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Best Practices for Migratory Bird Care During Oil Spill Response

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Edited by

Catherine Berg

U.S Fish and Wildlife Service
Ecological Services Field Office
605 W. 4th Avenue, Suite G-61
Anchorage, Alaska 99501

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Catherine Berg — U. S. Fish & Wildlife Service — Anchorage, AK
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Members of the Steering Committee:

Catherine Berg — U. S. Fish & Wildlife Service — Anchorage, AK
Pamela Bergmann — U.S. Department of the Interior — Anchorage, AK
Barbara Callahan — International Bird Rescue & Research Center — Anchorage, AK
Claudia Slater — Alaska Department of Fish & Game — Anchorage. AK
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Introduction

Background

Best Practices for Migratory Bird Care During Oil Spill Response (*Best Practices)* is the result of a Fish and Wildlife Countermeasures Coordination Project undertaken by the U.S. Fish and Wildlife Service (USFWS). The goals of the project include the development of national "best practices" using established protocols for keeping unoiled birds away from an oil spill and for dealing with oiled birds. Establishing a standardized approach helps protect wildlife resources, enables On-Scene Coordinators (OSCs) to focus on other aspects of spill response, and helps instill public confidence in overall response activities.

A group comprised of natural resource management agencies, rehabilitators, veterinarians, and industry representatives developed this document at a 3-day workshop held in February 2001 in Anchorage, Alaska. This workshop was a follow-up to the March 2000, Wildlife Countermeasures Session on the Effects of Oil on Wildlife Conference held in Myrtle Beach, South Carolina. Prior to the Alaska workshop, information was distributed through a variety of forums to interested parties. The outreach included a solicitation for copies of existing relevant standards and protocols. As a result of this effort, 26 documents were collected. Of those, 11, which were the most current and relevant, were selected by the workshop Steering Committee to serve as primary source documents for the workshop. (See *References*, page 45.)

A draft of the "Best Practices" document was presented at the March 2001 International Oil Spill Conference in Tampa, Florida, at a special session entitled *Migratory Bird Countermeasures Coordination Project*. This was an open meeting and comments were solicited and discussed. The U.S. Fish and Wildlife Service accepted written comments on the draft document through July 31, 2001. During this time, the document also underwent internal USFWS review.

Intended Uses

This document, *Best Practices for Migratory Bird Care During Oil Spill Response*, is intended for use by the U.S. Fish and Wildlife Service and other natural resource management agencies, oiled bird rehabilitators, OSCs, and Potentially Responsible Parties (PRPs) as a guide in:

- Developing appropriate sections of Area Contingency Plans;

- Evaluating contractors for bird capture and rehabilitation;
- Making informed choices during spill responses; and
- Evaluating oiled bird rehabilitation activities to improve field practices.

The creators of this document set out to define and recommend the best practices for their field with the aim of promoting the welfare of migratory birds during an oil spill response. Actual bird responses will depend on factors including the size of the spill, species involved, type of product spilled, time of year, and location. It is generally recognized that there are significant differences between a spill affecting 10 birds and one involving 1,000 birds. It is important that spill responders and pre-spill planners recognize that the degree of effort and complexity in bird response can be significant when comparing small and large events. This document is intended to help pre-spill planners and spill responders make informed decisions keeping the best interests of the birds in mind.

In defining the best practices of a migratory bird response, each aspect of a response is discussed separately. Topics include safety, training, capture and handling, stabilization and rehabilitation, and release criteria. Much of what is discussed in this document describes factors that constitute highest and best migratory bird care and recommendations for achieving the highest standard of care.

This document is not intended for use as a training manual. It is to serve as guidance for acquiring the best achievable care for birds during an oil spill response. Neither is this document an exhaustive list of techniques in this field, in which practical knowledge is being continuously refined and developed. It is intended that this document will be periodically reviewed and updated. If techniques not included here are proposed during an oil spill response, the U.S. Fish and Wildlife Service will seek the most current and best information on which to base an educated decision on the appropriate course of action.

Criteria for Evaluating Rehabilitation Groups

The following criteria will be used when considering and evaluating bird rehabilitators for conducting oiled-bird response.

- Hold all necessary permits for bird-related response activities;
- Experience in the capture, treatment, and care of oiled birds;
- Experience conducting bird-related response activities within the Incident Command System structure;

- Sufficiently trained, equipped, and experienced staff, and ability to train and equip personnel and volunteers for bird-related response during an emergency response;
- Ability to quickly mobilize to perform bird capture, field evaluation, stabilization and transport, including remote locations if necessary;
- Access to appropriate facilities adequate for treating and housing oiled birds:
    - Ability to establish and operate bird intake, holding, and isolation areas within 12-24 hours of wildlife response activation; and
    - Ability to establish and operate bird cleaning and pre-release areas within 48 hours of wildlife response activation.
- Agreement with a licensed veterinarian, experienced in the treatment of oiled birds, to provide any necessary veterinary medical care; and
- Use of best practices as outlined in the remainder of this document.

Chapter

1

Responsibility & Organization

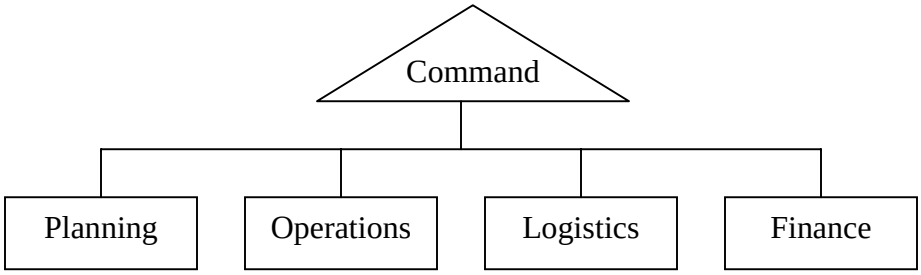
Trust Responsibilities

In the event of an oil spill, trust responsibilities for migratory birds and their habitats are clearly given to the U.S. Fish and Wildlife Service through several federal legislative statutes including the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Clean Water Act (CWA), National Oil and Hazardous Substances Pollution Contingency Plan (NCP), the Migratory Bird Treaty Act (MBTA), and the Endangered Species Act (ESA). States also have trust responsibilities for migratory birds within their state boundaries under various state statutes. Because of these shared trust responsibilities, both federal and state agencies are required to respond to spills, or potential spills, that may impact migratory birds. To facilitate efficient and effective coordination during a migratory bird response, federal and state agencies may consider developing Memorandums of Agreement (MOA's) or Memorandums of Understanding (MOU's) that pre-designate regional primary points of contact, establish lead representatives, and define roles for natural resource emergency situations.

Organizational Structure of a Wildlife Response

The organizational structure of a migratory bird response should fit within the Incident Command System (ICS) or the overall spill response structure. Federal directives and some states mandate use of the ICS by their agencies as the emergency management system for oil and hazardous substance spill response. The ICS is a standardized on-scene emergency management system designed to adopt an integrated organizational structure equal to the complexity and demands of an incident without being hindered by jurisdictional boundaries. A simplified chart of the ICS response organizational structure follows:

Example: Response Organization



Command

The Command or Unified Command, which includes the State On-Scene Coordinator and Federal On-Scene Coordinator, is responsible for authorizing and coordinating all incident operations. While the Command may include other entities such as a Responsible Party On-Scene Coordinator, only Federal and State On-Scene Coordinators have authority over bird-related response decisions. The OSC will consult with the USFWS and state agencies when migratory birds may be impacted to determine appropriate response measures. For incidents that could significantly impact trust resources such as endangered species, the OSC may request that an agency representative become part of the Command.

Planning

When trust resources, such as migratory birds, may be affected by an oil spill, USFWS and state wildlife agency representatives will likely become involved in the response effort through the Planning Section. The representatives provide input on the protection of sensitive resources and how to minimize impacts to trust resources like migratory birds. Most bird-response planning occurs within the "Environmental Unit" of the Planning Section. The Planning Section identifies all bird-related response activities and describes those activities in the Incident Action Plan. Depending on the nature and extent of the spill, such activities may include wildlife reconnaissance, carcass recovery, hazing, wild-bird capture and transport, safety and communications, and rehabilitation and release. The Incident Command must approve all migratory bird response actions. The responsibilities of the Planning Section related to bird response include:

- Identifying sensitive areas, locating birds-at-risk, and recommending response priorities;
- Identifying the need for, and obtaining permits, consultations, and authorizations required by the provisions of the Endangered Species Act, MBTA, and other wildlife laws; and

- Developing a plan for bird protection and response strategies (e.g., removing oiled carcasses, pre-emptive capture, hazing, and capture and treatment).

Operations

A USFWS representative or state wildlife agency representative should also serve within the Operations Section, to provide oversight of the bird-related and other wildlife response activities. Bird-related response and other wildlife activities, including the operation of a wildlife rehabilitation center, are managed under the "Wildlife Branch" of the Operations Section. It is critical that all wildlife response activities be coordinated and communicated through the Planning Section, Situation Unit, which is responsible for maintaining the communication of critical incident information vital to establishing and maintaining an effective command and control environment. The responsibilities of the Operations Section related to bird response include:

- Minimizing migratory bird losses during spill response;
- Overseeing and coordinating all activities of private migratory bird care groups, including groups employed by the responsible party;
- Coordinating early aerial and ground reconnaissance of birds at the spill site, and reporting the results to the Situation Unit Leader;
- Collecting oiled carcasses,
- Employing bird hazing measures as authorized in the Incident Action Plan;
- Recovering and rehabilitating impacted birds;
- Collecting necessary samples; and
- Identifying and maintaining a central bird processing center for evidence tagging, transportation, veterinary services, treatment and rehabilitation, storage, and other support needs.

Logistics

The Logistics Section is responsible for providing facilities, services, and material in support of the incident response. Bird-related support needs are identified in the Incident Action Plan and acquired within Logistics.

Finance

The Finance Section is responsible for financial and cost analysis aspects of the spill response incident.

Chapter

2

Safety and Human Health

Worker health and safety are of primary importance in any bird rescue and rehabilitation effort. The earliest phases of a bird-related response during an oil spill are generally the most hazardous to human health and safety. Thus, safe practices during field collection of birds must be a priority. Bird rescue programs will not be initiated unless personnel can conduct activities safely.

As with all spill response activities, the bird rescue and rehabilitation effort needs to be coordinated and monitored by the spill response command center operations, safety, and medical staffs. A written site safety plan, in accordance with 29 CFR 1910.120(b)(4), must be developed for the rehabilitation facility and submitted to the Spill Safety Officer. If field activities are on-going for bird response, the site safety plan needs to be expanded to include these activities and any specialized equipment that will be used (e.g., net guns, cannon nets, propane cannons).

Summary of Safety Precautions

Bird rescue and rehabilitation workers can minimize the risks associated with physical and chemical hazards by following the precautions below:

- Observe all industrial hygiene safety precautions stated in the Health and Safety Plan.
- Know how to use the Material Safety Data Sheet (MSDS).
- Take all required training regarding the hazards of the work task, and in the proper use and limitations of personal protective equipment.
- Wear personal protective equipment approved for, and appropriate to, the oil spilled to minimize contact with contaminated materials and inhalation of vapors.
- Maintain an awareness of field conditions and hazards (terrain, climate, flora/fauna, etc.) to prevent slips, trips and falls.

- Keep all oil, cleaning compounds, and contaminated materials away from skin, face, and eyes.
- Always remove protective equipment and wash hands and face with soap and water or approved cleaners before eating, drinking, or smoking.
- Ensure that all oiled personal protective equipment, supplies, and waste material are placed in appropriate receptacles.
- Ensure that work areas are kept clean.
- Never conduct bird rescue work alone; always work in teams.
- Keep birds at or below one's waist level to protect the face and eyes from pokes, bites, and scratches.
- Report all injuries and illnesses to the supervisor and/or Command Center medical staff.
- Be alert for over-heating and hypothermia.
- Don't overwork. Eat regularly and well.
- Never eat, drink, or smoke in bird handling areas.
- If you have immunosuppressive conditions, or you are pregnant, do not have direct contact with birds and consult your physician prior to participating in other aspects of bird-related response activities.
- Update tetanus shots.

Training for Bird Rescue/Rehabilitation Personnel

In addition to mastering specific bird rescue and rehabilitation tasks, personnel must be trained to recognize and minimize risk of injuries from oil-related and physical hazards associated with bird response operations prior to being allowed to participate in on-site activities. Elements of required and recommended training will vary depending on the tasks of the individuals involved in the response. Training-hour requirements and specific courses vary with level of involvement, agency policy, and OSHA and state regulations.

Required Training

29 CFR 1910.120(e) establishes the training required for hazardous operations site workers, including supervisors. All oiled-bird rescue and rehabilitation personnel must be trained to the minimal levels required in 29 CFR 1910.120 (e)(3)(iii). In addition, there

must be adequate on-site supervision by persons who meet the training requirements of 29 CFR 1910.120(e)(4).

Recommended Training

In addition to the training required by federal regulations, further training is highly recommended (and mandated for USFWS spill response personnel) for safe and efficient operations during a spill response. This guidance is considered a minimum essential training for bird rehabilitators in accordance with the goal of establishing best practices.

As a minimum, any personnel conducting bird deterrence or bird hazing activities should attend an 8-hour bird-deterrent training workshop and, if using pyrotechnics or firearms, should also attend 8-hour firearm safety training and 4-hour range training. Bird-capture personnel, field stabilization personnel, and bird transport personnel should attend a 16-hour basic rehabilitation skills training. Bird washing personnel should attend a 4-hour bird washing skills training session.

Personnel operating a boat should be licensed or certified with 24-hour watercraft operator safety training. Anyone riding in a boat should only ride with a certified or licensed operator. Response personnel performing field functions (e.g. bird surveys) while riding in a small aircraft should complete 8-hour basic aviation safety training. As indicated above, any personnel handling firearms should attend 8-hour firearm safety training and 4-hour range training. All teams operating in the field should have at least one person in the party certified in First Aid and CPR. Response personnel participating in the Incident Command Center should be trained to a minimum level of ICS300.

Table 1 summarizes basic training requirements and recommendations as discussed in detail above for each operational group.

Table 1. Summary of training essential to implementing "best practices" when responding to oiled migratory birds.

Training / Personnel	HAZWOPER	ICS 100-300	Aircraft Safety	Boating Safety	Firearm Safety	First Aid/ CPR	Basic Rehabilitation Skills	Bird washing	Supervisory and Crisis Management
USFWS Response[1]	R	R	R	R	R	R	-	-	-
Rehab Management[2]	R	R	-	-	-	H	H	H	H
Initial Assessment[3]	R	-	H	H	-	H	-	-	-
Bird Deterrent	R	-	-	H	H	H	-	-	-
Field Workers[4]	R	-	-	H	-	H	H	-	-
Facility Workers[5]	R	-	-	-	-	-	H	H	-

R = Required training, if performing the activity
H = Highly recommended for establishing best practices, if performing the activity
[1] = Training requirements established by Director's memorandum March 9,1998
[2] = Supervisory personnel and personnel in-charge.
[3] = Personnel conducting resources-at-risk reconnaissance surveys
[4] = Bird capture teams, field stabilization units, transport personnel, etc.
[5] = Bird washers, cage cleaners, pen monitors, etc.

