Protecting ***Manx Wildlife***
for the future

The Isle of Man Shark Tagging Programme

End of Year Report 2013

Written for:

The Department of Environment, Food and Agriculture (DEFA)

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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 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. This information may also contribute to future updates of the 'Management Plan for Tope and Other Small Species of Elasmobranch in Manx Waters' first produced by DEFA in 2013.

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 provision of tags/tagging equipment.

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

The project was advertised locally and interested anglers targeting small sharks were invited to partake in the project. An initial training session was attended by 15 anglers and an additional seven individuals were trained during subsequent sessions. Of the 22 trained anglers, nine deployed tags during 2013.

Once 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.

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. This year, Manx data was stored on the SSTP online database. The 2013 data was later sent to the Manx Wildlife Trust at the end of the tagging season. Furthermore, any additional Isle of Man tagging data recorded by SSTP prior to 2013, was also sent.

Results

Small shark tagging pre-2013

Prior to 2013, tope was the only species tagged or recaptured in Manx waters. Between 2003 and 2012, a total of 17 tope were reported. Recaptured individuals (determined through presence of a tag) were recorded in 2006 (n=1), 2008 (n=1) and 2011 (n=2). Unfortunately there is no further information regarding the recaptures. The number of individuals tagged/recaptured each year is depicted in Table 1.

Table 1 – The number of tope tagged and recaptured in Manx waters each year, prior to 2013. Data was provided by SSTP.

Year	Number of individuals tagged	Number of individuals recaptured
2003	1	0
2006	1	1
2007	10	0
2008	0	1
2009	1	0
2011	0	2

Sharks tagged in 2013

In total, 50 sharks were tagged during 2013, including 16 bull huss, 6 spurdog and 28 tope (Figure 1). Length range and average length of tagged individuals per species is depicted in Table 2. On average, tope were the largest of the sharks captured and bull huss were the smallest. Figures 2, 3 and 4 display the length of each tagged individual for each of the three species, bull huss, spurdog and tope, respectively.

When considering sex, the majority of captured bull huss were male (n=10) and the majority of spurdog (n=2) and tope (n=16) were female (Figure 5). The range and average lengths of males and females (for each species) is depicted in Table 3.

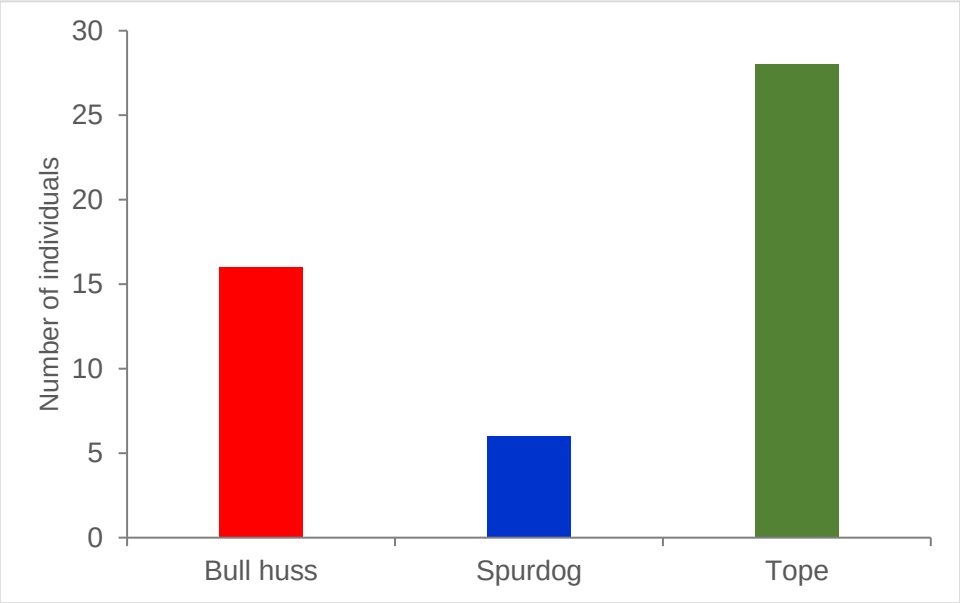

Figure 1 – The number of small sharks tagged in Manx water during 2013.

Table 2 – The range and average length (± SD) of small sharks tagged in Manx waters during 2013.

