NATIONAL OILED WILDLIFE RESPONSE AND PREPAREDNESS GUIDANCE MANUAL

Prepared for:
Ministry of Petroleum and Mining
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(KEPTAP)

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NOTE:

The Kenya national framework for hydrocarbon release prevention, preparedness and response capacity uses the term “hydrocarbon” to refer to crude oil, natural gas, and any product derived from the fractional distillation and refining of crude oil (both liquid and gas phase) and the term “oil” to refer to liquid hydrocarbons.

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GUIDANCE MANUAL REVISION LOG

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ACRONYMS

BC	Buffy Coat
BG	Blood Glucose
EU	Environmental Unit
GI	Gastrointestinal
HNS	Hazardous and Noxious Substances
IAP	Incident Action Plan
ICP	Incident Command Post
ICS	Incident Command System
IMT	Incident Management Team
JIC	Joint Information Center
KESCOM	Kenya Sea Turtle Conservation Committee
KMA	Kenya Maritime Authority
KWS	Kenya Wildlife Services
NCP	National Contingency Plan
NEMA	National Environment Management Authority
OHS	Occupational Health and Safety
ORT	Onsite Response Team
OWRO	Oiled Wildlife Response Organization
PCV	Packed-Cell Volume
PIO	Public Information Officer
PPE	Personal Protective Equipment
RAR	Resources At Risk
RP	Responsible Party
SANCCOB	Southern African Foundation for the Conservation of Coastal Birds

TP	Total Protein
UC	Unified Command
WMP	Waste Management Plan
WRP	Wildlife Response Plan

1 Introduction

1.1 Purpose and Scope

This Oiled Wildlife Response and Preparedness Guidance Manual is designed to be used as part of the national framework, including the Kenya National Contingency Plan (NCP) for marine and navigable waters (Marine NCP) and the NCP for onshore areas (Onshore NCP). This document was developed to assist with wildlife response preparedness and planning in advance of an incident and to provide key information about available response options during an incident. It was developed to be used by the oiled wildlife lead response agency, Kenya Wildlife Services (KWS), the responsible spill party (RP), and other stakeholders involved in wildlife response operations and response plan development.

The objective of oiled wildlife preparedness is to minimize the adverse impact of oil spills, and associated response actions, on wildlife. Preparedness plans bring critical understanding to the complex nature of oiled wildlife response and its context within the larger incident response. Established international protocols are incorporated into this guidance document to ensure best practices for working with indigenous species.

This document applies to the same geographic scope as detailed in the Marine NCP. The plan is effective for wildlife responses in the marine and coastal environment, territorial waters, islands and adjoining shoreline, the Exclusive Economic Zone (EEZ), and inland navigable waters of Kenya. It also applies to oil spills to inland (non-navigable) water (including all rivers of Kenya) that may impact wildlife.

1.2 Distribution and Intended Audience

This document is designed to be used as part of the national framework, including the Kenya National Contingency Plan (NCP) for marine and navigable waters (Marine NCP) and the NCP for onshore areas (Onshore NCP). This guidance manual will assist responders tasked with oiled wildlife response and preparedness; including the National Incident Management Team (National-IMT), Local-IMTs, management and staff of agencies with wildlife protection and care responsibilities, such as the Kenya Wildlife Services, as well as responders for a responsible party (RP).

This manual is intended to be used in conjunction with the Marine-NCP or Onshore-NCP and other spill contingency plans relevant to a specific spill location.

2 Responsibilities for Oiled Wildlife Incidents

2.1 The Responsible Party (RP)

Consistent with the Marine-NCP and the Onshore-NCP, the Responsible Party (RP) is liable for all damages and response costs associated with a spill or release of petroleum hydrocarbon or

Hazardous and Noxious Substances (HNS) that impacts environmental or socio-economic resources, including wildlife. The RP is required to report any discharge to the government agencies in charge of the NCP activation (i.e., KMA and NEMA), initiate spill response operations, including taking immediate actions to protect wildlife.

2.2 National Response Lead Agencies (KMA, NEMA and KWS)

The Kenya Wildlife Services (KWS) is established by the wildlife conservation management act or WCMA (2013), with the mandate to conserve and manage wildlife in Kenya, and to enforce related laws and regulations. In the event of hydrocarbon release event of national significance, the national response lead agencies for marine and onshore spill incidents are KMA and NEMA, respectively. The national response lead agency is responsible for activating an Incident Management Team (IMT), including KWS leading wildlife response operations.

3 Preparedness

All potential polluters including, but not limited to, oil operators and any other companies which import, export, or transport bulk oil or hydrocarbons into or out of the country should have **at least** a Tier 1 wildlife response plan (WRP) (principles and definitions of tier response are described in Section 6.3 of this Guidance Manual). All WRPs should indicate access to or agreements with trained wildlife response personnel, and escalation procedures (into Tiers 2 and 3) consistent with the activation of regional, national or international resources and according with the appropriate risk assessment.

All WRP should be consistent with the Kenya NCPs, international best practices on wildlife planning (IPIECA. 2016), and wildlife response operations described in this national guidance manual.

4 Response

Oiled wildlife response operations should be managed following the Incident Command System (ICS) and procedures outlined in the Marine-NCP and Onshore-NCP. The following elements on this guidance manual describe the process of response operations.

4.1 Incident Command System (ICS)

ICS consists of procedures for managing personnel, facilities, equipment, and communications. It is designed to be applied from the time an incident occurs until the requirement for management and operations no longer exists. ICS provides the following key features:

- A simple command structure with a standard format, regardless of the magnitude, severity, or nature of the incident
- The system is flexible and can be rapidly matched to the scale, phase and type of incident response required or flexed as circumstances change
- Communication channels are clear and information exchange is efficient and open

- Choice and prioritization of response actions are based on clearly stated objectives
- Allows personnel from a variety of agencies to meld rapidly into a common management and response structure
- Provides logistical and administrative support to operational staff
- Is cost effective by avoiding duplication of efforts
- Documentation is robust
- Forward planning is addressed

4.2 Establishing a Wildlife Branch

In the event of notification of an oil spill incident with the potential to impact wildlife, a Wildlife Branch will be established as part of the Operations Section of the incident management team (IMT), working closely with the Planning Section (Environment Unit) and Liaison Officers. The Wildlife Branch Director role should be filled by a designated IMT member or by the relevant Kenyan government authority. Under the Kenya Marine-NCP and Onshore-NCP, the Kenya Wildlife Service (KWS) has primary responsibility for oiled wildlife response.

Complex response operations may require multiple people addressing the needs of different functions within the IMT and the Wildlife Branch. In a larger incident, a Deputy Wildlife Branch Director position should be established and filled by personnel with skill and experience in oiled wildlife response (most likely from an internationally recognized wildlife response organization (OWRO). The Deputy can also act as liaison to the Environmental Unit (EU) to ensure best practices and effective communication between Operations and Environmental Unit. Depending on the scale of the wildlife incident, a wildlife-planning liaison and wildlife-logistics liaison may be appointed to the Wildlife Branch to facilitate the work process with their respective IMT sections.

The Wildlife Branch may need to establish a Wildlife Branch field command post, so that operations can be better overseen and coordinated. In this case, the Wildlife Branch field command post will work with a liaison in the IMT to ensure effective interfacing with the overall Incident Management System. The Wildlife Branch field command post needs office and meeting space as well as communications and office facilities. This facility for Wildlife Branch should have access to all information available from the Situation Unit. A designated wildlife-Situation Unit liaison receives and collects information from the oiled wildlife response activities which can be shared with the rest of the IMT. In order to make the right decisions, the Situation Unit must collect and made available information to the wildlife response team regarding sizing the response (Section 8.2).

4.3 Wildlife Branch Operations

Wildlife response management uses the organizational structure of the Wildlife Branch within the Operations Section of the ICS (Figure 1).

4.3.1 Role of the Wildlife Branch Director

The Wildlife Branch, led by the Wildlife Branch Director, has the functional responsibility for all aspects of oiled wildlife response operations and incorporates:

- Wildlife impact assessment
- Wildlife deterrence
- Monitoring and reconnaissance
- Oiled wildlife capture
- Evidence collection and documentation of live and dead oiled wildlife
- Oiled wildlife rehabilitation and decontamination, including the facilities to support these efforts
- Wildlife release and monitoring
- Reporting to the Incident Management Team (IMT) and Unified Command (UC)

Overall objectives and priorities for the Wildlife Branch are agreed upon within the IMT Operations Section and approved by the UC, with recommendations from the Wildlife Branch Director and the Environmental Unit Leader (EUL).

4.3.2 Role of Wildlife Technical Specialist / Wildlife-Environmental Unit (EU) Liaison

The Wildlife Technical Specialist is a critical position for the Wildlife Branch and for the EU. The position provides valuable expertise to the EU on a myriad of wildlife and resources at risk issues. Additionally, the Wildlife Technical Specialist should serve as the liaison position, providing a critical link and coordination between the EU and the Wildlife Branch. Information sharing is crucial to successful planning and response efforts in any large-scale incident.

4.3.3 Wildlife Rehabilitation Specialist

The Wildlife Rehabilitation Specialist is responsible for minimizing wildlife injuries during responses and coordinating aerial and ground reconnaissance of the response site wildlife. Advise IMT on wildlife protection strategies; coordinating the search for, collection and field tagging of dead and live impacted wildlife; and setting up recovery and cleaning facilities.

