



Geographic Society).

Introduction

This protocol is for volunteers to follow while conducting systematic beach surveys for as part of the Coastal Ocean Mammal/ Bird Research & Education Survey program (a.k.a. Beach COMBERS) in the Monterey Bay National Marine Sanctuary (MBNMS). Beach surveyors should consult field guide to aid in identification of the common species of marine birds and mammals. The primary reference is "Beached Marine Birds and Mammals of the North American West Coast: A revised guide to their identification" (Ainley et al. 1986) and "Birds of North America" (National

Data Collection

There are two data forms to fill out on each survey. The **header** sheet will include the beach segment number, names of surveyors, date, time, start and end times, weather, shoreline oil observations (zone & length, percent cover, oil type, diameter, freshness), and general notes or findings during survey. The beached **organism datasheet** will include detailed description of each animal encountered during your survey. It is important that for each beached animal every field in the survey datasheet is completed or filled with a dash to indicate that you have checked each carcass for scavenging, oiling, and tags. Descriptions of each field in the datasheet are listed below.

Species (code)

Identify the animal to the best of your ability, using your field guides, training materials, and Beached Bird and Mammal book. Consult your partner to agree on the most conservative taxonomic level. For example, if it is a phalarope, but the carcasses is heavily scavenged and your partner thinks it to be a red, but you a red-necked, record PHAL for unidentified phalarope in the Species code field. Use the species code list provided which uses the four-letter abbreviation for the standardized common names. If you then decide to key out the species using the Beached bird book and now know that in fact it is a red phalarope, then record the species as REPH. Include details of how you identified the animal when you have used the key, such as record the wing chord and bill measurements and coloration of bill, feet, or other characters you may have used to identify to species. If you take photos to identify an animal, please include digital or hard copies with your monthly data submission.

If you are not able to identify a bird use UNID or lowest taxonomic level, and put comments in the notes field, if you have other description, but questionable identification. For example, you could put PINN for unidentified seal or sea lion, and in notes, it might read "possible ZACA, skull missing". If you are *confidently* able to identify the species but it is not one that is on your species list (e.g. - Common Raven), put BIRD and identify it in the notes column.

Condition (1-4)

The condition of the carcass can often tell you how long it has been on the beach and whether it is in good enough condition to determine probable cause of death or collect for necropsy. Condition **1** indicates a live injured, dying, sick or oiled animal. Please note location and condition to relay to appropriate wildlife rehabilitation center. Condition **2** is considered fresh dead, a carcass that has just washed in from the sea. Although a condition 2 carcass may be scavenged, it will have fresh blood and tissue exposed. Only collect condition 2 animals for necropsy, unless it is a rare or endangered species or a cetacean of any kind. Condition **3** is a decomposing animal, often has bugs and/or deteriorating tissue. Condition **4** indicates that the animal is no longer decomposing at a fast rate because it has dried out and become mummified. Condition 3 and 4 differ in that the tissue is no longer soft, but is hard, the condition 4 carcasses are generally stiff.

Sex (M/F/U)

You will not be able to distinguish the sex of many seabirds because they are *monomorphic* (sexes look alike) and therefore sex will be "U" for unknown. The exceptions are ducks which have different male and

female plumages (i.e. surf scoters), and gulls and grebes in which the sexes have different sized or shaped bills. You should try to examine all pinnipeds and cetaceans to determine the sex of the animal. Using a stick, roll the animal onto its back, so that the central ventrum (belly) is exposed. The sex of the animal can mainly be determined on fresher (condition 1- 2) carcasses. Scavenging at the orifices is common, and makes it difficult to sex heavily scavenged carcasses. Male pinnipeds will have a penile opening posterior (toward tail end) of the umbilicus (belly-button), whereas female pinnipeds will only have one ventral mark for the umbilicus. Cetaceans differ in the presence (females) or absence (males) of two mammary slits on both sides of the central genital slit. Consult the pg. 172 (pinnipeds) and pg. 187 (cetaceans) for illustrations of differentiating among sexes in marine mammals. If you are unsure of the sex, record "U" in this field.

Age (Birds: HY, AHY, FY, SY, TY; Mammals: PC, IM, AD)

Birds are difficult to age; most seabirds can only be differentiated into juvenile or hatch-year (HY) and after-hatch-year (AHY) plumages. Gulls may have a series of two or three plumages after the first year, corresponding to the second-year (SY), third year (TY), before reaching the adult (AD) plumage. Consult your field guide to distinguish age by plumage, bill and foot coloration. Often there is little difference in bill or wing length among age classes.

Mammals are primarily aged based on size. Using rings of enamel in the teeth, researcher will be able to obtain a specific age, but for the purposes of the beach survey, we are only recording broad age classes. Mammal pups or calves (PC) are the smallest age class, followed by sexually immature or subadult (IM), and the oldest, largest animals are considered adults (AD). In some species there are other characters which distinguish the males as adults, such as the sagittal crest of the adult male California sea lions and the pronounced, billowing nose of the adult male Northern elephant seal.

Number of Feet (0, 1, 2)

If an organism has less than two legs, this will affect the 'Toe-Clipping' values. So please specify how many legs the organism has. The number of legs/flippers does not affect the values for marine mammal entries (you can tie strings around any appendage left) so don't worry about filling this field out for marine mammals.