Species	Length range (cm)	Average length (cm)
Bull huss	63-110	91.19 (±14.58)
Spurdog	75-107	94.17 (±11.92)
Tope	110-156	141.71(±12.32)

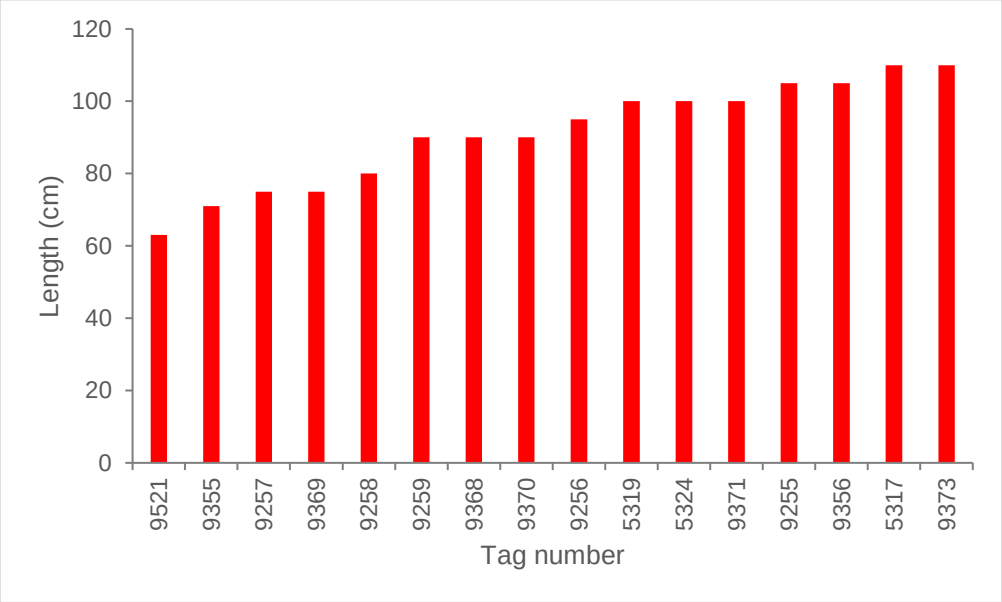

Figure 2 – Length of bull huss individuals tagged in Manx waters during 2013.

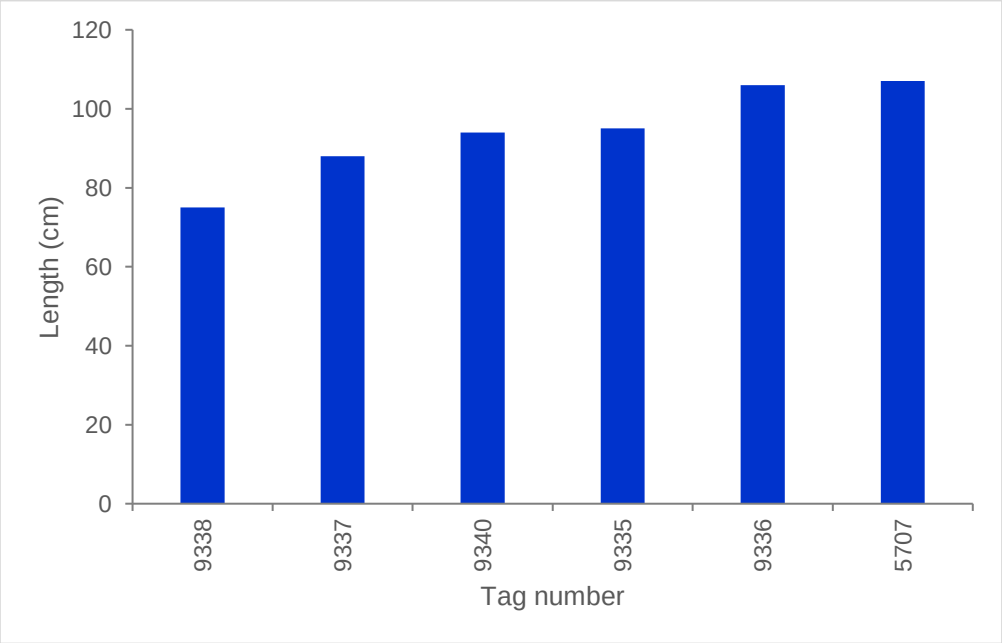

Figure 3 – Length of spurdog individuals tagged in Manx waters during 2013.

