SCARECROW
BIO-ACOUSTIC SYSTEMS

The User Survey

Commissioned by : SCARECROW BIO-ACOUSTIC SYSTEMS LIMITED

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1. Summary

The subjective results of a survey of users of Scarecrow products, for bird control on aerodromes, are presented in this document. The Survey indicates that, when used in the correct manner by experienced personnel, bird distress calls broadcast through Scarecrow equipment merit their place as part of an Integrated Bird Management System.

2. What Survey?

A previous Scarecrow Newsletter included a simple Questionnaire. In this, Scarecrow Bio-Acoustic Systems asked the end users of their equipment to tick a few boxes and return the completed Survey to Scarecrow.

The Survey was designed for easy completion with the aim of answering one question:

How effective were bird distress calls broadcast through Scarecrow equipment?

Surely, this was common knowledge; a manufacturer must know how their product is working. So why the necessity to ask the user? Very true, but when a system has been in use for a long time, the old adage of "no news is good news" is not sufficient. When things are working as expected they rarely get a mention. Therefore, the very best people to ask about its efficiency are those who use it daily. It also allows those same people to make any suggestions for practical improvements to the equipment as supplied.

The scientists had tested distress calls over several decades and would, no doubt, continue to do so. However, a manufacturer of distress call broadcast equipment needs to know that the equipment is practical for the required task.

The concept that any tool is only as good as the person handling it is still valid. However, the manufacturer's responsibility is to provide the operator with efficient and user-friendly equipment.

3. What was the response?

By market research standards the response from UK aerodromes was much better than average. Thirty-seven survey forms were returned, representing about half of the aerodromes known to be using Scarecrow equipment. Invariably, survey forms are unwelcome but this one was specialised, was not difficult to complete; reminders were issued and these followed up by fax and telephone.

This Survey was subjective and sought only to find very basic information, and was not so dependent on a large sample size.

It is easy to consider that any survey from a manufacturer can only be of benefit to the manufacturer. This is not denied but we each have a duty of care and improvements to any bird control tool can only be of benefit to flight safety.

Interestingly, completed Survey forms can provide more information than originally envisaged. They may, for example, provide a reflection of the bird control organisation at an aerodrome and, perhaps this Survey was identified as such by some of those that did not return the form.

4. The Analysis

The Survey sought for each species a percentage score of efficiency and the compiler was offered "tick box" choices as in this example:

	DISTRESS CALL SUCCESS RATE						
BIRDS AT YOUR SITE	90 %	70 %	50 %	30%	10%	Rarely	None
BLACK-HEADED GULL		®					
COMMON GULL	®						
HERRING GULL			®				
LAPWING						®	
ROOK		®					
JACKDAW		®					
STARLING					®		
FERAL PIGEON			®				
CARRION CROW		®					
MAGPIE			®				

For each species, the totals in each of the distress call success rate categories were calculated. These were then expressed as a percentage of all the returns for that species. ***For example if, from 29 sheets with entries for magpie, 12 had a tick in the 70% box, the Survey total for this species would be 41% at this success rate.***

The results were then reclassified as "Good, Moderate and Poor", to allow comparison with original distress call trials in the 1960s. The original trials gave the following results for the use of distress calls alone:

Table 1: Original distress call results from the 1960's trials on RAF airfields.

Species	Success Rate		
	Good	Moderate	Poor
Gulls	85%	6%	9%
Corvids	93%	5%	2%
Lapwings	71%	14%	15%
Starlings	57%	11%	32%

Reference: Brough, T. 1968: *Recent improvements in bird scaring on airfields*. In **Murton, R.K. & Wright, E.N. The Problems of Birds as Pests.** Academic Press. London

However, we are unable to confirm how Brough defined each category. Therefore, there is likely to be some overlap but in this analysis 'Good' is defined as better than 70%; 'Moderate' is 50% and 'Poor', anything below 50% success rate. These definitions of 'Good', 'Moderate' and 'Poor' will be the Scarecrow standard in any future surveys and trials.

