

## Data Collection Guidelines for Marine Wildlife Monitors

California State Lands Commission (CSLC) staff has prepared this guidance document to help Marine Wildlife Monitors (MWMs) record data in a manner that meets the expectations of CSLC staff reviewers. Permittees shall provide these guidelines to onboard MWMs who are responsible for the visual monitoring of marine wildlife, including recording information on survey activities and observations of marine wildlife, and summarizing encounters with marine mammals and reptiles and subsequent actions taken during vessel transit and survey operations. In accordance with the Low Energy Offshore Geophysical Survey Program (OGPP) General Permit requirements, Permittees must submit a Post Survey Field Operations and Compliance Report to CSLC staff no more than 30 days after the completion of any survey activities, which includes the following information collected by MWMs:

- Descriptions of any encounters with marine mammals, reptiles, and/or unusual concentrations of diving birds/seabirds (e.g., species, group size, age/size/sex categories [if determinable], behavior, distance and bearing from vessel) and the outcome of those encounters;
- The number of times equipment shut-downs or vessel slow-downs were ordered due to animals being observed in the safety zone or due to poor visibility conditions;
- A summary of observations of pinniped behavior at haul-out sites, if applicable, and any recommendations made related to pinniped avoidance; and
- Number of collision events, if applicable, and the species and disposition of animal.

The goal of providing data collection guidelines, in addition to a **Marine Environmental Variables Form** and a **Marine Wildlife Observations Form** (see below), to MWMs is to ensure consistency in the documentation of marine wildlife observations and interactions during vessel transit and survey operations. MWMs should refer to the Permittee's **Marine Wildlife Contingency Plan** (MWCP) for additional information regarding MWM responsibilities and marine wildlife that could be expected within the project region.

### I. General Information

Record the following information at the start of each shift, and when environmental variables and vessel activity change:

- Record your name, date, time, and environmental variables (refer to Section II)
- Note vessel activity (e.g., transiting, surveying)
- Record start and end times of vessel activity (e.g., start/end of transit, ramp-up)

## II. Marine Environmental Variables

Record the following environmental variables on the **Marine Environmental Variables Form** (see below) at the beginning of each shift and if there are any changes during the observation period:

- Weather Conditions – Note weather conditions (e.g., clear, hazy, gray, fog, rain)
- Cloud Cover – Refer to **Table 1** to determine the approximate cloud cover

**Table 1. Cloud Cover**

Description	Percent (%)
Clear	0-10
Scattered	10-50
Broken	50-90
Overcast	90-100

- Glare – Record intensity (none, mild, medium, or severe) and direction relative to the vessel (e.g., 0° to 30°, or north/northeast)
- Visibility – Measured in kilometers (km) or nautical miles (nm)
- Wind Speed – Refer to **Table 2** to determine the approximate wind speed
- Sea State – Refer to **Table 2** to determine the approximate sea state
- Swell Height – Measured from the crest to the trough of the swell (meters)

**Table 2. Beaufort Scale**

<b>Beaufort Scale</b>	<b>Wind (knots)</b>	<b>Wind Conditions</b>	<b>Sea Conditions</b>
0	<1	Calm	Sea surface smooth and mirror-like
1	1-3	Light air	Scaly ripples, no foam crests
2	4-6	Light breeze	Small wavelets (0.2 m), crests glassy, no breaking
3	7-10	Gentle breeze	Large wavelets (0.6 m), crests begin to break, scattered whitecaps
4	11-16	Moderate breeze	Small waves (1 m), some whitecaps
5	17-21	Fresh breeze	Moderate waves (1.8 m) taking longer form, many whitecaps, some spray
6	22-27	Strong breeze	Larger waves (3 m), whitecaps common, more spray
7	28-33	Near gale	Mounting sea (4 m) white foam streaks off breakers
8	34-40	Gale	Moderately high waves (5.5 m) of greater length, edges of crests begin to break into spindrift, foam blown in streaks
9	41-47	Strong gale	High waves (7 m), sea begins to roll, dense streaks of foam, spray may reduce visibility
10	48-55	Storm	Very high waves (9 m) with overhanging crests, sea white with densely blown foam, heavy rolling, lowered visibility
11	56-63	Violent storm	Exceptionally high waves (11 m), foam patches cover sea, visibility more reduced
12	64+	Hurricane	Air filled with foam, waves over 14 m, sea completely white with driving spray, visibility greatly reduced

