



Protecting *Manx Wildlife*
for the future

The Isle of Man Shark Tagging Programme

End of Year Report 2016



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 fourth 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 (funded by DEFA), design of a project logo and this year the provision of tags/tagging equipment has continued.

The most predominant elasmobranch species caught by anglers in Manx waters are bull huss (*Scyliorhinus stellaris*), spurdog (*Squalus acanthias*) and tope (*Galeorhinus galeus*). 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. Prior to this year, 39 anglers had been trained to tag small sharks. During 2016 only one additional angler was trained. This year four anglers tagged small sharks, each of whom had tagged for the project previously. Two of these individuals have administered tags for four consecutive years.

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

Results

Sharks tagged in 2016

In total, 16 small sharks were tagged in 2016, including four spurdog and 12 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. It should be noted that length was not obtained for two individual tope and therefore length calculations are based on ten individuals. Figures 2 and 3 display the length of each individual tagged spurdog and tope respectively.

All tagged spurdog were female. It is interesting to note that three of the four female spurdog that were captured and tagged this year were thought to be pregnant (tags numbers: 9328, 9327 and 5889). When considering sex of tagged tope, eight individuals were male and four were female (Figure 4).

The range and average length of tagged male and female tope is depicted in Table 2. Length data was not provided for one male and one female and therefore the values in Table 2 are based upon 10 individuals (seven males and three females).

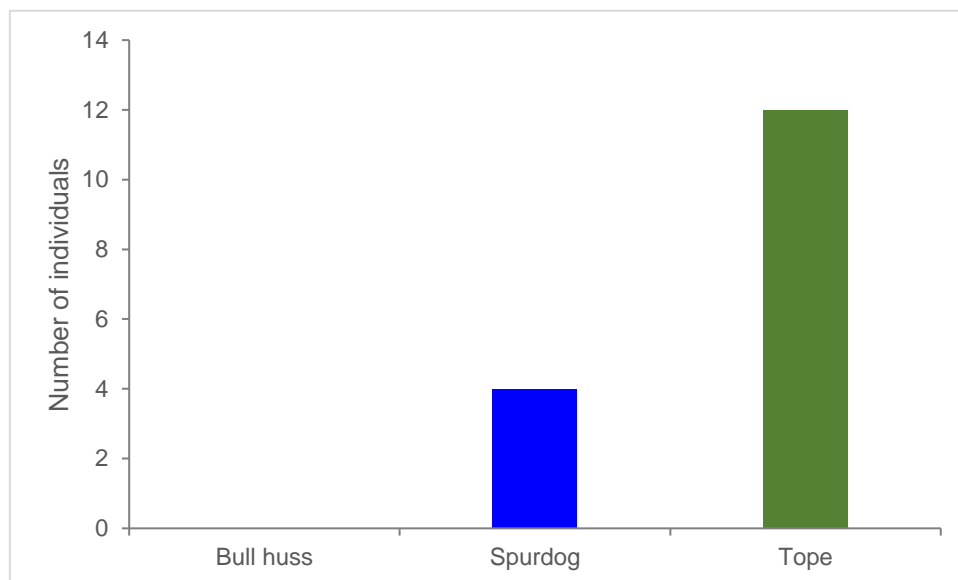


Figure 1 – The number of small sharks tagged in Manx water during 2016.

Table 1 – The range and average length (\pm SD) of small sharks (spurdog; N=4, tope; n=10) tagged in Manx waters during 2016.

