SCARECROW
BIO-ACOUSTIC SYSTEMS
KEEPING BIRDS AT BAY

SCARECROW ONE-SHOT 1308

DIGITALLY STORED PROGRAMMABLE BIRD DISPERSAL SYSTEM FOR PERMANENT INSTALLATION

INSTALLATION INFORMATION

THE PRODUCTS SUPPLIED:

1308	**SCARECROW ONE-SHOT**	**S/No.**	☐
PSU15v	**120/240 ac: 15v dc Plug-Top Power Supply**		☐
1233	**Remote Ambient Light Sensor, IP65 rated.**		☐
PIR/12V	**Passive Infrared Detector, IP rated for use with ONE-SHOT 1308 to activate playback during Dusk/Dawn shutdown periods.**		☐
1208	**Long-Line transformer, for use where loudspeaker cables are required in excess of 20 m in length. Loudspeakers to be installed should be given Suffix/L i.e. 1212/L**		☐
1212	**IP65 rated 10 watt re-entrant horn loudspeaker, fitted with fully adjustable mounting bracket.**		☐
1212/L			☐
1215	**IP65 rated 20 watt re-entrant horn loudspeaker, fitted with fully adjustable mounting bracket**		☐
1215/L			☐
1217	**Class 1 EexmN re-entrant horn loudspeaker for use in hazardous atmospheres, e.g. gas or petro-chemical plants**		☐
1217/L			☐
1211	**IP55 rated bi-directional loudspeaker suitable for use in shopping malls, passages etc.**		☐
1211/L			☐

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IMPORTANT NOTICE TO ALL SYSTEM PROVIDERS / INSTALLERS / USERS

MARINA & ONE-SHOT: SETTING UP FULLY AUTOMATIC BIRD DISPERSAL SYSTEMS

In our Technical Installation information we advise that, on set-up, the sound level of the completed system shall be adjusted to be as near natural as can be achieved in the operational environment. The 'best practice' means of achieving this is to select for continuous play the distress call of the main species to be dispersed and to increase the sound level from zero until, by the observation of a colleague on the site, the birds begin to be aroused and fly off. ***This is then the best practice sound level and should not be able to be adjusted by unauthorised persons.***

Increasing the sound level beyond 'natural' can cause a system to break Environmental Noise Laws and, moreover, change the distress call sound perceived by the subject bird to be a **novel noise** to which they will habituate – ignore over time. We have had such experiences reported to us over the years that our systems have been installed, therefore this simple instruction should not be ignored. ***Local Authority Fines could be levied on the Property Owner and the System Installer.***

When sound level adjustment has taken place, set the system to play the calls fully automatically on **NORMAL** sequence; only use **RE-INFORCE** or **SEVERE** during determined MIGRATORY periods, or for ONE or TWO DAYS if the birds to be dispersed need a more aggressive initial approach. To use **RE-INFORCE** or **SEVERE** without good reason could be a cause for habituation.

Finally, when SCARECROW Planning Engineers have been involved in the original system design, including loudspeaker placement, no system change shall be made without Consultation with them. Without this Consultation, when any agreed change shall be confirmed in writing, we shall not take any responsibility for system performance.

DISCLAIMER:
Whilst the unique efficiency of SCARECROW bio-acoustic products is long established SCARECROW BIO-ACOUSTIC SYSTEMS LIMITED stress that they can only work effectively as part of an overall and planned programme of bird control. This will include total hygiene management and where applicable the use of operatives who have been professionally trained. Without limitation, SCARECROW BIO-ACOUSTIC SYSTEMS LIMITED will not accept liability for any consequences as a result of poor equipment maintenance, misuse,

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CONTENTS

ONE-SHOT

Thank you for purchasing ONE-SHOT, a well researched and trialled bio-acoustic bird dispersal system using natural species distress calls to create an environment appearing hostile to birds, yet humane, inoffensive and does not endanger their lives. Importantly, ***natural*** distress calls played back at a ***natural*** sound level are not intrusive, often remaining unnoticed in places where the public is present.

Once set up using this Installation Handbook, ONE-SHOT will continue to operate for many years with high reliability being of importance to its design.

For security and insurance purposes, please note the Serial No. of ONE-SHOT in a safe place.

Please refer to the front page of this manual where the products supplied are itemised, specific for your application.

ONE-SHOT is designed to function 24 Hrs a day, fully automatically playing the programmed calls at random times.

A daylight sensor is incorporated into the ONE-SHOT processor case and can be programmed to cancel the playback sequence from DUSK to DAWN. A Separate daylight sensor, for remote installation, is also available, product code 1233.

ONE-SHOT can also be set up to play when any movement is detected using an optional Infra Red sensor (PIR), PIR/12V.

TAKING THE LID OFF

To gain access to all the pre-set controls and terminations, release by ‘quarter turn’ the 6 retaining screws from the lid; gently lift off the ONE-SHOT lid and set aside for replacement once installation is complete.

SITING ONE-SHOT

ONE-SHOT can be installed anywhere that is convenient for the proposed installation, given that the loudspeaker leads should not be longer than the recommended 20 metres without the use of LONG LINE TRANSFORMER 1208. See page 12.

The ONE-SHOT housing is IP65 rated, meaning that it can be placed on vertical surfaces in areas of relatively high humidity. Take note that this only applies to the ONE-SHOT housing and accessories but DOES NOT include the 120v/240v ac mains plug top power supply PSU15v, this being for use ONLY in damp-free indoor environments.

ONE-SHOT can be attached to vertical surfaces using the FOUR corner fixings exposed when the ONE-SHOT lid is removed.

CABLING ONE-SHOT

Along the lower edge of the housing there are seven cable glands, to be used for all input and output cables – loudspeakers, 12v dc etc.

