THE "HANDBOOK ON BIRD MANAGEMENT AND CONTROL" IS A TECHNICAL GUIDE FOR PEST MANAGERS INVOLVED IN CONTROLLING HAZARDOUS AND PEST BIRDS. IT DESCRIBES A SYSTEMATIC APPROACH TO BIRD MANAGEMENT BY SHOWING HOW TO ANALYZE A BIRD PROBLEM AND THEN SELECTING THE SIMPLEST, MOST EFFECTIVE METHOD(S) OF CONTROL. THESE METHODS INCLUDE AUDITORY REPULSION, METHODS OF EXCLUSION, AND HABITAT MODIFICATION, POISONING, TRAPPING, AND MANY OTHERS. FOR EACH METHOD DESCRIBED, THE HANDBOOK LISTS ITS APPLICABILITY, MATERIALS AND PROCEDURES FOR ITS USE, ADVANTAGES, DISADVANTAGES, AND RESTRICTIONS ON ITS USE. THE HANDBOOK IS NOT RESTRICTED TO TECHNICAL INFORMATION; THERE ARE ALSO CHAPTERS ON BIRD BIOLOGY AND BEHAVIOR; IDENTIFICATION; HEALTH, DAMAGE AND ECONOMIC ASPECTS OF HAZARDOUS AND PEST BIRDS; PUBLIC RELATIONS AND LEGAL ASPECTS OF BIRD MANAGEMENT. TO ENHANCE ITS FUNCTION AS A LEARNING AID, ALMOST ALL OF THE CHAPTERS HAVE A BIBLIOGRAPHY AND MULTIPLE-CHOICE REVIEW QUESTIONS TO ALLOW THE PEST MANAGER TO EVALUATE HIS/HER PROFICIENCY. THE HANDBOOK AND ACCOMPANYING SLIDE/TAPE PRESENTATION WILL BE INCLUDED TO THE PEST MANAGERS COURSE AT SHEPPHERD AFB, TEXAS. COPIES OF THE HANDBOOK ON BIRD MANAGEMENT AND CONTROL (AFESC-TR-80-01) ARE AVAILABLE FROM THE NATIONAL TECHNICAL INFORMATION SERVICE, 5285 PORT ROYAL ROAD, SPRINGFIELD, VIRGINIA, 22161 USA. THE COST IS $15.55, OR $3.50 IF YOU PREFER MICROFICHE. REFER TO AD NUMBER A089009.

J. J. SHORT

SLIDE 1

Bird Management and Control

SLIDE 2

Birds in the natural environment can be a beautiful sight.

SLIDES 3, 4

They have an important role in nature, and birds can be quite beneficial to man by consuming insect pests.

SLIDE 5

But birds in the vicinity of air bases and airports may present a hazard to personnel or cause damage to equipment.

SLIDES 6,7

Bird collisions with aircraft can cost lives, and birds near buildings can create a health hazard.

SLIDE 8

Maintenance and repair costs total millions of dollars each year.

SLIDE 9

Regular control of pest bird problems can prevent many bird problems from developing into emergency situations.

SLIDE 10

To provide base personnel with basic technical information on birds and their control, the U.S. Air Force has developed a handbook on controlling problems caused by pest birds.

SLIDE 11

What is a pest bird?

SLIDE 12

That depends upon the bird"s activities at a specific time and place. Birds cannot be classified as being simply "good" or "bad".

SLIDE 13

A pest bird is one that is causing economic damage to buildings, materials, or equipment - or creating a health or safety hazard to personnel by the bird's activities at a specific time and place.

SLIDE 14

For example, a flock of gulls on the beach will help keep the beach clean by feeding on dead marine life that is washed up and garbage left by thoughtless people.

SLIDE 15

But gulls on the runway create a safety hazard, because of the danger of a collision between birds and aircraft. This is known as a bird strike hazard.

SLIDE 16

Waterfowl are prized by sportsmen, and thus have recreational value; but if ponds near an

SLIDE 17 air base attract waterfowl, a serious strike hazard may result.

SLIDE 18 Even the pigeon can be beneficial. Domestic pigeons provide sport and recreation for many pigeon fanciers who raise and fly their flocks.

SLIDE 19 And messenger pigeons have delivered news of the battle to headquarters during many wars.

SLIDE 20 But wild pigeons have a habit of nesting and roosting in and around buildings where their

SLIDE 21 presence can result in expensive maintenance costs and cause damage to equipment, and

SLIDE 22 perhaps create a health hazard.