Species	Length range (cm)	Average length (cm)
Spurdog	101-108	104 (\pm 3.16)
Tope	89-157	130.70 (\pm 24.07)

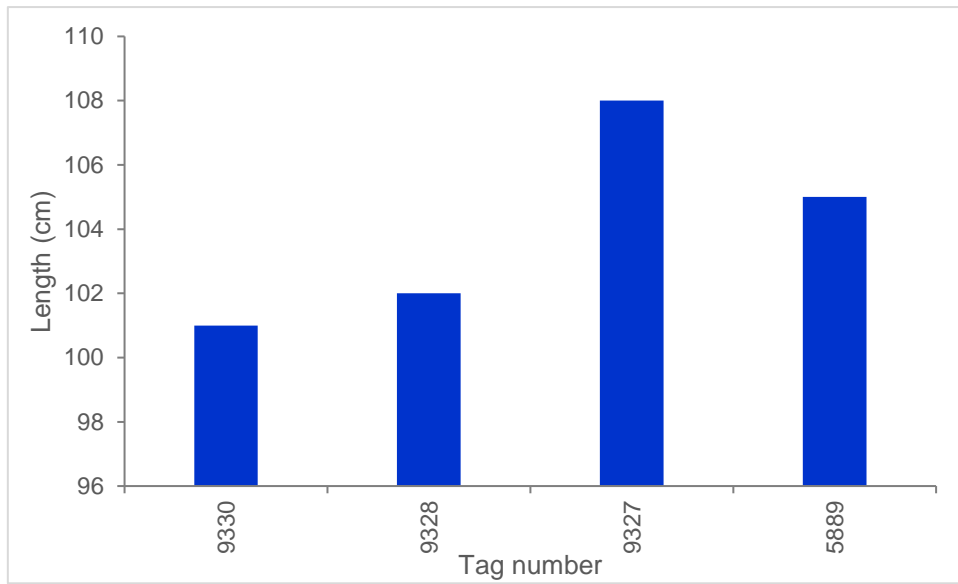


Figure 2 – Length of spurdog individuals (N=4) tagged in Manx waters during 2016.

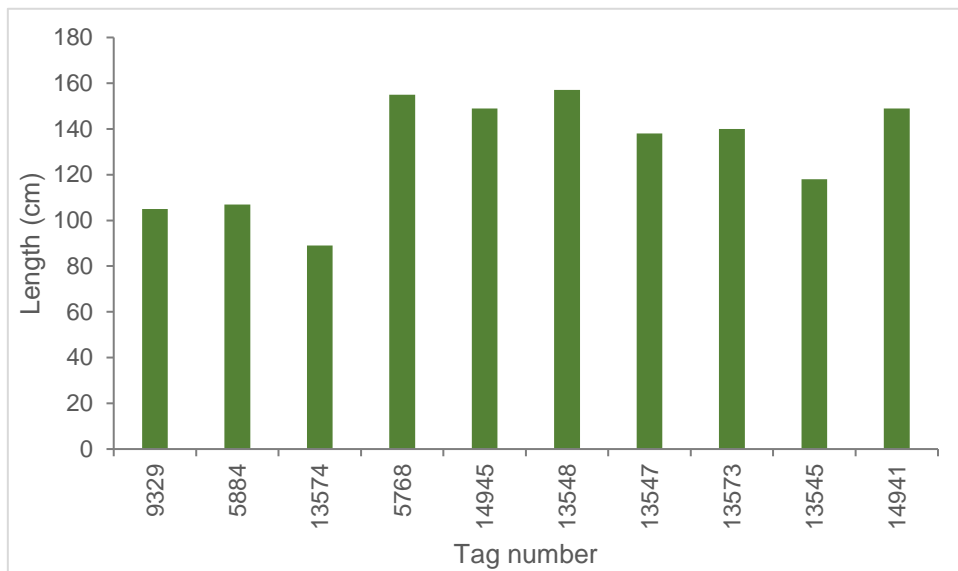


Figure 3 – Length of tope individuals (n=10) tagged in Manx waters during 2016.