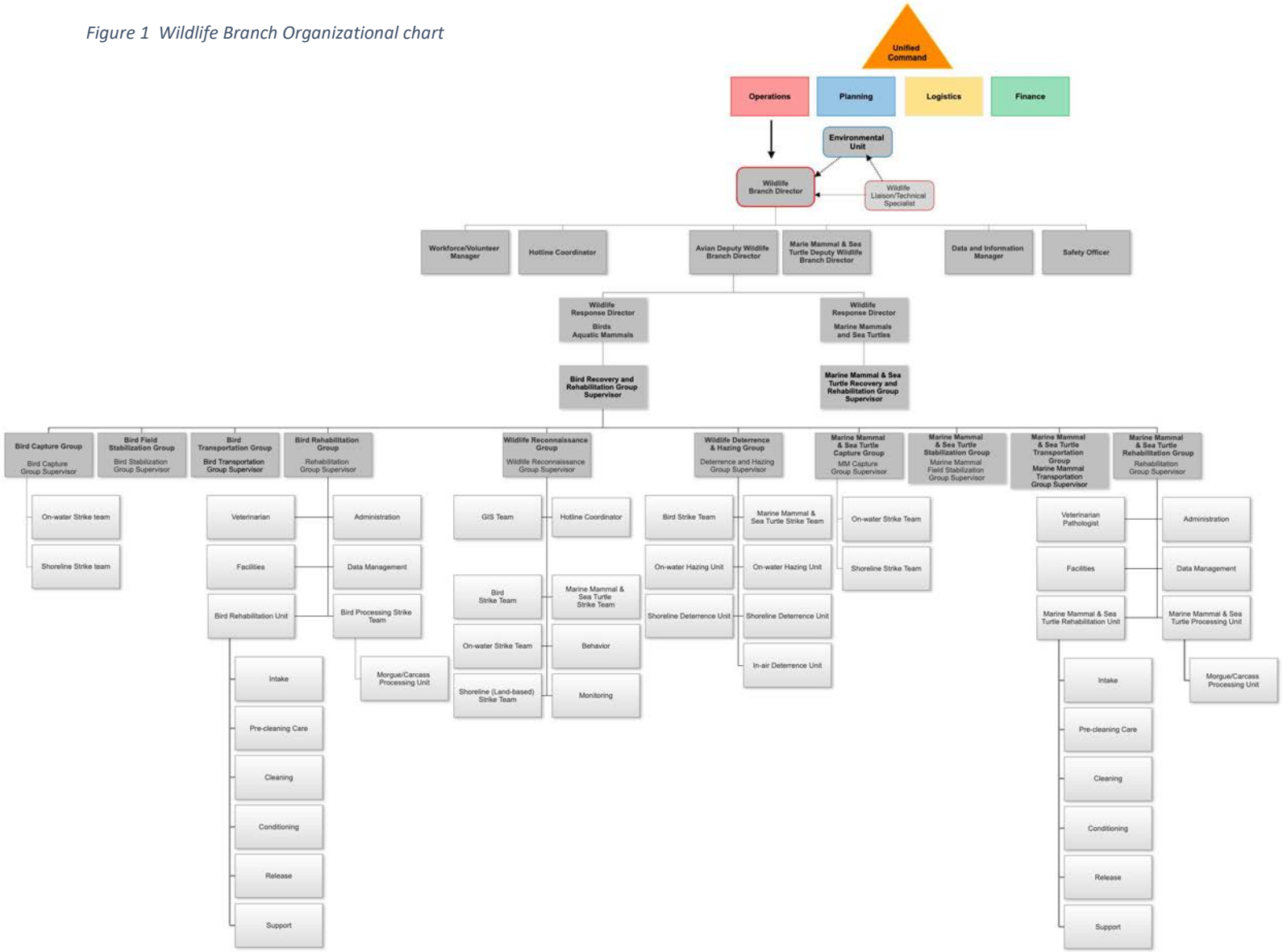
Wildlife Rehabilitation Specialist Responsibilities are as follows:

- Determine affected wildlife species and potential damage to each
- Coordinate reconnaissance of wildlife in the area
- Alert IMT personnel to laws and policies regarding impacted wildlife
- Determine wildlife protection strategies
- Identify wildlife hazing procedures and resources
- Prepare plan to recover and rehabilitate impacted wildlife
- Supervise Wildlife Branch operations:
    - Establish/implement protocols for collection of impacted wildlife
    - Coordinate transportation of wildlife to processing stations
    - Coordinate participation of volunteers and public at large
    - Establish wildlife release protocols

- Assess need for and feasibility of wildlife rehabilitation centers, including all financial aspects, procurement of staff and equipment, training and center management
- Work through Logistics Section Chief or Supply Unit to obtain necessary resources to construct and operate facilities for wildlife rehabilitation, as appropriate; help identify rehabilitation facility location
- Coordinate wildlife and habitat protection and rehabilitation operations with appropriate resource agencies
- Identify experts to assess wildlife impacts, rescue, and rehabilitation, as necessary
- Work with Safety Officer to provide for the safety of personnel engaged in wildlife protection and rehabilitation operations
- Maintain accurate, up-to-date information on wildlife/habitat impacts and rehabilitation operations, including documentation of successes and mortalities; provide information to Situation Unit Leader

The following diagram illustrates one possible means of organizing the Wildlife Branch during a large-scale (Tier 3) response involving birds, aquatic and terrestrial wildlife, and marine mammals (Figure 1). The mobilization and staffing of the positions are flexible and dependent on incident specific requirements.

Figure 1 Wildlife Branch Organizational chart



4.4 Scaled Wildlife Response

Any release of oil has the potential to immediately impact wildlife. As such, rapid establishment of a Wildlife Branch, activation of a specialized wildlife response contractor (Oiled Wildlife Response Organization or OWRO) and the immediate implementation of wildlife response actions are in the best interest of both mitigating the impact to wildlife and responding to oiled animals through capture and rehabilitation.

The Wildlife Branch and all wildlife response planning, strategies, and tactics should be scaled appropriate to incident specific conditions and parameters. The development of an incident specific wildlife response plan (WRP), wildlife response strategies and tactics should include only those elements of response that are needed (and implementable) to address incident specific wildlife impacts. The Wildlife Branch, in coordination with KWS, will make recommendations on appropriate scale of response for approval by the IMT before any response actions are initiated. The Wildlife Branch will continually assess incident conditions to appropriately size the wildlife response efforts. Wildlife response efforts will increase or decrease as needed. Recommendations for adjusting response efforts should be fully coordinated with wildlife regulators and will be approved by Incident Command prior to implementation.

4.5 Triggers for Activating Wildlife Response

When an incident occurs that activates an IMT, the IMT will assess the potential for wildlife impact and make a determination regarding wildlife response activation. The first step is then to activate the Wildlife Branch. Initially, the Wildlife Branch may be composed by a single wildlife specialist.

Any release of oil into the marine environment has the potential to immediately impact wildlife. As such, rapid establishment of the Wildlife Branch, activation of an OWRO, and the immediate implementation of wildlife response actions are in the best interest of both mitigating the impact to wildlife and responding to oiled animals through appropriate wildlife response actions.

The immediate activation and mobilization of an OWRO, along with the rapid acquisition of resources, directly correlates to both the effectiveness and full engagement of the response. The Wildlife Branch and wildlife response personnel can be stood down with approval of Incident Command if conditions do not warrant developing further wildlife response planning and implementation.

Pre-identifying an OWRO and establishing clear and concise lines of communications is imperative for a successful wildlife response. Additional personnel resources may be identified from local and regional wildlife organizations including wildlife rehabilitators, field biologists, zookeepers, veterinarians, and marine mammal and sea turtle conservation associations. These groups may be able to assist the OWRO with specific wildlife response operations.

Oiled wildlife incidents occur less frequently than oil spill incidents; while every incident has the potential to impact wildlife, not every oil spill will. However, if wildlife is threatened or impacted as a consequence of an incident, the success of wildlife response, and an adequate assessment of environmental impacts, will depend on a comprehensive wildlife response strategy (IPIECA, 2016).

4.6 Initial Wildlife Response: 0–48 Hours

The first 24 or 48 hours of a response impacting wildlife are critical to the success of operations (i.e., reducing or avoiding impacts to wildlife). A number of critical steps should be completed as soon as possible after a release occurs.

Within 24 hours of an incident:

- ☐ Report incident to appropriate wildlife regulatory agencies
- ☐ Activate designated professional Oiled Wildlife Response Organization (OWRO) immediately
- ☐ Complete Resources At Risk Report
- ☐ Establish the Wildlife Branch under the Operations Section of ICS
- ☐ Designate Wildlife Branch Director

Within 24-48 hours of a release, the Wildlife Branch will:

- ☐ Mobilize OWRO to arrive within a predetermined time of incident
- ☐ Mobilize wildlife response equipment
- ☐ Conduct Initial Wildlife Impact Assessment
- ☐ Mobilize marine mammal technical experts into Wildlife Branch
- ☐ Mobiles mammal technical experts
- ☐ Develop Wildlife Branch organization chart
- ☐ Establish Wildlife Hotline
- ☐ Implement incident-specific Wildlife Response Plan
- ☐ Develop recommendations for initial Reconnaissance Plan
- ☐ Determine location for field stabilization
- ☐ Establish wildlife staging areas
- ☐ Requisition supplies and equipment

4.7 Establishing a Wildlife Hotline

The Wildlife Hotline is a critical initial step and should be established by the Wildlife Branch within the first 24 hours of a spill. The hotline provides a mechanism for collecting information on impacted wildlife sightings from the public as well as response personnel. The information can be used to help determine the geographic scope of wildlife response efforts.

Public sightings of oiled, distressed, or deceased wildlife may occur once oil reaches the mainland or if oiled birds or marine mammals come ashore after impact. The Reporting Hotline will be utilized as the public call-in hotline. During a response, the hotline should also be used as

a resource to provide instructions to callers for safe handling and containment of wildlife. These procedures should be written by the Wildlife Branch and distributed to the call center.