SLIDE 23 The presence of a few birds around buildings might be just a nuisance and not worth the time and expense of a control program.

SLIDE 24 But if economic damage is resulting from the Presence of many birds - that is, if maintenance costs are significantly increased because of the birds' activities - there are a variety of control methods described in the handbook from which to choose an appropriate means of solving the problem.

SLIDE 25 The responsibility of the pest control operator is to control the hazards and reduce the damage caused by birds. This does not necessarily mean that the birds themselves need to be eliminated. Sometimes, simply killing birds is indeed an appropriate means of damage or hazard control, but more often a non-lethal control procedure is more effective and more economical in the long run.

Chapter Two - Bird Biology and Behavior

SLIDE 26 The more the pest control operator knows about birds, the better he will be able to control any problems they cause.

SLIDE 27 It is important to know how birds live - what they need and how they behave - to be able to choose a control technique that is likely to be successful.

SLIDE 28 For example, in the spring many birds defend their breeding territory against other birds rather than acting together in a flock. This

territorial behavior will influence the success of any attempt to repel these birds at this time of year.

SLIDES 29, 30 31, 32, 33

Each bird species had different nesting requirements, some birds nest on bare ground, others in tall grass or weeds, others in shrubs or trees, and other birds build their nests in the cracks and crevices provided by buildings, where they are likely to create a pest situation.

SLIDE 34

Many birds migrate each year, flying south in the fall and north in the spring back to their breeding grounds.

SLIDES 35, 36

Many migrating birds follow specific pathways defined by coastlines, or pathways defined by mountain ridges.

SLIDE 37

So the pest control operator should learn which birds are likely to congregate in his area during migration, and when to expect them, so that he can be ready to prevent a strike hazard from occurring. This information can be found in bird books that are available for many states.

SLIDE 38

Flocking is another behavioral trait of birds that affects the choice of a control technique. some birds form well-organized flocks that can be chased away as a unit, while other species flock together in a more casual manner.

SLIDE 39

SLIDE 40

Pest situations are sometimes caused by flocks of birds that roost together at night in trees, and pest situations are often caused by other birds that find suitable roosts inside aircraft hangars, where their droppings can cause major maintenance problems.

SLIDE 41

Other pest situations are caused by birds that roost or loaf together during the daytime in open areas, like airfields, which can cause a serious strike hazard.

SLIDE 42

Different kinds of birds have different feeding requirements. If the pest control operator learns what birds eat, then he might be able to eliminate the bird problem by removing the birds' food supply, whether it consists of:

SLIDES 43, 44, 45, 46, 47 — Plant material such as weed seeds, insects, dead animals, live animals, or garbage.

SLIDE 48 — A lot can be learned about birds' feeding habits by direct observation.

SLIDE 49 — And much information is available in books.

SLIDE 50 — Another important aspect of bird behavior is the ability to learn...specifically that birds

SLIDE 51 — quickly learn to ignore people...and to get accustomed to certain control procedures

SLIDE 52 — designed to scare them away, just as they have learned to ignore aircraft.

SLIDE 53 — This is one reason why a bird control program should include a combination of techniques, to maintain the element of surprise, and to reinforce scare tactics with occasional real danger.

Chapter Three - Bird Identification

SLIDE 54 — Since different birds have different habits, some control techniques will work on some kinds

SLIDE 55 — of birds but not on others. So the correct identification of the pest birds is important. Several excellent field guides are available for bird identification.

SLIDE 56 — The identification of birds in the field can be challenging and entertaining, and requires the noting of certain bird features known as "field marks."

SLIDES 57, 58 59, 60 — A knowledge is required of the different parts of a bird. Some birds are identified by the shape or color of their bills, or the shape of markings of their wings, or the shape or markings of their tails.

SLIDE 61 — Other details that aid in identification of birds include such things as flight patterns and other behavioral characteristics.

SLIDE 62 — Habitat preferences also help to identify birds, because some birds are associated with

SLIDE 63 — water, while others prefer drier upland areas.

SLIDE 64, 65 — The bird communities of open fields are different from the bird communites of wooded areas.

SLIDE 66

Because of their particular habits and habitat requirements, some kinds of birds cause pest problems more often than others do.

SLIDE 67

Gulls frequently cause problems at air bases because of their habit of loafing in open areas during the daytime. The runways and short grass of airfields are ideal for them.