### III. Marine Wildlife Observations

When a marine mammal or reptile is first sighted, record the following information on the **Marine Wildlife Observations Form** (see below):

- Time of initial sighting – 24-hour format
- Position of vessel – Latitude and longitude
- Distance (meters, kilometers) and bearing (relative to the geographical compass) to the animal(s)
- Species (or identification to the lowest possible taxonomic level) – If species cannot be determined, but species group can, please record, for example, “unidentifiable whale” or “unidentifiable dolphin.” In addition, if species cannot be determined, please record any distinguishing marks or characteristics (e.g., size and shape of dorsal fin, fluke shape, size and shape of blow, color, size)
  - Refer to **Appendix A** (California Marine Mammals) and **Appendix B** (California Sea Turtles) for information on marine mammals and reptiles that could be expected in California waters.
- Certainty of identification (unsure/possible, probable, definite)
- Number of individuals
- Age/size/sex categories (if determinable)
- Direction of animal’s travel relative to the survey vessel (e.g., toward vessel, away from vessel, parallel to vessel) – Draw/sketch, if necessary
- Behavior – Record behavior of animal(s) when first sighted *and throughout the observation period*; be as explicit and detailed as possible, and note any observed changes in behavior.
  - Examples of behaviors are: fast, moderate, or slow swimming; porpoising; bow riding; breaching/aerobatics; flipper slapping; tail slapping/lobtailing; spyhopping; diving (note whether fluke was raised); frequent/infrequent surfacings; feeding; milling; logging; avoiding/approaching survey vessel/equipment.
- If an animal enters the established safety zones (**Table 3**), please record the following additional information:
  - Time when first observed in safety zone
  - Time when observed exiting safety zone
  - What action was taken, if any, when the animal(s) was observed in the safety zone
  - Behavior of animal(s) in safety zone – (e.g., rapid breathing/increased surfacing, sudden/erratic change in behavior or direction)
  - Duration of power-down/shut-down, if required
  - Behavior of animal(s) after shut-down of geophysical equipment

**Table 3. Safety Zone Monitoring by Equipment Type**

<b>Equipment Type</b>	<b>Safety Zone (radius, m)</b>
Single Beam Echosounder	50
Multibeam Echosounder	500
Side-Scan Sonar	600
Subbottom Profiler	100
Boomer	100

- Activity of survey vessel (e.g., transit, equipment in operation [note type of equipment and operating parameters])
- Note the number and type (e.g., recreational/commercial fishing vessel, tanker) of other vessels in survey area

**Marine Environmental Variables Form**

Date: \_\_\_\_\_

Monitor: \_\_\_\_\_

Time	Latitude	Longitude	Vessel Activity	Weather	Cloud Cover	Glare	Visibility	Wind Speed	Sea State	Swell Height	Comments

## Marine Wildlife Observations Form

Date: \_\_\_\_\_

Monitor: \_\_\_\_\_

Time:	Latitude:	Longitude:
Weather:	Cloud Cover:	Glare:
Visibility:	Wind Speed:	Sea State:
Swell Height:	Survey Vessel Activity:	
Marine Wildlife Observations and Interactions:		

Time:	Latitude:	Longitude:
Weather:	Cloud Cover:	Glare:
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### Appendix A. California Marine Mammals