Oiled wildlife observations should also be reported by cleanup contractors, regulators, or other personnel actively working within the spill site. Oiled wildlife reporting protocols will be developed to provide a mechanism for cleanup operations (non-public) to report oiled wildlife to the Wildlife Branch. The Wildlife Branch will develop a process for assuring that reports of oiled wildlife are efficiently assigned to field teams to assess.

4.8 Media Relations

Media alerts and messaging for the hotline will be developed by the Wildlife Branch at the time the hotline becomes active. Appropriate messaging should be provided to the Joint Information Center (JIC) or Public Information Officer (PIO) to release as media notices.

Media statements regarding the mobilization and on-going activities of the wildlife response should be provided to the public at regular intervals. It is critical to provide the public with timely and accurate information regarding the impact to wildlife and the measures being taken to reduce both morbidity and mortality of wildlife. Similarly, it is important to raise awareness regarding wildlife concerns, public safety concerns, and the hazards of handling wildlife. The opportunity may also be used alert the public to requests for volunteer assistance or to direct their interest in participation to a particular area to avoid detrimental public intervention with positive intentions.

Accuracy of statements and media releases may be greatly improved by ensuring that all information has been fully confirmed as accurate by the Wildlife Branch. Numbers of live, dead, and released animals should correspond to the numbers established in the prior operational period's (end of day) wildlife report. Consistent use of the prior day's report may eliminate inaccuracies and limit the speculation regarding transparency.

5 Mobilization and Initial Assessment

5.1 Resource Mobilization

In the event of a release where KWS or the RP activate an OWRO, the OWRO will mobilize technical specialists to arrive on site within a pre-determined time of notification. Staff levels should be determined based on preliminary estimates of released oil and oil spill trajectories as well as any reports from monitoring teams of impacted or debilitated wildlife. In small incidents, KWS will conduct the initial impact assessment and determine the need for OWRO activation and mobilization of resources. The impact to wildlife will not always be readily apparent. Oil-impacted birds are frequently still able to fly and may relocate away from the initial release site. It is critical that on-the-ground impact assessments consider wildlife movement outside of the impact zone. It is preferable to over respond in the first few days of an incident rather than postponing mobilization.

5.2 Wildlife Impact Assessment

The OWRO will review species at risk information and the results of any wildlife surveillance information that may have been collected prior to arrival. The first operational tasking for the OWRO is to conduct an Initial Wildlife Impact Assessment. The purpose of the assessment is three-fold:

1. Determine potential sensitive wildlife or wildlife habitat in the spill impact area.
2. Determine if there is directly impacted wildlife.
3. Recommend scope and magnitude of wildlife response actions needed to address the specific incident.

The wildlife impact assessment will be conducted by a qualified OWRO in order to assess the full impact of the spill on wildlife. Visual observations and wildlife species characteristics will be considered in the assessment. Often, observations of behavioral changes in wildlife populations are the best indicators of impacts.

The initial wildlife impact assessment can be conducted in cooperation with KWS or regulatory agency personnel as available. However, the assessment should not be postponed to allow for agency personnel inclusion. The initial assessment will generally take one to two days to accomplish and should be the first wildlife task assigned to the wildlife team. The assessment may be undertaken in cooperation with response operations that contain surveillance and monitoring activities if objectives of the wildlife assessment can be met.

Information collected in the initial wildlife impact assessment will be used to determine the scope and scale of the required response, activate additional resources (personnel and equipment), and help determine response priority areas. The initial wildlife impact assessment will also provide information to determine what immediate response actions should be taken. Wildlife facilities and equipment to support deterrence operations, search and recovery operations, field stabilization, and rehabilitation operations will be mobilized based on both the actual and potential number of animals affected from the release.

5.2.1 Recommendations and Implications for Planning

The initial wildlife impact assessment is critical to determining the most appropriate response actions, personnel, resources, and facilities needed for a wildlife response. The Wildlife Branch (with input from the OWRO) will make recommendations to the Operations Section based on the initial wildlife impact assessment. The timely approval of recommendations to implement wildlife response is critical to the success of the overall wildlife response effort. Delays in starting on-the-ground wildlife response efforts will reduce the survival of impacted wildlife and may increase the number of animals impacted by the spill.

Information provided in the initial wildlife impact assessment will be used by the Wildlife Branch to determine the scope of appropriate wildlife response actions and strategies. Response recommendations will then be written into the incident specific WRP. On-going wildlife reconnaissance and wildlife impact assessment reports will be utilized by the Wildlife Branch

planning team to continually assess needs and adjust scale and scope of response actions as needed throughout the entire duration of emergency response operations.

In some cases, the initial wildlife impact assessment may indicate that no wildlife response above and beyond the wildlife impact assessment is needed. When that occurs, the OWRO will make recommendations through the Wildlife Branch or EU to the Incident Command. However, the EU should continue to monitor spill conditions and reassess wildlife issues if warranted. Future concerns should be included in the recommendations for no action at the current time. The OWRO should be engaged on the spill until a clear decision has been reached by the Operations Section and UC that wildlife response actions are not warranted in an oil spill incident.

An initial impact assessment will be initiated as soon as possible after a release occurs, by the Onsite Response Team (ORT) during small events or by the Wildlife Branch in the Operations Section of the IMT. Ongoing daily assessments will also be conducted by the Wildlife Branch and will provide vital information regarding the changing presence of wildlife in impacted and threatened areas, as well as the number of animals and the variety of species affected. Impact assessment reports will be used to determine the most appropriate facilities, personnel and resources needed for a wildlife response throughout the incident.

5.3 Tiered Response

The Wildlife Branch, headed by the Wildlife Branch Director is responsible for dealing with a wildlife response effort in the aftermath of an oil spill incident. The Team can consist of Tier 1, Tier 2 and Tier 3 resources as defined by IPIECA[1] and described below.

5.3.1 Tier 1 Responders

Tier 1 responders are pre-identified, trained Wildlife Response Team Members within the Kenyan Wildlife Service or (appropriately trained) local organizations. Tier 1 responders will primarily undertake mitigation strategies to prevent oiling of animals and/or capture and stabilization of animals that become oiled. This resource needs to be developed by a potential RP.

5.3.2 Tier 2 Responders (National or Regional Resources)

Tier 2 responders are pre-identified trained response personnel from third party organization (governmental or non-governmental) from within Kenya or in the East African Region with transferrable skills and experience regarding specific aspects of wildlife response. Important stakeholders who might be called upon to assist in oiled wildlife response include the following (Sea Alarm 2010):

- Local Ocean Trust's Watamu Turtle Watch

[1] IPIECA-IOGP, 2016. Tiered preparedness and response: Good practice guidelines for using the tiered preparedness and response framework. IPIECA-IOGP, London, UK. http://www.oilspillresponseproject.org/wp-content/uploads/2017/01/Tiered_preparedness_and_response_2016.pdf

- Baobab Trust (Turtles)
- Arocha Kenya (Birds)
- Kenya Marine Fisheries Research Institute
- Kena Marine Mammal Network
- Kenya Sea Turtle Conservation Committee (KESCOM)
- Kenya Society for the Protection of Animals
- Watamu Marine Association

5.3.3 Tier 3 responders (International Resources)

Tier 3 responders are pre-identified, contracted oiled wildlife response experts and expert organizations from other parts of the world. They will have a mobilization time of in excess of 24 hours. These expert organizations will also be involved in training events and exercises.

The Wildlife Branch Director (in consultation with the IMT Operations Section Chief) will determine the tier response based on the actual local response and rehabilitation capacity, number of casualties expected, and the actual and expected response complexity (Figure 2).

Additional Tier 3 resources must be secured through agreements with international organizations to assist in oiled wildlife response in Kenya. The Southern African Foundation for the Conservation of Coastal Birds (SANCCOB) is an example of international organizations recognized as experienced oiled wildlife response and rehabilitation experts; in this case, working solely with seabirds.

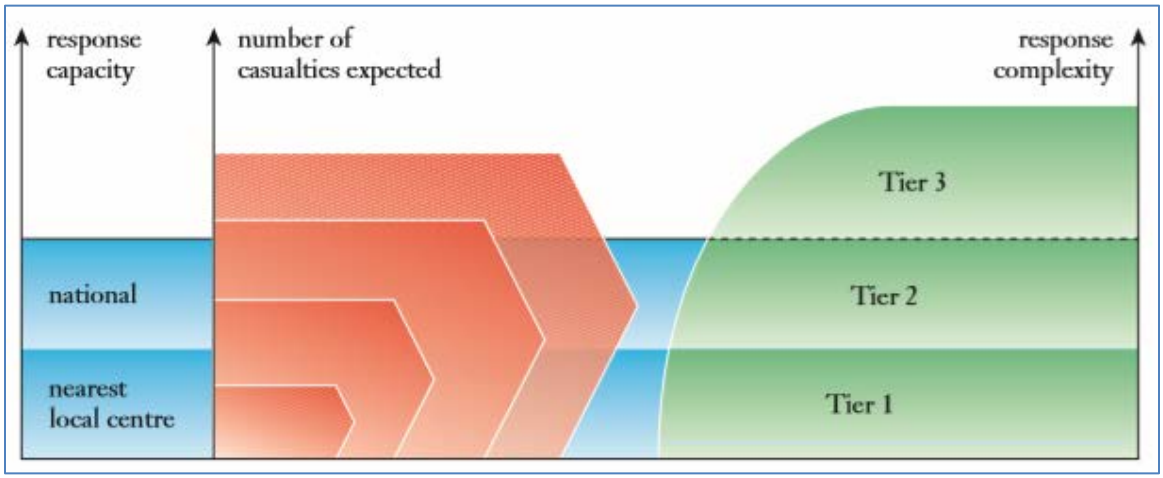


Figure 2. A tiered response model based on local response and rehabilitation capacity. The (expected) influx of oiled animals (red arrows) in relation to the local response national rehabilitation capacity (blue bars) in this model will determine the level of response (Tier1, 2, or 3 in green). Source: IPIECA, 2016

6 Resources at Risk

The Environmental Unit (EU) in the IMT, with the support of the Wildlife Branch, determine the actual and potential impact to wildlife. The wildlife impact assessment report (and continued reconnaissance) combined with the EU completed resources at risk form (ICS-232 or RAR form)

the basis of determining what species might be impacted in an incident. It should be noted that the intent of the resources at risk (RAR) form is to compile a list of species (along with other natural and cultural resources) that may be present in the spill impact area. Some of the RAR species are either not susceptible to oil impacts or not likely to come in contact with oil.

