Protocols For NRDA Surveys **Bird Injury Quantification**

Sampling Objectives

- Quantify number and species of oiled birds, the condition of those birds (e.g., live, dead, entered for rehab, state of decomposition and scavenging), and the sampling effort for the surveys.
- Quantify by species, by specified sampled or census areas, and by time period sampled, the number of live birds at risk from the oil spill and the percentage of observed birds that are oiled.

NOTE: This protocol is only a summary that lists considerations to be factored into bird surveys.

Survey Equipment/Supplies

- Personnel protective equipment
- Survey segment maps and sampling plans
- Wildlife field observation forms
- Standard avian guide book
- Label tags, markers, clipboard, pencils, clippers
- "Clicker counters", camera/film
- Binoculars, spotting scope
- GPS receiver units
- Cellular phones or VHF radios
- Paper bags, boxes, aluminum foil

Preparation Procedures

- The Wildlife Survey Coordinator should review current information on the trajectory of the oil on the water/shoreline and conduct an overflight, to identify species, locations, and number of birds present and potentially at risk, so the wildlife survey can be properly planned.
- Coordinate with the rehab center to make sure that proper records, storage, chain-of-custody procedures are being followed. Obtain wildlife collection permits, if required.
- Organize wildlife teams (min. two people) to search spill areas daily, starting at first light to minimize scavenger loss, until there is no longer a risk of oiling to birds or stranding of dead birds.
- For shoreline surveys, divide the spill area into shoreline segments by geographic features or geomorphology (i.e., river mile, shoreline type). Strongly recommend using SCAT segments.
- Determine for each survey if it will be a census (quantify all birds in a defined area) or sampled, based on extent of the area to be surveyed and personnel/equipment available.
- For counts of birds on water, divide water bodies into set survey areas based on visibility from access points, habitat type, natural breaks, left/right river banks, and extent of oiling.
- Assign each wildlife team a specific survey area or group of segments to survey, along with an alpha-numeric code (or use SCAT coding) for all segments and maps of the area. Systematic delineation of the location and extent of survey areas is extremely important.
- Conduct surveys by foot or boat depending on shoreline accessibility, the types of birds at risk, and where birds are expected to be. Conduct aerial surveys to count the number of birds at risk; record flight track with GPS, if available, but also mark on paper maps for backup.
- Use a zig-zag search pattern when searching for bird carcasses on shorelines. On water, the search pattern should consider currents, winds, and potential movement of carcasses during the survey, surveying from down current and down wind first so as to not miss animals.
- Each sampled survey should have a defined sampling plan, with defined transects or sample areas laid out to quantitatively sample each potential habitat or zone where bird numbers might vary. Replicate samples should be taken to allow estimates of uncertainty to be made.
- Use an avian guide to become familiar with bird species in the area at the time of the spill (esp. threatened and endangered species) and variations in species (wing patterns, body shape and size). ID morphological variations (plumage, bill size) for different ages and sexes of a given species. At a minimum, birds should be identified according to behavioral guilds such as:

  a) wading birds (egrets, herons) b) seabirds (gulls, terns, murres)
  c) shorebirds (plovers, sandpipers) d) waterfowl (ducks, geese, loons)
  e) raptors (osprey, eagle, hawks) f) passerines (sparrows, warblers)

  Groups may be further divided into more specific categories (e.g., sea ducks, dabbling ducks).
- Observe from a safe location roosting/breeding colonies for oiling or spill-related disturbances.
- To assess rates of carcass stranding, scavenging, burial, etc. refer to Carter and Page (1988).

Survey Guidelines

1. When searching the shoreline for bird carcasses keep in mind that they may be hard to recognize due to scavenging, or from being covered by oil, debris, or vegetation.
2. For each carcass, record the location within the segment (i.e., subtidal, high tide line, wetlands) and the collection time and date. Where appropriate, record the carcass location on a map, using an identification number assigned to each carcass.
3. Record the species, condition, age, sex, evidence of oiling, and evidence of scavenging for each carcass. Do not guess at the species; select the appropriate guild or label as unknown, and record a description of the bird on the wildlife observation form (WFO) form. Carcass condition should be recorded as: a) fresh dead (no signs of decomposition), b) decomposing (rotting flesh is evident), c) decomposed (only skin, feathers, and bone present, no rotting flesh visible, no signs of recent scavenging), and d) unknown. Do not assume when only finding skin, feathers, and bone of a carcass that it is decomposed. Check for evidence of scavenging (small shreds of flesh found near bone) before recording condition. Age and sex can be evaluated using an avian guide book. Evidence of oiling on the bird should be recorded; suggested terminology is:

   None: no visible oiling Light: oil spots, staining, or bands < 10% of the bird

   Medium: oil spots, staining, or bands that cover between 10-50% of the bird

   Heavy: oil covering > 50% of the bird
4. If removing carcasses, collect each carcass in a separate paper bag, cardboard box, or wrap in aluminum foil. Start the chain of custody record. Record carcass ID, shoreline segment code, and date/time in permanent marker on a label tag, and place tag in bag. Notify rehabilitation or collection teams for pick up of carcass bags. If bagging and collection of carcasses is not possible or if carcasses are being left in place as part of a "natural removal rate" study, clip a pre-specified toe on the dead bird to prevent double counting on a future survey.
5. For live birds, record the number, species, sex, age class, and locations of live birds in the shoreline segment or on the water, degree of oiling observed on the birds (use definitions above), and if they are immobile or free flying. Plot locations of live birds on the map, as appropriate.
6. Do not attempt to capture oiled birds, but report them to the rehab center by radio for capture.
7. Record latitude and longitude at all locations required to define the area surveyed. Record time of survey (start and end), transect sampling width, weather and wave conditions, visibility, and other variables that would define the effort and thoroughness of the survey.
8. Make all notes in pencil or indelible ink (regular ink will smear when wetted).
9. Photodocument as much as feasible oiled/non-oiled birds in the field, carcasses, etc.

References

California Department of Fish and Game. 2001. Wildlife Response Plan for California. Office of Spill Prevention and Response. Sacramento, California. At: http://www.dfg.ca.gov/Ospr/index.html.

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