Toe Clipping (0 – 6, 8, 9)

To determine how long a beached animal has been on the beach, we use a toe-clipping system to mark bird carcasses and twine to mark mammals. Each time a carcass is encountered, one toe is clipped off or a piece of twine is tied around the rear flipper. Because cetaceans and sea otters always will be collected, there is no need to mark these animals. There are two columns for coding this; "previous" refers to the number of toes that were clipped previously, before your present survey, and "post" refers to how many have been clipped after you leave the animal. So the first time a new animal washes up on the beach it will be coded as "0/ 1" corresponding to no toes clipped and then one clipped. The second month if it is encountered again, it will be "1/2", then "2/3" on the third survey, and so on, "3/4, 4/5, 5/6, and 6/6". We stop clipping toes after 6 toes of both feet or 3 on a bird with one foot (because not all species have 4 toes, but all have 3). If a bird only has one foot, then it will be coded as "0/1, 1/2, 2/8", indicating that all toes have been clipped on bird with one foot only, code "8". If the carcass only has **no feet or one foot**, please record this in the notes. Twine on mammals is coded similarly, with no limit to the number of pieces that are placed on a carcass. If an animal is collected, please indicate "9" in the post field and record this in the notes. If a wildlife agency has been notified of the occurrence of a dead protected or rare species (sea otters, turtles, cetaceans, snowy plovers or brown pelicans), please record this in the notes.

Scavenged (Y/N/U)

Most carcasses are scavenged when they are fresh and newly deposited on the beach. Typical scavengers include gulls, coyotes, turkey vultures and shore crabs. Scavengers target the breast of birds and eyes and other orifices of marine mammals. If the carcass has been scavenged, skin will be torn or

ripped, exposing the underlying tissue. Record "Y" (yes) in this field if there is evidence of scavenging and "N" (no) if there hasn't been scavenging (i.e. the carcass is intact). Record "U" (unknown) if the carcass is too old and mummified to determine scavenging.

External Findings (1- 7)

Try to determine probable cause of death, such as **1)** Shot: look for both entry and exit wound as scavenger pecks can look very similar (sometimes an x-ray is necessary to see bullet fragments). **2)** Tangled in fishing line or net: make sure that the line didn't wrap around animal after it died, look for signs of wearing of skin or feathers near entanglement site. **3)** Tangled in plastic. **4)** Unknown. **5)** Oil: if bird is oiled but you are unsure if this is the cause of death write **7** and use photos and notes. **6)** Shark bite. **7)** Other: write in notes field. Describe in notes and take photos to document cause of death. Generally, you will not be able to determine cause of death during your beach survey unless the carcass is really fresh. Collect fresh (condition 2) specimens for necropsy to determine other causes.

Oiled (Y/N/U)

Check each bird and mammal for oiling. You will only be able to determine oiling of carcasses in relatively good condition and that have not been scavenged extensively. Record "Y" (yes) if oiled, and continue to describe extent and where oiled in next two fields. If the animal is not visibly oiled, record "N" (no), and write dashes in the next two fields. If the carcass is not intact enough to determine if it is oiled or not, record "U" (unknown) in this field. Be conservative and careful, dried blood, and diatom growth on feathers can be mistaken for oil. Oil tends to make the tiny barbules of the feather stick together, whereas diatoms will grow along these structures, making it look frayed. If a bird was oiled for a while before dying, it may also have oil on its bill from preening oiled feathers.

Oil Extent (1-4)

Estimate the percentage of the surface of the body that is covered by the oil. The codes are **1)** small globules, <2% of the body, **2)** 2-33% of the body, **3)** 34-66% of the body, **4)** 67-100% of body. If it is covering the entire ventrum, this is considered 50%. Take a photo of the oiled area and another of the head to verify the identity of the animal for documentation. Continue description in next field.

Where oiled (1-7)

Examine the animal to determine which parts have been exposed to oil. Code as **1)** dorsal only (back), **2)** ventral only (belly), **3)** entire body, **4)** head only, **5)** feet only, **6)** wings or flippers only, **7)** other, please record description in notes if oiling does not fit into any of the other categories. Most often, birds are oiled on the ventrum when they roost on the water, whereas pinnipeds tend to be oiled on the head and shoulders when they surface.

Photo (Y/N)

Take a photo of animals which are oiled, entangled or show other evidence of human-related activities (i.e. six-pack plastic rings around body). Photograph banded or tagged animals, especially if cause of death is evident. Also take photos of interesting finds, such as sharks, unusual flotsam or jetsam. Indicate "Y" (yes) if a photo was taken and record roll and frame number in notes column. Record "N" (no) if no photo was taken. Photographs are optional. Please send in your photos via email or regular mail with your monthly data submission.

Tag (Y/N)

Tag refers to tags or other markings (brands, bands) applied by other researchers. Check both legs of birds for bands and all flippers of pinnipeds for tags, if none, record "N" (no) in this field. If the animal is tagged or marked in any way, such as a metal leg band, brand mark, or plastic flipper tag, indicate "Y" (yes) in the Tag field. Describe color, location, and number of tag in notes field. For example, you would record "TAG = Y, NOTES = #1209-23478 metal leg band (on right leg), collected". All tags are reported by the data manager to the national bird banding lab (birds), National Marine Fisheries Service (marine

mammals), California Department of Fish and Game (sea otters), or U. S. Fish and Wildlife Service (endangered species).

Notes

Use this field to record more detailed information from any of the other data, such as unusual species (not on list), measurements (standard length = nose to tip of tail), tag number, location and description, Photo roll and frame number, disposition of animal if it has been removed from beach (i.e. collected for necropsy, Moss Landing Marine Lab).