Species lists included in the incident-specific Wildlife Response Plan (WRP) should focus on wildlife species that are susceptible to oil impacts and likely to become oiled in the incident (occur in the spill impact area). Generally, the most susceptible species groups include birds that use the water or water interface (pelagic sea birds, waterfowl and shorebirds); sea turtles and marine mammals.

The offshore and near-shore waters of Kenya are biologically rich areas—providing habitat to a diverse abundance of marine and coastal birds, marine mammals, and sea turtles. Many of these marine and nearshore species are particularly susceptible to the effects of oil, based on behaviors such as food prehension (both hunting and foraging) and dive patterns during which the entirety of the water column is used. Obligate marine birds are the most susceptible of these species, as they are physiologically and anatomically designed for a life exclusively on or in the water. A comprehensive list of all species of concern should be compiled, frequently updated and inserted in any incident-specific WRP.

6.1 Species of Concern

The Kenya coast extends 600 km along the Indian Ocean sharing borders with Somalia and Tanzania. Within this coastal region are six marine reserves or national parks (Malindi, Kiunga and Mpunguti Reserves and Watamu, Mombasa and Kisite National Parks) with coral reefs, sea turtle nesting beaches and marine bird populations. The Kenyan coastline is protected by a fringing reef that runs nearly its entire length and support high diversity of marine life.

A survey of the Tana River Delta found over 340 species of waterbirds in the area. Over thirty-four species of marine mammal have been recorded in Kenyan waters but little is known about the abundance or seasonality of these species. Three turtle species (green, hawksbill and olive ridley) are more likely to be impacted as they nest on Kenya's beaches. Green turtles and hawksbill turtles are the predominant species in Kenya's offshore waters. Both species are widely distributed along the entire coast near areas associated with seagrass and coral reefs.

Table 1 provides a partial list of wildlife species of concern and at risk from oil impacts.

Table 1. Species of Conservation Interest

TAXON	CONSERVATION	COMMON NAME	SCIENTIFIC NAME
Birds	Endangered	Sooty albatross	*Phoebetria fusca*
	Endangered	Indian yellow-nosed albatross	*Thalassarche carteri*
	Endangered	Basra reed warbler	*Acrocephalus griseldis*
	Endangered	Madagascar pond-heron	*Ardeola idae*
	Vulnerable	Madagascar pratincole	*Glareola ocularis*
	Vulnerable	Grey crowned crane	*Balearica regulorum*

TAXON	CONSERVATION	COMMON NAME	SCIENTIFIC NAME
	Vulnerable	Spectacled petrel	*Procellaria conspicillata*
	Least concern	Crab plover	*Dromas ardeola*
	Least concern	Saunder's tern	*Sterna saundersi*
	Least concern	Roseate tern	*Sterna dougallii*
	Least concern	Pink-backed pelican	*Pelecanus rufenscens*
	Least concern	African openbill stork	*Anastomus lamelligerus*
	Least concern	African spoonbill	*Platalea alba*
	Least concern	White pelican	*Pelecanus onocrotalus*
	Least concern	Long-tailed (reed) cormorant	*Plaocrocorax africanus*
	Least concern	African darter	*Anhinga rufa*
Marine Mammals	Endangered	Blue whale	*Balaenoptera musculus*
	Endangered	Coalfish (sei) whale	*Balaenoptera borealis*
	Vulnerable	Fin whale	*Balaenoptera physalus*
	Vulnerable	Dugong	*Dugong dugon*
	Vulnerable	Indian Ocean humpback dolphin	*Sousa plumbea*
	Least concern	Melon-headed whale	*Peponocephala electra*
Sea Turtles	Endangered	Green turtle	*Chelonia mydas*
	Endangered	Hawksbill turtle	*Eretmochelys imbricata*
	Endangered	Kemp's ridley	*Lepidochelys kempii*
	Endangered	Olive ridley	*Lepidochelys olivacea*
	Endangered	Loggerhead	*Caretta caretta*
	Endangered	Leatherback	*Dermochelys coriacea*

(Sea Alarm 2010; IUCN 2020; International Whaling Commission 2020; Kenya Wildlife Service 2019)

7 Wildlife Response Planning

The Wildlife Branch has large planning requirement, as do all other operational activities, but it is one of the few operational units that do its own planning. Wildlife planning requires oiled wildlife expertise to develop effective plans—expertise that is only available from trained personnel in the Wildlife Branch. It is important to have the right personnel dedicated to completing the planning. The wildlife planning team must include oiled wildlife response experts, as well as trained KWS agency personnel (if available). The wildlife planning team is housed within the Wildlife Branch of the Operations Section and works in coordination with the Environmental Unit (EU).

The Wildlife Branch generally is responsible for two distinct planning efforts.

4. development of a long-range incident specific WRP and
5. To develop recommendations for a wildlife daily work plan to be included in the Incident Action Plan (IAP). The IAP then defines the specific work activities for each operational component of wildlife response on a daily basis (or other designated operational period).

The wildlife planning team accomplishes daily wildlife planning in collaboration with Operations, the EU, wildlife response contractors, and wildlife agencies. Daily wildlife operations planning will be a critical component of successful response to a release of oil. Operational tasking will be developed for the various operational components (or phases) of wildlife response. Wildlife response is composed of several phases or distinct operational components, listed in Table 2. Each operational component should be considered in developing the incident-specific wildlife response plan. Additional incident-specific protocols and procedures will be developed for each phase. Separate strategies and protocols are required to deal with different species groups. Birds and marine mammals will require different tactics and protocols.

Table 2. Overview of Wildlife Response Processes

	TYPE OF OPERATION	WILDLIFE RESPONSE PROCESS
1	At the Incident Command Post (ICP)	Establish Wildlife Branch
2		Notification (Tier 2 and / or 3 resources)
3		Documentation
4	Field Operations	Wildlife Impact Assessment
5		Reconnaissance and monitoring
6		Hazing and deterrence
7		Capture (pre-emptive and/or oiled animal capture)
8		Field stabilization
9		Transport to facility
10	Rehabilitation Operations	Processing and evidence collection
11		Intake/examination
12		Stabilization and pre-wash care
13		Cleaning
14		Pre-release conditioning
15		Release
16	Post-release	Post-release monitoring
17		Demobilization of personnel and resources

The Wildlife Branch personnel should be trained on the implementation of this guidance manual and specialized training to enhance the understanding of key issues, objectives and related

challenges to be considered (Table 3). The Wildlife Branch planning team should consider the following general guidelines for oiled wildlife response:

- Preventing animals becoming oiled is preferable to mitigating the effect of their oiling;
- Proactive actions that capitalize on the short windows of opportunity to save animals are required;
- If wildlife response is recommended, the necessary resources must be readily available and immediately mobilized to where they are needed;
- Animal carcasses should be collected from the impact area;
- A proactive policy must be adopted with regard to media reports about the wildlife response and its results;
- Public communication strategies should be clear, concise, and transparent;
- Opportunities for the public to assist with specific duties within the wildlife rehabilitation facility should be provided.

Table 3. Overview of Key Issues, Objectives and Related Challenges to be Considered

OPERATIONAL QUESTIONS	OBJECTIVES	WILDLIFE CHALLENGES
Can the oil be kept away from the animals?	Keep pollution at, or close to, the source. Recover oil quickly and efficiently. Protect sensitive areas. Use priority protection ranking for habitat or wildlife congregation areas.	Is there timely capability to combat oil at the source/at sea? Are sufficient data for a reliable risk assessment available? Are seasonal sensitivity maps available as well as information on migration patterns and breeding behavior of species? Can real-time information of animal distributions be obtained in relation to the oil?
Can animals be kept away from the oil?	Move animals (or their eggs/nests if appropriate) away from oil or a threatened location via: hazing / deterrence; pre-emptive capture or collection.	Is there timely capability for interaction with appropriate knowledge and understanding? Which species are present? How will animals react to methods (is there a potential for adverse impacts?) What should be done with captured/collected animals: how can animals be kept alive and healthy during captivity; is there a safe place to move the animals to; where/when/how should they be released? What measures are needed to follow up the release?
How should animals be treated when they are oiled?	Collect/remove dead animals. Treat live animals according to the most acceptable method (rescue/rehabilitation or euthanasia).	Who will carry this out? Can systematic and scientific methods for collection be established? Are reliable and approved methods for rehabilitation of oiled wildlife available that define the (species- specific or quantitative) limits of these methods? Have euthanasia methods been approved that are considered effective and acceptable (humane), and selective (i.e. not killing/disturbing animals that are not targeted)?
How can the response	Prioritize human safety at all times	Is there awareness of the potential damaging

OPERATIONAL QUESTIONS	OBJECTIVES	WILDLIFE CHALLENGES
itself minimize damage to people, the environment and the animals?	(no or postponed response if considered unsafe). Collect/remove dead animals (collect and store safely as these constitute valuable scientific data; avoid scavenging and collection for necropsy purposes). Ensure animal welfare at all times. Consider the net environmental benefit.	effects of a response (health and safety; secondary pollution; disturbance of unoiled animals; and unnecessary suffering or killing of animals) and do methods exist to avoid such effects? Are there methods in place to discourage the public from undertaking activities on their own outside of the coordinated response?
How can the media and public be informed so that the response will be understood and supported?	Communicate the response plan and immediate challenges. Provide daily updates on the response. Allow public to participate (allow volunteers; provide consumables such as towels). Provide a public action perspective (what to do if an oiled animal is found). Allow the media to report on the wildlife response.	Are strategies for mass communication (e.g. using dedicated websites with a wealth of background information) developed and easily implemented? Have lessons from past experiences been included in media information? Do baseline data exist (e.g. population size and strength before the spill happened)?