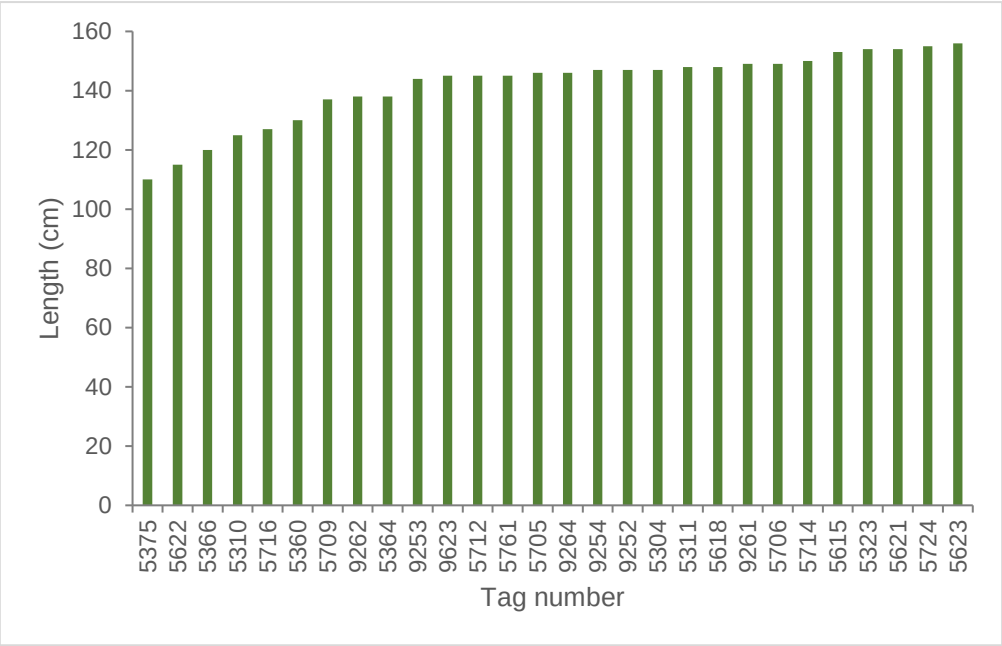

Figure 4 – Length of tope individuals tagged in Manx waters during 2013.

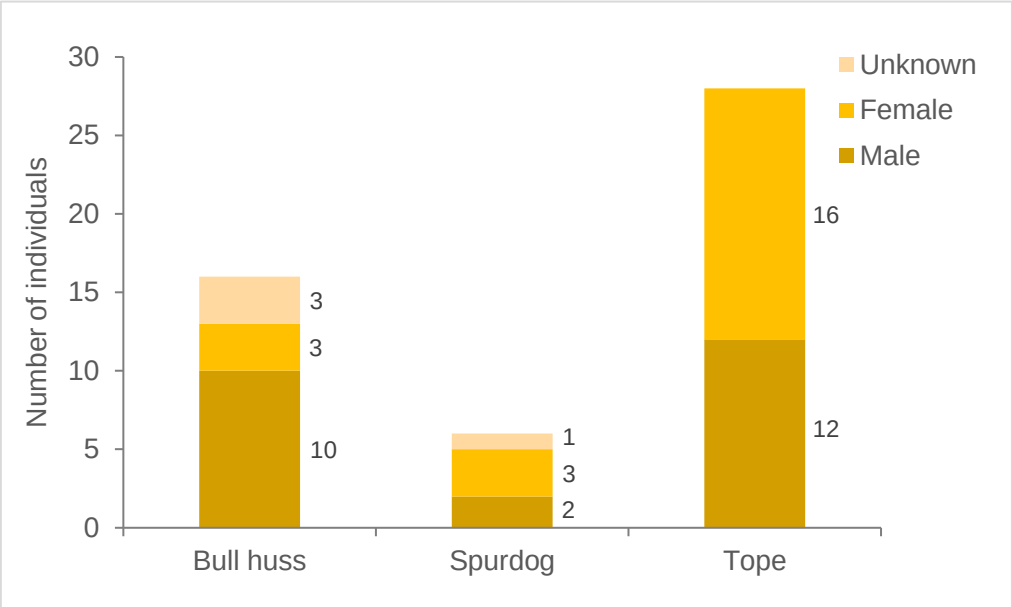

Figure 5 – Sex of sharks tagged in Manx water during 2013.

Table 3 – The range and average length (± SD) of male and female small sharks tagged in Manx waters during 2013. Bull huss (M: n= 10, F: n=3), spurdog (M: n=2, F: n=3), tope (M: n= 12, F: n=16). Sex of three bull huss and one spurdog was unknown and thus length data of these individuals have been omitted from the table.

Species	Males		Females	
	Length range (cm)	Average length (cm)	Length range (cm)	Average length (cm)
Bull huss	63-110	90.90 (±17.50)	90-100	95.00 (±5.00)
Spurdog	88-95	91.50 (±4.95)	94-107	102.33 (±7.23)
Tope	110-154	135.17 (±14.61)	125-156	146.63 (±7.52)

Distribution of sharks tagged in 2013

The majority of sharks were captured in relatively coastal waters. However, four tope and one spurdog were captured further offshore in an area southeast of the Isle of Man.

