

Western Purple Martin Nest Site Type Identification and Site Use Classification Protocol - ver. 3.8 (5/10/06)

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At the fall annual meeting of the Western Purple Martin Working Group in 2002 the need was identified to develop a simple hierarchical protocol for classification of colony site and cavity use by Purple Martins (PUMA), similar to and compatible as appropriate with Breeding Bird Atlas protocols, as a first step in standardizing estimation of local and regional abundance and reproductive success. Standard protocols developed for Breeding Bird Atlas programs have been used as a guide, though these are intended primarily for territorial (non-colonial) open-nesting species and require modifications for use with colonial cavity-nesting species. Separate colony site and nest cavity status protocols are provided because a specific behaviour may serve to indicate colony use but NOT cavity use and because assessment options differ greatly between colonies with readily accessible nest box/gourd and inaccessible cavity nest sites. This is meant to be a site USE classification protocol for colony and nest sites, rather than a full site description protocol. However, a simple colony site type classification checklist with basic categories is included. Comments and suggestions are invited, but please note the Frequently Asked Questions and answers on p.3 first.

NESTING CHRONOLOGY

It is essential to note that PUMA at a given location have a protracted (3-4 month) age-stratified spring migration (oldest [ASY] birds arrive first, youngest [SY] birds arrive last) and a variably asynchronous nesting season (first ASY arrivals may nest several weeks before later-arriving SYs with favourable spring weather, or may delay nesting until shortly before/during nesting of SYs in unfavourable weather.) There is also variability of 2-3 months in arrival and nest start timing with latitude. This high degree of seasonal variability confounds attempts at standardized timing of monitoring events for consistent results. At previously active colonies one or more ASY pairs may occupy the site in early spring, 4-6 weeks before start of nesting. The SY birds begin to arrive 3-6 weeks later and are attracted to active colonies by ASY males singing 'dawnsong' calls. Late arriving SYs may colonize new sites and start nesting as late as mid-late June or early July near the northern range limit.

Abbreviations have been proposed for the main status classifications – these are subject to revision and modification.

COLONY/SITE TYPE: [This section will evolve further as required.]

Location:	Marine	Freshwater	Upland	Other:	Pos'n: [Lat./Long., UTM, elevation, etc.]			
Habitat:	Estuary	Inlet or bay	Open shore	Harbour or marina	Burn age: []	Clear-cut age: []	Re-growth age: []	Urban
Structure:	Artificial	Structural	Natural	Single cavity	Multiple cavities	Other:		
Artificial:	Nest box	PVC tube	Gourd	Structural:				
# cavities:	# [.....]	# [.....]	# [.....]	# [.....] (e.g. wharf, bridge, freeway overpass, building, etc.)				
Natural:	Live tree	'Original'	Created	Piling	Other:			
	Type: [.....]	snag	snag	cavity	(eg cliff, lava tubes, etc.)			
# cavities:	# [.....]	# [.....]	# [.....]	# [.....]	# [.....]			

Notes: (Location notes, directions to site, local landmarks, any specific features or problems/threats, etc.)

COLONY/SITE STATUS: Intended to classify colony/site status as a whole. When used in conjunction with

Structure/Cavity Status assessment protocol (following), Colony/Site Status = highest level of Structure/Cavity use determined.

Status may change over early nesting season as site use intensifies, late SY colonization occurs or birds abandon site.

Seasonal timing of all observations refers to normal nesting period for the study area.

Observations may be unreliable in poor (cool, wet, windy) weather conditions (esp. early season).

Early morning or evening observation is critical prior to nestling feeding period, when activity at nest increases.

Approx. equivalence to "Possible", "Probable" & "Confirmed" breeding categories of standard Breeding Bird Atlas protocols for non-colonial cavity-nesting species is indicated.

- U** **Unoccupied:** No PUMA observed nearby in **1 hr** observation period during usual time of peak activity. Monitor <2 hr after sunrise or <2 hr before sunset, esp. prior to nestling feeding activity locally. Monitoring observations should coincide with the nestling feeding period in the area to be conclusive (nesting timing can be highly variable over relatively short distances due to local climate variables).
- O** **Observed:** Bird(s) observed near or high above potential nest site, feeding, etc., NOT using nesting structures
- P** **Present:** Bird(s) observed near defined *suitable nesting habitat* for area, NOT using nesting structures.
(PO) (“Possible”) [*optional*, same as “Observed” UNLESS near known ‘nesting habitat’ type for area]
- OC** **Occupied:** Pair(s) of birds perched near or entering cavities or flying about potential nesting structures.
(PR) (“Probable”) Birds observed repeatedly or for >1 hr “associated” with cavity (no direct evidence of nesting). At least one of *Occupied* or *Roost* CAVITY STATUS behaviours observed (see listing below). Adult male “dawnsong” calls heard continuously high above colony site in pre-dawn hours.
- A** **Active:** At least one of *Active* CAVITY STATUS conditions/behaviours observed (see listing below).
(CO) (“Confirmed”) At least one of *Occupied* or *Roost* CAVITY STATUS behaviours observed *repeatedly (5 days)*. [~ = “Confirmed” breeding category of Breeding Bird Atlas protocol]

STRUCTURE/CAVITY STATUS: Used at Occupied and Active nest colonies where cavity classification is desired.

Status may change over nesting season as more pairs begin nesting.
Seasonal timing of all observations refers to normal nesting period for the study area.
Observations may be unreliable in poor (cool, wet, windy) weather conditions.
Observation in early morning or evening is critical prior to nestling feeding period.