Grouping the returns for all species into these categories, the Survey produced the results in Table 2. In order to make a direct comparison with the original data, the results for only the three gulls, rook, jackdaw, lapwing and starling were grouped to produce Tables 3 and 4.

Table 2. Efficiency rates for each species

Species	Success Rate		
	Good	Moderate	Poor
Black-headed gull	70%	17%	13%
Common gull	73%	13%	13%
Herring gull	75%	14%	11%
Lapwing	43%	26%	31%
Rook	44%	28%	28%
Jackdaw	37%	21%	42%
Starling	50%	15%	35%
Feral pigeon	50%	6%	44%
Carrion crow	40%	33%	27%
Magpie	25%	25%	50%

The grouping of this data into Brough's categories in Table 3 gives very different success rates for this sample compared to the original trials, especially those for corvids and lapwings.

Table 3. Converted survey data

Species	Success Rate		
	Good	Moderate	Poor
All Gulls	73%	15%	13%
All Corvids	41%	25%	33%
Lapwing	43%	26%	31%
Starling	50%	15%	35%

In fact, original levels were not achieved in any category. Although direct comparison is not possible because of the probable overlap already mentioned, these results are disappointing. Untrained RAF Firemen using basic tape players achieved better success with distress calls in the 1960s than aerodromes over 30 years later. According to the Scarecrow Bio-Acoustic Systems specification, the fidelity of the calls is much improved on their equipment, especially when compared to the Trix AS103 Sappho used by the RAF for the original distress call trial. If the equipment is better, why is there such disparity in success rates?

All the data as in Table 3 were grouped by 'Bird Control Organisation' to see whether this may have an effect on the way the survey form was completed. This was, after all, a subjective analysis. The aerodromes returning survey forms were divided into three groups:

"Bird Control Unit : BCU" - a unit employed specifically for bird control duties on an aerodrome.

"Operations" - where one person on a shift is the "birdman" for that shift.

"Multi-role" - where bird control is a function, possibly extraneous, of a section on the aerodrome.

Table 4. Distress call success rate by Organisation

	Success Rate		
Organisation	Good	Moderate	Poor
BCU	74%	0	26%
Operations	63%	18%	19%
Multi-role	45%	25%	30%

Although the re-grouped results in Table 4 are derived from subjective data there are some interesting differences. Bird Control Units had most "Good" successes; "Operations" were not far behind but "Multi-role" reported less than 50% “Good” successes. If these variations are valid, they may explain some of the differences between the survey results and the base-line data.

Overall, the different levels of bird control organisation had very different success rates. If we assume the equipment is working equally well across all sites, we can break down the sample by species/group and organisation to produce the following table for "All Gulls".

All Gulls	Success Rate		
	Good	Moderate	Poor
Brough 1968	85%	6%	9%
BCU	86%	0%	14%
Operations	75%	8%	17%
Multi-role	70%	19%	11%

A difference is apparent between the bird control organisations using distress calls to disperse gulls. The original level is matched only where bird control is a function of a full-time Bird Control Unit. The others all fall short.

The same breakdown was applied to "All Corvids", Lapwings and Starlings to give the following:

All Corvids	Success Rate		
	Good	Moderate	Poor
Brough 1968	93%	5%	2%
BCU	75%	0%	25%
Operations	50%	33%	17%
Multi-role	29%	29%	42%

The Brough level for corvids was not attained by any group but again, BCU aerodromes had the highest score. It would seem that where bird control is a function of a multi-role unit there is difficulty dealing with this group.

Lapwings	Success Rate		
	Good	Moderate	Poor
Brough 1968	71%	14%	15%
BCU	67%	0%	33%
Operations	29%	0%	71%
Multi-role	44%	36%	20%

Again BCUs topped the success level but the other two sources presented very low scores compared to the Brough level.
The data for starlings is very different to the other groups in that only Multi-role sources failed to match the original level. The others exceeded it.