Recaptures from other tagging programmes

There has been an unforeseen additional benefit to starting the Isle of Man Small Shark Tagging Programme and raising the awareness of small shark tagging amongst the angling community. That is, there is now a recognised contact for reporting captures of tagged sharks, and there have been three separate reports of sharks captured on the Isle of Man bearing tags from other programmes. Although we have managed to trace the origin of all three tags, unfortunately not all details of the original capture have been traced (Table 4).

Table 4 – Summary of information regarding captured sharks tagged by alternate tagging programmes.

Species	Recapture date	Recapture location	Initial tagging date	Initial tagging location	Tagging programme	Days at liberty	Straight line distance travelled (km)
Tope	17/07/2013	Douglas	2009	SW Scotland	SSTP	-	-
Tope	07/2013	-	-	Irish Sea	CEFAS	-	-
Tope	01/08/2013	Point of Ayre (West)	11/06/2011	Malin Head, Ireland	Inland Fisheries Ireland	782	240

Fin clippings

In addition to tagging the sharks, 3 experienced anglers were also provided with small vials for storing fin clippings from tope and spurdog. These small clippings were sent to an Aberdeen University PhD student, who is analysing the DNA of these species to determine

levels of stock mixing between different areas. It is estimated that we will provide about 5 specimens to this project this year, although this may be increased in future years. This additional element is also contributing to the 'Management plan for tope and other small species of elasmobranch in Manx waters' and has clearance from the government vet.

Conclusions and recommendations

In total, 50 small sharks of three different species were tagged during 2013. As the programme was initiated this year, there have been no recaptures yet. The SSTP have recapture rates of 6.65% for tope, 4.25% for spurdog and 2.18% for bull huss, suggesting we are perhaps also likely to encounter recaptures in subsequent tagging years. It is also interesting to note the recapture of three individual tope that had been previously tagged by alternate tagging projects. This demonstrates the potential for data sharing and suggests other programmes may capture individuals tagged by the Isle of Man Small Shark Tagging Programme.

The relationship with SSTP has been incredibly useful, both in terms of their expertise, advice and provision of both data and equipment. Whilst this is currently offered free of charge, expansion of the project would require a degree of funding in order to purchase more equipment, train a greater number of anglers and potentially organise tagging events, such as the 'Tag-athon' held annually in Scotland. For a temporal period during the summer, all available tags had been utilised and this shortage meant opportunities to tag were lost. This demonstrates why it may be necessary to source more tags in future tagging years, ensuring a large supply at the start of the season.

Several anglers agreed to take part in the programme and enthusiasm was generally high. However, not all trained anglers administered tags and the reason behind this is uncertain. It is perhaps somewhat a result of a lack of fishing opportunities for anglers. In future years, it will be important to encourage trained anglers to tag as much as possible. Other opportunities to increase the number of sharks tagged, such as greater publicity of the programme amongst anglers (to increase the number of people willing to take part) or even going out on Queenie trawl vessels to tag bycaught sharks, are also encouraged.

Whilst the Isle of Man Small Shark Tagging Programme pilot has been successful, further tagging and recaptures are required in upcoming years in order to obtain a sufficient amount of data, if it is to be useful in the development of management plans and conservation activities.

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.

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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.

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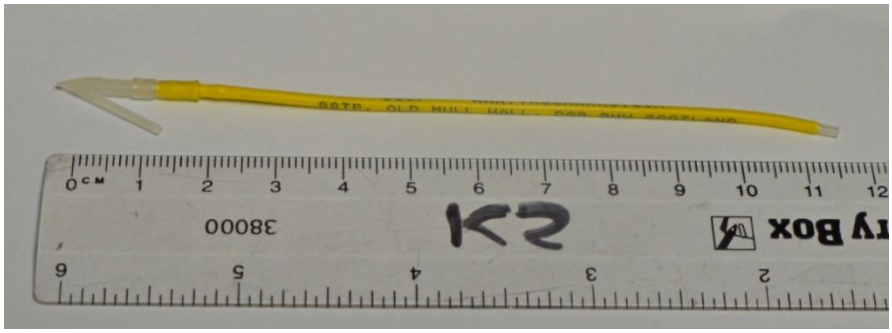
& Vooren, C.M. (2006). *Galeorhinus galeus*. *The IUCN Red List of Threatened Species* 2006: e.T39352A10212764. http://dx.doi.org/10.2305/IUCN.UK.2006.RLTS.T39352A10212764.en. Downloaded on 04 March 2019.

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

The IOM Shark Tagging Programme

In association with:

Scottish Shark Tagging Programme

Manx Wildlife Trust

Isle of Man Government

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