_


Email address: \_\_\_\_\_

Date: \_\_\_\_\_ Time start: \_\_\_\_\_ Time end \_\_\_\_\_

Location (please circle): NE NW SW SE

Lat/Long (this will NOT be made public):  
 \_\_\_\_\_ N \_\_\_\_\_ W

In association with:



Tag No.	Species	Sex	Length (cm)	Girth (cm)	Condition