Personal Protective Equipment

Personal protective equipment (PPE) must be used in accordance with 29 CFR 1910.120 (g)(3) to protect wildlife response personnel from exposure to hazardous substances. To guard against injury from birds, all workers should wear approved personal protective equipment appropriate to their task.

Recommended PPE

- Full eye protection, i.e., goggles, safety glasses, or face shield (Birds will peck when under stress and should be considered dangerous as they will aim for eyes.);
- Oil resistant rain gear or oil protective clothing (coated Tyvek, Saranex, etc.);
- Gloves (neoprene or nitrile rubber) that are oil resistant, waterproof, and provide protection against pecking and sharp talons;
- Non-skid shoes/boots, which are oil resistant and waterproof;
- Ear protection (muff or ear plug type) when using pyrotechnic devices or operating machinery; and
- Personal flotation device when working on or near water.

Respiratory protection from organic vapor hazards may also be required for some operations. If respirators are used, respiration training and fit testing are required in accordance with 29 CFR 1910.134. (USFWS personnel are not allowed to operate in an environment requiring protective gear above Level D as established in 29 CFR 1910.120, Appendix B, Part A.). All workers must be trained, in accordance with 29 CFR 1910.132(f), on the proper use and limitations of all personal protective equipment prior to using the equipment.

In addition to hazards from oil, numerous physical hazards may be associated with bird rescue activities. To protect against bites and scratches, appropriate clothing and equipment should be worn underneath the oil protective equipment whenever necessary. Workers should be aware of temperature, weather, and other environmental conditions and use personal protective equipment to guard against dangerous waters, frostbite, hypothermia, heat-stress disorders, and infectious diseases.

There is a potential health risk to poultry, farm and domestic animals (including pets) from clothing or equipment that has been in contact with wild birds. Decontamination procedures must be established and workers are required to return used oil spill response equipment and supplies to their supervisor in accordance with 29 CFR 1910.120(k).

Personal Safety When Handling Birds

Human safety is the primary consideration in bird handling; the safety of the bird being handled is important but secondary. In accordance with 50 CFR 21.31, bird capture and handling may only be done by trained and permitted individuals. Handling and restraint techniques appropriate for specific species need to be applied. M.E. Fowler's book, *Handling and Restraint of Wild and Domestic Animals* (Fowler, 1995) serves as a preliminary guide to handling procedures.

Capturing oiled birds is often physically and emotionally stressful for bird-handlers. Dehydration, exhaustion, and poor nutrition can all affect a person's ability to assess and react to a dangerous situation. It is therefore important that workers stay well hydrated and eat nutritionally sound meals. Rest is equally important. A tired, stressed person, the presence of oil, and hazardous terrain are a dangerous combination. Workers should be aware of their own condition and also the conditions of those around them. The safety of all depends on the alertness of each individual.

All rescue/rehabilitation work crews should have a first aid kit on site for minor cuts and scrapes. If bitten, scratched or otherwise injured, report the injury to a supervisor and seek treatment. Each crew or team, should be assigned at least one person trained to provide emergency first aid, including CPR.

Other safety issues are covered in Chapter 4, *Capture, Handling, and Transport*, page 18.

Zoonoses

Wild birds may carry diseases that are transmissible to people. Diseases that are transmitted from animals to humans are called *zoonoses*. They may be viral, bacterial, fungal or parasitic in nature. They can be transmitted to humans by four primary routes:

- Inhalation of particles (spores, bacteria) in the air;
- Ingestion of feces (i.e., projectile feces, poor hygiene);
- Dermal contact; and
- Indirectly, via a vector (e.g. needle sticks, insect bites).

NOTE: Individuals who have immunosuppressive conditions are more susceptible to contracting zoonotic diseases.

To reduce risk of contracting zoonotic diseases, and in accordance with best practices, bird handlers should always:

- Wash hands thoroughly with soap and water after handling birds.

- Wash hands well before and after eating.
- Avoid smoking or eating near birds; do so in designated areas only.
- Clean and treat all cuts and scratches.
- Use appropriate PPE.
- For a list of zoonotic diseases, modes of transmission, and symptoms, see Appendix 2.

Hazardous Substances

Bird rescue and rehabilitation workers may be exposed to spilled oil, and must be so informed in accordance with 29 CFR 1910.1200(e). Prior to handling a contaminated bird, the Material Safety Data Sheet (MSDS), as established in 29 CRF 1910.1200(g), for the spilled material should be reviewed and all recommended precautions followed. In accordance with 29 CFR 1910.120(h), workers and the rehabilitation facility shall be periodically monitored, using calibrated instruments and devices to determine airborne concentrations of petroleum products (e.g., benzene). Appropriate PPE is required (see *Personal Protective Equipment*, page 11). Ventilation in all work areas should prevent the buildup of airborne contaminants. (See *Facilities*, page 36)

A portion of the rehabilitation facility should be designated for the storage of contaminated clothing, equipment and medical waste until the items can be decontaminated or disposed in accordance with 29 CFR 1910.120(k)(2-5).

Volunteers

Wildlife response programs regularly use volunteers, particularly at the rehabilitation facility. Wildlife response managers need to ensure that volunteers are appropriately trained, supervised, and informed of all hazards in accordance with 29 CFR1910.120(i). A comprehensive volunteer management program is an essential component of an efficient wildlife response. This management program needs to address, at a minimum, volunteer safety, training, supervision, scheduling, and liability.

Chapter

3

Deterrence

Following an oil spill, it may be necessary to initiate a deterrence program that disperses and excludes unoiled birds from contaminated areas to reduce bird mortality. If warranted, deterrence activities are initiated as soon as possible following an oil spill to prevent birds from establishing or continuing regular use patterns within a contaminated area. Any delays may decrease the effectiveness of the program in reducing the overall numbers of oiled birds. Deterrent devices used to disperse birds include both visual and auditory techniques, using both simple and sophisticated devices in order to respond to the unique habits of different bird species, surrounding environments, and the spill situations. Information necessary to help determine whether or not to begin a deterrence program includes, but is not limited to: spill location, species present, species type, time of year, availability of nearby uncontaminated habitat, and location of species in relation to the spill.

All deterrence activities require authorization from appropriate natural resource management agencies and oversight by the designated USFWS representative. Only those persons trained and certified in bird deterrence techniques will be allowed to conduct these activities. Deterrence activities must be authorized and coordinated within the Incident Command System. A communication line will need to be established between deterrence personnel and Air Operations to avoid potential bird/aircraft collisions.

Aerial and Ground Surveys

Reconnaissance surveys for resources-at-risk are conducted as soon as practical following the spill. The main objective of these surveys is to evaluate the number, species and locations of birds that could be impacted by the oil spill. All surveys will be authorized and coordinated through the ICS. The scope and frequency of subsequent surveys will be incident-specific. Written reconnaissance survey results and maps are submitted to the appropriate ICS subunit within the Planning Section. The location and number of birds will need to be plotted on maps or charts for use by the Situation Unit.

Experienced personnel are essential for effective surveillance. An observer should have the appropriate knowledge to properly identify species, record behavioral

characteristics, be familiar with local area ecology, and make other pertinent observations. Ideally, an aerial survey should be done by helicopter, but fixed wing aircraft can also be used.

Deterrence Program Considerations

Consider the following points before beginning any deterrence operations:

NOTE: No attempt should be made to disperse oiled birds.

- Worker safety.
- Local habitats and species.
    - Some species, especially those found associated with a human environment are difficult to deter, especially if chosen deterrents mimic sounds or visual elements associated with that environment.
    - Consider the potential effects of human activity and disturbance on sensitive habitats and species.
    - Molting birds are not easily dispersed, and require a combination of different techniques.
- Availability of "clean" habitat within a reasonable distance.
    - Avoid dispersing birds into areas that might become contaminated; be aware of oil trajectory predictions.
    - Determine if "clean" habitat can be made more attractive (e.g., temporarily limiting access to people, boats or certain activities)
- Appropriate technique.
    - Deterrence will be most effective if the entire area of concern can be hazed as continuously as possible. As a general rule, do not start a deterrence operation that cannot be maintained for the required duration.
    - Automatically operated devices, which require checking only once a day or less, may be used when staffing is limited, during bad weather, or at night.
    - In general, expose the area to a variety of devices and techniques, with random variations to control habituation. Be prepared to back off as events dictate.

- Appropriate technique cont.
    - In general, most deterrence activities would probably not be effective for areas larger than seven to 10 miles in length or diameter.
    - Highly mobile devices (e.g. sound-emitting buoys) that can influence large radiuses are necessary for larger spills on water.
    - Some types of oil, like fuel, are highly flammable during the first hours following a spill, due to the presence of high concentrations of volatile oil fractions. Techniques with potential to induce sparks are to be avoided in these situations.
- Potential side effects.
    - The effects of sound-emitting devices on humans will influence whether or not some techniques will be acceptable to local residents.

Once the decision to deter or haze unoiled birds has been made, remember that each spill situation will be unique and preplanned deterrence activities must be viewed as tentative at best. The pros and cons of every deterrence operation are to be evaluated in view of site- and incident-specific details and after consultation with local experts. If pyrotechnics are used, permits may also be required from the local fire marshal.

See *Appendix 3*, for a discussion of the advantages and disadvantages of various deterrence methods.

Pre-emptive Capture

Pre-emptive capture includes the capture, handling, transportation, short-term holding and release of healthy, uncontaminated birds. According to 50 CFR 21.31(f)(1)(i), permitted rehabilitators are authorized to temporarily possess healthy, unaffected birds for the purpose of removing them from imminent danger. Pre-emptive capture of federally listed threatened or endangered species should not be conducted without prior consultation with, and approval by, the USFWS under Section 7 of the Endangered Species Act. No capture activities may be conducted in pinniped or seabird rookeries. Preemptive capture must be supervised by the USFWS and authorized by the Incident Commander

This secondary response option has limited application based on species-specific criteria. The primary concerns when conducting pre-emptive capture are human and

bird safety and minimizing transportation and holding times. Safety of the birds should be focused on stress reduction. Minimize stress by:

- Having the equipment necessary to handle and transport birds as quickly and efficiently as possible;
- Minimizing the number of vessels, aircraft, all-terrain vehicles, etc. to herd and capture birds in a given area;
- Avoiding unnecessary noise and disturbance during the capture effort;
- Never pursue the birds to the point of exhaustion; and
- Minimizing human contact with the birds except to provide veterinary care.

Pre-emptive capture techniques for birds may be the same as those used by bird banding operations such as mist nets and herding molting or flightless birds into corrals. All techniques should be considered in consultation with the U.S. Fish and Wildlife Service.

Chapter

4

Capture, Handling, & Transport

Capture

Human safety is a primary consideration before any retrieval effort is made. Hazardous weather conditions, unsafe footing, icy rivers, or dangerous seas may preclude a bird rescue attempt. In addition, captive birds are often aggressive and should be regarded as dangerous in any sort of confining situation. Only authorized and trained individuals are allowed to undertake the capture and treatment of oiled birds under the direction of a permitted rehabilitator. Teamwork is essential to minimize additional stress to the birds. To capture and handle oiled birds, rehabilitators must have appropriate licenses and permits in accordance with 50 CFR 21.31. Land-owner or manager permission may be necessary to access capture sites. All capture activities are developed within the Planning Section, coordinated within the ICS, and must be authorized by the Incident Command.

A bird capture program should be implemented as early as is safely possible in a spill response effort to increase the survival rate of birds. Captured birds are to receive medical evaluation and preliminary treatment as quickly as possible. The conditions under which oiled birds are captured can vary widely from one spill to another. A variety of capture methods and techniques are employed to maximize capture success. The effectiveness of rescue efforts will be influenced by factors such as time of year, type and amount of material spilled, species involved, local terrain, tides, and weather. Birds can be safely collected and transported in a variety of challenging conditions when rescue workers adhere to basic rules.

Capture Rules

- Ensure personnel are trained;
- Put safety first;
- Wear protective clothing.
- Work in teams; never work alone;

- Report any injuries;
- Do not allow the presence of domestic animals; and
- Do not pursue animals until they are exhausted.
- As a preliminary reference for developing a capture strategy, consult the summary of bird characteristics, natural history, and specific species concerns located in *Appendix 4*.

Capture Planning

In addition to trained personnel, well developed plans will ensure a safe and successful capture program.

Reconnaissance Plan

This plan describes the steps rescuers will take to survey birds in oiled offshore waters, near-shore waters, and along shorelines, as well as birds in areas that could be oiled. The reconnaissance plan also calls for surveys of nearby feeding, loafing and roosting areas to detect oiled birds that may have moved away from contaminated sites. Knowledge of the local area ecology is critical.

Capture Plan

Capture plans are site specific and address the following:

- Safety of personnel and birds from chemical and physical hazards;
- Personal protective equipment and clothing;
- Capture equipment and methods;
- Site access and egress;
- Bird approach and disturbance of unoiled birds;
- Adequate search coverage;
- On-site holding;
- Special site considerations (e.g. sensitive habitat, rookeries, cultural resources/historic properties); and
- Species prioritization for capture, as provided by USFWS.

Safety Plan

A safety briefing or plan must be approved by the ICS Safety Officer and available to all members of the capture team. The safety plan includes required personal protective equipment, communication instructions, and separate contingency plans for on-land and on-water capture activities, as appropriate. The plan will also discuss hazards of forecasted weather, terrain, and bird species.

Communications Plan

A communications plan for the capture program needs to be part of the site safety plan. The communications plan identifies the method of communication that will be used by the capture team, types of communications equipment (e.g. radios, cell phone), and how the capture program communications will be monitored.

Capture Equipment

An equipment maintenance and inventory schedule is an essential element of a successful bird capture program. Capture equipment and supplies need to be regularly maintained and restocked as necessary to ensure availability, cleanliness/ decontamination, and good working condition when an oil spill occurs. The equipment should be readily accessible and easily mobilized. Staging capture equipment in multiple locations can be helpful in reducing response time.

Capture Technique

An effective capture of oiled birds occurs swiftly with minimal pursuit and noise, uses correct techniques based on the species pursued and local conditions, and exposes the oiled bird to the least amount of stress. Knowing the pursued species' natural history and behavior allows for a more successful capture while decreasing the stress on the birds. Unless specifically authorized by the U.S. Fish and Wildlife Service, no normal, healthy, unoiled birds may be collected. No capture activities may be conducted in pinniped or seabird rookeries. All bird carcasses that are discovered during capture, need to be collected to prevent secondary oiling. Capture teams should receive guidance from the U.S. Fish and Wildlife Service regarding carcass collection protocols and how to record the location and condition of each carcass prior to collection. (See *Dead Oiled, Bird Handling* on page 25). In the case of raptors, only appropriately trained individuals should carry out their capture as these birds require special handling techniques.