(Adopted from IPIECA 2014)

7.1 Wildlife Response Decision Making Process

The Wildlife Branch planning team uses wildlife and planning expertise to review all available incident information. The planning team then develops recommendations for the most appropriated response actions based on incident-specific conditions. The most effective and efficient response will be accomplished by having the right mix of expertise and agency personnel developing, reviewing, and approving wildlife response recommendations.

Regulatory agency approval of plans and recommendations can result in time delays in implementing response actions; efficiency is increased when agency personnel are engaged *in person* in the Wildlife Branch. Agency review and approval time should be considered in incidents without agency involvement in the Wildlife Branch.

While wildlife agency participation by the KWS is important to developing recommendations, their participation in the decision-making process is critical. All wildlife response actions must be approved by KWS or designated regulators, preferably before recommendations are forwarded to Incident Command (IC) or Unified Command (UC) for the IMT approval; thus implementation during the specific incident response. Wildlife agencies may take a lead role in recommendations if they feel is in best interest of wildlife. The typical decision-making process would be for the Wildlife Branch to develop recommendations with input and review by all affected parties. The IC/UC ultimately reviews and approves all response actions.

7.2 Response Sizing

Based on all available information, the Wildlife Branch planning team must make recommendations to the Incident Command on the scope and scale of wildlife response efforts necessary to implement an effective wildlife response. The Wildlife Branch utilizes the collective oiled wildlife expertise of the planning team to develop strategies and determine the amount of resources (personnel and equipment) needed to accomplish strategies, goals, and objectives. These recommendations should be fully vetted through the entire planning team, wildlife agencies, and Indigenous community representatives.

The wildlife planning team will continually assess incident conditions to appropriately size the wildlife response efforts. Right-sizing the wildlife response may include increasing or decreasing efforts as needed. Appropriate scale of response effort may not be consistent during an incident. Typically, search and capture of oil-impacted wildlife will be initiated before rehabilitation efforts are fully implemented. Similarly, search and capture may ramp down while animal care and rehabilitation are ongoing. Recommendations for adjusting response efforts should be fully coordinated with wildlife agencies and approved by IC prior to implementation.

In order to make decisions appropriate to the size, scale, and potential threat to wildlife from the release, the following information should be used to help determine the best strategies:

- The spill location, impact time and magnitude;
- Type of oil and toxicity;
- Expected behaviour of the released oil according to environmental conditions;
- Wildlife habitat in or near the impact zone, identifying the most sensitive or limited habitat in the area as a priority including, wildlife species at risk;
- Location of the released oil in relation to seasonal distribution/behaviour of wildlife (breeding, migration);
- Weather forecast and season;
- Information on water depth, tides and currents in the potential response zone;
- Resource availability (facilities, equipment, specific expertise);
- Health and safety with regards to search and capture efforts.

8 Wildlife Field Operations Overview

Wildlife field operations encompass all aspects of on-the-ground wildlife response activities including:

- Reconnaissance and monitoring
- Wildlife deterrence
- Pre-emptive capture of not impacted individuals at risk (as needed)
- Oiled wildlife search and capture
- Carcass collection (removing dead oiled animals);
- Chain of custody and evidence storage
- Field stabilization (evaluation and medical care); and
- Field transport (transport from field to wildlife care facility).

Components of field operations are described below. The type and level of field activities are determined by the Wildlife Branch planning team and should be updated in the incident-specific WRP as specific strategies and tactics are developed.

8.1 Wildlife Reconnaissance and Monitoring

Reconnaissance may entail land, water, and/or aerial surveys. Information gained from these surveys is critical to mounting effective deterrence, search and capture, and response efforts and will be used to determine the scope and scale of wildlife response.

Reconnaissance efforts:

- Focus on the immediate and potential impact to wildlife;
- Assess potential wildlife impact based on spill trajectories, type and volume of oil;
- Evaluate the effect of weather patterns;
- Calculate wildlife dispersal patterns and behaviours; and
- Direct effective search and collection and deterrence actions.

Wildlife reconnaissance and monitoring efforts are ongoing throughout the course of a response. Risk and threat of wildlife impacts and current on-site conditions are assessed daily throughout the spill by the wildlife field teams. The Wildlife Branch will continually assess information needs and determine appropriate levels and types of reconnaissance needed. Wildlife reconnaissance and monitoring, along with updated incident information from the Situation Unit are used to build a clear daily picture of current onsite wildlife issues. Information sharing with the Environmental Unit is also critical during this phase of response.

The Wildlife Branch will develop a Reconnaissance Plan for any animal species listed in the resources at risk form (ICS-232 or RAR). Standardized surveys will be utilized to quantify animals at risk from the spill and to ensure that wildlife surveys will quantify densities and distribution of wildlife in the spill impact area.

Wildlife monitoring will include aerial observations (aerial over-flights), on-water boat observations, and land-based shoreline observations. Protocols will be developed to avoid scaring wildlife into the water—an operational consideration with aerial observations, as well as with shore-based activities.

8.2 Wildlife Deterrence

Deterrence programs proactively safeguard wildlife from the effects of an accidental product release by dispersing and excluding animals away from contaminated areas, thereby reducing wildlife contamination and mortality. The Wildlife Branch should continually assess opportunities to deploy effective deterrence strategies and tactics.

Deterrence strategies should be determined and planned by the Wildlife Branch after the initial wildlife impact assessment or first reconnaissance survey is conducted. Deterrence activities must be authorized and coordinated within the Incident Command

Deterrence actions are most effective in areas already made unattractive to wildlife through vegetation clearing, on-going cleanup operations, and continual hazing operations. For example, birds that are well habituated to existing deterrence actions will not likely be dissuaded from continued use of oiled areas without the implementation of further deterrence; rotation and combination of visual and auditory deterrence is recommended. It should be noted that historic use factors will be programmed in these birds and their offspring, likely resulting in the instinct for repeated annual usage of these areas.

Deterrence programs can be effective in small, well-defined areas such as sand bars, back eddies, inlets, or the immediate oil impact area. It is important to note that deterrence strategies will only be effective if there are equally attractive adjacent habitat areas into which birds and mammals can be hazed. Deterrence techniques for marine mammals have variable results, depending on the species involved. Effective deterrence techniques for sea turtles are poorly understood and there is little research to support effective strategies.

Only trained and experienced personnel should conduct deterrence techniques. Inexperienced personnel can worsen the situation by ineffectively deploying deterrents, inadvertently disturbing animals into oiled areas, or causing debilitated oiled animals to scatter. Deterrence activities should be initiated as soon as possible following an accidental release in order to prevent animals from establishing or continuing regular use patterns within a contaminated area. Delays may increase the number of oiled animals.

8.2.1 Deterrence Objectives

Goals and objectives should be developed by the Wildlife Branch with approval of the UC. Incident goals and objectives help determine where efforts and resources should be focused to maximize the effectiveness of deterrence activities. Whenever possible, deterrence goals and objectives should be multi-hazard in nature in order to provide the most comprehensive protection for the site.

Deterrence goals include:

- Avoid impacts to wildlife resources in the area
- Develop deterrence strategies that will provide long-term exclusion of wildlife from oiled areas
- Implement viable deterrence strategies for all potential wildlife hazards at the site
- Modify deterrence strategies over time, based on monitored success/failure of strategies

8.2.2 Deterrence Methods and Strategies

Methods and strategies will be selected by the Wildlife Branch based on the above guidance. Knowledge and experience of trained deterrence specialist should be used to determine criteria for selecting effective incident-specific deterrence strategies. The Wildlife Branch will continually assess opportunities to deploy effective deterrence strategies throughout the incident.

Effectiveness of deterrent methods ranges widely according to studies conducted on several deterrence methods in a variety of settings. Less information is available to support effective deterrents for reptiles, including sea turtles, and many marine mammals. As such, the information below details deterrents with a known level of effectiveness for individual species or classes of wildlife.

Several deterrence methods should be compared to assess the effectiveness of each method (assumed to be deployed according to best practices), the species with which they are effective, and possible unintended secondary effects. Effectiveness is based on experience of wildlife responders in utilizing deterrence strategies in oil spill incidents. All available options should be considered as incident-specific conditions change throughout the incident.