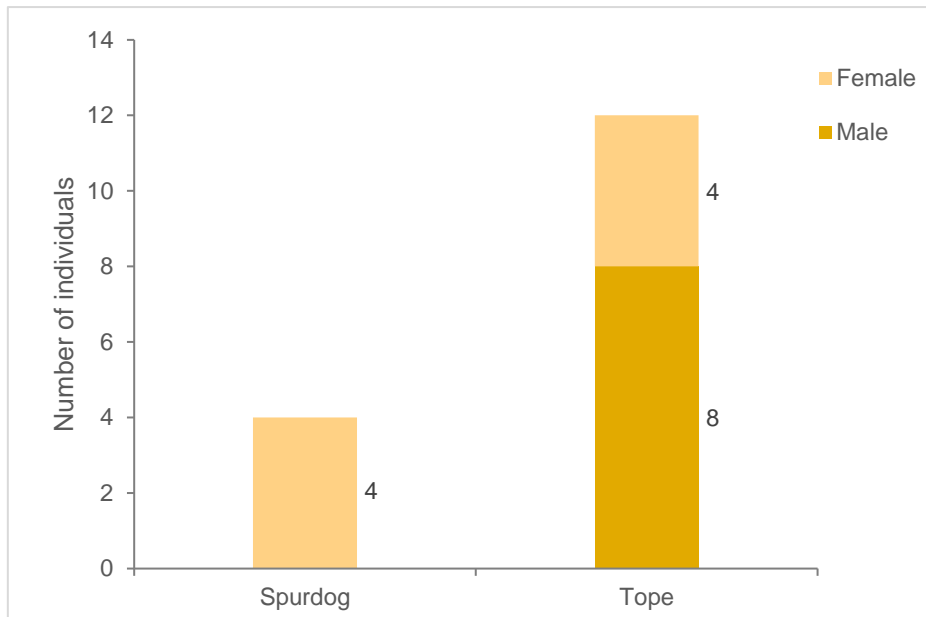


Figure 4 – Sex of sharks tagged in Manx water during 2016.

Table 2 – The range and average length (\pm SD) of male (n=7) and female (n=3) tope tagged in Manx waters during 2016.

Species	Males		Females	
	Length range (cm)	Average length (cm)	Length range (cm)	Average length (cm)
Tope	89-157	126.43 (\pm 25.82)	118-155	140.67 (\pm 19.86)

Distribution of sharks tagged in 2016

Sharks were predominantly tagged to the southeast of the Island. The majority of tope were tagged off the south coast of the Island, to the east of the Calf of Man. Three of the four spurdog were captured in relatively close proximity to Douglas Bay.

Recaptures

In 2016 no recaptures were made.

Comparison of sharks tagged 2013-2016

In total 110 small sharks have been tagged since the project began in 2013. However, Table 3 depicts a decrease in the number of individuals tagged each year. Tope is the most frequently tagged species (81 individuals tagged), followed by bull huss (17 individuals tagged). Whilst a relatively high number of bull huss were tagged in 2016, only one individual was tagged in 2015 and none were tagged in the past two years (Table 3). It is possible that this may reflect a local decline in bull huss, though there is not sufficient data to substantiate this. A low number of spurdog have been tagged each year (Table 3). This year the four anglers that administered tags represent just 10% of all individuals that have undergone training.

Table 3 – The number of small sharks (per species) tagged in Manx waters 2013-2016.

Species	Year			
	2013	2014	2015	2016
Bull huss	16	1	0	0
Spurdog	6	1	1	4
Tope	28	21	20	12
	50	23	21	16

The length of tope captured between 2013 and 2016 has remained relatively consistent, with small fluctuations (Table 4). This year, average length was greater than the calculated value for both 2015 and 2014, though still lower than the 141.71cm average tope length in 2013 (Table 4). The average length of spurdog this year (104cm) is consistent with the individuals caught in 2014 and 2015, that measured 100cm and 101cm respectively.

Table 4 – The length range (cm) and average length (cm) of tope tagged in Manx waters 2013-2016.

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)

Comparing the sex ratio of sharks tagged between 2013 and 2016, it is apparent that the majority of tagged spurdogs have been female (Figure 5) and no males have been tagged since 2013. Tagged tope were predominantly male in 2016 (n=8) and 2014 (n=16), in contrast to 2013 in which slightly more females were tagged (Figure 6). A comparison of bull huss sex ratio has been omitted as no individuals of this species have been tagged since 2014.

