

BIOTA/TARBALL STRANDING DOCUMENTATION

Objectives

- To document or estimate the abundance of stranded biota or discrete oil deposits such as tarballs
- To obtain preliminary information to help evaluate the need for more comprehensive studies

Parameters

- The extent and abundance of stranded, dead, or moribund organisms
- Abundance or percent cover of certain oiling types (e.g., tarballs)

Equipment

- site markers (appropriate for substrate type)
- surveying flags, tape
- 30 m fiberglass tape measure, marked in cm
- quadrats (1.0, 0.25, and 0.063 m²)
- GPS
- compass
- hand counter
- meter stick, rulers
- identification charts/guides
- field notebook (water-proof paper)
- pencils, waterproof pens, markers
- percentage estimation charts
- shoreline oil terminology code sheet
- standardized data sheets (waterproof)
- 35 mm camera, video camera
- slide and print film, video tapes
- photo scales, photo log forms
- specimen sample bags/jars, cooler and ice
- waterproof labels
- chain of custody forms and labels

Methods

- Conduct overflights within two-hours of low tide (before or after), to determine the extent of visible contamination and stranding of biota. Use USGS 7.5 minute topographic maps, vertical aerial photographs, or other detailed maps to record observations. Record the:
 - locations and approximate lengths of oiled shoreline segments
 - approximate width and degree of oiling along different segments of shoreline
 - evidence of stranding or mortality events (bodies, gulls feeding)
 - presence or location of debris or wrack accumulations (where biota might also accumulate)
 - features which appear to affect the pattern of oil/wrack/biota deposition along the shoreline, such as shoreline orientation or the presence of offshore rocks which refract waves

- shoreline access points
- all photographs taken
- Conduct a preliminary shoreline survey. Divide the impact area up into distinct shoreline segments using an initial classification system based on degree of oiling or relative rate of biota stranding. Develop a segment numbering system.
- For each shoreline segment, focus initially on documenting obvious impacts, delineating areas according to the relative degree of oiling/biota stranding, and determining potential locations for more detailed surveys. Record the locations of survey sites actually visited on a basemap and with a GPS. Field observations and descriptions for each shoreline segment should include the:
 - shoreline segment number, date, time, weather conditions, tide level, and names of observers
 - physical setting (shoreline orientation, exposure to wave energy and tidal currents, wind, potential for burial by sediment accumulation)
 - shoreline habitat type
 - dominant species or types of biota present
 - presence of stranded dead or moribund animals
 - extent and degree of shoreline oiling (use shoreline oil terminology codes and % cover charts)
 - type or degree of shoreline cleanup performed (particularly note removal of stranded biota)
- If significant strandings of biota are observed, they must be documented promptly to avoid loss to predation, or removal by tidal action or beach cleanup. Qualitative documentation of strandings would include systematic observations at representative sites, including:
 - location of the survey sites using a GPS and an appropriate basemap; field markings so that repeat surveys can be conducted as needed
 - photodocumentation using scales and/or quadrats of the general area and stranded organisms so that the relative abundance of species can be identified
 - estimates of the approximate length and width of the stranding area
 - record of the condition of stranded organisms (e.g., dead, moribund, decomposed) and any atypical behavior(s)
 - similar documentation at appropriate reference areas
- If a significant stranding event occurs over a large area and detailed sampling may be justified, a biostatistician should be consulted as soon as possible. If time and personnel permit, a preliminary estimate of stranded biota abundance should be made. The strategy for estimating the abundance of stranded biota will depend, in part, on how those organisms are distributed on the shoreline. In most cases, dead organisms will be distributed in a relatively narrow band at the last high tide line parallel to the shoreline. At selected segments:
 - lay out a 30-m tape parallel to the shore at the high tide line

- randomly select at least 5 locations along the tape. Lay out a transect perpendicular to the shore (shore-normal) at each of the five locations
- scale the width of the shore-normal transects to the size and abundance of the stranded organisms. This could vary from 0.1 to 1 m wide
- count (or collect) the number of individual organisms or oil type (e.g., tarballs) within each shore-normal transect; for very large numbers of individuals, it may be necessary to conduct counts in randomly located quadrats along the transect
- estimate the total number of stranded organisms by multiplying the average density of the five transect belts by the total length of the segment
- consider a subtidal survey to evaluate the condition of organisms in nearshore areas adjacent to major strandings, and to see if some organisms are not being stranded onshore
- conduct similar stranding estimates in appropriate reference areas
- be aware of beach cleanup activities so that removal or disposal of stranded or dead organisms (or lack thereof) does not confound initial or repeat sampling efforts
- photodocument the stranding and sampling effort in detail
- Consider collecting reference specimens or a large sub-sample of individuals for species identifications; age, size, and sex determinations; necropsy; or chemical analyses. Store samples on ice while in the field, freeze for longer-term storage or transport. If chemical and certain necropsy analyses are not planned, invertebrate and fish samples can be preserved in a chemical fixative such as 10% buffered formalin. Check with the laboratory or specialist conducting analyses about appropriate preservation methods and holding times. Specimens preserved in formalin must be shipped as hazardous materials.

References

NOAA Damage Assessment Center, 1997, Field forms and codes. Appendix 6: in Natural Resource Damage Assessment Emergency Guidance Manual, Version 3.1. NOAA Damage Assessment Center, Silver Spring, MD.