SLIDE 68

Large numbers of gulls are often attracted by the food available at garbage dumps. Dumps in the vicinity of an airfield can create a serious strike hazard.

SLIDE 69

There are many different species of gulls, each being more common in one part of the country than in another. Perhaps the most common gull on the Atlantic Coast is the Herring Gull.

SLIDE 70

The Ring-Billed Gull is smaller than the Herring Gull. The ring on the bill of the adult gives the bird its name, and the yellow legs and feet are another good field mark.

SLIDE 71

Pigeons commonly cause pest problems by roosting and nesting in and around buildings. Pigeons, which are not native to North America, vary greatly in color and even in size. Most, however, are quite plump, with pointed wings and a square tail.

SLIDE 72

The House Sparrow, often called the English Sparrow, is another non-native species. Males have a gray crown and black chin and throat; females and young Sparrows are dull brown.

SLIDE 73

House Sparrows roost and nest around buildings, and their messy living habits frequently make them unwelcome neighbors.

SLIDE 74

The Starling was also introduced into North America. Starlings appear somewhat similar to the Blackbirds, with which they often roost and flock, but the long bill, short tail, and pointed wings are good field marks.

SLIDE 75

SLIDE 76

The Starling frequently nests in cavities created by building design and construction flaws...and large numbers of starlings may roost in aircraft hangars.

SLIDE 77

Blackbirds, like Starlings, have a habit of forming large flocks that can create a strike

hazard when birds are arriving at a roost at sunset or leaving the roost at dawn. Feeding flocks can also present a problem.

SLIDES 78, 79, 80

There are a number of species of Blackbirds, including the Red-Winged Blackbird, the Common Grackle with its long, wedge-shaped tail, and the smaller Brown-Headed Cowbird.

Chapter Four - Health Hazards

SLIDE 81

Birds can be associated with an assortment of diseases including histoplasmosis, psittacosis, and encephalitis.

SLIDE 82

SLIDE 83

Germs thrive in bird droppings which accumulate where large numbers of birds consistently roost or nest...and dead birds can cause a health hazard where people live and work, so carcasses must be properly disposed of by incineration.

SLIDE 84

The pest control operator must realize the potential for contamination of his skin, clothing, and equipment. Always take the necessary precautions, and clean up properly.

SLIDE 85

SLIDE 86

Although collisions with large birds are obviously dangerous, strikes involving much smaller birds such as Starlings or Swallows can also result in damage or loss of aircraft and lives.

SLIDE 87

Starlings and House Sparrows can build a nest within a matter of hours, and they may select what might seem to us to be unlikely nesting locations. Nest material in dismantled aircraft can result in later malfunction of controls or engines, unless discovered and removed. A preventative maintenance program within hangars is the best way to avoid such bird problems.

Chapter Five - Management Techniques

SLIDE 88

SLIDE 89

Damage and hazard control techniques fall into five general categories or approaches. These approaches are: Altering the Concept, Altering the Situation, Exclusion, Repulsion, and Removal or Reduction. For each specific bird problem encountered, the pest control operator should think through each of these five categories in this order, with an awareness of the

variety of techniques available in each category (as described in the handbook). Each successive approach should be rejected only if it is concluded that no acceptable technique, that is likely to be successful, exists within that approach for the specific problem at hand. With experience the pest control operator will learn to immediately identify the best technique for a given problem.

SLIDE 90

"Altering the Concept" means thinking about the apparent bird problem in a different manner, and perhaps deciding that no active control program is needed or justified.

SLIDE 91

After careful investigation, it might be decided that the activities or the location of the birds in question do not really pose a

SLIDE 92

problem after all...or it might be determined that the birds are just passing through on migration and the problem will soon go away by itself.

SLIDE 93

"Altering the Situation" means avoiding conflict with birds by altering the circumstances at the root of the problem.

This includes changing procedures or scheduling flights to reduce the chance of collision between birds and aircraft.

SLIDE 94

Through a bird watch program, aircrews can be alerted to possible flight hazards due to birds.

SLIDE 95

Changes in operational procedures to avoid birds may include: Restricting the use of certain runways, allowing full stop landings only, avoiding long final approaches, and reducing approach and climb-out speeds.

SLIDE 96

Perhaps flights can be scheduled to avoid those times of day or night when birds in the vicinity of the air base are most active, such as when birds are arriving at a nearby roost at sunset and leaving the roost at dawn.