It is not possible to determine any conclusions 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.

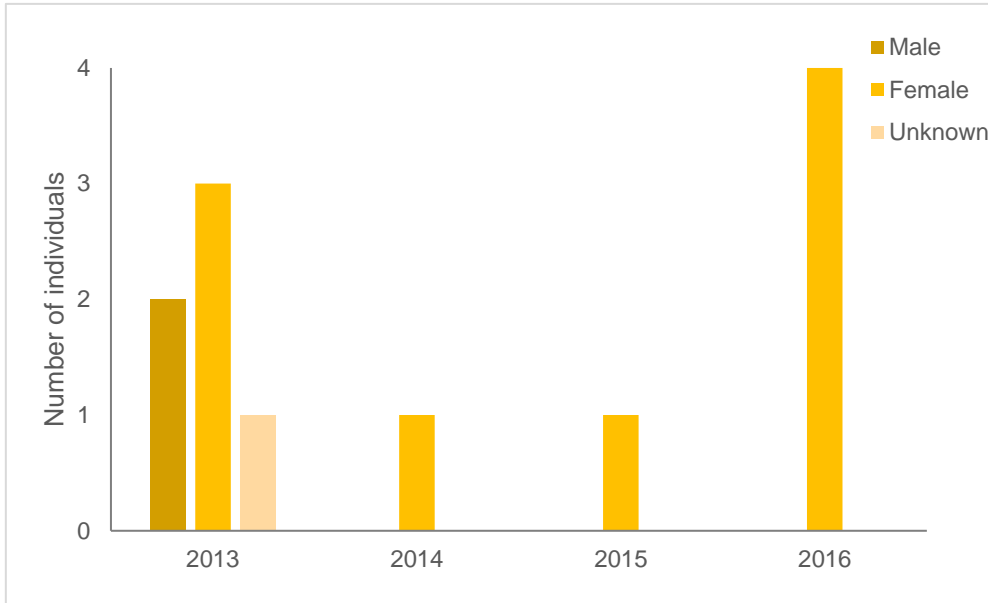


Figure 5 - Sex of spurdog tagged in Manx waters 2013-2016.

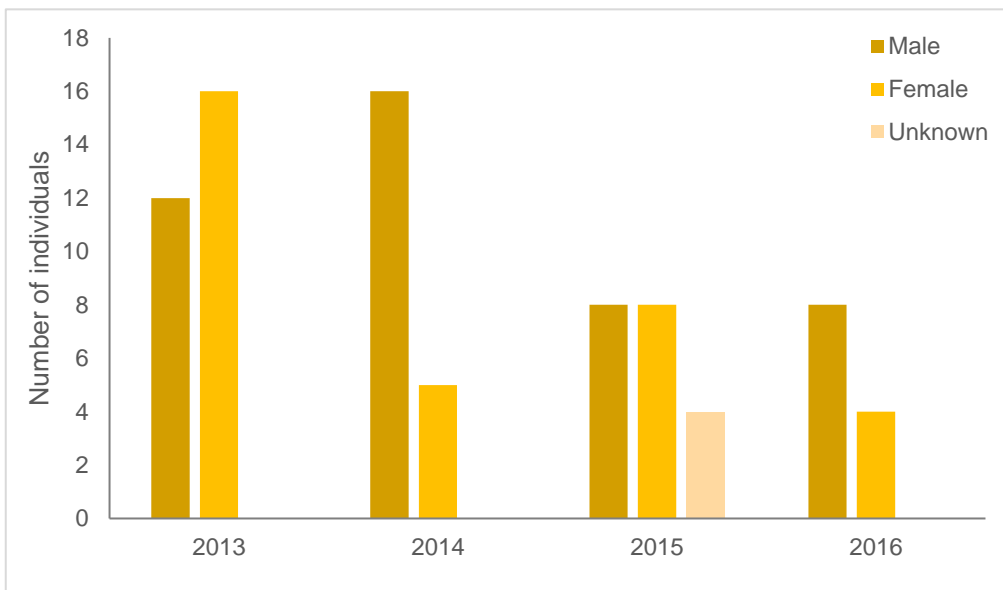


Figure 6 - Sex of tope tagged in Manx waters 2013-2016.