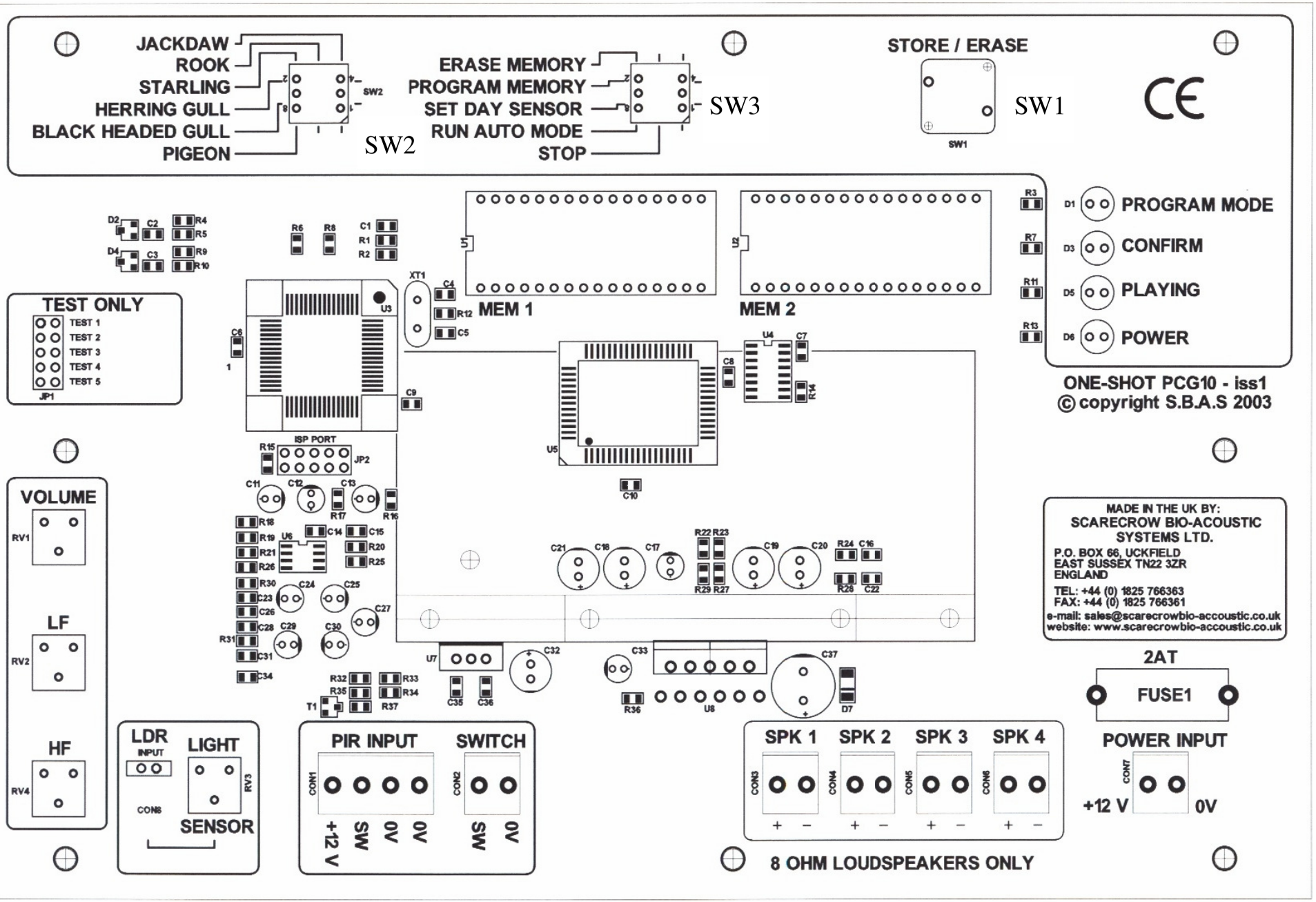
Use one cable per gland and leave sufficient flexible inside ONE-SHOT to allow for removing and replacing the cable termination to the p.c.b; these are **PLUG ON**, **PULL OFF;** make sure when replacing that the plug guides are used.

Once cabling is complete, tighten the gland closures in order to make moisture proof connections.

IF IN ANY DOUBT CONTACT US FIRST!

SCARECROW Engineers are normally available during the UK hours of 09.30 to 17.00 to assist you if you have any doubts about how to install ONE-SHOT, or have any questions.

Please contact by telephone, fax or e-mail and we will make every effort to resolve your questions.


JACKDAW
ROOK
STARLING
HERRING GULL
BLACK HEADED GULL
PIGEON
SW2
ERASE MEMORY
PROGRAM MEMORY
SET DAY SENSOR
RUN AUTO MODE
STOP
SW3
STORE / ERASE
SW1
CE
PROGRAM MODE
CONFIRM
PLAYING
POWER
MEM 1
MEM 2
TEST ONLY
TEST 1
TEST 2
TEST 3
TEST 4
TEST 5
JP1
ISP PORT
JP2
ONE-SHOT PCG10 - iss1
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VOLUME
RV1
LF
RV2
HF
RV4
LDR
INPUT
LIGHT
RV3
CON8
SENSOR
PIR INPUT
SWITCH
CON1
CON2
+12 V
SW
0V
0V
SW
0V
SPK 1
SPK 2
SPK 3
SPK 4
CON3
CON4
CON5
CON6
8 OHM LOUDSPEAKERS ONLY
2AT
FUSE1
POWER INPUT
CON7
+12 V
0V

POWERING ONE-SHOT

DO NOT POWER UP ONE-SHOT BEFORE COMPLETING LOUDSPEAKER CONNECTIONS OR FIXING ONE-SHOT AT ITS CHOSEN POINT OF INSTALLATION

There are two basic methods of powering ONE-SHOT:

a) 120v/240v ac, by using a 15 volt regulated plug-top (UK: 13A) power supply. ORDER CODE : PSU15v

Positive (+) is identified as a white plastics insulated flexible, from the power supply. The bare shield flexible is Negative (-)

b) By direct connection to a 12V (14.7V) fully charged battery of at least 30A/hr capacity. 'Leisure' batteries are to be preferred to vehicle types designed for constant recharging

For option b) a recharging source will be required: a simple battery charger, or environmentally friendly solar panel or wind generator.

LOUDSPEAKERS

The maximum number of loudspeakers that can be connected to ONE-SHOT is FOUR. If more are required, please contact SCARECROW.

Except for our 1221 bi-directional loudspeaker, all the loudspeakers we use are defined as re-entrant horns; a small efficient 'driver' feeds sound into a specially designed tube of increasing diameter and of a length calculated to perform to a required efficiency and frequency response.

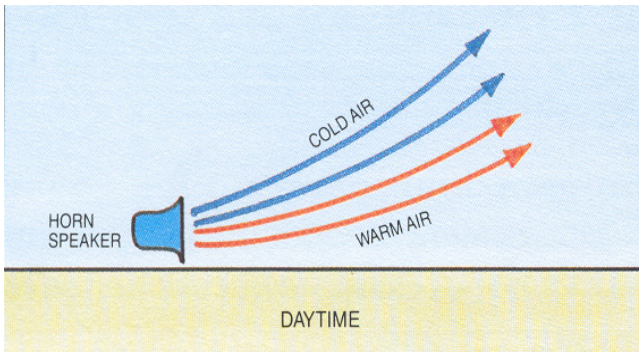
SCARECROW engineers use only high quality, high efficiency, loudspeakers designed for external use in all types of environments and weather conditions, including for use where there is a potential for explosion or chemical hazard.

