

# AstroBoost:

## Survey of Astronomy Societies

March 2019

AstroBoost was a Royal Astronomical Society project, funded by STFC and run in partnership with the STFC's Webb Campaign, Guildford Astronomical Society, Hampshire Astronomical Group, and Newbury Astronomical Society. The project was carried out by Dr Jenny Shipway.

The AstroBoost survey gathered data on public engagement activity by amateur astronomy societies in the southern region of England, including groups' motivations, aspirations and barriers.



Brighton Astro at public events on Brighton Beach and at Sussex University. Photos by Brighton Astro.

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## 1. Summary of findings

The survey results suggest that supporting astronomy societies could be an effective and cost-effective way to increase the quantity and quality of astronomy outreach in the region. Any such project should acknowledge the limited number of members currently active per group and seek to work with the societies to address this issue.

Thirty astronomy societies were identified within the selected region, which covered the counties of Dorset, Hampshire, Surrey, Sussex and the Isle of Wight, plus Reading and Newbury. A 100% survey response rate was achieved from these societies.

Societies had between 10 and 350 members, with a median of 55.

**Almost all societies (90%) considered public engagement to be an important part of their activity.** Most societies (67%) had this aim enshrined in their constitution or otherwise formally documented.

A large majority of societies (90%) had been active in public engagement over the previous year. In all but one case this activity was driven by a small core of members, with most (80%) of such societies reporting the support of additional members when required.

**Together, the 30 societies had an estimated audience of 19,865 non-members over the past year.**

A broad range of audiences and activities were involved. The most common audiences were “general public” and groups (school or otherwise) with children aged 5-11yr. The most common activity types were talks (89% of active societies), use of telescopes at night (89%) and naked-eye stargazing (74%). Formal activities such as courses (22%) and workshops (22%) were less common.

The most commonly-mentioned motivation for this work was the enjoyment of sharing a love of astronomy (60%). The importance of education (40%) and recruitment of new members (23%) were the other most common motivations.

**Most societies aspired to increase their public engagement activity (63% of all societies).** There were a range of ideas for potential audiences and activity types. Four societies aspired to establishing an observatory site.

**The most commonly-stated barrier was lack of willing and able society members to carry out such work (67%).** Money and equipment (19%) was another important factor.

## 2. Project background

### 2.1 Project outline

AstroBoost is a Royal Astronomical Society project, funded by a STFC Spark Award. The project also includes the development of Webb-themed public engagement resources for project partners Guildford Astronomical Society, Hampshire Astronomical Group, and Newbury Astronomical Society. This report is for the survey element only.

The AstroBoost survey was devised and carried out by Jenny Shipway (JS), a professional science communicator with experience of running twice-yearly public engagement events involving several regional Astronomical Societies over the past ten years.

### 2.2 Choice of region / definition of Astronomy Society

The survey was originally intended to cover the same region used by the Southern Area Group of Astronomical Societies (SAGAS). However, as this region is not precisely defined, the survey area was extended to cover the full counties of **Dorset, Hampshire, Surrey, Sussex and the Isle of Wight**.

The SAGAS region is informally considered to extend up to the M4 corridor, and so also includes **part of Berkshire**. The only two members of SAGAS based in Berkshire are project partner Newbury Astronomical Society, and Reading Astronomical Society. Both are included in this survey.

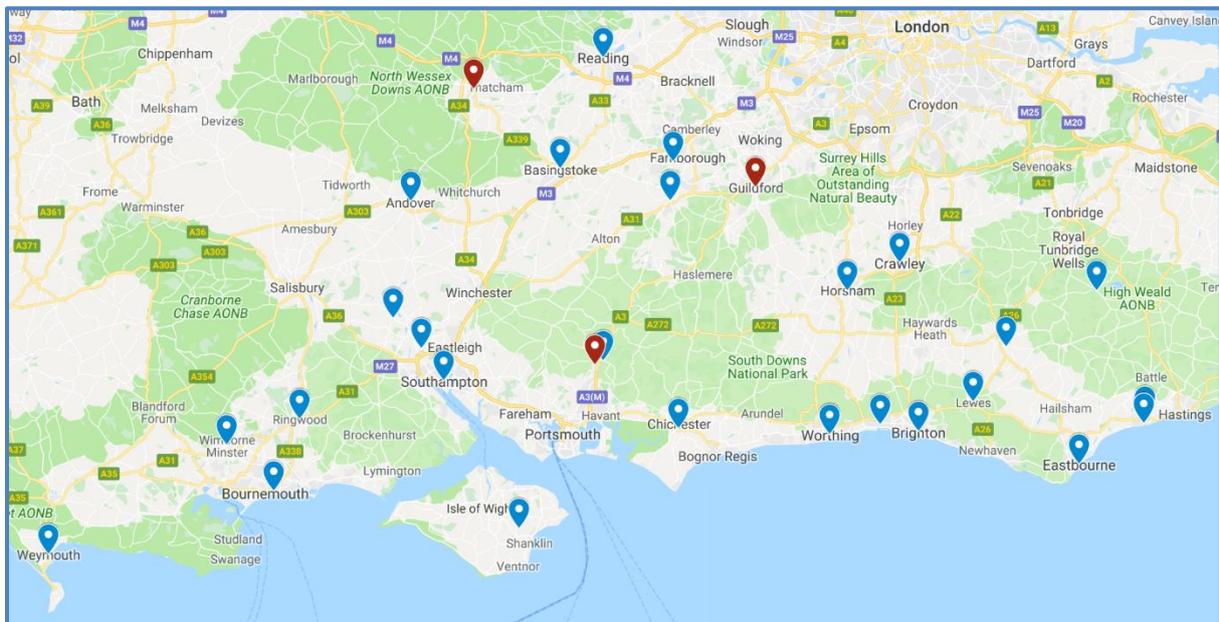


Figure 1: locations of AS across Dorset, Hampshire, Sussex and Isle of Wight, also Newbury AS and Reading AS. Red markers denote project partners. Map created in Google Maps.