The most common capture techniques use dip nets, net guns, and mist nets. Other techniques have been developed to target specific species groups (e.g. the use of foot traps for small shorebirds). The use of spotlights at night is sometimes employed for birds that are especially skittish and difficult to approach during the day.

A capture team consists of two or more people wearing appropriate protective clothing. Capture equipment most likely to be needed should be carried at all times. The teams evaluate each capture site and develop strategies to suit the terrain and species being pursued. Prior to entering the search area, the team identifies a plan of action, keeping in mind that alternative plans and equipment need to be available should the primary plan fail.

Capture by Boat

The first priority in the collection of oiled birds is to deal with birds already beached. Approaching and capturing birds from a boat is considered a secondary strategy. Oiled birds are under stress and should be allowed to come ashore at their own pace. Chasing an oiled bird will use up more of the bird's energy reserves and subject it to further stress. When pursuing birds by boat, it is important to know the birds' diving habits for best capture results. If capture is not accomplished after repeated attempts (3-4) on water, a judgment is made to either back away and hope the bird will beach itself or continue pursuit, which may result in the bird drowning. All personnel working near water must wear personal flotation devices.

Bird Handling

All bird handling should be done in a manner that minimizes stress to the bird and ensures that the bird does not injure itself or the handler. Birds have different weapons and strategies for defense so it is important that oiled birds be handled correctly. The chasing, capturing, and confinement of oiled birds will also increase their susceptibility to secondary and stress-related problems. Use of proper techniques will minimize stress and maximize efficiency. Only authorized, permitted and trained individuals may handle oiled birds.

The Material Safety Data Sheet (MSDS) for the spilled oil should be reviewed prior to handling a contaminated bird. Birds are to be carefully handled through light coverings that minimize damage to the bird's feathers and human exposure to oil. Coverings include sheets, towels and gloves. No oiled birds should be handled with bare hands. Although gloves and coverings are selected to eliminate skin contact with oil and to afford protection from pecks, bites and scratches, heavy or bulky gloves are rarely used and not recommended because they reduce human dexterity and can result in injury to the bird.

Appropriate Bird Handling

- Wear the appropriate personal protective gear, including gloves and eyewear;
- Use a towel, sheet, or light covering to place over the birds;

- Handle clean birds with clean gloves and equipment;
- Be alert for occasional and unexpected sharp foreign objects in birds, such as fish hooks;
- Approach a bird from behind or the side;
- Get control of a bird's head by grasping the beak where it joins the head, by controlling the neck at the base of the skull, or by cupping the skull with a gloved hand if towels and blankets are unavailable;
- Fold the wings into its body and pick it up while controlling the head;
- Hold birds at waist level and away from the face and other people to avoid injury from pecking and biting; and
- Work in teams and request assistance if needed.

NOTE: It is inappropriate to mechanically restrict the bird (e.g., tape, rubber band) from opening its beak/bill.

Appropriate handling techniques are based on the size and species of the bird. For example, small birds, such as shorebirds, are cupped in the hand and placed in small non-plastic, non-abrasive bags (e.g. pillowcase or small cloth bag). The basic technique for medium-sized oiled birds, such as a duck or murre is the two-handed body hold, making sure to not restrict the bird's breathing. Large oiled birds, such as geese, are usually controlled using the buddy system to ensure a proper hold on the bird. References such as *Handling and Restraint of Wild and Domestic Animals* (Fowler, 1995) provide more complete descriptions of bird handling techniques. Aggressive birds will require additional restraint of the head and/or feet and should only be handled by field personnel experienced in such techniques.

NOTE: The handling of raptors should be left to appropriately qualified and experienced personnel.

A summary of bird characteristics, natural history, and species-specific concerns is located in *Appendix 4*.

Containers

Captured birds are immediately placed into containers that provide safety for both the bird and the handlers. These include well-ventilated, solid-sided carriers such as modified cardboard boxes, plastic carriers, or shipping kennels. Containers are constructed to meet the hazards and conditions of transportation. Occasionally, qualified, experienced personnel may elect to use pillowcases as temporary field transport containers for small birds due to difficult terrain/access or weather conditions. All containers must close properly to prevent escape during transport.

Bird container requirements

- Secure lids/tops for closing;
- Sufficient space inside for comfort;
- Paper or cloth towels on the bottom of the container to absorb oil;
- Adequate ventilation on all sides; and
- Labeling to include: date, time, location of capture, species (if known), specific injury, and name of person capturing bird.

Each container should contain only one bird unless determined otherwise by qualified, experienced personnel. If necessary, some gentle, gregarious birds of compatible species (see list below) may be placed two or three to an appropriately sized container.

Compatible Species

Guillemots
Auklets
Murres
Ducks (except Scoters)
Mergansers
Geese
Terns
Sandpipers
Eared Grebes
Horned Grebes

Compatible species placed in the same container should be strong, stable, and equally affected by the oil. Containers are to be checked 5-10 minutes after placing birds together to ensure compatibility.

Steps for Containered Birds

- Pay attention. Do not leave containers with birds unattended;
- Place containers in a safe and quiet location (e.g. away from noise and activity, above high tide-line);
- Minimize temperature extremes (e.g. hot sun);
- Space containers adequately to ensure sufficient ventilation; and
- Keep containers away from oil vapors.

When taking birds to a central collection site or rehabilitation facility, do not leave the birds unattended. Containers are to be handed over to a site worker. Convey to the site worker in writing and orally, information about the bird's condition, the location the bird was found, etc.

Field Stabilization

All of the chemical hazards to humans also apply to affected birds. Attempts by oiled birds to clean their feathers through preening can result in oil ingestion and irritation of sensitive membranes of the eyes, mouth, lungs, and digestive tract. In addition, once feathers become matted, weatherproofing and insulating properties are lost, leading to either rapid chilling or overheating. Other problems may occur when food sources become contaminated, or when birds cannot fly or swim well enough to feed adequately. Despite being on water, oiled birds frequently experience dehydration and electrolyte abnormalities.

Oil contaminated birds that are captured or collected by appropriately trained field teams may require stabilization in the field before being transported to an off-site rehabilitation facility. (See *Training for Bird Rescue/Rehabilitation Personnel*, page 8). Field stabilization is provided to oiled birds that are likely to remain in the field longer than 2-3 hours. Field stabilization is a "first-aid" method, rendered only by trained personnel, for administering temporary care and initial treatment to quickly mitigate the effects of oiling on birds soon after capture. This field treatment will increase the oiled bird's chances for successful cleaning, rehabilitation and eventual release. Field stabilization does **not** include washing or taking blood samples, which can stress the bird and is difficult to accomplish effectively in the field.

Steps For Field Stabilization

- Clear mouth, nostrils and eyes. Heavily oiled birds may have debris and oil built up in their mouths and nostrils, which may impair their breathing. These foreign materials are removed prior to any additional treatment being rendered.

- Regulate temperature. Oiled birds lose their ability to thermoregulate. When possible, the bird's temperature is taken and the bird is warmed or cooled as appropriate. Once a bird's body temperature is normal, the bird is closely monitored for visual signs of chill or overheating.

- Treat for dehydration. Oiled birds are almost always significantly dehydrated and need to be gavage-fed fluids on a regular schedule, beginning at stabilization and as long as presenting conditions do not contra-indicate the administration of oral fluids. Pedialyte®, or a similar electrolyte solution, is recommended for treating dehydration. If the bird will remain in the field for a significantly long period prior to stabilization at a facility, a stomach-coating product (e.g., Toxiban®) may be used to help reduce the long-term effects of ingested oil.

- Minimize stress. Place birds in a safe, quiet, warm, ventilated area away from drafts, human disturbance, and other noises.

- Record field treatments. Transmit treatment records for individual birds, or for groups of birds (when treating large numbers of birds) with the bird(s) when they are checked in at the rehabilitation center.

Dead, Oiled Bird Handling

During an oil spill response, all carcasses need to be collected to prevent secondary oiling. Oiled bird carcasses will be collected in accordance with spill incident-specific instructions and chain-of-custody protocols provided by the U.S. Fish and Wildlife Service. (See *Records*, page 43). The designated, local USFWS representative will coordinate the collection, storage, and handling of any dead migratory birds with the Service's Division of Law Enforcement. When collected, each bird carcass is placed in an individual plastic bag. Where cause-of-death analysis is important, each bird must first be wrapped in clean foil to keep the carcass from contacting the plastic bag, which could contaminate the hydrocarbon sample. Each carcass is labeled with the date, time, location, species (if known), and collector's name; taken to a designated morgue location; and placed in a refrigerated unit.

Bird Transport

Captured birds are moved to an appropriate stabilization or treatment center at the earliest opportunity. Only appropriately trained personnel may transport birds (see *Training for Bird Rescue/Rehabilitation Personnel*, page 8). It is preferable to transport birds in an enclosed vehicle. Adequate space (at least 1-1/2") is left between containers during transport to allow sufficient airflow through side vents (top vents are not, by themselves, adequate). Remember, freshly oiled birds typically emit hydrocarbon vapors; therefore, always maintain adequate ventilation in the vehicle to protect both humans and birds from inhaling such vapors. Only one bird per transport container is acceptable except in the case of non-aggressive, compatible species (e.g. murres), which may be transported two or three birds (same species) to an appropriately sized container (see *Containers*, page 22).

Containers are secured to prevent load shifting that could cause the containers to slide together and impede air circulation. Birds are placed in secured containers before being transported to protect them from injury or escape during the transport process. If birds must be transported in an open vehicle or skiff, it is important that all containers are securely tied with rope or straps prior to transport. Make sure to compensate for cold outside temperatures and wind chill when moving birds in an open vehicle.

Temperature control and monitoring are critical during transport. Wet birds may require a temperature close to 80°F to be comfortable during transport, while dry, oiled birds will require a cooler environment. Note that birds may overheat inside an air-conditioned vehicle when containers are exposed to direct sunlight. Keep in mind that

human comfort during transport may not be synonymous with the temperature and ventilation needs of the transported birds.

Birds are monitored periodically on transports longer than one hour, as directed by the response veterinarian. For trips that take longer than four hours, birds should be hydrated periodically during the transport. Critical cases require more frequent monitoring. The person transporting birds must maintain contact between the field and the rehabilitation facility so that departure and arrival times may be anticipated at these locations.

Summary of Transport Practices

- Allow 1-1/2" between containers for ventilation;
- Only 1 bird per container unless they are non-aggressive compatible species;
- Maintain inside vehicle air temperature between 68-70°F or higher if birds are cold; and
- Monitor birds hourly; more frequently if unstable.

NOTE: No domestic animals are allowed in transport vehicles.

Chapter

5

Stabilization and Rehabilitation

In accordance with 50 CFR 21.31, the U.S. Fish and Wildlife Service issues permits for migratory bird rehabilitation. A rehabilitation permit is required for the capture, care, and treatment of oiled migratory birds. Only those individuals trained and experienced in oil spill response bird stabilization and rehabilitation techniques may care for oiled birds (see *Training for Bird Rescue/Rehabilitation Personnel*, page 8). During an oil spill response, the Incident Command must authorize all bird rehabilitation activities. These activities are developed within the Environmental Unit of the Planning Section of the ICS and implemented within the Wildlife Branch of the Operations Section.

The goal in rehabilitating birds during an oil spill response is the release of a healthy bird back into its natural environment. The stabilization procedures described in this section (similar to those described under "Field Stabilization" in the previous chapter) represent the first medical treatment that an oiled bird receives soon after capture. Only trained and experienced personnel may administer this type of care. Stabilization procedures are performed at a designated stabilization site or at the primary rehabilitation center.

General Guidelines for Stabilization

- Stabilize within 2 to 4 hours of capture.
- Minimize stress. Handle the birds as little as possible. Prepare treatments ahead of time. Keep noise to a minimum. Speak in a low voice. Provide visual barriers or "hides" so that the birds do not have to constantly see humans or other birds.
- Provide appropriate temperature control and ventilation. This is especially important since oiled birds typically have difficulty regulating their body temperature and are susceptible to secondary diseases that can be caused by poor ventilation.

- Evaluate all cases and consider euthanasia of high-risk birds. Unnecessary suffering can be alleviated and limited resources dedicated to those birds having a better chance of survival. (See *Euthanasia* , page 30).

- Prevent health risks to humans and to other birds. Wear protective eyewear, protective clothing, and masks (if appropriate) when handling oiled birds. Isolate birds with signs of infectious disease. Understand the physical dangers associated with the handling of each species. Secure treatment for injured humans, clean all cuts thoroughly with an antiseptic, and obtain medical attention for major wounds.

- Keep complete and accurate records. This helps to ensure that each bird receives appropriate medical care. A sequentially numbered, plastic leg band or equivalent ID tag, should be applied to identify each bird while in care. (See *Records*, page 43).

Federal regulations require a written agreement with a licensed, **veterinarian-of-record** who will provide medical supervision and oversight during a bird-related response (50 CFR 21.31(d)(1)(iii). The veterinarian is responsible for all medical aspects of the capture and treatment program, but does not necessarily have to be physically present during all bird treatment and care actions.

Veterinarian-of-Record Responsibilities

- Joint decision-making with rehabilitation personnel;

- Use of controlled substances (e.g. sedatives, euthanasia);

- Necropsy supervision;

- Triage and pre-release evaluation; and

- Quality of medical records.

Evaluation and Admission

The evaluation and admission process involves collection of biomedical data on individual birds, to establish the medical and rehabilitation courses of action necessary to care for that bird. **All** personnel performing bird evaluation and admission must wear appropriate personal protective equipment to protect them from exposure to oil and potential injury from birds. Additionally, steps should be taken to minimize stress to birds during this process, including speaking in a low voice, and rapid completion of the examination to reduce bird handling time.

When prioritizing multiple birds of the same species, treatment prioritization is based on the nature and extent of oiling, physical examination, and blood parameters. Medical attention should be given to those with the greatest probability of survival.

Four criteria that can be used to establish prognosis are (1) packed cell volume (PCV)/total solids (TS) determinations, (2) body weight relative to norm for species, (3) body temperature, and (4) physical exam results. Birds that do not meet criteria set for these results may be quickly, and humanely euthanized in order to alleviate suffering and to allow more treatable birds a greater opportunity of rehabilitation success.

However, when multiple species are presented for triage, prioritization by species may also be necessary. For example, an endangered species or a species of special concern may be given priority over resident waterfowl or an exotic species with the same or more critical condition. The incident-specific wildlife recovery and rehabilitation plan addresses species prioritization, as an integrated parameter of triage. The designated U.S. Fish and Wildlife Service representative establishes the species prioritization in close consultation with the veterinarian-of-record.

General Steps for Evaluation and Admission

- Start an individual record for each bird.
- Review and record bird data provided by field team: capture location, date, time, chain-of-custody information.
- Place a temporary identification band or tag on each bird.
- Record general bird information: ID number, species, age class, sex (if possible).
- Record overall impression of bird's clinical status (e.g. depressed, hyperactive, alert, etc.).
- Record degree of oiling: area(s) of body and degree (light, etc.).
- Perform physical examination: record temperature, weight, presence of overt injuries/disease states, oil-related effects, etc.
- Perform stabilization treatment: manually remove excess oil from nares, mouth and vent; flush eyes with a sterile saline or equivalent solution; and administer Pepto-Bismol® or Toxiban® or their equivalents in conjunction with hydration using a balanced electrolyte solution.
- Collect samples: take a blood sample to determine packed cell volume (PCV), total solids (TS) and blood glucose (BG); an oiled feather sample; a photograph of the bird (for evidentiary purposes); and other specialized samples for additional biomedical diagnostics, as indicated.