Starlings	Success Rate		
	Good	Moderate	Poor
Brough 1968	57%	11%	32%
BCU	75%	0%	25%
Operations	75%	13%	13%
Multi-role	37%	18%	45%

The new species added to the Scarecrow Bio-Acoustic Systems range since Brough's analysis produced similar variations by organisation, although sample sizes were the lowest for this group.

BCUs reported 66% "Good" results with the feral pigeon, Operations 100% and Multi-role 33%. BCUs also claimed 66% "Good" success level with both magpies and carrion crows. Operations reported 71% and Multi-role 25% "Good" success with the carrion crow.

5. Discussion

The results from this Survey are based on the subjective opinions of those respondents completing and returning the survey forms. They cannot be subjected to rigorous statistical analysis but are not undervalued because of it. The aim was for Scarecrow Bio-Acoustic Systems, to obtain a feel for how its products were working, which it did. However, the difference in reported effectiveness of the Scarecrow equipment of 2001 with digitally enhanced distress calls and the original RAF equipment used in the early distress call trials is interesting.

Distress calls are only one tool in the bird management arsenal. IBMS, or Integrated Bird Management Systems, have been mentioned in several Scarecrow publications and are essential to effective control. The success of bird dispersal is dependent upon both the birds' and the bird controller's motivation and persistence, the latter is often influenced by the organisation of the bird control task.

From this simple analysis it must be asked whether the difference in effectiveness for each species and control organisation is purely coincidental? It could be but it is reasonable to infer that full-time airfield bird control staff are interested in the subject, want to do the job and will employ all available tools in the best manner. Probably, if someone is on bird control duty for the whole of their shift, they are more persistent than anyone called upon to do bird control at short notice, when bird control is not the reason they joined the aerodrome staff.

To operate distress calls correctly, training is required and, again, it is a reasonable inference that the number of trained staff on an aerodrome is dependent upon the bird management organisation level.

So are the differences in reported effectiveness due in a large part to the human attitude to the whole task? Only the operators can answer this one.

Each aerodrome location and its bird problem are unique and some of the differences will be because of these factors. However, the larger the sample size, the more any such effect can be reduced

The attitude of the target species is also a source of variation. From Brough's data it was clear that distress calls worked best against social species and particularly so

with birds that approached the source of the call. These have been regarded as aggressive birds that will attack a predator - included in this group are gulls and corvids.

Other aerodrome species rarely if ever, approach the source of the call and thus, could be considered non-aggressive. Included here are lapwings and starlings, both of which will mob a predator so, are these two not aggressive species? What do you think?

Regardless, these views were supported by Brough's results and by the "lumped" data from this survey where lapwings and starlings both have a low score. However, BCU aerodromes appear not to have a problem using distress calls against them.

6. New Species

The new species were added in response to requests for the same from Scarecrow's customers. The carrion crow was intended to both target the nominate species and as an alternative to allow the rook call to be rested in the UK. Additionally, it was the first readily available choice to use against Indian house crows in Asia. The magpie followed a series of enquiries and the feral pigeon has been the subject of other reports.

There was initial scepticism by NH Bird Management of the value of using distress calls of territory holding birds and a concern that if these calls did not work, the distress call technique *per se* would fall into disrepute. This was, of course, the wrong attitude to take.

The aim of aerodrome bird management is "a bird-free airfield", and this cannot be achieved if attempts are not made to disperse solitary territory holders such as carrion crows and the odd one or two magpies. Even if these calls have only a limited success in comparison to the others in common use, that success has to be of value within an IBMS.

In summary, what has been known for a long time is still true. Within the correct hands, and as part of an Integrated Bird Management System, distress calls are still an efficient tool for day to day use.

7. COMMENTS, QUESTIONS AND RESPONSES

All those completing the Survey were asked to suggest any improvements to the equipment that would make their task easier. All the comments and responses from Nigel Horton (**NH**) and Tony Walker (**AW**), Scarecrow Chief Executive, are given below:

COMMENT 1: No (*suggested improvements?*) - good product

NH: Thank you, very succinct!

AW: Thank you

COMMENT 2: The distress call for starlings seems to be unsuccessful.