In all, 30 Astronomy Societies (AS) were identified within the survey region (locations shown in figure 1; full list provided in Appendix 1). Of these societies, 19 are members of SAGAS, and 25 are members of the national Federation of Astronomy Societies (FAS).

In a pre-funding meeting with partner societies (a group including SAGAS/FAS council members), it was generally believed that most AS carry out some form of public engagement, although they may not consider it as such. It was thought to be rare that any AS should work in partnership with other organisations or seek funding or training for public engagement activities.

However, there was no feeling for the types of audiences and numbers that are reached. There was no knowledge of any prior surveys of this type in this or any other region of the UK.

## **2.3 Aims of survey**

The survey aimed to find out the current situation with reference to AS public engagement activities in the south, and to inform future projects that might encourage this activity.

The process of surveying itself would also serve to raise awareness within the AS groups of public engagement as an activity, and to draw attention to the wide variety of engagement activities that a group might carry out.

The report would allow societies to compare their own activities with those of other groups, with the potential to inspire new activities, and to encourage sharing of ideas and experience.

The resulting data was intended to inform future project planning and grant applications, including for a potential AstroBoost phase 2.

## **3. Identification of Astronomy Societies**

For the purposes of this project, Astronomy Society (AS) is defined as any public membership organisation where people interested in astronomy meet to discuss and/or study this subject.

Clubs where membership is restricted to members of a single organisation (eg school clubs) and exclusively online groups are excluded.

Groups were identified in a variety of ways:

- SAGAS member list
- FAS member list
- Google search for other lists of astronomy groups (eg from astronomy magazines)
- Google search for “Astronomy Club”, “Astronomical Society” and such variants
- Google search for astronomy activities being run within the region

All societies are primarily aimed at adults, although some allow child members. At least one has a youth section. Most of the societies included in this survey carry out member activities including observational activities and (often) lectures/talks.

However, this was not true of all societies included in the survey:

- Cody Astronomical Society – membership is largely (but not exclusively) restricted to current/retired employees of businesses within the Cody Technical Park. This is due to security restrictions on entry to the site.

- Bournemouth Natural Science Society – a section of a larger, museum-led organisation. This group runs astronomy lectures but, unlike other societies in the survey, members do not meet for observational astronomy.

## 4. Survey design and implementation

### 4.1 Survey design

The survey was designed to be used by those unfamiliar with the jargon of professional science communicators, and to be simple and quick enough to be completed even by those lacking enthusiasm for the project.

The survey design was shown to Graham Bryant (Hampshire Astronomical Group Chairman / SAGAS Secretary / FAS Secretary / FRAS) and Paul Daniels (Guildford Astronomical Group President / FAS President / RAS council) for comments before dissemination.

A Google Form was set up to collect data. To encourage estimates where exact data was not available, fields were set to require inputs and the option was given to edit data after submission of the form, either by editing the form or by email.

For simplicity's sake, reporting of numbers of events / audience sizes were input as text. This offered flexibility for people to report unexpected or unusual activities, and to add additional notes that they thought may be of interest to the project. The low number of participants meant that the extra work this created was not problematic.

In response to feedback from non-respondents at a mid-survey SAGAS meeting, the form was edited to have all sections visible on arrival at the website. (Previously some sections had appeared only on submission of previous sections, or if certain replies were given.) This allowed the AS to quickly appraise what information they would need to have to hand before starting to fill in the form.

An exported version of the amended survey form is shown in Appendix 1.

### 4.2 Implementation was as follows:

#### 1. Google Form sent by email or other means

Societies were emailed using contact emails from their websites, with a brief explanation of the project and link to the form. Follow-up emails were sent, to chase up delayed responses and including offers of help to complete the survey if this might be required.

Where email addresses were not available, webforms, Facebook and/or Twitter were used as a means to introduce the project and request an email address. In one case a personal contact was used to chase things up.

One society reported they were unable to load the form in their internet browser. They requested an exported form which they then printed, completed by hand, and returned by post.

## 2. Telephone

Unresponsive societies were contacted where possible by telephone. If telephone numbers were not available on the AS website, societies were emailed to request a number for this purpose.

## 3. SAGAS meeting

Two unresponsive societies were approached at the 21 April SAGAS meeting, at which a presentation about the AstroBoost project was made. One completed the form during a coffee break, and the other submitted shortly afterwards.

Results were then exported for analysis in an Excel spreadsheet.

In one case, a society known to be active had reported that they were inactive. They were contacted to discuss their submission. They later re-submitted the correct information.

The initial plan had been for JS to travel to meet with societies to discuss their submissions further. However, the time taken to secure responses from all societies meant that hours were not available to this purpose. Also, such conversations had been successfully carried out on the telephone and at SAGAS meetings.

# 5. Results and discussion

Surveys were completed by all 30 of the targeted societies (100% response rate).

Submissions were collected between April and November 2018. As the survey referred to activities “in the previous year”, the data are therefore for slightly different periods. However I am not aware of any major events (eg BBC Stargazing LIVE, or Tim Peake event) that might have significantly affected the level of activity during this period.

## 5.1 Astronomy Society membership, and participation in activities

The memberships of the societies range from 10 to 350, as shown in figure 2. The median membership is 55, with most societies having between 40 and 120 members.

Most societies considered public engagement to be an important objective, with 20 (67%) having this enshrined in their constitution, or stated on other official documentation. An additional 7 (23%) considered it an important if unofficial objective.

Only 3 (10%) did not consider public engagement important to their society’s activities. One of these societies was the Bournemouth Natural Science Society Astronomy Section (250 members), which is unusual in that “we’re really a lecture society, not a hands-on society”.