Additional medical therapies that may be warranted

- Parenteral (e.g., not oral) fluid administration.
- Prophylactic use of antifungals (e.g., itraconazole).
- Start of treatment/isolation for overt clinical disease or injuries.
- Start of treatment addressing hematological abnormalities.
- Treatment of vomiting and/or seizures.
- Initiation of additional diagnostics when indicated (e.g. blood panels/CBC's, radiographs, or cultures).

Inappropriate Treatments During Admission

- Prophylactic use of antibiotics, eye ointments, or antiparasitics in the absence of clinical signs.
- Oral administration of mineral oil.
- Washing bird immediately after initial evaluation and admission.

Euthanasia

During an oil spill response, there are circumstances under which it may be necessary to humanely euthanize birds. For each spill where bird rehabilitation is undertaken, the bird rehabilitator will prepare a written euthanasia plan in consultation with the veterinarian-of-record and the designated U.S. Fish and Wildlife Service representative. The euthanasia plan will take into account species, spill, and regional characteristics.

Euthanasia is appropriate for any oiled bird with injuries that will render it unable to survive in the wild or unsuitable for use in captivity (50 CFR 21.31(e)(4)(iii)). Such injuries include fractured limbs (particularly those affecting a joint), injuries to the beak, extensive soft tissue injuries, and significant visual or auditory deficits. If birds are euthanized in the field, they will be collected following the procedures outlined in this document in Chapter 4. To prevent secondary contamination or poisoning, euthanized carcasses are never left in the field.

See *Appendix 5*.

Necropsy

Valuable information can be collected from necropsies of dead birds. This information can be used both to refine treatment protocols for live birds during the spill event as

well as to collect data on the successes and limitations of the rehabilitation process. The spill response veterinarian-of-record should conduct or supervise all necropsies, in consultation with the designated representative of the U.S. Fish and Wildlife Service. Prior to conducting a necropsy, the USFWS representative and veterinarian will agree on which forms to use; which samples to collect (e.g., tissues, feathers); how those samples will be prepared (e.g., formalin or frozen), stored, and shipped; and where samples will be analyzed. Reports are filed and all samples handled and stored using appropriate chain-of-custody protocols, provided by the USFWS.

Cleaning

The structure of a bird's feathers provides insulation and waterproofing. When a bird is oiled, waterproofing and insulation are lost, which may lead to hypothermia. Internal effects of oil may include damage to the lungs, gastrointestinal-hematological system, liver, or kidneys. This damage is caused by inhalation of volatile components, ingestion during preening, drinking or eating, and dehydration.

Based on these injuries, birds must be medically stabilized before cleaning. The cleaning process can be stressful to birds and care should be taken at every step to reduce that stress. Birds are monitored for signs of stress or instability during the wash, rinse, and drying processes. Handlers must always work in teams when handling birds during the cleaning process.

Bird Health Criteria for Cleaning

- Bright/Alert/Responsive (BAR); judged stable.
- Packed cell volume (PCV) and total solids (TS) within 90% of normal values.
- Exceptions as determined by veterinarian on a case-by-case basis.

Wash Water Criteria

- Pressurized and adjustable system delivery at 40-60 psi.
- Temperature 102 to 108°F depending on species, type of oil, and condition of the bird.
- Hardness 2-5 grains per gallon (some variation in species requirements).
- Large volumes of water (with these characteristics) available.

Cleaning-agent Criteria

- Able to remove oil from feathers without damaging feather structure or irritating skin and mucosal surfaces.
- Non-toxic.

- Leaves no residue.

NOTE: The only bird-cleaning agent that is recommended at this time is Dawn® dishwashing liquid (regular, not anti-bacterial formula) because it removes oil from feathers; is non-toxic; and does not leave a residue. Other methods or products are not recommended for use or testing during an oil spill at this time.

NOTE: Pretreatment agents are used only when absolutely necessary because they are an additional substance that must be removed. Methyloleate or warmed Canola oil are appropriate agents for pre-treatment of tarry feathers.

Drying

The most effective means of drying most bird species is to maintain an ambient air temperature between 90 to 95°F using a pet dryer. Other heat sources, such as heat lamps or brooders, may be more appropriate for some species including most shorebirds. Birds are continually monitored during the drying process to ensure that they do not become overheated. Using net-bottom pens for most water birds will reduce the chances of overheating and allow for better circulation of warm air to ventral (belly) feathers. Some species (e.g. eagles, pelicans), however, require the use of pens with solid floors.

Waterproofing (water birds)

After water birds (e.g. ducks, murres) are washed and determined to be dry or waterproofed, they are given access to freshwater pools for swimming. Birds are checked regularly to monitor for chilling and incomplete waterproofing. A seabird is considered "waterproofed" if it exhibits normal behavior, body temperature, and buoyancy after 24 hours in a pool with no haul-out. Some reasons for a lack of proper waterproofing may include incomplete removal of oil, incomplete or non-optimal rinsing, underlying injury or disease, poor pool-water quality, and feather loss or damage.

Waterproofing (terrestrial and wading birds)

After a terrestrial or wading bird is washed and determined to be dry or waterproofed, it is given access to fresh water for drinking and bathing. Additionally, misting the bird will encourage preening and test for waterproofing. Terrestrial birds should display waterproofing appropriate for their species.

Husbandry

Husbandry encompasses the housing, hygiene and nutritional aspects of maintaining wild birds in captivity. The goal in rehabilitating oiled birds is the release of healthy birds back into their natural environment. In order to achieve this goal, it is necessary

to treat the presenting problem — injury from oiling — as well as to prevent any secondary infections or injuries that may occur while keeping birds in captivity. The key to quality husbandry during an oil spill response is an emphasis on herd-health management.

Housing

Injuries or illnesses from improper captive housing can be a serious problem in the rehabilitation of oiled birds. Appropriate housing can reduce or prevent problems such as pressure sores, feather contamination, foot lesions, and infectious disease transmission. The following are best practices guidelines for good housing design and maintenance to maximize the chances of survival and release of healthy birds:

- Construct pens according to the needs of the species affected.
- Allow appropriate space based on species need.
- Provide padding as necessary.
- Avoid cages with wire walls or floors as these can cause feather damage, beak trauma, and foot lesions.
- Avoid solid floors for species susceptible to keel sores or fecal contamination of feathers.
- Provide perches as required.
- Provide for an adequate thermal gradient (combination of ambient air temperature and radiant heat source) appropriate for birds to maintain normal body temperature.
- Avoid placing washed (clean) birds in housing that previously held oiled (contaminated) birds to minimize the risk of re-oiling clean birds.
- Maintain high water quality through water exchange or overflow to eliminate waterproofing problems by re-contaminating feathers.
- Provide haul-outs as required, taking into account waterproofing and pre-release condition.

Disinfecting

Prevention of disease transmission relies heavily on effective disinfecting and sterilization of all inert objects used in treating the birds. In addition, consistency in technique and frequency of cleaning procedures will help ensure that optimum cleanliness is maintained throughout the response effort. Personnel should be trained in standard cleaning procedures so that these procedures will become routine.

Some Important Disinfecting Guidelines

- Know which pathogens are likely to occur; match disinfectant agents and procedures for best results.
- Clean and disinfect transport cages, holding pens, and restraint equipment after each use. Outdoor steam-cleaning is the preferred cleaning method.
- Change the papers under net-bottom pens at least twice a day.
- Complete water turnover, at least every 4 hours, to provide the most effective water filtration or overflow in pools.

Nutrition

Birds are fed sufficient food to increase body weight. Sufficiency is determined by the nutritional value of the food, based on a metabolic formula as well as the underlying body condition and health status of the bird.

Nutritional and Food-Handling Guidelines

- Food Types and Delivery: In most cases, gavage-feed birds a high-caloric and digestible food slurry prior to washing. For cleaned birds, provide solid food, appropriate for the species, in dishes or containers in a manner that prevents re-soiling of feathers. Feed birds, within pools, non-oily food in a manner that mimics feeding in their natural environment. Allow all birds, within an enclosure or pool, an opportunity to feed. Keep feeding records for each bird, or pen of birds in the case of large numbers of birds.
- Cleanliness: Wash hands prior to, and after, handling food. Thoroughly clean and disinfect all food preparation utensils and containers after each use.
- Storage: Properly store all food in freezers, refrigerators, airtight containers, etc. to prevent contamination and spoiling. Store bird and human food separately. Monitor temperatures of refrigerators, freezers, thawing tubs and food handing areas to ensure food quality.

Ongoing Health Assessment

After washing, bird assessment must continue to determine whether additional medical and rehabilitation intervention is necessary prior to a release assessment. These procedures, while not as intensively instituted as during intake, follow the same basic areas: assessment of hematological values (PCV, TS), assessment of nutritional state (through successive weighing and assessment of flesh tone), and behavioral observations in pools or pens (to ensure appropriate feeding activities, social interactions, waterproofing, and other behaviors). All birds are handled either with washed hands or powder-free gloves (to maintain waterproofing status), and only non-contaminated exam equipment and areas are used for these assessments. Additional

pre-release rehabilitative care may be necessary for some individuals and, if birds need to be kept in a hospital situation for a period of time, rewashing may be necessary.

Chapter

6

Facility Requirements

The size and extent of a rehabilitation facility will vary depending on location and need. Not all spill responses will require the use of, or will be in the vicinity of a permanent bird rehabilitation facility. The size of the spill, its location, and the number of birds oiled will determine the type and location of a facility that can meet the required need. There are basically, three types of oiled bird rehabilitation facilities: fixed, permanent facility; temporary facility established in local, fixed structures; and mobile units brought to a spill location to set up a temporary facility.

The facility requirements in 50 CFR 21.31 establish minimal standards of care. It is critical that spill responders and pre-spill planners recognize the degree of effort and complexity required to implement a migratory bird response and establish an adequate facility. Pre-spill planning is encouraged to achieve wildlife response systems that will adequately address the needs of small as well as large bird-rescue efforts. For best achievable care standards, response entities who are planning or authorizing oiled-bird rehabilitation facilities are encouraged to consult: (1) entities who have constructed permanent facilities, operated temporary facilities, or who have conducted facility planning (e.g., OWCN/IBRRC, Washington State, Tri-State Bird Rescue and Research, Inc.); and (2) documents such as the States/British Columbia Oil Spill Task Force wildlife facilities report.

Regardless of the type of facility used for bird rehabilitation during a spill response, the following facility requirement guidelines apply:

Facility Setup

- Establish and operate intake, holding, and isolation areas within 24 hours of wildlife response activation.

- Establish and operate bird cleaning and pre-release areas within 48 hours of wildlife response activation.

Facility Layout (traffic flow)

- Separate contaminated and uncontaminated areas with a de-contamination area, to eliminate cross-contamination from oil and disease.

- Ensure that facility layout minimizes audio and visual stimulus (e.g., human traffic and noise) to reduce stress to birds.
- Ensure that layout facilitates the natural "flow" of birds through the admission, rehabilitation, and release process.

Established Bird Areas (within a Facility)

- Intake
- Holding
- Wash/rinse
- Drying
- Pools/Outdoor caging
- Food preparation
- Hospital/isolation
- Morgue/necropsy
- Storage

In certain situations and depending on the spill characteristics, areas may have multiple designations, i.e., intake may need to occur in the holding area, but such designations will still follow the above indicated "traffic flow" requirements.

NOTE: A general guideline for estimating sufficient space for the bird holding area within a facility, including walking and aisle space, is to allow for 6 square feet per average-sized (1 kg) bird. More space may be needed for larger birds.

Facility Temperature

- Maintain air temperature between 65-85°F, adjustable within 2°F increments, in all pre-wash and wash areas, including bird intake, holding, and hospital.
- Maintain ability to warm or cool individual bird enclosures as needed.
- Maintain temperature in all remaining areas to meet human comfort needs.

Air/Ventilation

- Provide fresh air exchanges via air/ventilation system that ensures healthful air quality (as indicated by low odor levels, prevention of mold/mildew

growth, and minimal dust particles). Use of HEPA filters is highly recommended.

- Optimal: In bird areas, a minimum of 10 to 15 air exchanges per hour, to minimize disease risk.

- Optimal: In human areas, a minimum of 8 air exchanges per hour.

Electricity

- Maintain a reliable electrical supply sufficient for all electrical needs including heating, lighting, ventilation, air conditioning, water heaters, pet dryers, heat lamps, blenders, freezers, refrigerators, pool filters, computers, and faxes.

- Provide Ground Fault Interrupt circuits in all areas where circuits may be exposed to water.

Water Supply

- Temperature: Provide washing and rinsing water temperatures of 102 to 108°F, while maintaining additional hot water supply sufficient for other uses (e.g., laundry, cleaning, food preparation, warm-water pools).

- Pressure: Provide water pressure at 40-60 psi in wash and rinse area, while maintaining sufficient water pressure in other areas (e.g., doing laundry, washing dishes).

- Quantity: Provide supply line(s) large enough for all areas requiring water simultaneously (e.g., wash/rinse area, pool area, laundry.) The quantity should be sufficient to provide a continuous flow of 4 gallons/minute to all indoor outlets and additional supply for pools.

- Quality: Maintain a water hardness of 2-5 grains per gallon for all bird wash and rinse stations and waterproofing pools. Provide a source of potable water for human use.

Waste Water

- Facilitate disposal of all oily wastewater in accordance with appropriate Federal, State, and municipal regulations.

- Facilitate disposal of all gray water (e.g., rinse water, pool overflow) in accordance with appropriate Federal, State, and municipal regulations.

- Control storm water and other runoff, as appropriate, to prevent contact with gray water and oily wastewater.

Solid Waste

- Facilitate disposal of all solid waste in accordance with appropriate Federal, State, and/or local hazardous waste, municipal solid waste, and/or biological waste laws and regulations.

- Ensure that disposal of carcasses proceeds under the direction of the designated U.S. Fish and Wildlife Service representative.

Outdoor Areas

- Maintain a perimeter of restricted access from the public to outdoor areas.

- Provide outdoor space typically as large as the footprint of the facility itself (buildings or structures); may be larger depending on the species.

- Provide sufficient pool size as dictated by release criteria and by species (e.g., to demonstrate that grebes can fly, flight space is provided within the outdoor enclosure).

- Locate facility in a place that minimizes visual and auditory stress to birds.

- Provide vehicle access and parking.

Non-Bird Areas

- De-contamination area.

- Administration area (e.g., sign in, volunteer orientation, training, record keeping).

- Rest areas and rest rooms for workers.

- Sufficient space for human food storage, preparation, and dining.

Security

- Provide controlled access to the facility and any associated outdoor areas (e.g., pools, bird enclosures).