NH: This species is very persistent on an aerodrome but they can be successfully driven off as witnessed next.

AW: We continue our research.

COMMENT 3: It has been noticeable that starlings react well with the system. Fortunately we don't have a lapwing problem, therefore, we have not been able to survey the lapwing distress call fully.

Although with golden plover it has been 30% successful. Rook and jackdaw are rarely seen but it is effective against carrion crows, non-resident 70% when backed up with arm waving and lure/ABUT.

NH: Whoever you are you are fortunate indeed not to have a lapwing problem. Many locations will envy you. It has not been possible to acquire a distress call for golden plover but as it is closely related to the lapwing, the call of the latter is effective, especially when lapwings are also present.

Glad to see that you are having success against what are regarded as the "tough bullies" holding territories on your aerodrome. No bird should be routinely permitted a peaceful life on an airfield.

COMMENT 4: We currently play the same rook distress call year in year out (etc). Would a different bird from the same species record a different pitch of distress. At least the rooks would not think that it it's the same guy crying wolf

NH: Most of the calls are digitally derived from those used by the RAF in Brough's trial. The call of another rook would ring in the changes but jackdaw and carrion crow could be used instead.

Cry wolf or habituation is reduced when a single call is not the only one ever used. Backing up the harmless distress call by use of a lure/ABUT as commented on earlier is also of benefit.

AW: I can only agree with NH.

COMMENT 5: The systems work as advertised with new birds to a degree in late summer and autumn. However, the birds soon get used to the call and tend to ignore it, even before they are mature.

A distress call for geese (greylag) would be of great benefit to our location. (Go on, become a millionaire, create one for swifts, swallows and wagtails!)

NH: The rapid habituation reported here is of concern. I think the equipment should be checked and if it is working then the method in which it is used may be in need of revue.
As far as we are aware geese do not possess a call of practical use to their dispersal. However, we keep an open mind. Similarly for the other species, swallows and wagtails have a distress call but it has not been tested to see if it would be of practical use. With regard to millionaire status, I have a greater chance of success from ERNIE!

AW: A point for us to consider in our future developments.

COMMENT 6: We have been pleased with the effectiveness of the SCARECROW PATROL.

NH: Thank you,

AW: It has proved to be a great success and more derivatives are planned.

COMMENT 7: Your equipment has proven to be very effective, it's trying to educate people how and when to use it that's the problem.

NH: Using trained staff is fundamental to successful bird management, regardless of methods used. This should not be a problem, as training facilities are offered through Scarecrow Bio-Acoustic Systems, some suppliers of pest control equipment, bird control contractors and consultants.

AW: Our task is to produce good equipment and help educate the user to make the fullest use of the technology and potential efficiency it can provide.

COMMENT 8: Provide a demonstration video for training / continuation training of operatives.

NH: These are expensive to produce professionally and soon begin to look dated. Once that happens, the message they carry loses credence.

AW: I concur with NH. Practical training on site is the most effective.

COMMENT 9: Louder volume output for all distress calls would be advantageous, due to varying airfield weather conditions.

NH: Difficulty here is whether a louder call would be recognised by the target birds as a distress call and not a loud noise to which they would quickly habituate. I assume that you are considering occasions when you have to broadcast into strong winds - is that commonplace?

AW: Natural calls broadcast at a perceived natural sound level to the distant birds is the most effective method.

COMMENT 10: Make the system push-button, smaller and less cumbersome with volume on/off controls that are more reliable.

NH: These comments come as a surprise. I do not know which equipment you use but the SCARECROW PREMIER is designed for in-car installation and is about the size of a car radio/cassette - is this really cumbersome?
Is your problem because of the location within your vehicle?

AW: I would be interested to know how many users find the controls difficult in normal daily use? We continually review our products and appreciate all comments.

COMMENT 11: In an attempt to make the equipment "fireman-proof" I believe a more robust design/material may solve the problem. Also a speedier repair service for sites away from mainland UK. Plus recommend a dedicated vehicle for installation where the vehicle would not be used for any other purpose. Generally though a good piece of safety equipment.