The shark tagging distribution pattern this year is most similar to that of 2015. Each year there have been captures/taggings occurring off of Douglas on the east coast of the Island. Each year spurdog are consistently caught to the southeast of the Island. During 2013, bull huss were captured and tagged off the west coast of the Island. However, in the last two years no bull huss have been captured, nor have anglers apparently fished in this area. Therefore, perhaps there is a link between these two factors.

Conclusions and recommendations

In 2016, 16 small shark were tagged, the lowest number of taggings since the programme began in 2013. Whilst this is somewhat disappointing, a total of 110 individuals have been tagged over the past four years and the project continues to provide data about threatened small shark species. It is hoped that as the number of tagged individuals increases, recaptures should become more frequent, either here or possibly in other areas beyond the Isle of Man.

Tope has been the most frequently tagged small shark species each year, perhaps suggesting this is the most abundant species in Manx waters. The number of tagged spurdog increased slightly this year, compared to the previous two years, however no bull huss were tagged for the second year running. Perhaps in upcoming years, there should be a focus on tagging these species, in order to obtain useful data that can be used for conservation management plans. In order to do this it may be necessary to encourage anglers to fish in areas where they have successfully caught these species before. However, it should be noted that these species are considered vulnerable or near threatened (Walker et al., 2006; Ellis et al., 2009; Fordham et al., 2016) and therefore are unlikely to be abundant in Manx waters, limiting the extent of research possible.

A notable finding was the presence of three spurdog thought to be pregnant, which may suggest Manx waters provide nursery grounds for this species. However, this is presumptuous based on such limited data and further research is required.

As of 2016, there is not sufficient data to observe distinct patterns or draw strong conclusions about the small shark populations inhabiting Manx waters. Increased tagging, through continuation of the programme in subsequent years, is necessary to obtain substantial information about the distribution and population structure of small sharks. It is hoped that organised boat trips next year might encourage more anglers to tag and enable more sharks to be tagging within the season.

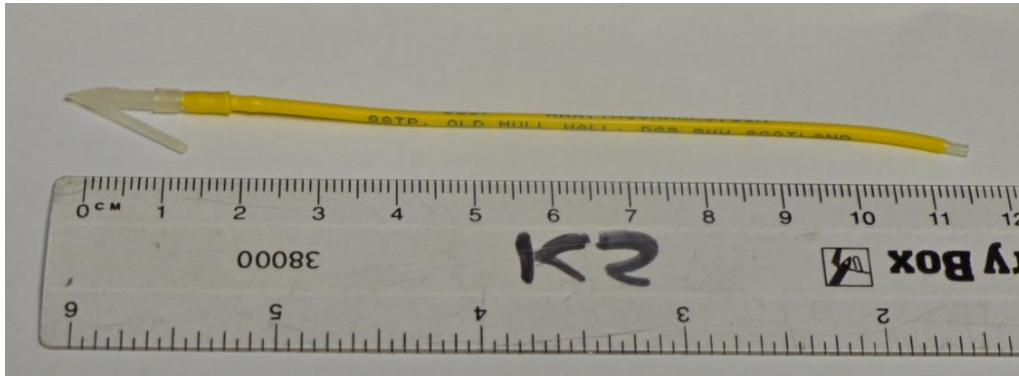
The Manx Wildlife Trust is grateful for the support of this programme and is optimistic concerning the potential for future data collection.

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.
- Walker, T.I., Cavanagh, R.D., Stevens, J.D., Carlisle, A.B., Chiaramonte, 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 or drop in at 7-8 Market Place, Peel, IM5 1XF or online at:

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 or drop in at 7-8 Market Place, Peel, IM5 1XF or online at:

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
 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