SLIDE 97

Also included under "Altering the Situation" is "Habitat Modification." This means eliminating the food, water, nest sites, roost sites, or perches that comprise the birds' habitat and are attracting birds to the air base. "Habitat

Modification" is the most effective means of controlling many bird problems.

SLIDE 98 — Eliminating a food source might mean closing a garbage dump that is attracting large numbers of birds, or perhaps encouraging proper operation of the landfill, whereby the refuse is continuously covered with soil.

SLIDE 99 — Mowing operations can reduce the amount of weed seeds and insects which attract many birds to tall grass areas, as well as reduce rodent populations that might attract Hawks and Owls.

SLIDE 100 — "Habitat Modification" also includes the elimination of water sources that are attractive to birds.

SLIDE 101 — Low areas that collect water can be drained or filled by regrading drainage ditches and culverts should be kept unclogged.

SLIDE 102

SLIDE 103 — The open areas of short grass on airfields can be modified to discourage gulls from loafing there by allowing the grass to grow to 8 to 12 inches, and maintaining it at that height.

SLIDE 104 — Wooded areas used by roosting Blackbirds can be thinned to make them less attractive to the

SLIDE 105 — birds, and tall reeds can be cut to discourage roosting Blackbirds or Swallows.

SLIDE 106 — Dead snags used as perches by Hawks can be removed.

SLIDE 107 — The third major category of control techniques is "Exclusion." This means preventing the birds from gaining access to an area where they would create a problem.

SLIDE 108 — Exclusion is most effective when considered during design and construction of new structures, but wire screening, netting, or building materials <u>can</u> be added to existing structures to keep out Starlings, House Sparrows, and Pigeons.

SLIDE 109 — Netting can be installed to exclude birds from the entire upper portions of aircraft hangars.

SLIDE 110 — Cavities created by flaws in building construction can be filled with bricks and mortar...and

SLIDE 111

open eaves can be enclosed with boards or screened to prevent pest birds from nesting there.

SLIDE 112

The fourth major category of control techniques is "Repulsion" which means scaring birds away by threatening danger or creating an unpleasant sensation.

SLIDE 113

"Auditory Repulsion" refers to making noises to frighten birds, and includes a number of specific techniques.

SLIDE 114

A highly recommended technique for dispersing Gulls from an airfield, or Blackbirds and Starlings from their roosts, involves playing a tape recording of the birds' own distress or alarm calls over a loudspeaker.

SLIDE 115

Another auditory repulsion technique useful for dispersing Gulls is the firing of charges that explode in mid-air.

SLIDE 116

Shellcrackers are fired from a 12-gauge shotgun.

SLIDE 117

M-74 airbursts are fired from a flare gun. these pyrotechnic devices are particularly useful as reinforcement for recorded distress calls. The distress calls will get the birds into the air, where they can then be herded away from the airfield by the airbursts or shellcrackers.

SLIDE 118

With auditory repulsion techniques the keys to success are diversity and persistence, day after day. Birds will learn to ignore the noises, as well as your presence, unless the element of surprise and the constant threat of impending danger is maintained.

SLIDE 119

Automatic exploders, also called gas cannons, produce loud reports at regular intervals. Because of this regularity, birds eventually get accustomed to the noises; but these devices can be helpful if moved frequently and used in combination with other techniques.

SLIDE 120

Another way of repelling birds is through their sense of touch. Sharp spikes can be put on runway markers to discourage birds from perching.

SLIDE 121

Sharp projections, commerically available in strip form, will discourage birds from perching on ledges or other roosting sites on buildings.

SLIDE 122

Application of this material could also be considered an exclusion technique. Sticky materials are available to apply to perching locations to make they unattractive to birds.

SLIDE 123

Another type of repulsion involves the use of a certain toxic chemical. When birds eat bait, of which a small proportion has been treated with this chemical, a few birds in the flock ingest the treated bait and react erractically.

SLIDE 124

The affected birds exhibit abnormal behavior and may give distress calls, depending on the species. This frightens the rest of the flock away from the area. In nigher concentrations, this chemical is used as a poison.

SLIDE 125

The fifth major category of control techniques is "Removal" or "reduction." This is an attempt at direct population reduction by capture or killing. For any bird problem, this approach should only be used after the other techniques have been considered, and each rejected. As a general rule, direct population reduction is not a good approach.

SLIDE 126

Even if the pest control operator manages to remove a large proportion of the flock, other birds will eventually move in to replace them. It would be much more effective to permanently eliminate those factors that are attracting the birds or to exclude the birds from the area. Repulsion is preferable to population reduction because it is usually much easier to accomplish than trapping, and it is more acceptable to the public than poisoning or shooting the birds.