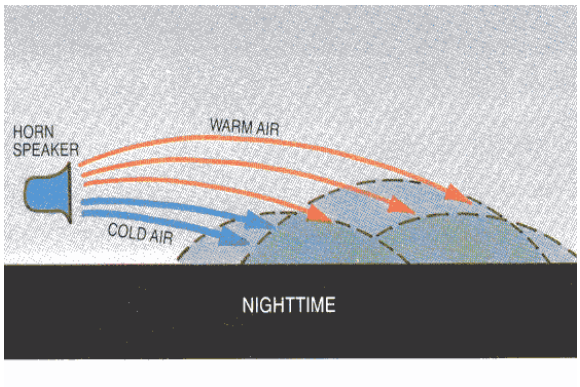
Generally, the larger the horn in length and final diameter, the greater the efficiency and directivity. The horn is folded within itself – the reason they are called ***re-entrant*** horns – to make them smaller and therefore less environmentally obtrusive, yet maintaining sound quality and efficiency.

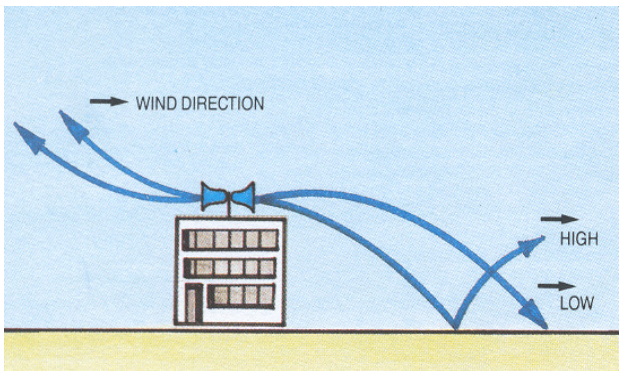
By using their directional properties and installing an appropriate number of loudspeakers, it is possible to very efficiently cover the area from where the birds are to be dispersed and keep most of the reproduced sounds within the area, with minimum overspill.

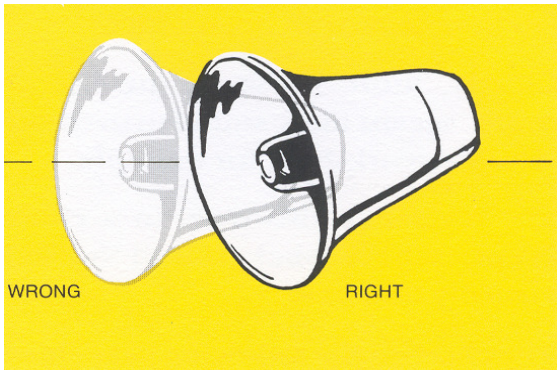
EXTERNAL MOUNTING CONSIDERATIONS

When installed outside, the effect of wind and temperature can modify the directional characteristics of horn loudspeakers. This will be most noticeable when installed on the flat roof of a building in full sunlight and the following diagrams demonstrate how the sound will be affected.









It is important to maximize the benefit of prevailing winds, to use these to enhance the distance that sound will naturally travel. If not considered, in positioning the loudspeakers, it could be that wind could reduce the distance that the dispersal sound will travel, blowing in the opposite direction to that which the loudspeakers are directed.

To reduce the adverse effects of sound reflections from flat, horizontal or near horizontal, surfaces, e.g., a factory pitched roof, loudspeakers should be mounted at least one metre above these pitched or flat surfaces.

Similarly, loudspeakers should not be positioned such that the sounds they reproduce are obtrusively reflected from adjacent flat vertical surfaces, causing echo, which could confuse the birds to be dispersed.

CONNECTING LOUDSPEAKERS

ALWAYS MOUNT RECTANGULAR MOUTHED LOUDSPEAKER WITH THE WIDEST DIMENSION HORIZONTAL

Once the positioning of loudspeakers had been established, they will need to be connected to ONE-SHOT using cable of sufficient size to minimize cable loss of the available ONE-SHOT audio power.

For one loudspeaker up to 20m from ONE-SHOT use not less than 1.5mm^2 cable. If, for ease of cabling, two loudspeakers are to be connected together as a pair at a distance of up to 25m, use 2.5mm^2.

Check with the site Health & Safety Officer or Safety Personnel to ensure that the site cables meet any prevailing site specifications.

If cable lengths greater than 25m are required, please refer to page 12 of this Manual.

LIGHT SENSOR

If ONE-SHOT is installed in an area **without** artificial lighting it is possible to use the in-built light sensor to enable dawn – dusk automatic shut-down.

This setup should be done at dawn or dusk to ensure correct setting. To set the point at which night time is detected, set the mode switch to position '2'. Adjust 'LIGHT SENSOR' control until the yellow led just extinguishes which indicates the system is in night mode and will not broadcast.

If artificial lighting is present then a remote light sensor, positioned so that **only natural light** is available to the sensor should be considered. A LIGHT SENSOR for installation remote from ONE-SHOT, maximum distance 10m, is available from SCARECROW.

ORDER CODE : 1233

PIR SENSOR

A PASSIVE INFRA-RED movement detector can be fitted to ONE-SHOT. Simply wire a 12V functioning PIR detector, generally used for security application with normally closed contacts.

Using the PIR INPUT terminals in ONE-SHOT connect the 12V supply, ensuring CORRECT POLARITY across 0V/+12V terminals; the PIR contacts will connect to 0V/SW.

Adjustment for sensitivity is provided on most commercially available PIR units.

ORDER CODE : PIR/12V

PASSIVE INFRARED NIGHT FUNCTION

Using the passive infrared detector PIR/12V, it is possible to trigger bird call playback in darkness, overriding the function of an activated in-built light sensor. This facility could be used to prompt the dispersal of any birds attempting night roosting.

If selecting this feature care should be taken to ensure minimal noise intrusion on any public/residents in close proximity as a result of night time playback.