Pest Control

- Develop and maintain a pest control plan for rodents and insects.

- Develop and maintain a plan for predator exclusion.

Communications

- Ensure adequate access to phones, faxes, and computers with internet access for all rehabilitation personnel.

- Maintain communication, via radio or cell phone, with all field capture teams and field stabilization units.

Visitor Control

- Coordinate and facilitate all visits by news media through the Joint Information Center within the ICS.
- Limit visitor frequency to no more than 2 per day.
- Limit number of persons per visit to minimize stress to birds.

Chapter

7

Release

Release Criteria

The goal in rehabilitating oiled birds is to release healthy birds back into their natural environment. During a spill event, it is highly recommended that the bird rehabilitator prepare a release plan for the release of rehabilitated birds in consultation with the designated USFWS representative. The plan is submitted to the Planning Section within the ICS and authorized by the Incident Command. There are certain criteria that must be met prior to releasing birds. For those birds that do not meet release criteria, several options are available following consultation with the USFWS. These include additional rehabilitation, euthanasia, or placement in a long-term facility.

Bird Release Criteria

- Normal behavior (including natural feeding, swimming, & diving);
- Body weight within 10% of normal for that species;
- Waterproofed;
- Normal blood values;
- Normal physical exam;
- Free of apparent disease;
- Acclimated to outdoor temperature and light;
- Pelagic species who have been maintained on fresh water for over 14 days should be re-acclimated to salt water prior to release; and
- Free of all temporary leg bands and other ID tags and fitted with a permanent USFWS metal leg band.

Release Site Criteria

- No oil contamination present;

- No risk of re-contamination;
- Same general geographic area of capture, if possible;
- Appropriate seasonal range for species (important consideration during migration periods);
- Available, natural, uncontaminated food sources;
- Minimal human disturbance (e.g., boats, noise);
- Favorable weather conditions/forecast;
- Appropriate time of day for species; and
- Minimal logistics for traveling to site.

Post-Release Monitoring

To determine the long-term effectiveness of rehabilitation of oiled birds, post-release monitoring is a necessary component of the rehabilitation effort. Follow-up on released birds can improve the processes and criteria associated with emergency bird care. Monitoring also enhances biologists' understanding of the role that exposure to oil has on both medical and behavioral aspects to bird ecology, such as short-term and long-term survival and breeding status. A post-release monitoring plan should be part of the USFWS-approved release plan.

Several different methods are currently used for post-release monitoring of birds after rehabilitation. The most commonly used technique is to acquire federal band return data, collected by hunters, beach walk programs, or others, to determine mortality levels in released birds. Although this method is relatively simple to undertake, it is difficult to determine survival with any confidence due to low band return rates. A method that facilitates collection of more behavioral information is color banding and visual observation of released animals. This method requires large amounts of observation effort and is limited to birds that remain close to land and do not migrate. The most effective means to acquire information on released oil rehabilitated birds is through the use of radiotelemetry. This method involves placing a transmitter onto birds prior to release and monitoring the activated signal by radio or satellite. In this way, biologists may follow birds for months to years after release.

Chapter

8

Records

The importance of recording information cannot be over-emphasized. Record collection enhances individual bird care, response evaluations, and the ability to accurately characterize the best practices for appropriate care. In-house records are maintained at the rehabilitation facility and copies provided to the U.S. Fish and Wildlife Service. Final reports from the rehabilitator for the oiled-bird response, including carcass chain-of-custody and sample collection records, where required, should be delivered to the USFWS within 30 days of the date the FOSC declares the response closed or from the departure date of the rescue/rehabilitation organization, whichever comes first.

Scientific Records

The following types of records are necessary to preserve vital information for scientific study, natural resource damage assessment, and improved rehabilitation practices and techniques:

- Resources-at-Risk Survey: provides information regarding the location of birds and other animals in relation to the spilled oil.
- Oiled bird sightings: records and maps for all reports of oiled birds.
- Field Retrieval Report: records for all birds collected in field.
- Live Bird Log.
- Dead Bird Log.
- Running tally: list of all in-house birds by species and case number.
- Daily Care Report: documents care for each bird or enclosure, including feedings, treatments, medications, normal/abnormal activities.
- End-of-Day Report: reports current and next day's work.

- Oiled Bird Examination Report: individual record summary of retrieval, medical exam, diagnostic results, samples collected (chemical, blood, and tissue), cleaning, treatment, evaluation, chain-of-custody, Federal bird bands, and final disposition.

- Record of samples collected (chemical, blood, feather, and tissue).

- Lab Analyses Report: identifies all samples sent to labs; requested analyses; and lab results.

- Federal Bird Banding Report: lists all birds banded for release.

- Necropsy Report.

Some sample forms are provided in *Appendix 6.*

Administrative Records

The following are types of additional documentation and reporting requirements associated with an oil spill response effort for entities such as the Incident Command System, USFWS Rehabilitation Permit Office of Migratory Bird Management, and law enforcement, among others.

- Incident Action Plan – ICS 200: Includes Site Safety and Health Plan, Communications Plan, Organizational Structure, and Group Assignments.

- Pollution Incident Daily Resource Report (USCG Daily Report).

- Chain-of-Custody Record: all migratory birds that die as a result of contact with exposed oil represent evidence of a potential violation of the Migratory Bird Treaty Act. As such, each bird carcass must be labeled with an *Evidence Seizure Tag* provided by the USFWS Division of Law Enforcement or other law enforcement agency, through the designated USFWS representative. The bird carcasses are then delivered to a central, secure, evidence storage area and a Chain-of-Custody record completed.

- Qualified Wildlife Responder Application.

Some sample administrative record forms are provided in *Appendix 6.*

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Appendices

Appendix 1. Sample Supply and Materials List

Administration/Communications Items:

No.	Item	Purchase (P) or Stockpile (S)
	Air horn	P
	Animal identification and natural history books	P
	Beepers	P
	Binoculars	P
	Cellular phones	P
	Chairs, folding or stacking	S
	First Aid Kit (humans)	P
	Food and fluids for volunteers geared to good nutrition and hydration (from a list of local sources prepared in advance)	P
	Maps of impacted area and response facilities	P
	Marine radios (handheld)	P
	Master copies of all forms (designed in advance)	P
	MSDS binder (add pertinent sheets as needed)	S
	Operations Manual (designed in advance)	S

Animal Care Items:

No.	Item	Purchase (P) or Stockpile (S)
	Aluminum foil	P
	Antiseptic solution (Povidone iodine; chlorhexidine)	P
	Aprons (full coverage vinyl)	S
	Astro-Bubble® bedding roll	S
	Barrier Cream	S
	Bleach	S
	Blender, industrial type	S
	Blood collection tubes: Red top ____ Lavender top____ Green top ____ other types _____	P
	Boots, 16” vinyl (Men’s sizes 5-12)	S
	Broad spectrum antibiotic (having wide safety margin)	P
	Brood Rite® heaters 240 500 750 watt units	S
	Buckets, 5 gallon	P
	Butterfly catheters--Pediatric size or Scalp vein sizes	P
	Camera, disposable (to record each animal on intake)	P
	Can opener	P
	Cardiac and respiratory stimulants	P
	Catch pole	S
	Centrifuge for hematocrit tubes	P
	Clay tray for hematocrit tubes	P
	Cleaning table--sturdy, stable, and water resistant (96”x30”x28“)	S
	Cloth tape	P
	Clothes pins	S

	Cotton balls	P
	Cotton swabs	P
	Culturettes	P
	Cutting board	S
	Dawn® dishwashing liquid	S
	Dexamethasone sodium succinate	P
	Diaper pins	S
	Digital gram scale	P
	Dish drainer mat (perforated)	S
	Dishpans, plastic	S
	Disinfectant (Roccal D®)	P
	Drum lid wrench	P
	Drums, 55 gallon with lids	P
	Elasticon® tape	P
	Electrical adapters (heavy duty, triple outlet, outdoor type)	S
	Enteric coating agent (i.e. Pepto-Bismol® or Toxiban®)	P
	Euthanasia solution	P
	Exam forms	P
	Exam Tables Size:	S
	Eye wash bottles	P
	Floatation vest	S
	Floor mats, non-slip, self draining, anti-fatigue	S
	Foley catheters (12-16 gauge, with adapters) (12 adapters and 30 catheters per dozen animals)	P
	Food processor	S
	Food strainers	S
	Food/water containers Size(s):	S
	Formalin 10%	P
	Galvanized tubs, 17 gallon round, with lids	S
	Garbage can, 33 gal. metal with lid & wheels (rodent proof food storage)	S
	Garden hose (25’)	S
	Gauntlet style gloves, butyl or neoprene	S
	Gauze squares	P
	Heat lamp fixtures with inline switch, clamp on type	S
	Heat lamps, 150 watt conical ceramic type	S
	Heating mats, kennel type	S
	Hematocrit tubes	P
	HEPA filtration units (portable)	P
	Hot/Cold water mixing valves, accurate +/- 2ºF.	S
	Injectable anesthetic agents	P
	Injectable sodium bicarbonate	P
	Insect repellent	P
	Isopropyl Alcohol	P
	IV fluid stand	P
	IV sets (18-25 gauge) Sizes:	P

	Kling® gauze	P
	Knife sharpener	S
	Knives carving paring boning fillet	S
	KY jelly	P
	Leg bands, plastic, numbered Sizes:_____ Colors: red blue yellow green white other____	P
	Lights, portable, on stand	S
	Measuring cups and spoons	S
	Micropore® tape	P
	Microscope	P
	Microscope slide cover slips	P
	Microscope slides	P
	Milk crate, plastic	S
	Multiple animal feeder	S
	Multitest sticks	P
	Necropsy instruments (append list)	P
	Needles (hypodermic) Sizes:	P
	Net, cast	S
	Net, hand	S
	Net, hoop	S
	Net, long handled	S
	Non-steroidal ophthalmic antibiotic solution	P
	Nylon netting (rolls 0.5” to 1”, smooth mesh)	S
	Oral rehydration fluid (i.e. Pedialyte®)	P
	Panalog® cream	P
	Penlight	P
	Perching and flooring material Type:	P
	Peroxide	P
	Pet carriers, waxed cardboard Small Large	P
	Pet carriers, plastic Large Medium	P
	Pet dryers, portable	P
	Plastic cups	P
	Plastic pitchers pint quart gallon	S
	Plastic sheeting, 4-8 mil polyethelene, 8’x100’ rolls	S
	Plastic Totes (small to large) for food storage	S
	Play pens, soft sided	S
	Plumbing adapters from 1/2” shower head to garden hose	S
	Pool thermometers	S
	Poultry shears	S
	Pretreatment agents (if needed based on type of oil and species involved)	P
	Protective goggles (non fogging)	S
	Pump hoses for intake and output, hot water resistant	S
	Rain gear XXL XL L M	S
	Raptor or welders gloves	S

	Refractometer (temperature compensated)	P
	Sea salt (bags and tablets)	P
	Sharps container	P
	Sheets	S
	Shell or crab cracking mallet	S
	Shelving unit (water resistant, sturdy)	S
	Shower heads w/inline shut off valves	S
	Sponges	S
	Spray/mist bottles, quart size	S
	Sterile electrolyte (Lactated Ringers Solution with 2.5% Dextrose; or Normosol)	P
	Sterile gauze wrap Size:	P
	Sterile instruments (list appended)	P
	Sterile saline	P
	Sterile syringes, Catheter tip Sizes:	P
	Sterile syringes, Luer lock type (1cc-60cc) Sizes:	P
	Stethoscope	P
	Stool	P
	Sump pumps (1/4 HP for small pool drainage)	P
	Sunscreen lotion	P
	Surgical gloves XL L M S	P
	Surgical masks	P
	Survival suit	S
	Tegaderm® Skin Covering	P
	Telfa® Pads	P
	Thermometer calibrated to 108º F (rectal)	P
	Thermometer, Photographic calibrated to 120°F. with hanging clips	S
	Tissue sample containers (small)	P
	Toothbrushes (extra soft, child size)	S
	Towels bath size hand size	P
	Trash bags	P
	Tube feeding ingredients (varies by type of animals fed) (append list)	P
	Tyvek® coveralls XXL XL L M S	S
	Utility sink, free standing, only drain plumbed	S
	Valve, inline ball-style, for garden hose	S
	Vetrap® 2” 4”	P
	Vitamin supplements	P
	Water Pic® dental irrigator	S
	Whistle on lanyard (order one per person in the field)	P
	Zipper style plastic bags Sizes:	P

Animal Deterrance

No.	Item	Purchase (P) or Stockpile (S)
	Animal calls	S
	AV Alarms®	S
	Cannon launched net	S
	Cracker shells (for 12 gauge shotgun)	S
	Decoys	S
	Hip waders	P
	Mist netting with cable ties, stakes, and mallet	S
	Mylar tape	S
	Net Gun	S
	Nylon cord	S
	Phoenix Wailer®	S
	Propane cannon	S
	Propane tank (20 lb.) 2 per cannon	S
	Scarecrow	S
	Seine net	S
	Shallow draft watercraft appropriate to conditions	P
	Shotgun, 12 gauge	P
	Spot lights	S
	Stroboscopic light, revolving	S

Facility Maintenance List:

No.	Item	Purchase (P) or Stockpile (S)
	Clock, battery operated	P
	Desk	P
	Desk Chair (rolling)	P
	Electrical circuit tester	S
	Extension cords (20amp, outdoor, 100' 50' 25')	S
	Fans, portable	S
	File cabinet or file storage box	S
	Fire extinguishers Type:	P
	Floor squeege	P
	Folding Metal Tables Size:	S
	Freezer Chest type Upright Lockable? Yes No	P
	Garbage cans, 33 gal. with lid & wheels	S
	Garden type spray nozzel	P
	Hardware Kit: electrical tape, wire nuts, assort. washers, nails, nuts, bolts, screws, rope, duct tape, wire, cotter pins	S
	Heaters, portable electric	S
	Large signs: Quiet Clean Animals Oiled Animals Medical Treatment Clean linens Newspaper Dirty Laundry Volunteer Area No Admitance Other_____	P
	Microwave oven	P

	Mop bucket with wringer & wheels	P
	Multiple-outlet power strips, heavy duty	P
	Paper towel holder	S
	Paper towels	S
	Plumbing Kit: Teflon tape, assort. rubber washers, hose clamps, PVC pipe cleaner and cement, Y hose connectors, male & female end repairs, splice repair kit	S
	Plywood and lumber for pens and pools:	P
	Pool filtration system	P
	Pool(s) Size(s):	P
	Power tool Kit: Cordless & corded drills, Circular and reciprocating saws with extra blades, drill index, extra batteries and charger for cordless tools, level	S
	Push broom	P
	Refrigerator Size(s):	P
	Room thermometers	S
	Shelving unit metal plastic wood	P
	Staple Gun (heavy duty)	P
	Staples for staple gun Type: Sizes:	P
	String mop	P
	Tarp, waterproof, grommetted, 20'x20' for pool liners, area covers	S
	Tool Kit: hammer, pipe wrench, pliers (channel, clamping , needlenose), hack saw, wire cutter/stripper, slot & phillips screwdrivers, utility knife, adj. wrench, tape meas.	S
	Trash barrels, 50 gallon, on wheels	P
	Trash Can liners 33 gal. 55 gal.	S
	Utility sink	P
	Vacuum cleaner , wet/dry type (Shop-Vac®)	P
	Water cooler	S
	Water heater, High capacity, on demand (90° rise at 3 GPM continuously) this item may require propane/natural gas hook up. Electric units are normally insufficient	S
	Water pressure gauge	P
	Water pressure pump (maintain 40 PSI at full flow, up to 60 PSI)	S
	Water test kit (pH, hardness, chlorine)	P
	Water treatment system (for hard/soft water, auto regeneration, min. maintenance high capacity)	S
	Water/sewage pump, electric, self priming, able to withstand hot water & debris	S