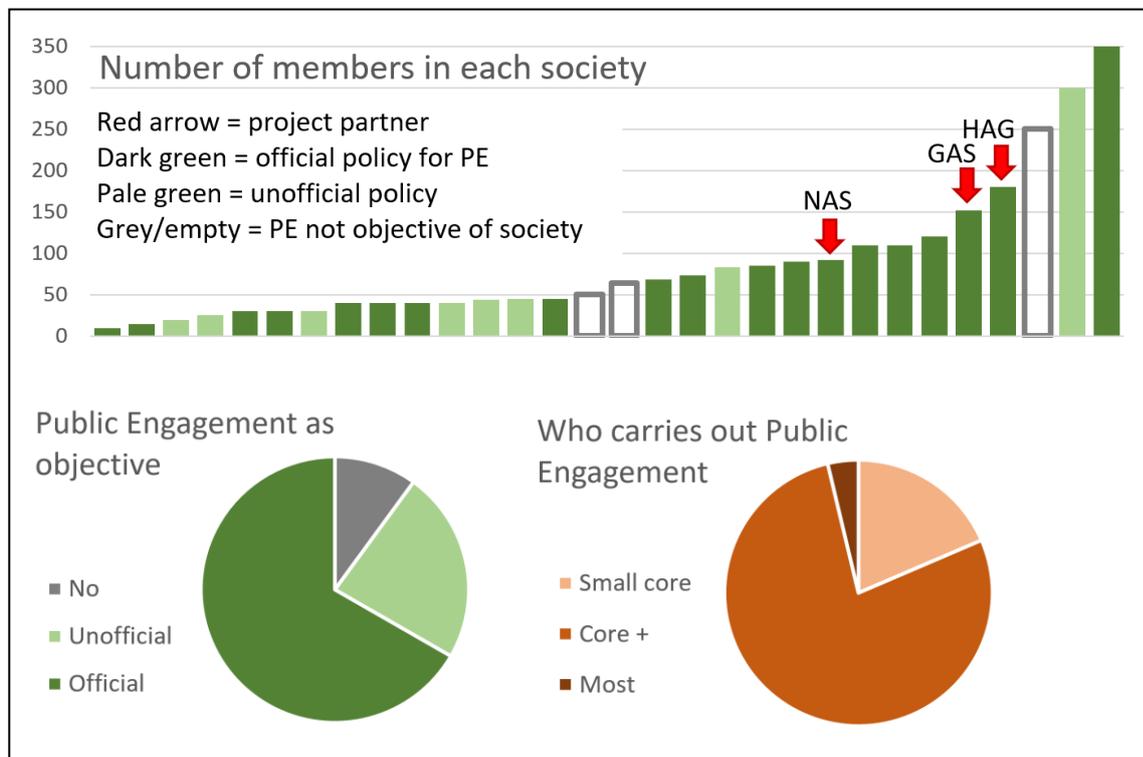


Figure 2: PE = Public Engagement. For exact wording of questions, see Appendix 2.

Although most societies are keen to carry out public engagement activities, usually only a small core of members drive this activity. 5 (19%) of PE-active societies reported that only this small core were ever involved.

21 (78%) of PE-active societies reported that additional members were available to be called in to help at big events. In future surveys it would be interesting to subdivide this category further.

Only one society (Fordingbridge Astronomers) reported that most of its members were involved.

These responses are reflected in the stated barriers to carrying out more/better activities, with 20 (74% of all societies) mentioning the number of people available as a barrier.

In the survey, 5 societies (19% of all societies) mentioned skills as a barrier. In informal discussions, this issue was described as a barrier for some members’ participation. This suggests skills training as a potentially useful resource for future support packages.

However, it should also be appreciated that there are many AS members that were thought to be unlikely to carry out public engagement activities under any circumstances, for reasons including frailty and a strong personal dislike for talking to the public. Lack of time was also cited as a

significant factor. Although it is desirable to support such activities, and especially to tackle barriers to participation, it is not considered appropriate to aim for 100% participation.

## 5.2 Audiences

### 5.2.1 Reach (numbers)

Audience figures excluded members of other astronomy societies, academic astronomers or similar ‘professional’ style communications. They also excluded people engaged during membership admission processes.

Of the 30 societies, 27 (90%) reported public engagement activity. One of those not participating (BNNS) is in essence a lecture club. Together, these 27 societies reached an estimated audience of 19,865 over the past year, not including those engaged indirectly via websites, social media, local radio and other media.

Figure 3 (below) shows the annual audience of each society plotted against membership.