SETTING TO FUNCTION: refer to the p.c. board TEST ONLY area; there are 5 test zones. ***Do not attempt to remove any jumpers other than for TEST 5.*** The jumper allocated for TEST 5 use is 'parked' on **one** PIN of the TEST 5 facility; remove this and place over both PINS of TEST 5. PIR/12V, when installed as directed, will now prompt call playback in darkness if birds are in proximity to the PIR Sensor.

REMOTE TEST

Where routine system checks are required it is inadvisable to each time remove the ONE-SHOT lid for this purpose. Simply wire a MOMENTARY PUSH BUTTON at the chosen remote test position and connect across SWITCH (next to PIR INPUT) using a flexible cable pair of at least 0.75mm^2.

Pressing this PUSH BUTTON will trigger a dispersal sequence. This feature may also be used for instant dispersal processes, where a specific species is being persistent in its attempt to use the site.

Note: *If the light sensor is in darkness the sequence will not broadcast unless TEST 5 link is fitted (see above: Passive Infra Red Light function)*

SETTING TO WORK

THE CONTROLS

SW1 (RED) : This is used for confirming the storage of selected bird calls and for manually starting a bird sequence without waiting for automatic playback.

SW2 (BLUE) : This is used to select the bird calls that are to be stored, one by one, using SW1 after each selected call and for seasonal timing adjustments.

SW3 (BLUE) : This determines the mode of operation of ONE-SHOT during programming of calls etc.

NOTE THAT THE NUMBERS REFERRED TO ARE THOSE SHOWN IN EACH SWITCH "WINDOW"

VOLUME: This is adjusted as a 'final' action after programming is complete and SW3 is set to RUN (1) See SETTING SOUND LEVELS

LF & HF: These are factory set and should not be adjusted.

INDICATOR LIGHTS

PROGRAM: RED LED illuminates to indicate that PROGRAM MEMORY or ERASE MEMORY is selected.

CONFIRM: YELLOW LED lights to confirm MEMORY PROGRAM / ERASE functions. This will also light to indicate daylight sensed when setting up the **light sensor.**

PLAYING: GREEN LED lights to indicate that a bird call is being broadcast. A flashing LED means that the random timer is operating.

POWER: RED LED lights to indicate that a 12V dc supply is connected to ONE-SHOT.

SW2 POSITIONS EXPLAINED

The primary purpose of SW2 is to select the BIRDS to be programmed into an automatic playback sequence. As explained in SW3 (3) up to six bird species can be programmed, less if appropriate. With persistent species it is sometimes necessary to programme that species TWICE, one after the other, or to alter playback time, to aid dispersal.

Caring for environmental changes

ONE-SHOT's automatic, random playback programme is the result of extensive research, trials and site performance feedback; it has been shown over many years to provide optimum dispersal effect, always depending on environmental factors and good hygiene practice.

Most recent research has also provided further evidence of seasonal and migrational effects on efficient dispersal. For this reason ONE-SHOT now includes 2 further automatic random playback sequences: RE-INFORCE and SEVERE.

To avoid species habituation and possible environmental noise pollution these two sequences should NOT be used without due reason or considered plans.

RE-INFORCE: this is achieved by selecting SW2 position 8, selected ***after*** all species programming and ***after*** AUTO has been selected on SW3. Playback minimum 15 mins, maximum 40 mins.

Use this when, for example, Seagulls are very populous and when the nesting season is about to commence.

When this effect has been subjectively established over a maximum period of only a few days RETURN SW2 from position 8 to position 0 (to NORMAL sequence).

SEVERE: this is achieved through selecting SW2 position 9, selected ***after*** all species programming and ***after*** AUTO has been selected on SW3. Playback minimum 5 mins, maximum 20 mins.

Use this sequence when, for example, Starlings are pre-roosting; they may gather in large numbers before going on to or on leaving a local roosting point. It is often necessary to use this position during their roost periods.

When the Starlings cease to use the ONE-SHOT dispersal site in large persistent numbers (their season) RETURN SW2 from position 9 to position 0 (to NORMAL sequence).

SW3 POSITIONS EXPLAINED

0: Stops playback temporarily if required.

1: RUN MODE: the automatic random play process will now function if programming has been completed; your choice of birds has been inputted and confirmed.

2: SET DAYLIGHT SENSOR: using the BLUE rotary control in the lower left hand corner of the p.c.b, set the threshold at which the SENSOR will action. This adjustment should be done at DAWN **or** DUSK to ensure correct setting. To set the point at which night time is detected, set the mode switch to position'2'. Adjust 'LIGHT SENSOR' control until the yellow LED just extinguishes, which indicates the system is in night mode and will not broadcast.

4: (first step) **ERASE MEMORY**: You must first erase the memory prior to programming. To do this, select '4' on SW3. The red PROGRAM LED will light to indicate programming mode. Press STORE / ERASE pushbutton to the right of the two rotary switches and confirm that the yellow LED lights momentarily.

3: (second step) **PROGRAM MEMORY**: The sequencer can store up to six birds within its memory but you can program less if you wish. It is possible to program the same bird more than once but it is not recommended unless a particular species is known or expected to be a major dispersal problem.

Set SW3 to position '3' and then select which bird to store by selecting this with SW2.

After you have made your selection, press the RED pushbutton and check that the yellow LED lights momentarily to confirm the storage operation.

Select the next bird to program using SW2 and then press the RED pushbutton again.

Repeat the process until all required birds are programmed.

If you attempt to store more than six birds in the memory, both the red and yellow lights will flash together indicating the memory is full.

Note: the order of the birds in the automatic sequencer memory is shuffled during playback, to further the dispersal integrity.

SPECIES PLAYBACK TIME

As FACTORY SET, each programmed bird distress call will play for 50 secs, normally sufficient for them to be alerted and then disperse. Noting that the playback time should never be shorter than 50 secs, some species can seasonally require a longer time to be alerted, no longer than 90 secs.

To extend all the selected species playback times, refer to the TEST ONLY 'jumpers' situated above the ONE-SHOT VOLUME control, on the left hand side of the printed circuit board.

PLAYBACK TIME	TEST 1	TEST 2	TEST 3
50	IN	IN	OUT
60	OUT	OUT	IN
70	IN	OUT	IN
80	OUT	IN	IN
90	IN	IN	IN

IN = JUMPER LINK FITTED

OUT = JUMPER LINK NOT FITTED, BUT 'PARKED' ON ONE TEST PIN.

NO OTHER SWITCH POSITIONS ARE RELEVANT TO USER ADJUSTMENT; these are for factory test programs ONLY.

