

## Revised 2019 AMOYWG Breeding Metrics with Definitions

Objective: Provide guidance in order to standardize the way nesting data is categorized and interpreted across all partner sites, with the ultimate objective of creating a standardized monitoring protocol and productivity database.

Sites to Include: Report any sites where American Oystercatchers were surveyed during the nesting season. Sites are units of area monitored and/or managed discretely and could be miles long (e.g. a large barrier island), segments of beach (e.g. a city's beach on a coastline with multiple municipalities along it), or smaller areas (e.g. a marsh island). If at all possible, avoid lumping metrics for entire state or region. Use consistent site name(s) across years to indicate the same area covered and different site name(s) if new/different areas are covered.

*Italic: input* (simple count of observed objects/events; Working Group members will enter this data)

**Bold: output** (computational process required; the spreadsheet or compiler will calculate these values)

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*Monitoring window:* Dates when monitoring began and ended for the season.

*Site visit frequency:* Average number of days between visits. Ideally this is 2x a week for best resolution for nest and chick fates. If a nest is monitored using a camera (still or video), consider number of days between sites visits during the period of camera deployment to be 0. We recognize ideal visit frequency may not be feasible in more remote areas. For now, recording this is most important, as number of visits needed to detect change or compare surveys will be determined with the database development.

*Territorial pairs:* Number of pairs that create scrapes, mate, and/or engage in agonistic behavior with other AMOY but for which eggs or chicks are not found throughout the season. Includes pairs at sites that are visited only a few times/season, for which nests are not found due to low survey intensity.

*Breeding pairs:* Number of pairs that lay at least one egg (or have at least one chick, if discovered after hatching). In nearly all cases, this will **not** be the same as the number of nests found, as pairs that fail usually re-nest.

*Breeding pairs monitored:* Number of breeding pairs (as defined above) that were monitored with at least one visit every three weeks throughout the season.

*Nests:* Number of nests found throughout the season, including nests that were not monitored. A nest is a scrape with eggs or chicks in it, including those found with non-viable egg(s) (e.g., broken, washed out, etc.) in them on initial visit. A nest is also counted for cases where no nest is located but a chick or chicks are found after hatching.

*Nests monitored:* Number of nests that were monitored with at least one visit every three weeks throughout the season. Includes nests monitored with cameras and nests that could not be further monitored because they were found with non-viable eggs or eggshell fragments on initial visit.

*Nests with camera monitoring:* Number of nests that were monitored with still or video camera for all or part of the egg or chick stage.

*Hatched nests:* Number of nests hatched. Nests are considered hatched once at least one chick is observed out of the shell. Nests observed pipped or starred are not counted as hatched.

*Failed nests:* Number of nests that failed to hatch any eggs.

*Nests of unknown fate:* Number of nests for which the outcome (hatched or failed) is unknown.

*Nests with partial clutch loss:* Number of nests that lost at least one egg but not the entire clutch.

*Chicks fledged:* Number of chicks that have been known to survive to 35 days or have sustained flight of 100 m, whichever comes first.

*Fledged broods:* Number of nest attempts in which at least one chick fledged. A brood is the group of one or more chicks belonging to a breeding pair. Number of broods is equal to number of nests hatched. Note broods fledged will **not** be the same as number of chicks fledged, as 1-3 chicks could fledge from a single brood.

*Failed broods:* Number of broods that completely fail after hatching (i.e., no chicks fledge).

*Broods of unknown fate:* Number of broods for which the outcome (failed or fledged) is unknown.

**Productivity:** Chicks fledged/Breeding pairs monitored

**Nest survival (apparent):** Number of nests hatched/Number nests with known fate (e.g. hatched vs. failed).

**Nest survival (adjusted):** Probability of a nest surviving over a given interval (usually a day or average incubation period). Most people are not calculating the metric at this time. This will be part of the database development.

**Chick survival (apparent):** Fledged chicks/Hatched nests.

**Chick survival (adjusted):** Probability of a chick surviving over a given interval (usually a day or average incubation period). Most people are not calculating the metric at this time. This will be part of the database development.