Office Supplies List:

No.	Item	Purchase (P) or Stockpile (S)
	Bulletin Board	P
	Calculator	P
	Clip boards	P
	Copier	P
	Disks compatible with computer Type:	P
	Dry erase markers black red blue green assorted	P
	Duct tape	P
	Fax machine	P
	File folder box	P
	Highliters pink yellow blue green assorted	P
	Ink/Toner cartridge for Copier Fax Printer Make/Model _____ Cartridge No._____	P
	Manila folders	P
	Masking tape	P
	Name tags or badges	P
	Paper clips large small	P
	Paper compatible with fax machine Ink jet Laser Roll (size:)	P
	Paper compatible with printer Ink jet Laser Pin feed	P
	Paper for copier Ink jet Laser	P
	Pencils	P
	Pens	P
	Portable computer w/database, spreadsheet, word processing programs, modem, cables	P
	Portable printer & cables, compatible w/computer model:_____	P
	Poster boards	P
	Push pins	P
	Rulers	P
	Scissors	P
	Scotch® tape	P
	Stapler (desk type)	P
	Staples for above stapler size:	P
	Waterproof markers black red other assorted	P
	White Out® fluid	P
	Whiteboard large medium small	P
	Writing tablets	P

Optional Surgical Item List:

No.	Item	Purchase (P) or Stockpile (S)
	Allis tissue clamps	P
	Disposable drapes	P
	Endotracheal tube	P
	Esophageal stethoscope	P
	Forceps	P
	Hemostat	P
	Instracal sterilizing liquid	P
	Needle holder (5.5 Olsen/Hegar)	P
	Needles Sizes:	P
	Oxygen	P
	Pan (stainless steel 8”x5”x2”)	P
	Scalpel blades No.:	P
	Scalpel handle	P
	Small animal anesthetic machine (Isoflurane vaporizer)	P
	Surgical caps	P
	Surgical gowns	P
	Surgical scissors	P
	Surgical table, stainless steel	P
	Sutures	P
	Towel clamps (3.5 Backhaus)	P

Source: Created by Jan White, Wildlife Publications, Maple Valley, WA.

Appendix 2. Zoonotic Diseases of Wild Birds

Organism Common Name	Mode of Transmission	Usual Source	Reported Species	Signs and Symptoms	Precautions for Handlers
BACTERIAL					
Campylobacter jejuni -Campylobacteriosis	O	Contaminated Tissue Fecal Exposure	Man, birds, mammals	Abdominal Pain, Fever, Vomiting, Headache	PPE/Gloves Handwashing Food Hygiene
Chlamydia psittaci -Chlamydiosis	I	Aerosol droplets	Man, birds	Conjunctivitis, Depression, Respiratory Infection	PPE Gloves/Mask Handwashing
Clostridia sp. Blackleg/Tetanus -Enterotoxemia/etc.	C, I Puncture Wounds	Fecal contamination Contaminated soil	Man, all mammals, birds	Anaerobic Wound Infections/Septicemia Hemorrhagic Enteritis/Neurotoxin	PPE Vaccination Handwashing Food Hygiene
E. coli -Colibacillosis	I, O	Contaminated Tissue	Man, birds, mammals	Enteritis Diarrhea	PPE/Gloves Handwashing Food Hygiene
Erysipelotrix sp. -Erysipeloid, diamond skin dis.	O, C Bites/Scratches	Water/Saliva Fish/Shellfish	Man, bird, cetacean	Cellulitis, Septicemia Rhomboid Skin Placque	PPE Gloves/Masks Handwashing
Listeria monocytogenes -Listeriosis	O	Water/Mud	Man, birds, mammals	Conjunctivitis	PPE Gloves/Masks Food Hygiene

O = Oral I = Inhalation C = Contact PPE = Personal Protective Equipment

Organism Common Name	Mode of Transmission	Usual Source	Reported Species	Signs and Symptoms	Precautions for Handlers
BACTERIAL (Cont.)					
Mycobacterium avium - Mycobacteriosis	I, C, Insect Vectors Scratches	Soil/Water	Man, birds, swine	Pulmonary Disease, Cervical Lymph-adenopathy	PPE Masks/Gloves
Mycoplasma sp. -Atypical pneumonia	I Aerosols	Mucous membranes	Man, most mammals, birds	Respiratory Infection Conjunctivitis	PPE Masks/Gloves Handwashing
Pasturella multocida -Pasturellosis	I, O?, C Bites/Scratches	Respiratory secretions from carrier birds or mammals	Man, pinnipeds, birds	Cellulitis/Respiratory Infection Septicemia/Enteritis Peracute Death	PPE Gloves/Mask Handwashing
Salmonella/Shigella Plesiomonas -Infectious Enteritis	O	Tissues from infected animal/fecal contamination	Man, all vertebrates	Enterocolitis/Diarrhea Fever/Septicemia	Food Hygiene Cooking/Chilling Handwashing/Gloves
Yersinia pseuotuberculosis -Pseuotuberculosis *Yersinia enterocolitica* -Yersiniosis	I, O, C	Fecal shedding Contaminated food or water	Man, birds	Enlarged Mesenteric Lymph Nodes -*Y. enterocolitica* enteritis	PPE Gloves

O = Oral I = Inhalation C = Contact PPE = Personal Protective Equipment

Organism Common Name	Mode of Transmission	Usual Source	Reported Species	Signs and Symptoms	Precautions for Handlers
VIRAL					
Paramyxovirus -Newcastle Disease	I,O	Secretions and Excretions	Man, birds	Conjunctivitis, Fever, Chills, Headache	Isolation of Suspects Sanitation PPE/Gloves/Mask
Influenza Virus -Influenza A	I, O	Aerosol droplets	birds, Harbor seals, pilot whale, man,	Upper Respiratory Tract Infection Pneumonia/Conjunctivitis	Isolation PPE/Mask/Gloves
FUNGAL					
Aspergillus sp. -Aspergilliosis	I	Spores from mold growth in damp, poorly ventilated areas	birds, cetaceans, man, birds	Respiratory Infections Granulomas	PPE/Mask Adequate ventilation
Coccidioides immitis Coccidioidomycosis	I	Spores in dust / soil (esp. following an earthquake)	Dolphin, man, sea lion, sea otter	Pyogranulomas in lung/other tissues	PPE/Mask Sanitation
Cryptococcus neoformans Cryptococcosis	I	Spores in soil contamined by bird droppings	Man, mammals, birds	Pulmonary disease but may disseminate to viscera, skin, bones or CNS	PPE/Mask Sanitation
Histoplasma capsulatum -Histoplasmosis	I	Spores in dust and soil and bird roosts	Man	Flu-like signs, fever, Respiratory signs	PPE/Mask Sanitation

O = Oral I = Inhalation C = Contact PPE = Personal Protective Equipment

Source: *Recommended Protocols for the Care of Oil Affected Birds*, States/British Columbia Oil Spill Task Force, 1998

Appendix 3. Deterrent Techniques

Gas-Operated Exploders

Detonators consist of a bottled gas supply, separate pressure and combustion chambers, an igniting mechanism and a barrel to aim and magnify the blast. Gas-operated exploders produce a loud directional shotgun-like noise by slowly filling a bellows with propane gas from a tank, then rapidly transferring this gas to a firing chamber and igniting it with a spark. Blasts are emitted at adjustable time intervals. The interval between detonations can be varied from less than one minute to 30 minutes. Some gas-operated exploders can be set to fire at random intervals and rotate after each explosion so that subsequent shots are aimed in different directions. The sound level is approximately 120 dB. An exploder can operate for about two weeks without refueling, but needs to be maintained regularly for effectiveness and to ensure that it is working properly.

> Note: Gas-operated exploders are extremely dangerous and should be used only by trained personnel.

Advantages

- Deployable in onshore and offshore situations (when placed on anchored rafts) especially when the oil is well confined and where birds are particularly susceptible;
- Protective of relatively large areas (200 - 1000 m or 30 - 50 ha);
- Rapidly remobilized;
- Automatically operated and require only minimal staffing;
- Effective during both day and night;
- Especially effective in deterring dabblers and geese;
- Inexpensive to operate and require little maintenance;
- Inexpensive to purchase ($300); and
- Widely available.

Disadvantages

- Birds rapidly habituate to the sound of the blasts (no more than two or three days and sometimes less than a few hours for some bird species);
- Not effective in deterring most shorebird species as well as gulls, coots, grebes and loons;
- Significantly reduced effective range and sound intensity when used in fog and wind;
- Difficult to install and operate on an anchored raft in open water and in bad weather; and
- Disturbing to local residents and responders.

Pyrotechnics

These devices frighten birds by producing a whistling noise, explosion and/or flash of light. Types include shotgun-launched projectiles (shell crackers) and a variety of pistol-launched projectiles. When using pyrotechnics, the danger of igniting spilled oil and vegetation should always be avoided. Both shotgun- and pistol-launched devices should be fired with the wind, and away from personnel. Safety goggles and ear protectors (muff or ear plug type) are worn, and personnel using pyrotechnics are expected to be trained in firearms safety.

Shotgun-launched projectiles include shell crackers and scare cartridges. They are fired from a 12-guage shotgun with the shell shot being replaced by a bulldog or M-80 firecracker that explodes at 100-150 yards

(91-136 m). Single barrel shotguns that break and load at the breech are recommended. The shotgun should be fired from the hip at a 45° angle, and shell crackers should explode as close to the birds as possible. Because of the light charge, the shotgun has only a slight recoil.

Note: Pyrotechnics are extremely dangerous and should be used only by trained personnel.

Advantages

- Effective both day and night;
- Easily directed close to water birds;
- Especially effective in deterring open-water birds;
- Relatively high radius of effectiveness (at least 200 m from the source and up to 1 km for some bird species);
- Effective on land or in offshore situations;
- Highly effective in combination with other deterrents (motorboats, ATV, effigies); and
- Relatively inexpensive (roughly $50 per hundred).

Disadvantages

- Short duration of effectiveness (one or two hours);
- Less effective in deterring dabbling ducks;
- Ineffective in deterring gulls and shorebirds;
- Significantly reduced effective range and sound intensity when used in windy situations;
- Requires continuous staffing;
- Potentially hazardous to operators and bystanders if not used carefully;
- Potentially hazardous if used in areas containing volatile oil components; and
- Disturbing to local residents and responders.

Aircraft

Aircraft, especially helicopters, are effective deterrents because of the combination of loud noise and rapid approach from above. They are often effective for hazing birds away from large areas. Helicopters may also be used to herd flightless (young and molting) birds.

Aircraft are considered to be especially useful during the early stages of cleanup and hazing operations. They are more effective if used in combination with other devices such as shell crackers and gas-operated exploders. Because of their maneuverability and noise, helicopters are probably more effective than fixed-wing aircraft.

Not all bird species will take flight in response to overhead disturbances. Some waterbirds (e.g., loons and alcids) dive rather than fly when approached by aircraft, and others who are young or in their molting or brood-rearing stage may be incapable of flight. Flightless birds can be herded with a helicopter (Alaska Regional Response Team, 1991), or ground patrols after the helicopter has departed. Helicopters have been used successfully to drive flightless Canada geese over water, exposed tidal flats, and dense sedge in Alaska with the helicopter remaining 10 to 20 m (33-66 ft) behind the geese at an altitude of 1-15 m (3-49 ft). (Timm and Bromley, 1976).

Advantages

- Readily available to remote and roadless areas;
- Disperses birds in different types of habitats (marsh birds, offshore birds);
- Rapidly disperses birds while oil is still offshore;
- Requires minimal staffing; and
- Highly effective at deterring geese.

Disadvantages

- Less effective at deterring species other than geese, especially during molt;
- Less effective for birds gathered in very attractive sites like feeding or nesting grounds;
- Increased potential of bird-aircraft collisions during low flying activities;
- Ineffective at night;
- Reduced or limited feasibility during bad weather (especially fog);
- Time consuming for deterring birds on a large scale basis;
- Limited ability to procure helicopters, in heavy demand during an oil spill; and
- Relatively high cost of charter aircraft.

Motorboats

Motorboats can be used to deter birds located offshore where hazing from the shoreline with other techniques is ineffective in driving birds away. A few studies conducted during the last 20 years have demonstrated the potential of boats as an effective deterrent. Birds are more sensitive to boats propelled by outboard motors. A powerboat causes virtually instantaneous flight as soon as it appears on the water, causing a majority of birds to leave. There is some speculation that the larger the flock, the more sensitive it is to an approach (Batten, 1977). The hazing of diving birds with boats is generally considered slow, labor intensive, and may be ineffective. Boats may be useful for herding flightless waterfowl away from spilled oil to boomed areas of lagoons, or overland to inland lakes (Alaska Regional Response Team, 1991).

Advantages

- Useful in deterring birds located at some distance from the shoreline;
- Rapidly implemented for deterring birds while oil is still offshore;
- Works well with most species except diving birds;
- Covers relatively large areas; and
- Requires limited staffing.

Disadvantages

- Deployment potentially hazardous during bad weather, ice conditions or darkness;
- Limited ability to locate birds, especially in rough seas; and
- Difficult to direct dispersed birds to unoiled waters.

All-Terrain Vehicles (ATVs)

All-Terrain Vehicles (ATVs) such as quad-runners are moderately effective for hazing many species of waterfowl and shorebirds. Human presence reinforces the effects of the noise and rapid movement of the vehicle. A quad-runner can also be equipped with air horns or sirens, or used with pyrotechnics.

Advantages

- More efficient for covering larger shore areas (between 3 and 5 km instead of 1-2 km by foot); and
- Most effective when used in combination with other methods (e.g. noisemakers).

Disadvantages

- Limited to birds onshore;
- Limited to daylight use; and
- Potentially destructive to certain habitat types.

Electronic Sound Generators

These devices, broadcast loud, intermittent electronically synthesized sounds that are in the audible range of birds. The units can be adjusted to the most effective range of sound patterns for the target bird species, and sound patterns within this range can be varied over time to decrease habituation. Sound generators can be positioned on land, mounted on boats, or housed within a raft or buoy for effectiveness in open water and marine situations.