SETTING THE SOUND (VOLUME) LEVEL

*** SEE IMPORTANT NOTICE AT FRONT OF THIS MANUAL**

The objective is to set the sound level as near to 'natural' as possible, taking into consideration the ambient noise at the site, and the distance the loudspeakers are from the birds to be dispersed.

Turn the VOLUME control from fully anticlockwise by around 10^{o}, i.e. just off 'zero' volume. Use SW1 to manually start a bird call playback sequence and adjust the sound level such that the birds to be dispersed are seen to be aroused by the distress call and that they will then disperse. Repeat this over time to ensure the correct setting.

If VOLUME is set too high, birds will habituate to what they will then determine as 'noise', not one of their species in distress. Not only that, but distant birds, perhaps not even at the site, will come to find out what the problem is, therefore compounding the original problem.

TECHNICAL SPECIFICATION IN BRIEF

Power requirements	12V dc (14.7V) @ 3A peak
Standby current	95 mA
Audio output	25 Watt into 2 Ohms
Output impedance	2-16 Ohms
Audio compression	ADPCM
Bandwidth	30Hz – 11KHz
PIR input	Normally closed input to ground (10k pullup to 5v)
Switch input	Normally open input to ground (10k pullup to 5v)

INSTALLING ONE-SHOT

LOUDSPEAKER CABLES: A GUIDE TO SIZE

ONE-SHOT: standard low impedance* loudspeakers

(Note that the cable lengths shown assume only ONE 8R loudspeaker is connected at the distant end. If TWO loudspeakers are installed at the distant end, the maximum distance permitted is reduced to 75% (¾) of that shown, e.g. 70m to 52m. Alternatively, increase the cable flexible area (mm^2) to the next larger one to maintain the required cable length.

FLEXIBLE	DISTANCE IN METRES
5.0mm^2	70
4.0mm^2	50
2.5mm^2	30
1.5mm^2	15

ONE-SHOT: 100v Line loudspeakers

***If ONE-SHOT is used with long line transformer type 1208 and the loudspeakers are suitable for 100v line use (suffix /L) then the following extended cable lengths may be used:**

(Note that the maximum loudspeaker load using 1208 and suffix /L loudspeakers is 30watts e.g. 4 x 7.5w, 8 x 3.5w etc.)

FLEXIBLE	DISTANCE IN METRES
4.00mm^2	300
2.50mm^2	200
1.50mm^2	120
1.00mm^2	75

IN THE EVENT OF SERVICE REQUIREMENTS

Please return the unit to:

SCARECROW BIO-ACOUSTIC SYSTEMS LIMITED
33/35 BELL LANE
BELLBROOK BUSINESS PARK
UCKFIELD
EAST SUSSEX TN22 1QL

Tel: +44 (0)1825 766363

Fax: +44 (0)1825 766361 Freephone: 0800 917 8488

E-mail: sales@scarecrowbio-acoustic.co.uk

SCARECROW
BIO-ACOUSTIC SYSTEMS
KEEPING BIRDS AT BAY

ABOUT BIO-ACOUSTIC BIRD DISPERSAL : THE USE OF DISTRESS CALLS

CONTENTS

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1. SOME GENERAL NOTES ABOUT BIRD DISPERSAL

1.1. The use of bird distress calls as a tool for bird dispersal is not new. They have been around for over 40 years, being initially tested and used on UK aerodromes to help combat the bird strike problem to aircraft. Following this success they have been introduced, where possible into all pest bird management

1.2. Their use differs from other commercially available bird control techniques because they are not based upon what we, as humans, consider should scare or startle birds. Merely because loud bangs may startle birds in the same way as they make us jump, does not mean birds will associate such a noise with danger. If they are not in danger, they have no reason to leave.

1.3. **So what is a distress call?** This needs definition, as there is confusion over alarm and distress calls. An alarm call is given by some birds as a signal that there is a potential risk of danger. A bird gives a distress call only when a predator or man catches it. In other words, it is not warning of potential danger, it is stating that the danger is here now.

1.4. Birds have an instinctive behaviour when subjected to their own species distress call and this has caused confusion in the past with operators unfamiliar with the technique. It is expected that any bird control device will cause birds to fly away immediately and, hopefully, not return for a long time. Some species do fly away from the source of the call, some species react immediately on hearing the call, but others do not. Instead, on hearing the distress call, they stop whatever they are doing and appear to be assessing the situation and identifying the location of the source. This may take from a few seconds to over a minute before they take flight.

1.5 **What have the target birds discovered at this stage?** First, they know the location of the predator, it is at the source of the call and, it is on the ground. An obvious fact if the predator is a fox but if the predator is a falcon, this master of the air is now on the ground and very vulnerable to attack. Gulls and corvids, in particular, after the initial "thinking time", take flight and fly towards the predator - these birds are not being scared.

1.6 In the natural situation, the approaching birds could mob the predator, forcing it to release its prey. Thus, the distress call has a survival value for the bird giving it. Also, of course, because it indicates the presence of an actively hunting predator, any bird not responding to it could well end up as its next meal!

1.7 When the call is broadcast artificially, the initial response of the birds is the same but when those species that approach the source of the call do so, they do not see a predator. The distress call indicated that there was one, it gave away the predator's position, they have arrived at that location and there is no predator. Suddenly the once safe area for them has become hostile because they cannot pinpoint the predator, so they move on to a safer site.

1.8 The following table summarises the general reaction to broadcast distress calls.

Bird Type	Approach the source	Hold for duration of call	Immediate Flee
Gulls	Yes	Over Source	Rare
Corvids	Yes	Over Source	Rare
Waders	No	Over position	Often
Pigeons	Occasional	Rare	Usual
Starlings	No	No	Normal

1.9 **Where do birds "feel secure"?** This varies between species but it can be a location that allows birds to undertake their normal daily routine in safety. Or, it can be a site where the birds "feel safe" to escape any danger, house sparrows, for example, feed close to shelter and if disturbed, fly straight into the nearest dense shrubs or bushes. The social flocking ground feeders such as gulls and waders seek the security of flat open areas from where they can see the approach of any predator soon enough to take evasive action.

1.10 It is unfortunate that one avian pest finds security in the very location pest controllers seek to remove it from. Feral pigeons find security, resting and breeding sites on buildings and when disturbed from the ground fly straight to these. They are then very reluctant to leave their safe perch when there is a threat somewhere in their vicinity.