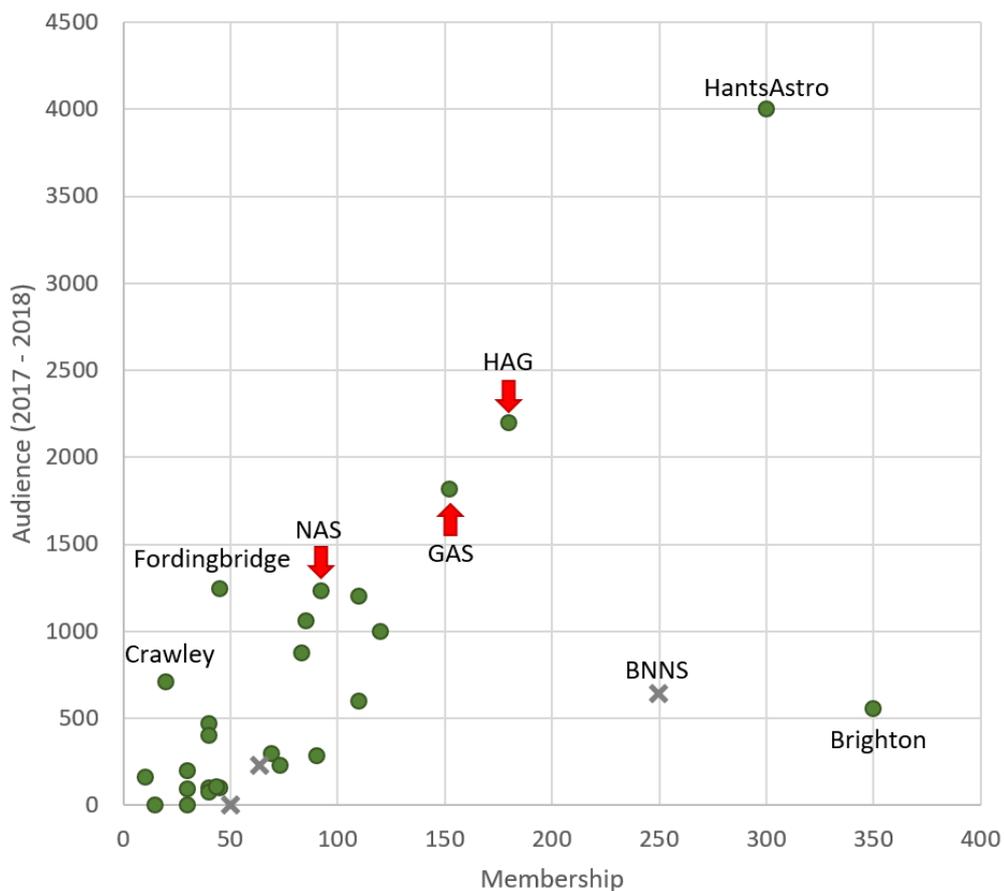


Figure 3: Relationship between membership and audience. Partner societies marked with red arrows. Societies not counting public engagement as an objective are shown as grey crosses.

There are wide ranges in the data, from Crawley (audience = 35x membership) and Fordingbridge (28x) to three societies reporting an audience of zero over the period.

The two outliers to the bottom right of figure 3 are the Bournemouth Natural Science Society (in grey, 2.6x), and Brighton Astro (1.6x). The former is a lecture club as previously discussed. Brighton Astro is an active society with junior branch. They run/contribute to events for the general public including drop-in public events on Brighton beach, but do not engage schools or scouting groups.

Audience figures broken down by age or audience type were not requested due to the complexity of estimating such figures.

### 5.2.2 Reach (audience type)

The reported audiences were broad, including every surveyed audience group. Figure 4 shows the percentage of active societies (ie those carrying out any form of public engagement) reporting engagement with the different audience types.

The survey specifically excluded communication with other astronomy groups, academics, or similar ‘professional’ style communications.

Audience type		% PE-active societies	Notes
General public	families	89%	
	adults	78%	All of whom also engage public families.
	either of the above	89%	
School group	5-11yr	70%	
	12-16yr	52%	
	either of the above	74%	
Uniformed groups	Cubs / Brownies	67%	
	Scouts / Guides	52%	Almost all of whom also engage Cubs/B's.
	either of the above	70%	
School 5-11yr and/or Cubs/Brownies		85%	
School 12-16yr and/or Scouts/Guides		67%	All of whom also engage younger groups.
School and/or scouting groups total		85%	
Adult group		56%	
Other		22%	

Figure 4. Percentage of active societies reporting engagement with each audience group.

The audience type most commonly engaged by active societies was General Public: families (89% of PE-active societies). Most of these societies also served General Public: adults (78% of PE-active societies).

Schools and scouting groups were also well-served (85%) with most societies who engaged one also engaging the other.

Younger groups (ie schools 5-11yr and Cubs/Brownies) were better served than their older peers, but it is interesting and welcome to see a full two thirds of active societies (67%) also engaged older groups (ie schools 11-16yr or Scouts/Guides).

Adult groups were engaged by 56% of active societies.

### **5.3 Activity type**

Detailed data for the number of societies offering different types of activity, divided by audience, are shown in figure 5 (over).

Almost all PE-active societies had carried out talks/shows (93%) and observing activities (93%). The latter were predominantly night-sky observing, especially involving telescopes (89% of PE-active societies).

Most societies (85%) also carried out some form of informal activity, such as visual displays (59%), chats (56%), or handling/hands-on activities (67%).

Formal workshops and/or courses were less-frequently offered (37%).

The gathered information can inform future projects by:

- Identifying popular forms of engagement where interventions could have wide impact within multiple societies' normal operations.
- Identifying popular forms of engagement which may be good choices where encouraging societies to extend their activities.
- Identifying societies that run different types of activities, facilitating networking for skill shares or practical advice.
- Identifying gaps in the activities offered.

	Talks		Informal activities				Media			Formal activities		Observatory		Observing		
	Power-point with demo	93%	Visual display	chats	Handling	hands-on activities	Mass Media	AS website	Social media	workshop	course	observatory	solar telescopes	telescopes at night	binoculars	naked eye
% of 27 PE-active AS																
General public: families	17	89%	13	10	11	6	9	13	12	3	1	4	13	18	14	16
General public: adults	13	78%	8	10	7	3	6	9	9	2	3	4	9	15	9	11
School group 5-11yr	13	70%	6	3	8	6			2	1		4	2	11	5	7
School group 12-16yr	10	52%	5	4	6	7			2			4	4	9	5	8
Cubs / Brownies	13	67%	6	3	8	8			1		1	4	2	11	6	9
Scouts / Guides	10	52%	5	3	6	8			1		2	4	2	8	5	7
Adult group	10	56%	8	4	6	3	1	1	3	2	3	7	3	7	4	5
Other	2	22%	1	1		1	3	3	4							1
Numb socs:	25		16	15	14	13	10	15	16	6	6	10	15	24	15	20
	93%		59%	56%	52%	48%	37%	56%	59%	22%	22%	37%	56%	89%	56%	74%
Powerpoint with demo	17		13	10	11	6	9	13	12	3	1	4	13	18	14	16
Visual display	13		8	10	7	3	6	9	9	2	3	4	9	15	9	11
chats	13		6	3	8	6			2	1		4	2	11	5	7
Handling	13		5	4	6	7			2			4	4	9	5	8
hands-on activities	13		6	3	8	8			1		1	4	2	11	6	9
Mass Media	13		5	4	6	7			2			4	2	11	6	9
AS website	13		6	3	8	6			1		2	4	2	11	6	9
Social media	13		3	3	6	8			1		2	4	2	11	6	9
workshop	13		3	3	6	8			1		2	4	2	11	6	9
course	13		3	3	6	8			1		2	4	2	11	6	9
observatory	13		3	3	6	8			1		2	4	2	11	6	9
solar telescopes	13		3	3	6	8			1		2	4	2	11	6	9
telescopes at night	13		3	3	6	8			1		2	4	2	11	6	9
binoculars	13		3	3	6	8			1		2	4	2	11	6	9
naked eye	13		3	3	6	8			1		2	4	2	11	6	9
Talks	93%		59%	56%	52%	48%	37%	56%	59%	22%	22%	37%	56%	89%	56%	74%
Informal activities																
Formal activities																
Observatory																
Observing																
Total	93%		59%	56%	52%	48%	37%	56%	59%	22%	22%	37%	56%	89%	56%	74%
				85%												

Figure 5

## 5.4 Motivations

Motivations for carrying out public engagement work (other than that this was required by their constitutions) were coded into categories as shown below.