Advantages

- Useful in open water environments;
- Rapidly deployed;
- Projects over large areas;
- Readily deployed on leading edge of drifting oil slick;
- Maximizes potential of dispersing birds away from contamination, when deployed directly into oil slick;
- Reduces potential of bird habituation because buoy is moving with the wind and current and regularly encounters new groups of birds;
- Limited habituation of birds, even when anchored, due to the diversity of sounds produced;
- Operable and effective day and night;
- Operable during bad weather (fog and rain);
- Readily retrievable;
- Easy to handle and operate by two persons;
- Constructed to withstand the hazards of fire and explosion sometimes associated with oil slicks;
- Long-lasting effectiveness (>two weeks);
- Low maintenance (requires four marine batteries: two in the unit and two on full charge).

Disadvantages

- May be less efficient in areas where birds are accustomed to loud background noises, where hunting pressure is low; or where birds congregate in very secure habitats;
- Batteries must be replaced or recharged after 72 hours of operation;
- Requires a boat or a helicopter to be deployed offshore;
- Regular monitoring (daily) is recommended to ensure effectiveness;
- Range of effectiveness decreases during high winds and rough seas;
- Requires monitoring, when used in oil slick, to ensure that device stays in oil slick;
- Duration of effectiveness unknown when the buoy is used in a stationary mode;
- Disturbing to local residents and responders;

- Expensive, more so if the costs of radio beacon transmitters and receivers are included; and
- May not be immediately available.

Biosonics

These techniques use distress, warning, or alarm calls that are broadcast by tape players to disperse single or closely related species from the immediate area. In general, individuals or small flocks are less responsive than large flocks. The effectiveness of biosonics can be increased by supplementation with pyrotechnics.

Advantages

- Effective at lower sound intensities; and
- Slower habituation.

Disadvantages

- Highly species specific;
- May attract rather than deter birds, depending on life stage; and
- May attract predators and scavengers.

Underwater Acoustics

These include devices that put sound into water, such as sweep frequencies, killer whale vocalizations, and underwater percussion devices. These devices have not been studied enough to allow for guidance or to determine advantages and disadvantages and, therefore, are NOT recommended for use as bird deterrents during oil spill response.

Balloons

All-weather helium balloons are considered effective if properly maintained and frequently refilled and repositioned. They are generally 20-30 inches (50-75 cm) in diameter, and should not be fully inflated in order to reduce stress from wind resistance. Balloons may be suspended from land or from a floating object in the water. They should not be located near trees or other objects that could cause puncturing. Balloons should be tethered on 40-75 feet (12-23 m) of 48 lb (22 kg) or stronger monofilament line and initially spaced at least every 200 yards (183 m). Some balloons should be set very high to deter birds from flying overhead.

Advantages

- Inexpensive; and
- Readily available.

Disadvantages

- Rapid habituation;
- Ineffective at night;
- Do not function well in winds over 10 mph; and
- Potentially subject to ultraviolet degradation.

Flags

Flags are considered an effective and inexpensive hazing device for waterfowl. They can be constructed by mounting a three-by-two-foot (91-61 cm) sheet of black plastic to a four-foot (1.2 m) stake. The stakes

should be driven into the ground at an angle so the flags will move in light wind. They should be erected every 100 to 200 feet (30-61 m) on land, or on buoys over water. Mylar car dealership flags can also be effective for hazing waterfowl. Flags can be used in conjunction with gas-operated exploders.

Advantages
- Inexpensive; and
- Readily available.

Disadvantages
- Rapid habituation; and
- Ineffective at night.

Human Effigies and Predator Models

Human effigies (e.g., traditional scarecrows) and raptor models may be effective if they appear lifelike, have motion, are frequently repositioned, and are used in combination with loud sounds or recorded distress calls. Human effigies are more effective if you first establish the human form as being potentially detrimental (e.g., have response personnel create disturbance in the area before deploying human effigies), and are dressed similarly to personnel operating in the area.

Advantages
- Readily put in place;
- Easily remobilized;
- Does not constitute an auditory disturbance near populated areas or responders;
- Effective in good and bad (winds, rain, etc.) weather; and
- Relatively inexpensive (<$200).

Disadvantages
- Effectiveness limited to daylight, except if equipped with lights or combined with audio deterrents;
- Rapid habituation by birds (a few days); and
- Small range of effectiveness (100m or 4-8 ha).

Reflectors, Mirrors, and Reflecting Tape

Reflector devices can be constructed by attaching aluminum or tinfoil pie plates to a line suspended over land or water. These devices can be used in association with lights to haze waterfowl. Hand-held mirrors that reflect sunlight may also be effective. Mylar reflecting tape is another deterrent for many species of birds. This silver and red-coated tape is generally twisted and strung between support posts. The tape reflects sunlight, and vibrates under windy conditions producing a humming noise.

Advantages
- Inexpensive.

Disadvantages
- May attract, rather than deter, birds; and
- Ineffective at night.

Lights

Strobe, barricade, search, and revolving fixed lights have been used to haze birds, and they should be combined with other deterrent techniques such as exploders and pyrotechnics. Although lights may be partially effective for deterring waterfowl during the night, some bird species may be attracted to lights, especially during rain, fog, or heavy cloud cover.

Advantages

- Inexpensive.

Disadvantages

- May attract, rather than deter, birds.

Lure Areas and Bait Stations

Birds may be lured from one area to another with the use of bait food. However, bait stations require that large quantities of bait food be available over a period of days. Because lure areas need to be relatively close to a spill so that the food can be detected, this proximity may increase the oiling risk to birds attracted into the general area. Lure areas are recommended only when, after careful evaluation, alternative techniques would be expected to be ineffective.

Advantages

- Passive form of deterrence.

Disadvantages

- May attract birds not normally present in the area and increase potential for oiling as birds disperse from baited site.

Dyes

The feasibility of using dyes for deterring birds from oil spills is unknown because of data gaps including: species-specific reactions to colors, habituation potential, dye toxicity, dye solubility in various types of oil, concentration required, and rates of dye weathering. Therefore, use of dyes is NOT recommended as a bird deterrent during oil spill response at this time.

Trained Falcons and Hawks

Trained falcons and hawks are sometimes used at airports to chase away birds and disperse birds from runways. If used in a contaminated or oiled area, there is the potential that these trained birds could themselves become oiled or contaminated, or could potentially chase or disperse birds into contaminated areas. Using trained falcons and hawks is NOT recommended as a bird deterrent during oil spill response.

Decoys and Visual Devices

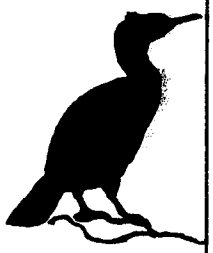
Dead-bird decoys or bird carcasses are sometimes used to discourage birds from using an area. However, placing dead-bird decoys or bird carcasses in a contaminated or oiled area may attract healthy birds of prey or other mammalian predators, potentially causing these predatory species to become contaminated or oiled. Using decoys and carcasses is NOT recommended as a bird deterrent during oil spill response.

Sources: *Deterrent Techniques and Bird Dispersal Approach for Oil Spills,* Denis Lehoux and Daniel Bordage, Canadian Wildlife Service, 2000; and *Rehabilitation Manual for Oiled Birds*, Greer, R.D., D.J. O'Connor of Exxon, Biomedical Sciences, Inc., L. Frink, and S. Welte of Tri-State Bird Rescue and Research, Inc., 1998.

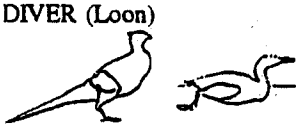
Appendix 4. Bird Natural History and Special Concerns

Source: *Oiled Bird Search and Collection Training Course*, Marine Oil Spill Workforce Manual, BC Environment

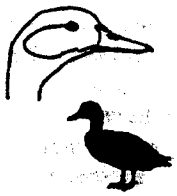
Appendix 4. Bird Natural History and Special Concerns

Body Shape	Group (Order) Examples	Physical Characteristics Natural History	Bird Collection and Care - Special Concerns
	ALCIDS (Charadriiformes) Common Murre Rhinoceros Auklet Cassin's Auklet Pigeon Guillemot Tufted Puffin Marbled Murrelet Ancient Murrelet	Divers that use short narrow wings to fly underwater and use feet to steer, short legs attached toward the rear of the chunky body, have short-tail, large head, only three toes (all webbed) and dense waterproof plumage. Most prefer open sea, very gregarious, most nest in colonies on offshore islands. Nest disturbance can seriously reduce the success of a breeding season. Most molt all their flight feathers at once and are flightless for a period.	Some may be able to stand, but padding in box/ pen should be provided; those that stand on the entire foot up to the ankle are more awkward on land. Prone to foot and joint infections. Smaller alcids should be provided with hiding places. Can be aggressive, be careful of sharp beak. Birds will often be comforted by presence of others of their species in the same pen. Murres out on the water that have lost waterproofing will sometimes create a lot of splashing by flapping their wings while trying to stay afloat at the surface.
	CORMORANTS & PELICANS (Pelecaniformes) Brandt's Cormorant Double-crested Cormorant Pelagic Cormorant Brown Pelican	Foot propelled diving birds, have short legs to the rear of a stout body, long neck, with long beak sharply hooked at tip and no external nostril openings, long stiff tail, webbed foot (all 4 toes are webbed), are very aquatic and strong fliers. Feathers not completely waterproof. Gregarious, nest in colonies, can sink partly or completely below surface by squeezing air out of plumage. Swim low on the water. Can often be seen perching with wings held out.	Allow bird to breathe through its mouth. Always maintain head control, can strike and inflict severe bite. They walk poorly; can be provided rocks or slumps for perching in pen and padding in box/pen. It can help to support the strong feet when holding for tubing, etc. They may be more still and easier to work with this way.

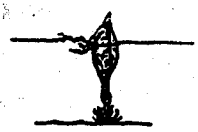
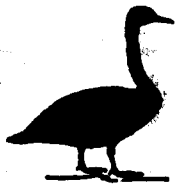
Source: *Oiled Bird Search and Collection Training Course,* Marine Oil Spill Workforce Manual, BC Environment

Body Shape	Group (Order) Examples	Physical Characteristics Natural History	Bird Collection and Care - Special Concerns
	GREBES (Podicipediformes) Horned Grebe Eared Grebe Red-necked Grebe Western Grebe Clark's Grebe	Foot propelled diving birds with short wings, rudimentary tails, slender pointed bill, four lobed toes with partial webbing, legs far back on body, soft plumage, very aquatic, weak fliers. Rarely on land, even to breed.	Head needs to be controlled so that handler avoids being struck by sharp beak. Awkward on land, will feel safest in the water, not likely to come ashore until they have to. Prone to getting sores on keel, so need lots of padding in boxes and pens. Likely to become soiled in pens because they don't move away from their own droppings. Handlers should try to avoid projectile feces. May fight among themselves and peck at each other in crowded conditions. Prone to getting an impacted cloaca.
	LOONS (Gaviiformes) Pacific Loon Common Loon Red-throated Loon	Large, foot propelled diving birds, with legs far back on long body, straight sharp beak, hard compact plumage, wings narrow and pointed. Loons have four toes, (front three are webbed). Rarely on land, except to breed, on shore, of lakes and ponds. Extremely sensitive to human disturbance near nest. Migratory. Flightless period during fall molt. LEG POSITION OF WALKER (Pheasant) VS DIVER (Loon) 	Strong birds with sharp beaks; need to always control head, usually need two people to handle a loon. Wear goggles. Will feel safer in the water and less likely to come onshore (until they have to); awkward on land. Very susceptible to stresses of captivity. Prone to sores on keel so need lots of padding in boxes and pens. May fight among themselves and hurt each other in crowded conditions. Prone to getting impacted cloaca. Likely to become soiled because they don't move away from their own droppings. Light oiling on surface feathers may not penetrate enough to destroy waterproofing. Handlers should try to avoid projectile feces.

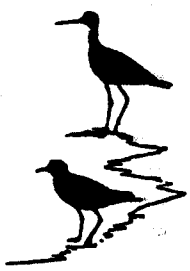
Source: *Oiled Bird Search and Collection Training Course,* Marine Oil Spill Workforce Manual, BC Environment

Body Shape	Group (Order) Examples	Physical Characteristics Natural History	Bird Collection and Care - Special Concerns
	SEA DUCKS & BAY DUCKS (Anseriformes) Canvasback Surf Scoter Black Scoter White-winged Scoter Bufflehead Goldeneye-Common, Barrows Harlequin Duck Scaups-Lesser Greater Oldsquaw	These sea ducks & bay ducks have relatively short legs and tails, most have broad flattened beaks, with dense plumage and the three front toes webbed, hind toe is lobed. Diving ducks are foot propelled with large, more widely spaced feet that make them less balanced on land than dabblers. Legs are short and farther to the rear of their bodies. Diving ducks have smaller more pointed wings than dabbling ducks. (Some diving ducks use both feet and wings when swimming underwater). Found in open ocean and bays. Most are migratory.	Diving ducks must build up air speed before taking off. Prone to sternal lesions, foot and joint damage, and should have padding in box/pen. Divers are less inclined to come ashore than dabblers (until they have to). A light oiling on the surface of dense plumage may not affect waterproofing. Most duck beaks are not dangerous to handlers. Male and female ducks generally have very different plumage; males are often aggressive toward females and sub adults, especially in crowded pens. Scoters will often go limp when being handled; this is not an indication that they are in serious trouble; they also can be aggressive, hissing and striking out, but there is little chance of them hurting handlers.
	STIFF-TAILED DUCKS (Anseriformes) Ruddy Duck	Stiff-tailed ducks have big feet and long tails, often held erect. Ruddy ducks' feet are so far back that they are nearly helpless on land. Ruddy ducks are the most aquatic diving ducks and can quietly sink below the surface without making a ripple Found in ponds, lakes & shallow bays.	Stiff-tailed ducks can be very shy; should be given hiding places. Ruddy ducks are nearly helpless on land and need padding in boxes and pens.

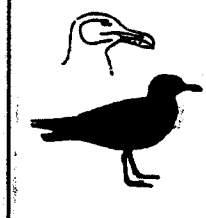
Source: *Oiled Bird Search and Collection Training Course,* Marine Oil Spill Workforce Manual, BC Environment

Body Shape	Group (Order) Examples	Physical Characteristics Natural History	Bird Collection and Care - Special Concerns
	DABBLING DUCKS (Anseriformes) Eurasian Wigeon Northern Shoveler American Wigeon Green-winged (Teal) Northern Pintail Gadwall Mallard	Dabbing ducks have short legs placed more to the front of the body, feet are generally smaller than those of diving ducks, have larger less pointed wings than the divers and dense plumage. Unlike seaducks, hind toe is not lobed or flattened. Usually feed in shallow fresh or salt water by tipping up the tail and reaching below the surface. Most rarely dive except to escape danger.	Dabbling ducks can bound directly from surface into flight; pens should be covered (i.e., netting), boxes should not be opened completely before handler is ready to hold duck. Easiest of the water bird groups to handle; more resistant to stresses of captivity. Males may be somewhat aggressive toward sub adults or females, especially in overcrowded pens. Light oiling on surface feathers may not penetrate enough to destroy waterproofing.
	GEESE (Anseriformes) Brant Snow Goose Canada Goose Whitefronted Goose	Geese have a large body, long neck, stout bill and dense plumage. Legs of geese are placed further forward on the body than on ducks and swans, which gives them better balance for walking. Swim and feed at water surface, often tipping up. Highly social. Have strong family bonds and lasting pair bonds.	Can be very aggressive, especially during breeding season (threatening displays are common). Powerful wings and legs, some have bony knob at carpet joint of wings that can inflict injury. It may be easier to hold the goose against the ground while its wings are controlled and then wrap a sheet around the wings and lower body, then it can be picked up and carried more easily. Can walk or run well. Because of dense plumage, light oiling on surface feathers may not penetrate enough to destroy waterproofing.