1.11 **Is the target birds' response always the same?** The short answer is no, the dispersal response varies because of a number of factors. As a general rule, breeding birds are virtually impossible to scare from their nest site; feeding birds have a stronger attachment to a site than do resting birds. However, resting birds become more reluctant to move when they are in moult. Very often, juvenile birds make no response at all, probably because they do not know what they should do. In the case of ground nesting birds, these youngsters often try to bury themselves in the ground to hide on

hearing a distress or alarm call, as they did when they were flightless.

1.12 Where distress calls are frequently used, local birds that usually approach the source may not do so after a while but disperse on hearing the call; habituation is possible but distress calls, if used correctly, it will take longer to be seen than with bird scarers. In both these cases, changing to the call of a closely related species will reinforce the usual call that should be rested for a short period. However, habituation will develop if dispersal action is less than thorough. For example, driving a vehicle at speed whilst broadcasting distress calls from it gives no opportunity for the target birds 'approach and investigate' behaviour. By the time birds have taken flight, the reason for disturbance has departed and they will return soon afterwards.

1.13 **How long will it take the birds to disperse?** This again varies with the activity of the target birds and the attraction of the site. In some cases, as with local residents mentioned above, it can be immediate. However, because the reaction is instinctive, distress calls should not be considered when immediate dispersal is necessary.

1.14 As already mentioned, there is usually a time lag before the target birds respond. As they identify the call, the birds take flight and those that do, approach the source and circle overhead for at least the duration of play. Gulls, for example, appear to be more secure when in the air than in a flock on the ground and may remain in the area for some time before dispersing. The same is true for corvids and as a rule the greater the distance between the SCARECROW equipment and the target flocks, the greater the time for dispersal.

1.15 The recommended distance is 100 metres and the recommended length of play 90 seconds. This allows the target birds to "think about it", approach the source and begin to disperse. It is best if the broadcast is upwind of the birds but not imperative. As the distress call is indicating the location of a predator on the ground, it follows that the broadcast should be from a stationary position.

2. PRACTICAL USES OF DISTRESS CALLS

2.1 **The basic technique.** There are a few points to always bear in mind before considering bird dispersal techniques:

a. Why are the birds there?

b. Is bird dispersal the right option?

c. Can the attractions be removed first - this makes any dispersal attempt easier!

d. It is generally easier to prevent birds arriving than to disperse them once they have become established.

e. Bird dispersal, by any method, should only be a part of an Integrated Bird Management System.

2.2 Once it is decided that distress calls are suitable, the first step is to identify the birds in order to select the correct call. Each call is species specific, therefore, birds respond best to distress calls of their own species. This is not a hard and fast rule as already mentioned in 1.11, using the call of a closely related species' delays the onset of any "cry wolf" effect.

Similarly, birds that share the same habitat often react on hearing the distress call of their companion species. This is due in part to the sudden change in behaviour of their companions on hearing the call.

"What's up? Where are they going? I'm going too!"

So on a landfill, for example, gulls and corvids may react to each other's calls.

2.3. The following table details call preferences:

TARGET SPECIES	PRIMARY	CLOSE RELATED
Black-headed gull	Black-headed gull	Common gull Herring gull
Common gull	Common gull	Black-headed gull Herring gull
Herring gull	Herring gull	Black-headed gull Common gull
Lesser black-backed gull		Herring gull Black-headed gull Common gull
Great black-backed gull		Herring gull Black-headed gull Common gull
Lapwing	Lapwing	

Golden plover		Lapwing
Starling	Starling	
Feral pigeon	Feral pigeon	
Woodpigeon		Feral pigeon
Rook	Rook	Jackdaw Carrion crow
Jackdaw	Jackdaw	Rook Carrion crow
Carrion crow	Carrion crow	Rook Jackdaw
Magpie	Magpie	Rook Jackdaw Carrion crow
Mynah	Mynah	Starling

2.4 Broadcast the call. Common sense is required after the call is selected. If possible follow the ideal method as in 1.14 but if, the distance is shorter or longer than, 100m adjust the length of play accordingly. Additionally only play the call at sufficient volume to disperse the target flock.

2.5 Whenever possible, time being the usual constraint, allow the birds to undertake their natural response to the call. Do not move the speaker position while the call is broadcast (but see 3.1.5) nor employ any other scaring device. Once the broadcast is stopped, if the target birds have approached the source, allow them to disperse at their own pace.

2.6 What happens if other devices are used in conjunction with distress calls? Some may help the harmless confidence trick whereas others can counter any repellent effect. Of the former, waving a white or black rag while the call is broadcast can reinforce the call by simulating the calling bird. Any pyrotechnic device or shotgun blast induces birds to flee; therefore, their use during a broadcast when birds are approaching the source can create confusion. As such, they do not enhance any dispersal effort. Once the broadcast is stopped, they may be used to hasten the birds' dispersal if time is a problem.

2.7 **Scarecrow Bio-Acoustic Systems recognises that no single bird dispersal method is 100% effective for 100% of the time.** The greater the variety within the bird control armoury, the more efficient will be the system. The ultimate bird controller is man; everything else is just a tool to assist the task. However, that

same man must have the knowledge of how the systems work. In most circumstances, bio-acoustic bird control is only successful if activated by a trained and knowledgeable operator at the right moment.

2.8 Dispersal action must be a determined and organised routine without being a repeat of a regular plan or previous pattern. So, it is important to vary the approach as much as possible within the scope and limitations of the equipment, local situation and routine. In order to be successful, the operator has to be motivated to be more persistent than the birds. **Remember that they only want a quiet life too!**

3. APPLICATION OF DISTRESS CALLS BY LOCATION.

Risk-reducing measures and bird dispersal are essential in situations where the presence of birds can be a safety or health hazard.

3.1 AIRFIELD BIRD DISPERSAL PROCEDURES

Aerodrome users of Scarecrow equipment are reminded that ICAO and National Regulatory Authorities provide full details of bird control policy, regulation and methodology. The following notes are not intended as a replacement for these but are for general guidance only.

3.1.1 The dispersal of birds from airfields and surrounding areas is an essential part of flight safety for civil and military operations and it must be carried out efficiently to maximise safety.

3.1.2 Airfields differ from many other bird pest problem areas in that they are generally flat, have a fairly uniform habitat, and because people are not present in the operational area, are very safe locations for birds. The problem is also easy to define and the target for bird control straightforward - a bird-free situation. A simple aim following the concept that if birds, especially those known to create a high risk of damage if hit, are not present then aircraft cannot hit them!