Table 4. Comparison of Deterrence Measures and Equipment

DETERRENCE STRATEGY	EFFECTIVENESS	CONSIDERATIONS	TAXON	DEPLOYMENT
Physical Barriers				
Solid Cover (barrier, peat, coconut mat)	Very Good	May be difficult to deploy depending on type of cover; short-term use until cleanup measure can be affected	Shorebirds; gulls; may reduce impact to pinnipeds and sea turtles when on land	Shoreline segments
Elevated Mesh Netting	Very Good	Entrapment	Gulls; less effective in breeding gull populations	Shoreline segments; shallow waters
Mylar Streamers	Good	Weather; placement; may attract some species of birds	Passerines	Riparian areas, shoreline segments
Sight-line Fences	Good	Must be stable enough to exclude large terrestrial mammals	Terrestrial mammals	Riparian areas, shoreline segments
AUDITORY HAZING METHODS				
Cannons	Subject to habituation	Human safety, subject to habituation	Birds; less effective with diving birds	Shoreline segments
Shotgun Blasts, Cracker Shells	Subject to habituation	Human safety, must be randomly deployed	Birds, terrestrial mammals, crocodilians	
Horns	Subject to habituation	Human safety, must be randomly deployed	Birds, terrestrial mammals	On-water; shoreline
Breco Bird Scaring Device	Subject to habituation	Human safety	Birds	Shoreline
Oikomi pipes	Subject to habituation	Knowledge of technique, human safety	Some whale species; possibly sea turtles	On-water
Seal bombs	Subject to habituation	Human safety; untargeted dispersal	Pinnipeds	On-water
Recorded (distress, predator)	Subject to habituation	Season; regionally specific predatory species; distress call may bring in other predatory birds	Birds; especially passerines and shorebirds	Shoreline
Ultrasonic (Bird-X)	Good; subject to habituation	Several options of auditory deterrents to choose from	Birds	Shoreline

DETERRENCE STRATEGY	EFFECTIVENESS	CONSIDERATIONS	TAXON	DEPLOYMENT
VISUAL HAZING METHODS				
Lights (work lights, laser, colored, strobe, spot, flashing, intermittent)	Poor in daytime; good in night-time	Placement	Birds; some terrestrial mammals	Shoreline; coastal waters on boat
Rotating Beacon (floating or on land)	Poor in daytime; good in night-time	Placement	Birds	Shoreline; coastal waters on boat
Pyrotechnics	Subject to habituation	Human safety	Birds; some terrestrial mammals	Shoreline
Effigies (owl, falcon, human)	Poor	Placement	Birds	Shoreline
COMBINED AUDITORY AND VISUAL HAZING METHODS				
All-terrain vehicles ATVs/UTVs	Good; must be ongoing	Human safety; untargeted dispersal	Most birds, marine and terrestrial mammals	Shoreline
Human disturbance	Good; must be ongoing		Most birds, marine and terrestrial mammals	Shoreline and on-water
Helicopter	Good; must be ongoing	Human safety; untargeted dispersal	Cetaceans	On-water
Motorboat	Good; must be ongoing	Human safety	Birds, seals, possibly sea turtles	On water
Predators (falconry, dogs)	Good; must be ongoing	Ethics; untargeted dispersal	Birds	Shoreline; coastal waters

8.3 Preemptive Capture

Pre-emptive capture techniques may be considered for a limited number of species identified as at risk of impact. Any preemptive capture effort requires rapid and coordinated deployment of resources and thorough planning. Each aspect of the capture, transport, relocation, and release must be planned and resources to support successful execution of the plan must be available. Preemptive capture efforts must be coordinated with the appropriate regulatory agency. Incident-specific authorization and permits for the capture of migratory bird species and non-migratory bird Species at Risk are required.

Preemptive capture should be considered when deterrent use is not appropriate (young animals with limited mobility); when population is of high conservation value or where there is a high potential of oiling and associated risk of mortality from oiling; where circumstances are conducive to successful capture. The following factors shall be considered to identify potential candidates for pre-emptive capture:

- Population health and vulnerability
- Population vulnerability to oiling
- Response to deterrent/hazing tactics
- Availability of appropriate housing and husbandry to ensure humane care
- Appropriate relocation habitat

8.4 Search and Capture

Search and capture field teams will focus on daily reconnaissance and assessment of oil-impacted wildlife; prioritizing capture based on individual animal health condition or potential for rapidly declining health secondary to oiling; and, determining appropriate capture methods for these species. Search and capture activities will be directed by the Wildlife Branch; the number of capture teams should be scaled to ensure effective coverage of both the geographic extent of the spill and not impacted areas in which wildlife are known to congregate (loafing, foraging and night roost areas). Wildlife search and capture efforts will be focused in areas where there are known concentrations of impacted animals. As time allows search efforts may be extended to locate oiled animals that may have moved some distance from the spill impact area.

Wildlife capture strategies will be developed based on species, location, degree of oiling and mobility of oiled wildlife (in particular birds). Capture will be prioritized based on species susceptibility to oil impacts and availability of resources and personnel.

Captured animals are documented on field capture forms and then transported to either the field stabilization unit or the Wildlife Rehabilitation Facility. To ensure that human health and safety guidelines are met, there are certain species whose capture should never be attempted by anyone other than wildlife professionals with skill and experience in their capture (e.g.,

cetaceans, pinnipeds, crocodilians). It should also be noted that any animal captured must also be able to be safely and securely transported and housed.

8.5 Field Stabilization

The field stabilization unit accepts oiled animals directly from field capture teams and provides basic first aid measures to ensure that animals are stabilized prior to transport (fluid administration and gross decontamination as needed, depending on species and degree of oiling. Field stabilization units for large reptiles, sea turtles, pinnipeds, and terrestrial and marine mammals should be separate from those for birds due to facility and space requirements and safety considerations. Field stabilization sites are established when transport times from the field to the rehabilitation facility exceed two hours.

8.6 Wildlife Transport

Transportation procedures will be established by the Wildlife Branch and put into practice by search and capture teams in coordination with the field stabilization unit. These groups coordinate transport times with the Wildlife Rehabilitation Group Supervisor to ensure that facility staff is prepared to receive incoming wildlife.

8.7 Oiled Wildlife Carcass Collection

An additional component of the wildlife response activities is the removal of any dead, oiled wildlife to avoid attracting scavengers to the site. The responsibility for the collection and documentation of dead oiled wildlife / livestock is primarily the responsibility of the Wildlife Branch. Search and capture field teams will recover dead oiled wildlife (size/weight permitting) as part of their normal daily activities. Unrecoverable dead animals due to their size/weight should be marked (logged) and alternative methods of collection and disposal organized. Dead, oiled animals that are observed by other response personnel should be reported to the Wildlife Branch following pre-approved protocols.

Dead animals should be handled using common sense sanitary precautions to reduce risks to human health. Carcasses must be handled using nitrile or other chemical resistant disposable gloves. Avoid contact with feces, blood, body fluids. Standard personal hygiene must be followed, including thorough handwashing with soap and water after handling any dead animal (see Site Safety Plan).

Carcass processing protocols should be established early on in the response in accordance with KWS veterinary services. Protocols should be established for the identification, documentation, preparation, and storage of all species likely to be impacted by the incident.

9 General Facility Requirements

During an oiled wildlife response (off or on-shore) it is critical that appropriate facilities be available to rehabilitate the affected animals appropriately. Given the below minimum requirements (Table 5), efforts should be made in the pre-planning phase to identify potential

facilities throughout Kenya that could be converted/used during a spill. A potential facility does not need to be located in close proximity the spill site as long as appropriate stabilization protocols are followed. Animals can be transported in appropriate vehicles to the rehabilitation facility.

Table 5. Preliminary Facility and Infrastructure Checklist for Oiled Wildlife Rehabilitation

GENERAL REQUIREMENTS
☐ Field stabilization space
☐ Ventilated/heated interior space
☐ Heated interior space (ventilation unnecessary)
☐ Minimum of 10–15 air exchanges per hour with outside air in all animal areas
☐ Air temperature adjustable and maintainable to any given temperature within 19-35C with ventilation system running
☐ Electrical capacity to support heat lamps, pet dryers, etc.
☐ Fire hydrant
☐ Sufficient staff and volunteer support to handle workload
OILED BIRD REQUIREMENTS
☐ Intake and assessment area that is separate from regular patients
☐ Area to house oiled patients the ability to prevent cross contamination through establishment of a decontamination zone
☐ At least one pre-wash holding pen
☐ At least one post wash holding pen
WASH REQUIREMENTS
☐ Wash/rinse area (recommended 9.2 m^2)
☐ Water pressure sustainable at 40-60 psi for the duration of the rinse process (to be adjusted by expert wildlife responder according to the animal in hand)
☐ Water maintainable at 39-41C (102-108F)
☐ Water hardness of 2-5 GH (34-85 mg/L)
☐ Water softening system
☐ Ability to collect and safely dispose of oily wastewater
☐ Propane tanks
POST-WASH SUPPORT FOR AQUATIC BIRDS
☐ At least one warm water pool
☐ Outdoor conditioning space
☐ Conditioning pool and constantly running water that drains from the surface to exchange the volume of the pool 4.25x/day
☐ Minimum 1.2m deep or 13,250 liters 3.6m diameter pool to fill.

10 Rehabilitation Operations

10.1 Best Achievable Care Standards in Oiled Wildlife Response

Professional oiled wildlife response organizations follow best practice documents for oiled wildlife response and rehabilitation. While methods and techniques may differ between spills,

the principles and ethics of best practices remain consistent. “Best achievable care” practices take into consideration the realities of individual incidents; successful rehabilitation is defined as the application of best practices within the context of available equipment, facilities, personnel, and other resources. Early and the full support of the Wildlife Branch and wildlife response activities play a defining role in the success of those efforts.