SLIDE 127

Nevertheless, in situations where these other techniques are not appropriate, there are a number of capture and killing techniques that can be attempted.

SLIDE 128

Many styles of traps are commerically available to capture birds alive. Captured birds can be killed or transported and released a long distance from the air base.

SLIDE 129

The handbook includes plans for t... tion of traps such as a pigeon t...

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SLIDE 131
SLIDE 132

box trap to capture Starlings or House Sparrows, and the modified Australian Crow trap, which is actually used primarily for Starlings and Blackbirds, or for House Sparrows. If the need arises, traps are also available for the capture of Hawks and Owls.

SLIDE 133

Killing of birds by poisons or other means should only be done as a last resort.

SLIDE 134

But if all else fails, and poisons must be used, there are several chemicals available for use on Pigeons, House Sparrows, and Starlings.

SLIDE 135

When using poisons, the most important part of the program is pre-baiting with untreated bait until all the pest birds are accustomed to taking the bait.

SLIDE 136

The bait must be placed in locations where it won"t be taken by protected species of birds.

SLIDE 137

There might be certain occasions when shooting the pest birds is an appropriate means of eliminating small numbers of birds in a limited area.

SLIDE 138

Live ammunition is also useful as reinforcement for repulsion techniques, when killing an occasional individual will demonstrate the presence of real danger to the rest of the flock. But again, a permanent technique such as habitat modification or exclusion is preferable to repulsion or reduction.

Chapter Six - Surveying a Bird Management Problem

SLIDE 139

Before any problem can be solved, it must first be identified and evaluated.

SLIDE 140

Periodic inspections of the entire air base should be performed to identify problems before they become too serious.

SLIDE 141

The handbook includes a checklist that can be used when conducting these inspections. The checklist will also help the pest control operator analyze the cause and circumstances of the problem and choose the most appropriate control technique.

Chapter Seven - Legal Restrictions

SLIDE 142

Most birds are protected by federal law and cannot be harassed, captured, or killed without a permit. The only birds not protected by federal law are:

SLIDES 143, 144, 145

Pigeons, House Sparrows, and Starlings.

SLIDE 146

But even these species are protected in some localities.

SLIDE 147

Many control measures, such as scare tactics, trapping, and the use of toxic chemicals require special permits.

SLIDE 148

The pest control operator should check with the base office of the Staff Judge Advocate to determine what permits are necessary before using any control procedure.

SLIDE 149

In many circumstances, control measures can only be taken with the cooperation of the U.S. Fish and Wildlife Service. The bird experts at district and regional offices of the Fish and Wildlife Service can provide much helpful information concerning birds and the control of bird problems.

SLIDE 150

State conservation departments should also be consulted.

Chapter Eight - Bird Control and Public Relations

SLIDE 151

Maintaining favorable public relations toward bird control programs can be more difficult than solving the pest problem.

SLIDE 152

The general public is quite concerned about humaneness toward animals, so attempts at lethal control of birds often make the news.

SLIDE 153

The best way to maintain good public relations is to follow a sound approach to bird management, and use the more socially acceptable techniques whenever possible. Each one of the five major categories to control techniques - Altering the Concept, Altering the Siutation, Exclusion, Repulsion, and Reduction - is generally more socially acceptable than all the successive categories.

SLIDE 154

For example, if Gulls in the vicinity of an airfield are creating a real problem, Altering the Concept is inappropriate. Altering the Situation by letting the grass grow longer is likely to be more acceptable to the public than would harassing the birds with loud noises in a Repulsion program, and there is no effective Exclusion technique for this situation, but Repulsion would certainly be more acceptable than killing the birds in any attempt at direct Reduction.

SLIDE 155

In addition to using a sound management approach, good public relations can be maintained through communication to keep the public well-informed and prevent misconceptions concerning a bird problem and its control. This is best accomplished through the base Public Affairs Office.

Chapter Nine - Suggestions for Futher Study

SLIDE 156

After reading the handbook on bird management and control, the pest control operator may desire additional knowledge on various aspects of birds and bird management. A wealth of

SLIDE 157, 158, 159

interesting and useful information is available in books on bird identification and on bird biology, the problems caused by birds...and ways to solve these problems.

SLIDE 160

Understanding birds and solving these problems is an art, a science, a necessity...and a real challenge.