Figures are styled “(18, 60%)”, where the first digit is the number of societies mentioning this factor, and the percentage is that of *all* respondents that this represents. Quotes are usually part of societies’ longer and more multifaceted responses.

Most frequently, mention of the **enjoyment** of passing on their own enthusiasm (18, 60%):

“We all enjoy sharing our knowledge of the night sky.” (Seven Sisters AS)

“Put simply, we enjoy sharing our love and passion for astronomy with others.”

“The 'wow' moment even for simple objects such as the moon in both adults and children is rewarding.” (Farnham AS)

Many societies were interested in **education** (12, 40%):

“Our Constitution says that ‘the object of the Society shall be to advance public education in astronomy, and subjects related thereto, including space research”. (Newbury AS)

“General furtherance of understanding the natural worlds.” (Wessex AS)

**Recruitment** of new members was often mentioned, but sometimes just as a welcome side-effect of activities, and in one case as something hard to achieve in practice (7, 23%):

“we feel that we need to engage to keep interest up in joining GAS and to keep the membership up” (Guildford AS)

“To recruit more members” (South Downs AS)

“Getting new members is a bonus but not the reason we do it” (Farnham AS)

“Of course we hope to attract more paying members but I believe most of us just want to encourage the public to look up and learn. (Vectis AS)

“One of the aims had been to increase our own membership but very few new members had attended one of these events prior to joining, although there always seemed to be a lot of potential interest on the nights themselves.” (Worthing AS)

Encouraging children into **STEM** study and careers (3, 10%):

“Inspiring the astronomers/scientists of tomorrow.” ... “Advocating for STEM” (Fordingbridge Astronomers)

“We aim at families and parents to demonstrate the Astronomy can play a part in a children's career as a STEM activity, as well as being a creative one.” (HantsAstro)

“To encourage more engagement in STEM by young people” (Basingstoke AS)

Raising awareness of **light pollution** was mentioned (3, 10%):

“Also important is the need to make others aware of the effects that light and particle pollution has on us and the wider environment for example interference with natural animal behaviours” (Wadhurst AS)

“We hope to raise awareness of issues such as light pollution among the general public and thereby gain their support for better lighting initiatives that will benefit us all.” (Newbury AS)

Some societies were motivated by **specific requests** for support (4, 13%):

“These groups have requested us” (Cody AS)

“ Most of the activities ticked above have been carried out by 1 or 2 members on behalf of Windlesham House School, whose site also houses our observatory. We also received a request for letters from a cub group.” (Worthing AS)

“We offer the service if asked but do not publicise” (The Local Group)

**Other** reasons included personal development (2, 7%) and the opportunity to go observing (2, 7%):

“We find we learn a lot too” (East Sussex AS)

“To challenge ourselves” (Basingstoke AS)

“For some it is just an excuse to go observing.” (Farnham AS)

“Well it is fun, it's also part of our charitable status work” (Vectis AS)

## 5.5 Aspirations and barriers

The most frequently-mentioned aspiration was to grow audiences (19, 63%). See appendix 3 for the full answers which include a range of schools and public audiences.

The most commonly mentioned barrier was the lack of society members willing and able to carry out such work (20, 67%).

Barrier: Lack of **People** (20, 67%), some of which societies also mentioning **Skills** (5, 17%)

“Too few members willing to participate and also too little available time for members of working age.” (Worthing AS)

“We need to attract more young people into outreach activities to help balance the age profile and keep us in touch with new technologies and methods of communication.”  
(Newbury AS)

“External events are time consuming and our committee is small” (Weymouth Astronomy Club)

“Many (most?) members feel insufficiently confident to front outreach activities”  
(Fordingbridge Astronomers)

Aspiration: “Training for members without the confidence.” (Hampshire AS)

Barrier: Lack of **Money** (5, 19%) and/or **Equipment** (5, 19%):

“Lack of mobile telescopes with GOTO facilities.” (Eastbourne AS)

Aspiration: “Bring more high tech to the younger audience?” (Hampshire AG)

Aspiration: “A decent mobile display” (Fordingbridge AS)

Barrier: Lack of **Venue** (4, 15%) / Aspiration to gain venue (4, 13%)

“Underground reservoir upon which our observatory stands has been closed for refurb”  
(Solent AS)

“Storage of kit/resources/models” (Fordingbridge Astronomers)

Aspiration: “an observing site with solar and nocturnal scopes (Crawley AS)

Aspiration: “Create a full time Astro observatory that is open to the public as much as possible as well as planned observations gathering scientific data” (Test Valley Astronomers)

Aspiration: “A public observatory with permanent staff members who could give both educational lectures and telescope viewing sessions.” (Eastbourne AS)

Barrier: **Other**:

“British weather” (Test Valley AS)

“Getting ourselves known to places/organisations that might like to invite us” (Fordingbridge Astronomers)

Aspiration: Improve links **with other organisations** (3, 10%)

“Public open evenings in conjunction with other community groups” (Weymouth Astronomy Club)

“Do research projects with schools” (The Local Group)



“Closer ties with some large organisations (e.g. NT, Universities, RHS, etc...)” (Guildford AS)