Species or Guild	Stock	Status and Species Account for California Waters	Probability of Encounter
<b><i>Mysticetes – Baleen Whales</i></b>			
Bryde's whale ( <i>Balaenoptera edeni</i> )	Eastern Tropical Pacific	Bryde's whales along the California coast are likely part of a larger population inhabiting the eastern part of the tropical Pacific Ocean. As a result, a regular occurrence is likely to be very low.	Very low
Sei whale ( <i>Balaenoptera borealis borealis</i> )	Eastern North Pacific	Endangered; sei whales are considered rare in California waters.	Low
Minke whale ( <i>Balaenoptera acutorostrata scammoni</i> )	California/ Oregon/ Washington	Minke whales occur year-round along shelf waters in California and in the Gulf of California, occurring south of California in the summer/fall.	Low to Medium
Fin whale ( <i>Balaenoptera physalus physalus</i> )	California/ Oregon/ Washington	Endangered; aggregations of fin whales occur year-round in Southern/Central California and the Gulf of California. Fin whale vocalizations are detected year-round off Northern California, with a peak in vocal activity between September and February. Although typically found over the slopes and continental shelves, fin whales have been regularly reported from shore during gray whale migration surveys.	Medium
Blue whale ( <i>Balaenoptera musculus musculus</i> )	Eastern North Pacific	Endangered; the U.S. west coast represents one of the most important feeding areas in summer and fall for blue whales. Most of this stock is believed to migrate south to Baja California, the Gulf of California, and the Costa Rica Dome during the winter and spring.	Medium
Humpback whale ( <i>Megaptera novaeangliae</i> )	California/ Oregon/ Washington	Humpback whales in the North Pacific feed in coastal California waters and migrate south to winter. The California/ Oregon/Washington stock includes humpback whales that feed along the U.S. west coast. Humpback whales are found throughout shelf waters, but have been reported with regularity inside the 100-m isobaths.	Medium



Species or Guild	Stock	Species Account for California Waters	Probability of Encounter
North Pacific right whale ( <i>Eubalaena japonica</i> )	Eastern North Pacific	Endangered; North Pacific right whales primarily occur in coastal or shelf waters in northern latitudes. During winter, right whales occur in lower latitudes and coastal waters where calving takes place. Sightings have been reported as far south as central Baja California in the eastern North Pacific.	Low
California gray whale ( <i>Eschrichtius robustus</i> )	Eastern North Pacific	Most gray whales in the Eastern North Pacific stock spend the summer feeding in the northern and western Bering and Chukchi Seas before migrating south in the fall along the coast of North America from Alaska to Baja California. The stock winters along the coast of Baja California, using shallow lagoons and bays for calving. The northbound migration generally takes place between February and May with cows and newborn calves migrating northward, primarily between March and June, well within 5 mi of the shoreline.	Seasonal: High to Low
<b><i>Odontocetes – Toothed Whales</i></b>			
Short-finned pilot whale ( <i>Globicephala macrorhynchus</i> )	California/ Oregon/ Washington	Short-finned pilot whales were likely residents off Southern California; however, after a strong El Niño event in 1982-83, short-finned pilot whales virtually disappeared from this region. Since then, there have been infrequent sightings of pilot whales off the California coast.	Low to Medium
Killer whale ( <i>Orcinus orca</i> )	Eastern North Pacific Offshore <sup>2</sup>	Killer whales are wide-ranging species, with this stock ranging from the outer coasts of Washington, Oregon and California.	Low to Medium
Striped dolphin ( <i>Stenella coeruleoalba</i> )	California/ Oregon/ Washington	Striped dolphins are typically sighted 100 to 300 nm from the California coast.	Medium

Species or Guild	Stock	Status and Species Account for California Waters	Probability of Encounter
Pygmy and dwarf sperm whales ( <i>Kogia</i> spp.)	California/ Oregon/ Washington	Pygmy and dwarf sperm whales are distributed throughout deep waters and along the continental slopes of the North Pacific; however, little population data are available for these species. <i>Kogia</i> sightings may underestimate their presence due to their inconspicuous behavior. Due to their deep diving habits, they may be more susceptible to sound impacts than other species.	Low to Medium
Small beaked whales <sup>1</sup> (Ziphiidae)	California/ Oregon/ Washington	At least five species of Mesoplodont whales have been recorded off the U.S. west coast. They are grouped here due to the infrequent records and difficulty of positive identification. Ziphiid beaked whales are distributed widely throughout deep waters of all oceans, but have been seen primarily along the continental slope in western U.S. waters from late spring to early fall. They have been seen less frequently and are presumed to be farther offshore during the colder water months of November through April. Due to their deep diving habits, they may be more susceptible to sound impacts than other species.	Low to Medium
Sperm whale ( <i>Physeter macrocephalus</i> )	California/ Oregon/ Washington	Endangered; sperm whales are widely distributed across the entire North Pacific during the summer, while in winter, the majority are thought to be south of 40° N (roughly Eureka, CA). Sperm whales are found year-round in California waters with peak abundances from April to June, and again from September to November. They are typically found on slopes in waters deeper than 200 m.	Medium
Bottlenose dolphin (offshore) ( <i>Tursiops truncatus truncatus</i> )	California/ Oregon/ Washington	Offshore bottlenose dolphins are evenly distributed at distances greater than a few kilometers from the mainland and throughout the SCB.	Medium
Bottlenose dolphin (coastal) ( <i>Tursiops truncatus truncatus</i> )	California Coastal	California coastal bottlenose dolphins are typically found within 1 km from shore from Point Conception south into Mexican waters.	High (South Coast region)