3.1.3 After habitat management procedures have been introduced the major attraction of any airfield is reduced and the number of birds decreases. However, some birds persist in visiting the site and need to be dispersed. These include gulls, grassland waders, corvids and starling; the species that the distress call technique was initially used against.

3.1.4 The bird control device has to be taken to the birds because of the large area airfields occupy, therefore, it is usually carried in a vehicle. The procedure for using SCARECROW equipment is the same except that the first stage is to locate the birds. Following identification and call selection (Table 2.3), the call is played from the stationary vehicle for 90 seconds.

3.1.5 The loudspeaker and/or vehicle are moved when broadcasting distress calls of lapwings and starlings. The typical lapwing response once in the air is for the flock to hold over their original position then for the flock to break into 3 or 4 groups that re-settle in different parts of the airfield. By moving the speaker to hold the flock in its beam, the flock can be slowly driven off the site. In this case, the distress call is broadcast continuously until the birds have been followed to the boundary fence.

3.1.6 Starlings tend to fly up immediately on hearing the call, fly downbeam for about 100m and re-settle. Once they are in the air the operator follows the birds, keeping about 100m behind them while broadcasting the call. The flock is then driven over the boundary fence.

3.1.7 With all species, if the airfield is attractive the birds will always return and the procedure is then repeated. Eventually the birds move on, they do not want the continual harassment created by a persistent operator.

3.2. BIO-ACOUSTIC DISPERSAL IN AGRICULTURE

In comparison to the aerodrome and urban bird situations, bird problems in agriculture tend to be relatively short-lived and seasonal. This is the market for which most of the "traditional" bird scaring devices were developed.

3.2.1. Bird control in the rural environment has largely been by lethal or automatic means. Killing the pest birds removed the immediate problem, if only psychologically, and the traditional *Scarecrow* in the farmer's field provided long-term protection. Commercial bird scaring devices tend to follow the *Scarecrow* tradition by being placed in a field and left to operate; bang, move, light flash or any combination as the automatic timer or wind dictate, whether birds are present or not.

3.2.2. There is a temptation to use distress calls in the same manner; place a broadcast system with a random timer sequence in a field and leave the device emitting distress calls, again whether the birds are present

or not. There is the danger with such a system that the pest species will rapidly habituate to the call if always coming from the same position, especially so in a highly attractive feeding situation, such as starlings on a ripening cherry crop or gulls and corvids around intensive rearing units.

3.2.3. The basic principle is no different to that on aerodromes, dispersal is more efficient if distress calls are used as part of a variety of methods that are taken to the birds by man and used only when necessary.

3.2.4. Bird dispersal should commence before the birds arrive and distress calls of the relevant species broadcast as the birds approach. Starlings tend to bunch up into a large flock in the air and the loudspeaker should be moved to keep the birds in one cohesive flock. The call in this case should be broadcast for more than 90 seconds.

3.2.5. Gulls and corvids feeding around livestock approach the source on hearing the call and disperse to a safer area. While the food is available they will always attempt to settle but they cannot feed and they seek another location where they can.

The behaviour of the stock animals must be monitored for signs of stress, especially when distress calls are first introduced.

Correct use of the volume control may reduce the risk. On first broadcasting, gradually increase the volume from '0' until the birds take notice and respond.

3.2.6. Starling distress calls are very useful when attempting to clear a woodland starling roost. As roost dispersal of any communally roosting species is very complex, we recommend you first call Scarecrow Bio-Acoustic Systems Limited for specialist advice.

3.3. <u>USING SCARECROW IN THE URBAN AREA.</u>

3.3.1. The most common pest species in the urban area are feral pigeons and starlings. More recently, gulls have created problems by fouling, blocking drainage gullies and gutters with nest material, and allegedly attacking people.

3.3.2. The basic principles of an Integrated Bird Management scheme apply here because the reasons why the birds are present and creating the problem are usually very simple to define. Wherever we are there will be food for birds and other pests whether left deliberately or not. Additionally, the buildings that we live and work in provide birds with ample safe resting, overnight roosting and breeding sites.

3.3.3. ‘Physical’ proofing of buildings and structures has proved effective in excluding birds but only where it has been correctly fitted and maintained. Denying the birds access to food in an area where the proofing is efficient removes any reasons for the birds to stay there. Unless such actions are taken to any extent, all “scaring” attempts will be temporary measures and the greater the attraction to the birds, the sooner they will overcome their fear to the dispersal stimulus.

3.3.4. The most difficult species in this location is the feral pigeon, they are very used to people, general traffic noise and are only startled by sudden sharp noises such as vehicle backfires etc. Their response is then to seek the security of their perches on nearby buildings until they assess that any “danger” has passed. The response, when they do react to their own broadcast distress call, is similar and the nearest safe area might only be two storeys above the feeding site. Once on or in their safe perch, they are very reluctant to leave whilst they think a predator is still in the area.

3.3.5. Dispersal action should be taken at the start of the day, before the pigeons arrive at the feeding site. As the birds approach, the distress call should be broadcast to deter them from landing and the action repeated whenever they try to return throughout the daylight hours. Persistence by the operator is necessary to achieve any degree of success but if the attractions remain, the task will be so much more difficult.

3.3.6. The current recommended approach to dispersing pigeons from perching ledges is to broadcast the call from above the birds. Broadcasting from the ground, with the possibility of a high ambient noise level, is difficult and may not cause them to leave their safe site. The broadcast position give the birds the impression that the predator location is below them and, while it is there, it is probably more dangerous to leave the perch than sit it out. When the predator is above them, it appears that they are less secure and may therefore depart.

3.3.7. The major problem created by large numbers of starlings in urban areas is from their overnight roosts, containing perhaps several thousands of birds. Roosting sites can be on or inside buildings, or in trees, especially those in sheltered city squares.

3.3.8. The dispersal methodology using starling distress calls is very similar to that needed for rural roosts and again, we recommended that specialist advice should be sought from Scarecrow Bio-Acoustic Systems.

3.3.9. Birds have the greatest attraction to their breeding sites and it is generally considered that distress calls have limited, if any, effect against breeding birds. However, birds have a stereotyped breeding behaviour and this can be disrupted at any stage before eggs are laid.

3.3.10. Roof-nesting gulls are a relatively recent and rapidly spreading problem. Action is usually requested against these birds when nest site tenacity is at its greatest, they have full clutches of eggs or chicks, and the adults dive-bomb residents and visitors to the building.