Aspiration: Improve **diversity** of membership (2, 7%)

“much more multi-cultural and gender and age balanced” (Crawley AS)

“I believe that we would like to broaden our membership and possibly grow it. The key thing is 'sustainability' - one fear is that we will be attending each other's funerals and GAS will atrophy - so we want something that lasts.” (Guildford AS)

## **Appendix 1 – list of Astronomical Societies**

1. Adur Astronomical Society (West Sussex)
2. Andover Astronomical Society (Hampshire)
3. Basingstoke Astronomical Society (Hampshire)
4. Bournemouth Natural Science Society, Astronomy Section (Dorset)
5. Brighton Astro (East Sussex)
6. Cody Astronomical Society (Hampshire)
7. Crawley Astronomical Society (West Sussex)
8. East Sussex Astronomical Society (East Sussex)
9. Eastbourne Astronomical Society (East Sussex)
10. Farnham Astronomical Society (Surrey)
11. Fordingbridge Astronomers (Hampshire)
12. Foredown Tower Astronomers (East Sussex)
13. Guildford Astronomical Society (project partner, Surrey)
14. HantsAstro (Hampshire)
15. Hampshire Astronomical Group (project partner, Hampshire)
16. Horsham Astronomy Group (West Sussex)
17. Lewes Astronomers (East Sussex)
18. Newbury Astronomical Society (Berkshire)
19. Reading Astronomical Society (Berkshire)
20. Seven Sisters Astronomical Society (East Sussex)
21. Solent Amateur Astronomers (Hampshire)
22. Southampton Astronomical Society (Hampshire)
23. South Downs Astronomical Society (West Sussex)
24. Test Valley Astro (Hampshire)
25. The Local Group (East Sussex)
26. Wadhurst Astronomical Society (East Sussex)
27. Wessex Astronomical Society (Dorset)
28. Weymouth Astronomy Club (Dorset)
29. Worthing Astronomical Society (West Sussex)
30. Vectis Astronomical Society (Isle of Wight)

# Appendix 2 – survey questions

## Survey questionnaire

01/10/2018

Astronomical Society survey 2018

### Astronomical Society survey 2018

Survey of AS outreach / public engagement activities in the SAGAS region, by Dr Jenny Shipway on behalf of RAS. This survey is part of the AstroBoost STFC-funded project, run in partnership with Hampshire AG, Guildford AS, Newbury AS and JWST. Findings will be shared with SAGAS and FAS, and be available for download from the RAS and JWST websites. If you would prefer any of your information to be anonymised, then please do let me know and this can be arranged.

Survey aim: to shine a light on current activities to help inform future funded projects that could support AS in their activities.

IF YOUR GROUP DOES NO OUTREACH - please do still answer! The form will be especially quick for you to fill in.

Accuracy: estimates or partial information is fine; just put in what you can. There are places you can leave me a note to flag up if anything is a completely wild guess. If you later access more accurate numbers/info, then you can edit your form entry or email these to me at [jennyshipway@gmail.com](mailto:jennyshipway@gmail.com).

\*Required

**1. Name of Astronomical Society \***

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**2. Optional: change contact details (if I should use a different email/contact in future)**

Contact details will not be included in the report. If I got it right first time then you can leave this blank.

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**3. Number of members (approximate is fine) \***

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**4. Does your group consider outreach / public engagement within its aims? (ie communicating astronomy topics to non-members\*.) \***

\*Not including communicating with academic astronomers or other AS group members.  
Mark only one oval.

- Yes - stated in official documents (eg constitution, or AGM minutes)
- Yes - generally recognised as an objective, but only on an unofficial basis.
- No

01/10/2018

Astronomical Society survey 2018

**5. Has your group been associated with public observing, talks, social/mass media, display stands, web articles, or any other public engagement activities over the past year? \***

Please include activities where the aim was to recruit new members, and/or where members supported events run by other organisations. Activities aimed primarily at members still count if there is any attempt to make these available also for the public. But please do not include activities that are part of the joining process (ie for people who have already decided they will join the group).

Mark only one oval.

- Yes.
- Not aware of any such activities. (Please skip past the following five questions).

**6. Who in your group is involved in public engagement? \***

Over the past year, who has taken part in these activities? If 'other', please give details. You can also select 'other' if you just want to give more details than the other choices allow (please do if you can!).

Mark only one oval.

- One or two members each doing their own thing.
- Always the same small core, very few others ever involved.
- A small core of organisers, supported by other members who come to help at big events.
- Lots of people! Most of our members are involved in one way or another.
- Other: \_\_\_\_\_

**7. What have your members done in the last year, and for whom?**

If I've missed anything, then just add it in the next written section.

Tick all that apply.

	School group 5-11yr	School group 12-16yr	Cubs / Brownies	Scouts / Guides	Adult group	General public: families	General public: adults	Other
Lecture (eg Powerpoint talk)	<input type="checkbox"/>							
Lecture with demonstrations	<input type="checkbox"/>							
Visual display: posters, photos, info	<input type="checkbox"/>							
Informal chats	<input type="checkbox"/>							
Handling objects (touch/look only)	<input type="checkbox"/>							
Interactive hands-on activities (using materials to achieve something)	<input type="checkbox"/>							
Mass media (eg radio, TV, print) interview or providing information	<input type="checkbox"/>							
AS website (eg articles, photos)	<input type="checkbox"/>							
Social media	<input type="checkbox"/>							

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**8. Anything else?**

*Tick all that apply.*

	School group 5-11yr	School group 12-16yr	Cubs / Brownies	Scouts / Guides	Adult group	General public: families	General public: adults	Other
Interactive workshop (with a beginning, middle and end)	<input type="checkbox"/>							
Formal course / lesson	<input type="checkbox"/>							
Tour of observatory facilities	<input type="checkbox"/>							
Observation - solar telescopes	<input type="checkbox"/>							
Observation - telescopes at night	<input type="checkbox"/>							
Observation - binoculars	<input type="checkbox"/>							
Observation - naked eye	<input type="checkbox"/>							

**9. How many people have these types of event reached in the last year?**

Please estimate as well as you can how many people you've reached over the past calendar year. Where possible, using the categories above. Eg "Three family observing nights with telescopes and staffed displays for roughly 50 visitors each time, and one talk with Q&A to a class at a primary school". Any/all additional info is very welcome also - don't hold back! Having numbers will help everyone with future fundraising.