10.2 Wildlife Rehabilitation Phases

The capture, stabilization, cleaning, and conditioning of oiled wildlife require that care begin immediately after an incident. The success of rehabilitation efforts differs based on the number of animals and numerous other variables, including: the immediacy of the response effort, the species involved, the care and husbandry requirements, the time of year, the type of contaminant affecting wildlife, and the extent and duration of contamination. All phases of the rehabilitation process occur at the Wildlife Rehabilitation Facility (often called the rehabilitation center).

Figure 3 Rehabilitation

All OWROs responding in Kenya should work according to international standards for best achievable care of oiled birds (USFWS 2003; OWCN 2015; IPIECA 2017), sea turtles (NOAA 2010) and marine mammals (NOAA 2015). The condensed and general procedures for rehabilitating oiled wildlife are summarized in Table 6 and described in the following sections.

10.2.1 Processing and Evidence Collection

Upon arrival at the rehabilitation center, wildlife goes through a processing procedure. Processing is the means by which evidence is collected from each wild animal, dead or alive. The four pieces of evidence generally required collection include a product sample (generally conducted via feather or fur sampling), photo documentation, identification/logging and tagging each animal, and a signed medical record, which is then completed during the intake process. Individual medical records follow the individual animal throughout the rehabilitation process.

Table 6. General procedures goals for rehabilitating oiled wildlife

PHASE	DESCRIPTION AND GOALS
Processing and Evidence Collection	Evidence collection Assigned individual, temporary band Feather/fur/product sample Photograph Individual medical record
Intake	Medical examination and treatment plan development Critical care concerns addressed Euthanasia evaluations based on established criteria and best practices
Triage	Ongoing euthanasia and treatment plan evaluation based on medical health status
Stabilization	Fluid, nutritional and medical stabilization of impacted animals 48–72 hours period (duration and process taxon-specific) Use species-appropriate husbandry and housing Prepare animals for cleaning process
Cleaning	Pre-treatment to loosen weathered product Removal of all oil/contaminants from an impacted animal by washing (species-specific methods) Removal of the cleaning agent by rinsing Drying cleaned and rinsed animal
Conditioning	Restoring waterproofing and physical health
Release	Banding or tagging of individual animals Release of cleaned, waterproof animals into a clean environment Post release monitoring

10.2.2 Wildlife Intake

Following processing, the wildlife proceeds to intake, where each animal receives a thorough medical examination, initial in-house bloodwork (packed-cell volume [PCV], total protein [TP], buffy coat [BC], blood glucose [BG] [as necessary]) is taken. A comprehensive initial treatment plan is then laid out for each animal. Triage, either based on medical health status or conservation value, also takes place at this point. In cases where the medical condition of the animal indicates that it will be unable to recover from its current condition and will not be able to survive the rehabilitation process to release, the individual should be humanely euthanized.

Exposure to petroleum products has numerous, significant, and often fatal consequences for wildlife. Exposure effects can lead to debilitation and fatality (including euthanasia) for wild animals. Euthanasia guidelines are generally based on a number of factors relating to each

individual animal's condition. Factors to consider include behavior, secondary complications, blood values, thermoregulatory ability, Gastrointestinal (GI) tract function, and waterproofing issues. Agonal state, seizuring, extreme hyper/hypothermia, and severe traumatic injuries also require immediate euthanasia evaluation.

10.2.3 Triage and Euthanasia Considerations

The number of animals oiled may exceed the resources available to effectively rehabilitate all of the animals presented for care. In this case the most humane course of action is to euthanize those animals with a poor chance for survival so that the remaining animals' chances for survival are optimized.

Euthanasia should be considered whenever the prognosis for release back to the wild is poor. Each case should be considered individually. Priority should be given to animals with a high conservation value, with fair to good prognosis for release. Animals exhibiting symptoms of infectious diseases that may be transmissible to the larger group or to the wild population should be isolated immediately and considered for euthanasia.

Euthanasia decisions are made based on a combination of these factors for each animal on an individual basis. These parameters have been developed through extensive experience on survivability of animals through the rehabilitation process. The Wildlife Branch should coordinate with KWS approved veterinary services to develop and approve euthanasia criteria and methods. Permitted wildlife rehabilitators (under veterinary supervision) and wildlife veterinarians with species-specific expertise should be the only personnel authorized to implement euthanasia protocols and perform euthanasia.

10.2.4 Stabilization

After intake, the animal moves into the stabilization phase, where it is appropriately housed, provided with medical, nutritional, and husbandry support to treat its condition, until it is deemed medically stable enough to processed to the cleaning (decontamination) phase. This stage of the rehabilitation process is crucial to the animal's overall survival. If a bird is moved through the cleaning process prior to it being medically cleared to do so, it may die during the cleaning process or it will not have the strength following the cleaning process to recondition for release to the wild. Each individual animal generally remains in stabilization for a minimum of 48 hours; some will require 72 hours or more.

Reptiles differ from birds and mammals in this regard. Due to their unique physiology, reptiles should be decontaminated immediately after intake, with stabilization taking place after cleaning. Some individuals may require numerous cleaning sessions, or cleaning may need to be halted and resumed at a later time if the individual's medical health is in jeopardy.

During the medical stabilization phase of the rehabilitation process, wildlife is medically monitored on a regular basis (including bloodwork), to determine its progress. Species-specific husbandry techniques are used to mitigate secondary complications due to captive care. Some species are particularly susceptible to the complications and have a very short "window of

opportunity" before secondary issues related to captivity become evident. Thus, extremely specialized care, husbandry, caging and facility development are mandatory components of oiled wildlife rehabilitation. Humane euthanasia is a necessary component of this phase of the rehabilitation process for wildlife that is not medically able to meet criteria for ongoing rehabilitation.

10.2.5 Wildlife Cleaning

All wildlife receives a wash evaluation before proceeding to the cleaning/decontamination process. Wildlife must meet strict medical criteria in order to be cleared to go through the decontamination process. The cleaning process may include pre-treatment to assist with breaking down weathered or heavy product prior to cleaning. Wildlife then goes through a series of specialized washes at specific temperatures, using specific detergent dilution, and with specific technique to remove the contaminant. Once the contaminant is thoroughly removed, wildlife receives a pressure rinse treatment to ensure that all detergent residue, also considered a contaminant to bird feathers, is completely removed. The cleaning process is slightly modified from the above for mammals, and further modified for reptiles and amphibians depending on the specific species in care.

Facility water volume, pressure and hardness requirements must be appropriate to the needs of the cleaning process. After being washed, birds move to the drying area where they are fully dried using high-velocity pet dryers and are carefully monitored for overheating, shock, and other complications. Pinnipeds are dried with heat lamps; reptiles and cetaceans should not be dried.

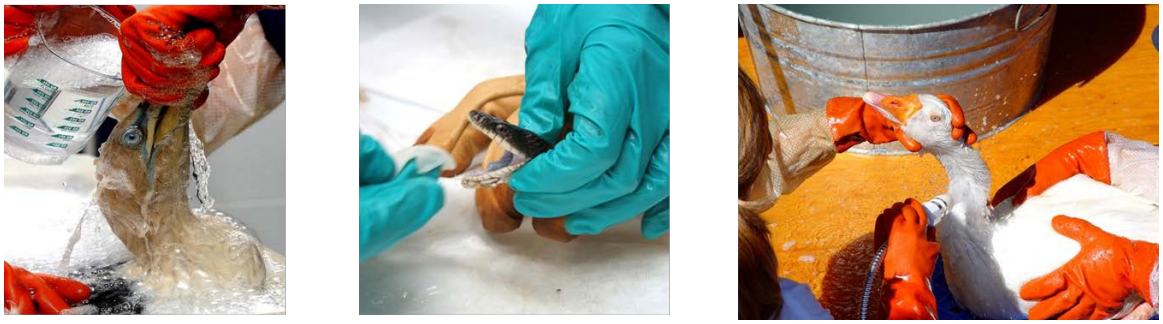


Figure 4 Oiled Wildlife Cleaning

10.2.6 Conditioning

Once fully dried, wildlife moves into the conditioning phase of the rehabilitation process. During this phase animals are returned to environments appropriate to their species (generally water-based environments), allowing them to regain their waterproofing, endurance, acclimation, nutritional status and medical status. Water volume, pressure and hardness requirements are mandatory for this stage of the rehabilitation process to ensure adequate conditioning. Each animal must enter the conditioning phase with a great deal of strength and health in order to reach potential for release. Due to the microscopic architecture of bird feathers, each feather's

microscopic barbs and barbules must be preened back into waterproof alignment during this time. This process generally takes between 7–10 days.

All individuals continue to be provided with veterinary medical and nutritional support as required. All wildlife is medically monitored on a regular basis to determine progress (including bloodwork). Humane euthanasia can be a necessary component of this phase of the rehabilitation process for wildlife that is not medically able to meet criteria for ongoing rehabilitation to release.

10.2.7 Release

Each animal will receive a pre-release evaluation prior to release to the wild, which includes a full medical examination, blood-work and waterproofing assessment. Waterproofing assessment generally takes place up to 72 hours of conditioning pool access, species dependent. Strict criteria must be met for wildlife to be considered for release to the wild. Only wildlife that meets these criteria will be released, to ensure survivability once returned to the wild. Wildlife is released in a location appropriate to its species, time of year and migration status, and into a location that has minimal risk of re-oiling. All birds should be banded prior to release by an authorized and permitted bird bander.

Figure 5 Bird's identification bands and release operations

11 Post Release Monitoring

The Wildlife Branch in coordination with wildlife regulatory agencies should consider opportunities for initiating scientific post-release monitoring whenever possible. Monitoring can be used to determine effectiveness of response actions on survival and potentially subsequent breeding success of released animals. Simple color marking and monitoring of breeding colonies and hauls out areas can provide basic information on survival. More detailed radio-tagging studies might be able to determine movement, migration, long term survival and breeding success of rehabilitated and released wildlife species.