3.3.11. Again this has to be considered in terms of an Integrated Bird Management System; the breeding activity of herring gulls sometimes begins as early as January, with the dominant males return to the colony to establish their territories. These appear to be loosely maintained until the start of the breeding cycle gets underway, when they are vigorously defended as they attract a mate. Following courtship and copulation, a nest is made of local materials and the sight of the empty nest stimulates the female to drop an egg in it and she continues to do this until there is a full clutch. The sight of the latter causes her to sit on the eggs to incubate them until they hatch. If the eggs are removed, the empty nest causes the female to lay again and if the eggs and nest are removed, the effort of rebuilding the nest and re-laying a full clutch of eggs may cause the birds to desert the site.

3.3.12. Strange as it may appear, the initial action before using distress calls against roof-nesting gulls is to get a broom to clean the roof of all the old nesting material. If the gulls have to leave their territory to get nesting material the task is made more difficult. Thereafter, the roof should be regularly swept or hosed down and this will delay or disrupt the breeding activity. Broadcasting distress calls as the gulls attempt to return reduces the attraction of the site by creating a general disturbance.

3.3.13. If the cleaning and disturbance programme is not maintained, at the weekend for example, and birds do lay eggs, it is too late to use distress calls for effective dispersal.

3.4 AUTOMATIC DISPERSAL SYSTEMS :SCARECROW MARINA

3.4.1 There are situations which require the broadcast of bird distress calls even when there are no humans present or human involvement is not possible or desirable. Examples will be inaccessible structures,

marinas, harbours, docks, oil and gas platforms, car parks, outdoor restaurants.

3.4.2 MARINA is a fully automatic, random play, system that can be programmed to function 24 hours a day or, for example, from dawn to dusk. It cannot be used on airfields where its (automatic) function could promote a severe flight safety hazard.

3.4.3 Each system will comprise a central MARINA processor and a number of loudspeakers whose quantity and location will have been determined by specialist SCARECROW engineers from plans/layouts of the site to be cleared. There are various other considerations: prevailing wind direction, geographic position, proximity to housing etc.

3.4.4 The whole objective is to create an environment that is always regarded by the problem birds to be hostile and to giving the impression that there will be other locations for their use that are less stressful, hostile or potentially dangerous. Anything for a quieter life.

3.4.5 Experience shows that such systems are often spectacularly successful; because the calls used are natural, played at a natural level, the general public, as local residents or visitors, do not comprehend that dispersal processes are in place, merely that they cannot see the birds they hear.

4. BIRD DISPERSAL PROGRAMMES

4.1 When planning a daily bird control programme take into account the manner in which birds have responded historically to dispersal activity; be aware of the various flight paths that birds use to and from the area. Familiarity will enable the minimum delay before implementing dispersal procedures. The early interception of approaching birds before they land will deny the birds the opportunity to settle; the effect of subsequent dispersal action, if necessary, will thus be increased.

4.2 Often the dispersal of small numbers of birds may not appear to warrant the required effort but it must be emphasised that birds in flight frequently join other birds already on the ground. A relatively small number of birds can form the core from which a large flock congregates.

4.3 We hope this very simple guide is useful in focusing on the problems that may be experienced and, in seeking solutions, some of the pitfalls to be overcome.

4.4 We do aim to be helpful, so please contact us on any specific problem which, with your help, we will try to resolve. If we cannot, we'll direct you to an expert without hesitation.

5. BIRD DISPERSAL : AN INTEGRATED BIRD MANAGEMENT SYSTEM

5.1 An effective **I**ntegrated **B**ird **M**anagement **S**ystem at first sounds very complicated but is effectively the use of common sense in Professional Pest Control. This appears to be a flippant statement but it has become so very simple while chasing new methods or creating new equipment to lose sight of the basic problem. For example, in many areas we seek to ease the symptoms to satisfy the immediate needs of the client rather than eradicate the root cause.

5.2. **What is the problem?**

A fundamental requirement is to correctly identify the problem. Birds are capable of creating a number of different problems and the same species can be seen as both friend and foe, depending on one's outlook. When called to investigate a bird pest problem what are we looking for and, how does this equate to the requirements of the client? In many cases, the client is only interested in removing the visible symptom, such as the presence of droppings. This is a cleansing problem and not pest management.

5.3 **What is causing the problem?**

The visible symptoms are droppings, clean away the droppings and the problem is solved? Unfortunately not the case, the problem is the depositors of the droppings and why they happen to be at the particular site. Birds need secure sites to roost, rest, feed and breed in, therefore, the attractions of a particular site should be identified before control action of any sort. The attraction to gulls presented by a landfill is easy to identify and is removed by changes in materials tipped, exclusion netting or active bird control using distress calls. If the birds cannot feed there is no attraction!

5.4 **Remove the attractions.**

Sometimes this is easier said than done. However, if the attractions remain, the birds will always attempt to return. Deny the problem birds access to food, remove the safe perches and breeding sites, etc. Nothing else will reduce the numbers so effectively.

5.5 **Remove the birds.**

Some birds will persist in their attempts; the client may not be able to prevent staff from inadvertently or deliberately feeding the birds and it is not possible to remove all the attractions at every site.

Whether the control method chosen is by lethal means or "scaring" it must be remembered that no single method is 100% successful for 100% of the time. Additionally, not all bird control methods disperse birds, some are more subtle confidence tricks.

5.6 **Bird Control Organisation: how SCARECROW BIO-ACOUSTIC SYSTEMS LTD. can help.**

In order for bird control to be successful, staff must be organised and trained in the correct use of the available techniques. Some appear ridiculous to us as humans but if, by their novelty value alone, they keep birds away from a particular site for the two or three days when that site is vulnerable to "damage", we need recommend nothing else. Most problems usually last for much longer than a couple of days.

5.7. **How is an Integrated Bird Management System applied?**

This is simplicity and yet, to some, it is an obstacle of immense magnitude - especially with some clients. Whatever is recommended they then see as the total answer - some professional pest controllers maintain the same view!

5.7.1. If a problem is not examined using IBMS, unnecessary treatments may be applied in true "sledge hammer" fashion. In addition, we are able to indicate the client's day to day responsibilities so that these do not disadvantage whatever treatment we advocate or install.

5.7.2. By identifying the attractions to birds in a "problem situation", we are able to differentiate between a true pest control and a straightforward cleaning problem.

5.7.3. The bird problem at a fast food Drive-Thru is the result of an abundant food supply – not a matter for pest control, or expensive equipment – just a broom! In other areas, it may not be so straightforward, especially where the public is present.

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