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**10. Why do you do these things?**

What are your / your members motivations in their public engagement? Why is it important, what do you hope to achieve? What would you consider as a succesful outcome from these activities? It is likely different members will have different motivations, and so please enter all that apply, highlighting any more important drivers. And yes you can include 'because it's fun'!

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**11. --- EVERYONE FILL IN THE FOLLOWING QUESTIONS PLEASE! ----**

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**12. What gets in the way of your doing any/more outreach? \***

What are the barriers to your group doing any / more / better quality outreach?

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**13. What would you aspire to do in future? \***

If all those barriers magically vanished, what would your ideal vision be of what your particular group could be doing? What level of activity would be appropriate for your group? (If none, then a quick word about why this isn't a fit for your group would be really helpful, if you haven't already explained this above).

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**14. Might you be interested in being part of AstroBoost phase 2? \***

AstroBoost phase 2 would develop/provide resources for AS groups to help them start or further develop their public engagement activities. Resources might include training, practical items like banners and tablecloths, and/or communication aids like models and hands-on activities. The project would likely start in spring 2020.

*Mark only one oval.*

- Very likely / Yes
- Maybe
- Unlikely / No

**15. Anything else that I should have asked or you could contribute to this survey?:**

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## Appendix 3 – written survey responses

Full responses to questions about motivations, barriers and aspirations.

### Appendix 3.1 Motivations:

To encourage public interest in astronomy (and get new members!)

Inspiring the astronomers/scientists of tomorrow.

We have a love of astronomy and wish to share it.

Showing people that it needn't be difficult and can be enormously satisfying.

Advocating for STEM

We want to share our passion for astronomy and science, and pass-on our knowledge and experience to new generations. It's important because so few children have enough access to dark skies and to people with knowledge that many of them have very limited mental horizons which is not good for their futures. A successful outcome is a spontaneous "Wow!" or "OMG!" and a reluctance to give up the eyepiece of the telescope to the next person in line! And it's fun, and we find we learn a lot too.

We aim at families and parents to demonstrate the Astronomy can play a part in a children's career as a STEM activity, as well as being a creative one.

Spread the work about sharing science and astronomy, sharing time with people of all ages and interests the wonders of the night sky. This is part of the Group's constitution

We want to grow our society to at least four to five times its current size. We hope this will enable us to get a better venue, positive cash flow, more celebrated speakers and even an observatory. We welcome hands on types as well as more theoretical types, but we don't have enough hands-on types, so we are especially looking for these.

Sharing our enthusiasm; giving people a chance to do/see things they wouldn't normally experience; educational and fun.

To help the public if they have an interest. To help out at the University & local Science Centre. Also Stargazing Live.

To share our enthusiasm of astronomy with others. The 'wow' moment even for simple objects such as the moon in both adults and children is rewarding. Out of a group of 20 there are probably a couple of people who show a real interest with the questions. Our members enjoy spending time with these people. For some it is just an excuse to go observing. Without exception everybody who is involved in this considers it fun and always willing to help out again. Getting new members is a bonus but not the reason why we do it. So many people never look up at the sky at night and we all just enjoy guiding children and especially their parents to look upwards.

We all enjoy sharing our knowledge of the night sky.

To promote and encourage an interest in astronomy, particularly in its practical aspects.

Well it is fun, it's also part of our charitable status work. Of course we hope to attract more paying members but I believe most of us just want to encourage the public to look up and learn. We have the additional aim of getting all on the IW to appreciate the benefit of Dark Skies

We were invited provide observing sessions to Friends of Chichester Harbour, the Chichester Harbour Conservancy Dark Skies site. Solar observing sessions to promote the club

Motivations include passing on enthusiasm about the natural world and our place in the cosmos. Also important is the need to make others aware of the effects that light and particle pollution has on us and the wider environment for example interference with natural animal behaviours. We provide information for the public to take away about how the whole environment is affected by light pollution for example. Our members have carried out surveys of the local area to assess street lighting and met with Local and District Councils and AONB units to formulate a strategy for improving light intrusion. Due to this the local Council in Wadhurst has been granted funds for street light improvements and have met with other parties (Network Rail being one) to promote this part of East Sussex as being dark sky friendly as a way of attracting visitors. We are currently following the new GCSE Astronomy syllabus at some of our monthly meetings.

Another motivation is seeing how looking through a telescope for the first time induces the (rather overused) "wow" factor especially in children. One young boy, whilst looking at Jupiter through a telescope turned to his Father and asked "is this live?"

i) Our constitutional objective is: The object of the Society is to further the astronomical interests of its members and to educate the public in the science of astronomy.

ii) we have a core team who are enthusiastic about public engagement. Admittedly many of the general members see organised events as an excuse to get out the equipment and observe and perhaps their engagement skills could be 'improved'

iii) we have some additional members who have expressed an interest but are not so much part of the core team.

iv) we feel that we need to engage to keep interest up in joining GAS and to keep the membership up

v) we would be very interested in broadening our appeal, to be honest. I'm afraid that looking at GAS membership we do have rather a stereotypical look about us (average age is probably way above 50 - I don't want to guess - even though we do have some younger members).

vi) yes - it is fun!

Education and motivation for youngsters. Education for adults. To recruit more members.

General furtherance of understanding the natural worlds. Technical interest, the 'wow' factor, answering questions.

We offer the service if asked but do not publicise

"Our Constitution says that 'the object of the Society shall be to advance public education in astronomy, and subjects related thereto, including space research'.

We enjoy sharing our interest in the various aspects of astronomy both with other astronomers and non-astronomers.