Species or Guild	Stock	Status and Species Account for California Waters	Probability of Encounter
Long-beaked common dolphin ( <i>Delphinus capensis capensis</i> )	California	Long-beaked common dolphins are commonly found within 50 nm of the coast from Southern to Central California.	Medium
Short-beaked common dolphin ( <i>Delphinus delphis</i> )	California/ Oregon/ Washington	Short-beaked common dolphins are the most abundant cetacean off California and can be seen in coastal and shelf waters up to 300 nm from shore.	High
Northern right whale dolphin ( <i>Lissodelphis borealis</i> )	California/ Oregon/ Washington	Northern right whale dolphins are primarily seen in shelf and slope waters with seasonal movements into California waters during the colder water months.	Medium
Dall's porpoise ( <i>Phocoenoides dalli dalli</i> )	California/ Oregon/ Washington	Dall's porpoises are commonly seen in shelf, slope, and offshore waters with occurrences common off Southern California in winter.	Medium (location, season)
Risso's dolphin ( <i>Grampus griseus</i> )	California/ Oregon/ Washington	Risso's dolphins are commonly seen in shelf waters within the SCB and in slope and offshore waters of California.	Medium
Pacific white-sided dolphin ( <i>Lagenorhynchus obliquidens</i> )	California/ Oregon/ Washington	Pacific white-sided dolphins are common along continental margins and offshore, with peak occurrences off California during the colder winter months.	Medium to High
Common dolphin (long- and short-beaked) ( <i>Delphinus</i> spp.)	California/ Oregon/ Washington (short-beaked); California (long-beaked)	Many stock assessment and cetacean surveys list <i>Delphinus</i> species rather than distinguish between short- and long-beaked common dolphins; consequently, this species group has been considered as a whole in the density model.	High
Harbor porpoise ( <i>Phocoena phocoena vomerina</i> )	Central California (incl. bay Stocks & N. California/ S. Oregon Stock)	Four geographic stocks in California waters are identified as separate stocks mainly due to varying fisheries pressures. The combined range extends from Southern Oregon/Northern California to Point Conception. Harbor porpoise are found almost exclusively in coastal and inland waters.	High

Species or Guild	Stock	Status and Species Account for California Waters	Probability of Encounter
<b><i>Pinnipeds – Seals and Sea Lions</i></b>			
Harbor seal ( <i>Phoca vitulina richardsi</i> )	California	Harbor seals inhabit nearshore coastal and estuarine areas from Baja California to the Pribilof Islands in Alaska. In California, approximately 400 to 600 harbor seal haul-out sites are widely distributed on the mainland and on offshore islands, intertidal sandbars, rocky shores, and beaches. Rookeries are located from Santa Rosa to Mexico.	High
Northern elephant seal ( <i>Mirounga angustirostis</i> )	California (breeding)	Northern elephant seals breed and give birth in California primarily on offshore islands from December to March from about San Francisco southward. Adults return to land between March and August to molt. Adults return to their feeding areas again between their spring/summer molting and their winter breeding seasons.	High (seasonal)
Northern fur seal ( <i>Callorhinus ursinus</i> )	San Miguel Island	All northern fur seals in California waters are found along San Miguel Island off Southern California.	High (Channel Islands region)
California sea lion ( <i>Zalophus californianus</i> )	California	California sea lions are distributed along the entire coastline year round, and breed on islands in Southern California.	High
Northern (Steller) sea lion ( <i>Eumetopias jubatus</i> )	Eastern Pacific US	Threatened; rookeries for Steller sea lions (eastern DPS) are located between Cape Fairweather, Alaska and Ano Nuevo Island, California. Breeding takes place from May to July, outside of which they are widely dispersed.	High (seasonal)
Guadalupe fur seal ( <i>Arctocephalus townsendi</i> )		Threatened; Guadalupe fur seals pup and breed mainly at Isla Guadalupe, Mexico, with a second rookery at Isla Benito del Este, Baja California. In 1997, a pup was born at San Miguel Island, California. Individuals have stranded or have been sighted as far north as Blind Beach, California, inside the Gulf of California, and as far south as Zihuatanejo, Mexico.	Extremely low