12 Waste Management and Disposal

Wildlife response operations will generate a considerable amount of waste and oily waste. The volume of waste will be determined by the scale of the response. Every effort will be made to reduce the volume of waste generated by various components of wildlife response. The Wildlife Branch will work with the EU to ensure that the incident-specific waste management plan will include all needs specific to wildlife response efforts in the field and in the rehabilitation facility. The Waste Management Plan (WMP) should include the supply and procurement of waste disposal containers for wildlife operations, as well as appropriate methods for disposal.

12.1 Wastewater

Wastewater resulting from oiled wildlife rehabilitation operations requires specific and specialized disposal methods. Wastewater is to be handled in accordance with the waste management plan (WMP) for the incident.

- Oily wastewater (water from decontamination process): Must be collected during the decontamination (wash) process managed in accordance with the WMP.
- Grey water: (ex. rinse water, pool overflow water) must be disposed according to national, county, and municipal regulations. Grey water from pool overflows can be managed by routing the water to a cistern (or storage tank) where it is then collected.
- Storm water/runoff: Must be appropriately controlled to prevent contact with grey water and oily wastewater.

12.2 Solid Waste

- The wildlife rehabilitation facility generates considerable solid waste. Disposal of all solid waste must be in accordance with the WMP for the incident.
- Oiled solid waste (e.g., PPE, sorbent pads, towels) that is generated by wildlife field operations as well as animal care facilities should be included in the WMP.
- Disposal of carcasses must be in accordance with designated regulatory agencies, evidentiary protocols, and best management practices for biosecurity. Carcass disposal protocols are frequently site-dependent and will be developed by the Wildlife Branch for incorporation into the WMP for the incident.

13 Health and Safety

When initiating wildlife response activities, responder safety is of paramount importance. Thorough site surveys and hazard assessments should be conducted prior to the commencement of any monitoring, deterrence, capture, or rehabilitation activities. Work needs to follow an incident-specific site safety plan. Workers need to wear protective clothing that meets all spill safety requirements and wildlife specific safety requirements.

Minimum training requirements will be established, by the Safety Officer and the Wildlife Branch Director of the IMT, for specific positions in order to conform to Kenyan health and safety regulations.

During response operations all injuries (bites, scratches, trips, falls, burns, etc.) must be immediately reported to the Health and Safety Office. Medical attention should be pursued as needed. Safe lifting practices should be observed when lifting animals and equipment. In the rehabilitation facility, special attention should be paid to the potential for slips, trips, and falls. Recognize areas of particular potential for harm to both humans and animals, e.g., heat lamps hanging near sheets, inadequate ventilation leading to an accumulation of toxic fumes, and certain drugs or disinfectants that may have undesirable secondary effects.

Appropriate personal protective equipment (PPE) is required at each oiled wildlife response, this includes, but is not limited to: safety glasses, protective suits, latex or nitrile gloves, and protective footwear. In addition, personnel working on search and collection will be required to undergo more extensive safety training and may be required to wear other forms of PPE, including Personal Flotation Devices (PFDs). The Site Safety Officer will supervise all aspects of human health and safety. To guard against injury from birds, all workers should wear approved personal protective equipment appropriate to their task.

13.1 Recommended PPE

All workers must be trained 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. The following PPE is recommended:

- Full eye protection, e.g., goggles, safety glasses, or face shield
- Oil resistant rain gear or oil protective clothing (coated Tyvek, Saranex, etc.)
- Gloves (neoprene or nitrile rubber) that are oil resistant and waterproof
- Non-skid shoes/boots, which are oil resistant and waterproof
- Ear protection (muff or ear plug type) when using pyrotechnic devices or operating machinery
- Personal flotation device when working on or near water

13.2 Zoonosis

Zoonoses are infectious diseases that may be transmitted between animals and humans under natural conditions. Personnel handling or coming into contact with wildlife have the potential of exposure to zoonoses. Veterinarians, technicians, search and capture staff, animal handlers, and other animal care personnel who come into direct or indirect contact with animals and any body fluids are at risk of contact with disease agents that may have zoonotic potential. Organisms that may cause or transmit zoonotic diseases include many classifications from viruses and bacteria to internal and external parasites.

Anyone whose immune system is compromised (including, but not limited to conditions such as pregnancy, HIV/AIDS, patients undergoing chemotherapy, organ transplant recipients, splenectomized individuals, or persons under acute or chronic high levels of stress) is highly susceptible to opportunistic and secondary infections with zoonotic disease agents.

Standard veterinary clinic hygiene practices will be employed in all aspects of wildlife operations to reduce risk of disease transmission.

13.3 Site Safety Plan

A Site Safety Plan will be developed by the Wildlife Branch Director in coordination with the Safety Officer, to identify hazards associated with the work on the site, along with the hazard control measures that will be implemented to ensure that people are adequately protected from risk of injury or illness. Site-specific safety plans will be available on site for inspection by all staff utilized in wildlife operations prior to commencing work. The plan should be modified and updated during the course of the incident. The Site Safety Plan should address the following components:

- **Risk management**: identification of the hazards and assessment of the risks associated with the work, and documentation of the risk control measures to be taken.
- **Statement of responsibilities**: a statement that nominates individuals who will be responsible for the site-specific occupational health and safety (OHS) aspects of the work, and who will be available to deal with illness/injury and OHS incidents.
- **Occupational health and safety training**: a statement identifying the training needs of the personnel on the work site.
- **Incident management**: a statement identifying the processes to be used and personnel available to prevent, prepare for, respond to and recover from illness/injury and incidents.
- **Site safety rules**: safety rules that should be displayed in prominent areas on the work site.
- **Safe work method statements**: statements for all work activities identified as having health or safety risks, identifying the measures to be used to manage those risks. Particular attention should be paid to work activities with a high safety risk.

14 Personnel

14.1 Workforce Personnel/Volunteers

Volunteers form an important part of oiled wildlife response and are often involved in larger oil spill events. Members of the local wildlife rehabilitation community, wildlife and domestic animal veterinarians, biologists, wildlife enthusiasts and members of the public interested in wildlife frequently request to be of assistance during a spill. Furthermore, during an oiled wildlife response seemingly mundane tasks such as the cleaning of animal pens, animal food

preparation and the transport of wildlife from the field to the wildlife facility are important support functions in a wildlife response and require additional personnel.

Pre-response planning for the use of volunteers is highly recommended. Wildlife is often the "face" of an oil spill, particularly in incidents impacting populated and/or politically active populations. Members of the public or people associated with wildlife or environmental organizations often want to assist on behalf of wildlife and may "self-deploy" during a response. This can include attempts to capture or clean wildlife, particularly those animals that have come to shore after becoming oiled. While well-intentioned, these efforts can impede the wildlife response, making it more difficult to capture or stabilize animals and causing a public health concern. Trainings offered to the public in advance of an incident can provide opportunities to bring pre-trained volunteers into a response. Trainings can provide an understanding of the context and structure of an oil spill response and, ideally, act as a way to both limit the number of people who self-deploy while creating a group of trained personnel who can readily deploy to provide support for the response. Support tasks can be pre-defined to include support services such as animal or supply transport, food preparation, cleaning, data input, etc.

Due to the potential for liability issues, it is preferable to hire volunteers as workforce staff under the Wildlife Branch. Planning considerations that detail conditions under which volunteers will be used, training and experience required of volunteers, methods for volunteer management and training, delineation of duties, and addressing liability concerns will assist with integrating volunteer teams into the overall response. Local resources can be of assistance in larger events with a high need for manpower, particularly in the WRF. The use of volunteers is at the discretion of Incident Command and should be managed by the OWRO.

14.2 Local Area Resources

The OWRO may request support from local organizations. Decisions regarding support from local organizations are best made in conjunction with the OWRO to ensure fluid response operations, maintenance of human health and safety requirements, and high quality of care. Local organizations and stakeholders may be able to assist the OWRO with specific wildlife response operations. They should be managed and coordinated by the OWRO through the Wildlife Branch to ensure a consistent approach to implementing approved response actions. The organizations listed as local area response resources may not have specific oil spill response capacity but do have expertise in the types of activities in which they would be engaged during a wildlife response. These personnel and organizations can be instrumental in the development of Tier 1 resources.

15 Administrative Management, Records and Reporting

The importance of recording information cannot be over-emphasized. Record collection enhances individual animals care, response evaluations, and the ability to accurately characterize the best practices for appropriate care. In-house records need to be maintained at the rehabilitation facility and copies provided to the regulatory agencies. 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 regulatory agencies within 30 days of the date the Incident Commander declares the response closed or from the departure date of the rescue/rehabilitation organization, whichever comes first.

The following types of records are necessary to preserve vital information for 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 wildlife in-house 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, 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.
- National Bird Banding Report: lists all birds banded for release.
- Necropsy Report.

15.1 Demobilization and Termination

Continuous monitoring of oil slick behavior and clean-up progress, search and capture activities, numbers of animals admitted into facilities, animals released and those still in care, all provide important indications of trends in the level of response effort that is required. A downward trend in response effort must be noted and addressed by the Wildlife Branch Director. If clear signs of the end of the wildlife response are observed, the termination of the response needs to be considered.

Termination of the response follows a period of winding down operations, demobilization of staff and equipment, closure of the facilities, and the demobilization of the Wildlife Response team. A plan must be developed by the Wildlife Branch Director or their designate that allows the winding down of wildlife response operations and the demobilization of personnel and equipment under his/her control.

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