We hope to raise awareness of issues such as light pollution among the general public and thereby gain their support for better lighting initiatives that will benefit us all.

We'd like to promote a better understanding and enjoyment of the natural world.

Successful outcomes:

We engage more interest in science and astronomy amongst the general public;

We encourage more amateur astronomers to get involved in outreach activities; and

We enable more astronomy societies to support their members with equipment and material.

To encourage more engagement in STEM by young people

To challenge ourselves

To encourage new members

We are a non formal group of space enthusiasts. Put simply, we enjoy sharing our love and passion for astronomy with others.

These groups have requested us

Most of the activities ticked above have been carried out by 1 or 2 members on behalf of Windlesham House School, whose site also houses our observatory. We also received a request for letters from a cub group. One of the members involved teaches there.

Increase membership and inspire / encourage astronomy

To pass on an interest in Astronomy to the public.

To promote astronomy

Allowing members of the public from the very young to the oldest who are mobile to look through telescopes and to view astronomical objects. Once a month, during the winter months, we present a free public observing session. widely publicised in local newspapers and with local council help and have attendees from 3 years old to over 80 in numbers up to 200. We feel it is important and useful to help the general public to understand humanities place in nature and the fragile nature of our planet. There is much more lack of [sic]

## **Appendix 3.2      Barriers**

Limited number of society members willing/able to participate

The Great British Weather (scuppered 2 public outreach events in the last year)

Resources: time, personnel, and kit/financial

Storage of kit/resources/models

Getting ourselves known to places/organisations that might like to invite us

Many (most?) members feel insufficiently confident to front outreach activities

A permanent observatory

Lack of resources (people, time) to organise and run outreach.

Weather, lack of funding. Advertising events

People able to undertake this activity, resources to support them, skills and confidence of those not yet able to support this type of event.

Not enough mobile and articulate members.

Time and cost, generally.

Lack of members to help and the weather if outside.

The weather. Probably at least 2/3rds of planned outreach events with observing are cancelled and we end up just doing interactive presentations. Time commitments of members. I was appointed to the committee a year ago as the person dedicated to outreach. Some work and outreach to cubs/beavers often starts around 6. Too many commitments and it puts strain on the volunteers. We are trying to encourage members who may not possess a telescope to do outreach by providing full support, loan telescopes and notes but this is not encouraging new volunteers.

Most of our members are working and find it hard to commit to events we have a few dedicated members who I can call on as we are a small society the outreach we do over the year is just about enough we also help other societies on their outreach events.

Demand and if there was demand then availability. Also timing, members in full time 9-5 employment cannot do outreach to schools.

Just available time as most of our active members still work.

number of members, a large number are retired

Finding local suitable sites that are reasonably light pollution free but also easily accessible.

Easier advertising.

Lack of time and not enough dedicated in the core team currently. That is too few people take on too much of the burden.

Not so many people have portable equipment.

Lack of confidence, I think, with some people in engagement.

Better quality of materials/presentations and perhaps some update of powerpoint slides with 'more exciting/more current' information."

No great wish to do more than we do.

Our spread is so great that we do not generally encounter barriers. Public curiosity, occasional journalistic enquiries (radio & press) are quite frequent.

Time/age

We need to encourage more members to get involved in outreach activities, so it isn't just our committee organising events every time.

We need to attract more young people into outreach activities to help balance the age profile and keep us in touch with new technologies and methods of communication."

Access to a suitable observing site in a very light polluted area

None

Not enough members with the time, inclination, ability and materials / support to run an event. Limited funds also mean a poorly attended event could affect the ability of the group to continue.

Time - we're all busy working people, this is a side hobby for us. Funding to put on some events (e.g. venue costs etc)

Time, fitting it into our programme, the number of members available.

We try not to turn anyone down

Too few members willing to participate and also too little available time for members of working age.

In general - external events are time consuming and our committee is small

Underground reservoir upon which our observatory stands has been closed for refurb

Money and British weather

Lack of mobile telescopes with GOTO facilities. We have bought an integrating CCD camera to aid with public viewing but have only one of these and one lap top on which to display the images. We do not have a permanent site, to which we have exclusive use, from which to present displays, lectures etc.

### **Appendix 3.3 Aspirations**

More public observing events

A decent mobile display, a dozen well-attended outreach activities each year, regular astronomy courses specifically for children,

Regular talks and observing sessions with schools and young peoples' organisations. Regular public outreach for solar viewing and evening viewing.

Open Air Workshops are something we really want to develop, and more Public Events as we are geared up for larger events as we have 30+ volunteers.

Bring more high tech to the younger audience? Training for members without the confidence.

In an ideal world, we'd have many sessions a month, both practical and theoretical. We'd have an observing site with solar and nocturnal scopes. We'd certainly have simple spectrometers for measuring absorption and emission lines and links to local academic groups. We'd have space for a

home-made array of satellite dishes for radio astronomy. We'd be much more multi-cultural and gender and age balanced. Because of our wide offering, we would be the goto venue of choice for anyone interested in astronomy or even just getting into science.

We could advertise our activities. At the moment, it's "word of mouth".

We could be out every weekend.

Working with children is great but I would like to do more with adults and the public. One event of 20/30 people using 5/6 observing stations a month would be ideal. It would be great to provide more tangible links between what can be shown via Powerpoint or astro software and what they see through a telescope/binoculars.

See above

Demand is very sporadic depending on current media and education promotion of astronomical events. A steady demand at current levels (or slightly higher) would be sustainable.

We would like to build a new observatory/science centre as an all-year all- weather attraction on the Island. This is very much a dream but perhaps one day!

I think we would like to have more observing sessions

We could provide for larger groups and provide more telescopes and associated talks on a more regular basis.

More schools outreach.

Closer ties with some large organisations (e.g. NT, Universities, RHS, etc...).

I believe that we would like to broaden our membership and possibly grow it. The key thing is 'sustainability' - one fear is that we will be attending each other's funerals and GAS will atrophy - so we want something that lasts.

Outreach may be a key to do this.

Promote awareness of dark sky issues.