Species or Guild	Stock	Status and Species Account for California Waters	Probability of Encounter
<b>Mustelid – Sea Otter</b>			
Southern sea otter ( <i>Enhydra lutris nereis</i> )	California	Threatened; southern sea otters occupy nearshore waters along the California coastline from San Mateo County to Santa Barbara County. A translocated colony has been established at San Nicolas Island, Ventura County.	High (location)
<p><sup>1</sup> Includes <i>Mesoplodon</i> species and <i>Ziphiidae</i> species</p> <p><sup>2</sup> Stocks overlap in some California waters; however, this stock encompasses the waters along the entire California coast</p> <p>Probability of encounter during low energy geophysical surveys is based on population estimates and distribution facts in the NOAA Stock Assessment Reports, and the density calculations are from the SERDP-SDSS density models and are not referenced from the NOAA Stock Assessment Reports. The probability of occurrence for marine mammal species in the Project area was determined based on the overall population density of the species, spatial and seasonal distribution patterns (particularly those associated with water depth), and species behavioral characteristics. These descriptors are partially subjective in that they assume an overall equal possibility of an OGPP operation occurring anywhere in State waters at any given time. Species with very low and low probability of occurrence (N= 3) during operations were those that have a low overall population density off the California coast combined with either a narrow seasonal occurrence, or are typically found well outside State waters (e.g., outside the 200 m isopleth). Species with a low to medium probability of occurrence are those that have (or have had) a documented population (seasonal or year round) in waters off the coast of California, but tend to occur at depths beyond those delineated as State waters. Species with documented sightings within State waters and those that use of shelf and slope waters or have a widely distributed resident population fell to the medium rather than low end of the occurrence scale. Species meeting both the low and medium criteria with behaviors that make them less conspicuous (e.g., deep diving, less gregarious), or lacking population data were given a higher occurrence rating as a precautionary approach. Species that have documented populations in State waters were given a high probability of occurrence even if found in a localized geographic region or only during specific seasons.</p>			

## Appendix B. Sea Turtles of California

Taxonomic Classification and Common Name	Status and Species Account for California Waters	Presence in California Waters
<b>Family – Cheloniidae</b>		
Loggerhead sea turtle ( <i>Caretta caretta</i> )	FE <sup>1</sup> ; occupies three different habitats – oceanic, neritic, and terrestrial (nesting only) depending upon life stage; omnivorous.	Rare
Green sea turtle ( <i>Chelonia mydas</i> )	FE; resident populations in San Diego County (San Diego Bay); aquatic, but known to bask onshore; juvenile distribution unknown; omnivorous.	Common
Pacific hawksbill sea turtle ( <i>Eretmochelys imbricata bissa</i> )	FE; Rare in CA; pelagic; feeding changes from pelagic surface feeding to benthic, reef-associated feeding mode; opportunistic diet.	Rare
Olive ridley sea turtle ( <i>Lepidochelys olivacea</i> )	FT <sup>2</sup> ; primarily pelagic, but may inhabit coastal areas, including bays and estuaries; most breed annually, with annual migration (pelagic foraging, to coastal breeding/nesting grounds, back to pelagic foraging); omnivorous, benthic feeder.	Rare
<b>Family – Dermochelyidae</b>		
Pacific leatherback sea turtle ( <i>Dermochelys coriacea</i> )	FE; pelagic, lives in the open ocean and occasionally enters shallower water (bays, estuaries); omnivorous (jellyfish, other invertebrates, vertebrates, kelp, algae); local aggregations evident (e.g., Monterey Bay); seasonal migrant.	Frequent
FE: Federally Endangered; FT: Federally Threatened <sup>1</sup> North Pacific Ocean Distinct Population Segment (DPS) <sup>2</sup> Coastal Mexico population endangered (threatened elsewhere)		