NH: Similar to the previous comment, what is it that firemen manage to break? So far as I am aware there is no recommendation for a dedicated bird control vehicle in CAP 680, it is left to the aerodrome management.

AW: We aim for 24h repair turn rounds but sometimes an airport will delay us returning a product as there was no indication with it of where it came from!!

COMMENT 12: Millbank unit fitted to one vehicle. SCARECROW PREMIER units fitted to others, both very similar in dispersal outcome.

NH: Following the last comment, you must be from a large airport to have more than one vehicle.

AW: I did own Millbank, so PREMIER will look like MILLBANK DIGISCARE.

COMMENT 13: Success rate of dispersal outcome increased when used either in conjunction with or subsequent to use of birds of prey.

NH: As the distress call is given when a predator catches a bird, this is not surprising

AW: Birds of prey are an expensive experience.

COMMENT 14: A good system, the fixed unit is easy to operate and works very well. You provide a good service.

NH: I suspect a manufacturer could not ask for a better review.

AW: Thank you

COMMENT 15: We don't use your equipment, or anyone else's.

NH: I hope you do not have a bird problem either.
I apologise for any inconvenience caused and wish you well.

AW: Does Utopia really exist?

8. FROM THE CHIEF EXECUTIVE OF SCARECROW BIO-ACOUSTIC SYSTEMS LIMITED. TONY WALKER

As one of the leading Companies in the field of Professional bio-acoustic bird dispersal and control equipment, not just in aviation but in all environments – urban, seaside, industrial, etc., we have a Duty of Care to ensure that we provide the best possible equipment for the job. This includes regular evaluation of in-use performance of our products.

Last year we commissioned N.H. Bird Management, an independent Consultancy associated with the provision of advice on aerodrome bird management and no attached commercial interests, to develop a simple, easy to complete, Questionnaire especially for aerodrome personnel directly 'hands-on' involved in bird control.

We were pleased to fund this Survey which has given us some useful feedback on both our products and the manner in which they are used. The coincidental indication of some other factors with an influence on the efficiency of our equipment came as a surprise. We are very aware of the necessity for experienced operators etc.

The fact that we commissioned and funded this work demonstrates that we are realists, we do care about efficient bird dispersal rather than simply selling equipment; we do not employ sales people, those that select our product buy it.

What have we at SCARECROW done to help, since the original use of bird distress calls was established?

1. We have digitally reprocessed the original calls, and our new ones, to 'clean' their background noise.
2. By careful editing, we ensured that each call starts at a natural beginning. We believe this to be more efficient than taking random sequence from the original recording. A scream is different to talking; that would be like any of us starting a sentence half way through and expecting the person we are attempting to communicate with to understand!
3. We are fundamentally audio engineers, so we know how to make sound **sound natural** so combined with (2) birds react more promptly, thinking our broadcast is perhaps the real thing.
4. Our own commissioned research has demonstrated that remorseless use of bird call played at maximum volume is long term less effective than controlled use at sound levels that appear natural to the distant birds.
5. Our aim is to fund acquisition and testing of distress calls of other species; the feral pigeon - the world's first? - is an example and that research continues.

We do not intend this Survey analysis to be used as a definitive scientific document, in fact nothing more than we intended to be; subjective input from the users of our equipment to help us strive to make any improvements highlighted to be necessary. It should not be quoted otherwise.

I thank all those who either completed a Questionnaire or who simply telephone/e-mailed in to us to give their opinions.

We're going to provide a Questionnaire to our other 'user fields' as well, so don't think we're going to stop at aerodromes!

By the way, we are the ONLY dispersal system provider that produces to ISO Standards and whose designs comply with CE and LV European Directives. *How's that for helping your choice of bio-acoustic dispersal equipment?*

Again, thanks to everyone ‘out there’ for their Survey contributions and to N.H. Bird Management for their time in analysing the data obtained.

Don’t forget, our communications ‘door’ is always open and we would be more than grateful for more user comments and feedback.