Source: *Oiled Bird Search and Collection Training Course,* Marine Oil Spill Workforce Manual, BC Environment

Body Shape	Group (Order) Examples	Physical Characteristics Natural History	Bird Collection and Care - Special Concerns
	SHOREBIRDS (Charadriiformes) Oystercatcher Turnstones Plovers Dunlins Sandpipers Phalaropes	Most are long-legged, and are seen walking, running or wading in or near the water. The larger shorebirds have long necks. Most have slender, specialized bills. They have dense plumage and are good fliers. Primarily wading shorebirds, often in large flocks. Most probe mud or sand. Can walk or run quickly.	Smaller shorebirds can benefit from being boxed or penned together. Many species are shy and should be provided hiding places in pens. Many species are small and delicate; require careful handling and are very susceptible to hypothermia. Oystercatchers' nest on offshore rocks and islets (on rocks and gravel) can be easily disturbed by people or boaters in their areas in spring. Many shorebirds prefer mud flats (areas where oil will persist).
	HERONS (Ciconiiformes) Great Blue Heron	Long necked, long legged waders with long, rounded broad wings, short tail, long bill and four long widely spread toes. Most are wading feeders. They are usually solitary except during breeding.	Long legs subject to trauma especially if cramped. Have sharp, pointed beaks and may aim for eyes of handlers--so always maintain head control. Wear goggles. Very shy and sensitive to human presence; provide visual barriers. Should be provided a perch and housed alone.
	TERNS (Charadriiformes) Common Tern Caspian Tern	Long narrow wings, dense waterproof plumage, long tail usually forked, sharp, pointed bill, no hook, webbed feet, short legs, but not strong swimmers on surface. Often hover and plunge head-first into water. Colonial breeders, migratory. Most terns mate for life. Long distance fliers.	Poor swimmers. Do not swim well on the water's surface. Have sharp cutting beaks.

Source: *Oiled Bird Search and Collection Training Course,* Marine Oil Spill Workforce Manual, BC Environment

Body Shape	Group (Order) Examples	Physical Characteristics Natural History	Bird Collection and Care - Special Concerns
	GULLS & JAEGERS (Charadriiformes) Glaucous-winged Gull California Gull Thayer's Gull Bonaparte's Gull Heermann's Gull Black-legged Kittiwake Mew Gull Herring Gull Ring-billed Gull Western Gull Parasitic and Pomarine Jaeger	Long pointed wings, dense waterproof plumage, short, fan-shaped tail, bill hooked at tip, webbed feet, agile walkers and runners, good swimmers on surface. Usually feed from surface. Gregarious. Colonial breeders. Migratory.	Can take off straight up from the ground or water's surface. Have sharp beaks. May regurgitate food if alarmed. Dense plumage, light oiling on surface may not penetrate enough to destroy waterproofing.
	TUBE-NOSED SWIMMERS (Procellariiformes) Northern Fulmar Black-footed Albatross Fork-tailed Storm-Petrel Leach's Storm-Petrel Sooty Shearwater Pink-footed & Short-tailed Shearwaters 	Tube-nosed swimmers have a hooked, deeply, grooved bill with nostrils enclosed in one or two tubes on the top of the bill. They have long narrow wings, webbed feet, and thick plumage. (Excess salt is excreted through tubular nostrils. Small pockets in the nasal passages may sense velocity of air currents.) Migratory, off-shore seabirds. Some, like the Black-footed Albatross and the Northern Fulmar, will follow and sometimes land near ships in search of food (and are attracted to fish oil thrown overboard). Most are colonial breeders. Usually come ashore only for breeding.	Shearwaters and Fulmars often rest weight on toes and lower legs giving them a somewhat crouching posture on land. May require padding in boxes and pens. Many medium and large size members of this group are capable of delivering hard bites. May regurgitate strong-smelling stomach oil when alarmed, and this may soil nearby birds. Live birds not usually found on shores unless they are sick or oiled. Shearwaters have strong feet and sharp nails which can inflict wounds.

Source: *Oiled Bird Search and Collection Training Course,* Marine Oil Spill Workforce Manual, BC Environment

Appendix 5. Euthanasia Guidelines

Rehabilitators must administer euthanasia in accordance with 50 CFR §21.31(e)(4)(iii). In addition, rehabilitators who treat migratory birds at oil and hazardous waste spills should do the following:

1. Euthanasia should be considered for a bird having serious injuries that will require extended treatment or render it unable to survive in the wild. Serious injuries can include fractured limbs (particularly those affecting a joint), injuries to the beak, extensive soft tissue injuries, and significant visual or auditory deficits.

2. When large numbers of birds are contaminated in a spill, it is necessary to selectively treat them so the appropriate attention is given to those with the greatest probability of survival. Packed cell volume (PCV), relative weight, and body temperature are used to identify those birds having reduced chances of survival.

   Birds having a PCV of less than 20 percent may require an extended period of treatment, and are thus at a greater risk of developing secondary complications. This is especially true for seabirds that may have little resistance to terrestrial disease organisms. Birds that are both underweight and hypothermic (relative to other birds of the same sex/species involved in the spill) have been shown to have a significantly decreased survival rate. A bird having consistently low body temperatures (less than 100º F.) despite attempts to warm the animal are considered a poor risk.

3. Birds showing signs of infectious disease should be isolated, and either supported until a diagnosis is made or euthanized and necropsied. Birds with lesions characteristic of avian pox (warty lesions around the eyes, mouth or on the feet) should be isolated and precautions taken to prevent exposure to other birds. Other signs which should arouse suspicion include: bloody or mucous discharge from the eyes, nose or mouth; moist or gurgling respiratory sounds; watery or bloody diarrhea; regurgitation; rapid weight loss; or pronounced neurologic signs.

4. Birds that show signs of chronic disease, such as extreme emaciation, have a very poor prognosis. Consider euthanasia for a very underweight bird that has wasted pectoral musculature and a prominent keel. However, note the following: the keel is normally very prominent in species such as herons and egrets; at certain times (the end of winter or migration), birds may also have reduced muscle mass with no underlying disease process; and severely dehydrated birds are often underweight but will gain rapidly with rehydration.

5. The degree of oiling, the temporary presence of bleeding from the GI tract, and molting are NOT considered adequate grounds for euthanasia.

6. Approval by Federal or State agencies is required before certain birds can be euthanized. This applies to threatened or endangered birds, migratory birds, unusual

birds with small local populations, and species with low reproductive potential. All birds that are euthanized must be disposed of as instructed by the Division of Law Enforcement or the USFWS on-scene oil spill coordinator, as the birds they possess may be essential evidence for a civil or criminal investigation conducted by the USFWS or other agencies.

7. Techniques for euthanasia:

   a. Appropriate for the size of the animal;

   b. Designed to minimize stress;

   c. Reliable and rapid.

   d. Safe for personnel administering technique.

8. Chemical injection as discussed below is recommended and preferred. Alternative techniques are mentioned but not discussed.

   a. Injection, according to dosage guidelines, of a commercial euthanasia solution, with prescribed routes usually being the medial metatarsal, right jugular or brachial veins, will quickly and painlessly kill most birds.

   b. Most euthanasia solutions are restricted drugs and subject to control by the Drug Enforcement Administration: professional supervision, inventory control, and locked storage are required. All solutions must be obtained through a veterinarian and used under veterinary supervision.

   c. Ensure that animals euthanized by this method do not become food for carrion eaters.

9. Alternative techniques of chemical euthanasia include inhalation of anesthesia or toxic gases. Physical euthanasia is not recommended.

10. Refrigerate all dead birds until necropsied. Post mortems conducted in-house can yield information that will help in determining treatment protocols in live birds at the facility. All carcass disposal should be coordinated with the Division of Law Enforcement or the USFWS on-scene oil spill coordinator and disposed of consistent with spill incident-specific instructions and chain-of-custody protocols.

Source: U.S. Fish and Wildlife Service Spill Response Contingency Plan, 1997. Appendix Q, as revised.

Appendix 6. Sample forms and formats.

Wildlife Field Reconnaissance Form - Shoreline or On Water Observations

Page ___ of ___

1. Incident Name: _____ **2. Observation Team:** _____

3. Date: _____ **4. Time Start:** _____ **5. Time End:** _____

6. Segment Name: _____ **7. Segment No.:** _____

8. Survey Length: _____ ft. **9. Survey Width:** _____ ft. **10. Latitude:** _____ N **11. Longitude:** _____ W

12. Survey Mode: Foot ☐ Vehicle ☐ Boat/Ship ☐ Airplane ☐ Helicopter ☐ **13. Tide Table Data at Start of Survey:** _____ ft.

14. Weather: _____ (Describe Briefly) **15. Beaufort Scale:** _____ (See Chart) **16. Visibility:** < 0.1 mi ☐ (< 160 m) 0.5 mi. ☐ (800 m) 1.0 mi. ☐ (1.6 km) > 1.0 mi. ☐ (> 1.6 km)

17. Round Trip Mileage: _____(miles) **18. Round Trip Driving Time:** _____(hours) **19. Trip Prep Time:** _____(hours)

Species Name (See Four Letter Code Sheet)	No. of Animals	Condition Live/Dead	Oiled Yes/No	Scavenged Yes/No	Band or Tag No.	Photo Yes/No	Toe Clipped Yes/No	Comments on Wildlife (recoverable, catch technique, etc.)

Revised: 05/14/99

OWCN Oiled Bird Intake Form

Spill and Capture Information

Barcode

Spill Name _____ Animal Intake Number _____

Intake Date/Time _____ Examiner's signature _____

Animal and Physical Exam Information

Temporary Band No. _____ Species _____

Type of Oil **Crude** **Refined** **Veg/Fish** **Other** Area Oiled **Entire** **Waterline** **Body** **Spotty**

External Oil Visible **Yes** **No**[a] External Oil Not Visible but Bird is Oiled? **Yes** **No**[b]

Oil not visible but bird oiled based on one or more of the following (circle): **smell oil** **plumage malaligned or parted** **sticky texture** **wet** **skin burns**

Percent Bird Oiled _____ % or **sheen?** Depth of oiling **Deep** **Moderate** **Surface**

Age **Chick** **Sub-Adult** **Adult** **Unknown** Sex **Male** **Female** **Unknown**

Weight _____ g. Temperature _____ °F Dehydration _____ %

Heart Rate _____ /min. Resp. Rate _____ /min. CRT _____ sec.

Attitude **BAR** **QAR** **Nonresponsive** Body Condition **Normal** **Thin** **Emaciated**

Head/Mouth/Bill NSL Other _____

Eyes/Ears NSL Other _____

Heart/Lungs NSL Other _____

Gastrointestinal NSL Other _____

Musculo-skeletal NSL Other _____

Integument NSL Other _____

Intake Diagnostics and Initial Plan

PCV _____ BC _____ TP _____ BG _____ Blood Taken? **Crit** **LTT** **RTT** **GTT**

Initial Feeding Plan _____ Toxiban _____ ml given @ _____

Treatment Plan _____ Itraconazole? **No** **Yes** Dose _____

Date Washed _____ Date(s) Rewashed _____

Disposition Information

Disposition Status **Released** **Died** **Euthanized** **Transferred** **Placed** Date _____

Disposition Location _____ Federal Band No. _____

[a]May be diesel, jet fuel, gasoline, vegetable oil, fish oil, or other.
[b]Examiner cannot smell oil, feel oil, plumage intact (not wet or parted).

Revised 6/15/99

BIRD COLLECTION RECORD

Incident: _____ Date: _____ Time: _____

Species: _____ Male: ___ Female: ___ Adult: ___ Juvenile: ___

Capture Location: _____ On Water: ___ On Land: ___

Difficulty in Capture. Low: ____ Medium: ____ High: ____

Collector Information:

Name: _____
Organization: _____

Extent of Bird Oiling (circle one):

Completely Oiled Dorsal Surface No Obvious Oil Spotty Ventral Surface

Other Observations: _____

_____

_____

In House Band Number: _____ Federal Band Number: _____

Field Treatment (check):

Mouth, nostrils cleaned: _____
Body wiped: _____
Body wrapped: _____
Gavaged: _____
Emaciation: Slight: _____ Moderate: _____ Severe: _____

Warmed: _____
Temperature: _____
Eyes Irrigated: _____
Amount: _____

Remarks: _____

PATHOLOGY REPORT

CLINIC NO. _____ PATHOLOGY NO. _____
SPECIES _____ SEX ___ AGE ____ DATE _____
IDENT. _____ PATHOLOGIST _____
CLINICIAN _____ STUDENT _____ STUDENT _____

OWNER _____ ADDRESS _____
DR. _____ ADDRESS _____
SPECIMEN _____ DIED OR KILLED _____ DESTROYED BY _____
PRESERVED _____ POST MORTEM STATE _____
NUTRITIONAL STATE _____ RECORDER _____

PATHOLOGICAL DIAGNOSES:

CLINICAL ABSTRACT:

INTEGUMENT:

PERITONEUM:

DIGESTIVE CANAL:

LIVER:

PANCREAS:

SPLEEN:

DEPARTMENT OF THE INTERIOR
U. S. FISH AND WILDLIFE SERVICE
DIVISION OF LAW ENFORCEMENT

CHAIN OF CUSTODY RECORD

FILE NO.
INV-

DATE AND TIME OF SEIZURE:	REGION:	EVIDENCE/PROPERTY SEIZED BY:

SOURCE OF EVIDENCE/PROPERTY (person and/or location):	CASE TITLE AND REMARKS:
☐ TAKEN FROM: ☐ RECEIVED FROM: ☐ FOUND AT:	

ITEM NO.	DESCRIPTION OF EVIDENCE/PROPERTY (include Seizure Tag Numbers and any serial numbers):

ITEM NO.	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE	DELIVERED VIA:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE:	RECEIPT DATE	☐ U.S. MAIL ☐ IN PERSON ☐ OTHER:
ITEM NO.	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE	DELIVERED VIA:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE:	RECEIPT DATE	☐ U.S. MAIL ☐ IN PERSON ☐ OTHER:
ITEM NO.	FROM: (PRINT NAME, AGENCY)	RELEASE SIGNATURE:	RELEASE DATE	DELIVERED VIA:
	TO: (PRINT NAME, AGENCY)	RECEIPT SIGNATURE:	RECEIPT DATE	☐ U.S. MAIL ☐ IN PERSON ☐ OTHER:

☐ ADDITIONAL TRANSFERS ON REVERSE SIDE

FORM 3-2063 (3/90)