- U** **Unoccupied:** No use by PUMA observed at structure/cavity in **1 hr** observation period. Monitor <2 hr after sunrise or <2 hr before sunset (esp. prior to nestling feeding period locally). Requires monitoring during local incubation or nestling feeding period to be conclusive.
- UN** **Unknown:** PUMA seen/heard nearby but not seen at nest structures (*initial default cavity status*)
(OB) (“Observed”) [~ = “Observed” of COLONY/SITE STATUS and in Breeding Bird Atlas protocol]
- OC** **Occupied:** Bird(s) seen entering, defending or guarding cavity, or adding nest material on one occasion or on widely separated occasions; no regular or repeated cavity use observed
(“Possible”) [~ = “Possible” nesting; BUT... For regular or repeated cavity use see “*Probable Nesting*” below]
- R** **Roost:** Bird(s) seen entering and remaining in cavity at dusk; it may be defended at other times
- A** **Active:** Nesting confirmed by direct inspection or indicated by diagnostic behaviour, as follows:
- AC** **Confirmed Nesting*:** Egg(s) or nestling(s) observed in nest cavity (incl. feeding at entrance, dead nestlings) Characteristic nestling begging calls heard from within suspected nest cavity/structure. [= “Confirmed” in part, of breeding bird atlas protocol]
- AI** **Inferred Nesting*:** at inaccessible or uninspected cavities, at least one of...
(= “expected”)
- carrying food into cavity or frequent short visits during nestling period
 - carrying fecal sacks out of cavity
 - dead young observed below single (i.e. unambiguous) Occupied nest cavity
 - newly fledged young at cavity, being fed by adults (i.e. not dispersing ‘visitors’)
 - night roosting of fledged young in cavity (may be ‘visitors’ >7-10 days post-fledging)
- [= “Confirmed” in part, of breeding bird atlas protocol]
- AP** **Probable Nesting:** at inaccessible or uninspected cavities, at least one of...
(= “suspected”)
- frequent repeat visits to cavity over time
 - dead young observed on ground below Occupied or apparently suitable nest cavity
 - nest material carried into cavity *repeatedly by pair of birds* (i.e. not ‘false’ nest start)
 - member of pair defending or guarding cavity (for > 1/2 hr)
 - presumed incubation (female in box/cavity continually for > 1/2 hr)

[= "Probable" in part, of breeding bird atlas protocol]

[The distinction between "Confirmed" and "Inferred" breeding categories is subtle and of most significance in comparisons between inspected and uninspected sites. They are kept separate to isolate different levels of certainty in the protocol and thus in field data (as in ongoing studies) for clarity; they can easily be combined during analysis if this is justified.]*

The above is generally consistent with procedures used in BC & WA for box checks at accessible sites or a combination of box checks and close observation of nesting behaviour in recent years. Presence of an egg or nestling or evidence of the presence of nestlings, e.g. feeding or cleaning behaviour, is required for a cavity to be considered **Active**. For **Confirmed** nesting, observation (seen/heard) of one or more eggs or nestlings is required. At inaccessible and uninspected sites, nesting is strongly **Inferred** by carrying of food or faecal sacs, feeding of newly fledged young near cavity or night roosting of newly fledged young in cavity. Behaviours such as repeated visits to cavity or carrying in nest material may or may not indicate nesting in that cavity, so suggest but are not reliably diagnostic of a breeding attempt or even a nesting pair. Involvement of both members of a pair in these behaviours repeatedly over time is a stronger indication of a nesting attempt, arguably at the "**Probable**" level.

"**Inactive**" is often used to indicate either no site use or no nesting activity so is somewhat ambiguous for colonial cavity nesters. Since either a colony site or a cavity may be classed as "**Occupied**" in the absence of sufficient evidence of nesting to classify it as "**Active**", it seems more logical that sites with no PUMA observed are better classified as "**Unoccupied**" than "**Inactive**". However, either designation will serve the purpose as long as we are clear and consistent in the meaning.

THESE ARE EXPERIMENTAL PROTOCOLS – COMMENTS AND SUGGESTIONS ARE WELCOME!!!

Frequently Asked Questions (so far):

1) *Why do we need both a Colony Site Use Protocol and a Cavity Site Use Protocol? Wouldn't just one protocol do the job?*

Not easily, though the protocols are quite similar in many respects... Inferring site use for nesting from diagnostic behaviour at colony and individual cavity levels are fundamentally different issues involving slightly different criteria for this colonial-nesting species when cavities are not accessible. Some behaviour patterns indicating colony site use are not sufficiently diagnostic to confirm cavity use, so it's possible, even likely, to declare a colony site 'Occupied' before having direct evidence of specific nest cavity use (esp. early in the season). The most obvious example is one or more adult males singing Dawnsong above the colony to attract SY birds, which indicates the colony is 'Active' with at least one mated pair present (an unpaired male would have left), but indicates nothing about cavity use directly. There are other more subtle distinctions. As well, some studies may be targeted mainly at the colony level while others will be focused on individual cavity use. It thus seems unnecessary to try to cover every eventuality in a single protocol when separate colony site use and cavity use protocols resolves the issue. We may wish to combine these in time but for the moment we have provided a general colony site use protocol that includes a simple and flexible site type classification, as well as a cavity use protocol with specific diagnostic behaviour requirements for those needing to address multiple individual nest cavities. -BC

2) *Should the colony site and structure/nest cavity site protocols use the same or different terminology?*

The few involved so far who have expressed an opinion were equally divided on this one. Being at heart more a 'lumper' than a 'splitter' and because the protocols are similar, I have made an executive decision to use similar terminology for both protocols to (I hope) minimize confusion, though it remains to be seen which approach is less confusing for others. I'm aware that the populace is divided fairly evenly into splitters and lumpers, so we'll see where this takes us and re-evaluate later if there seems to be a need. -BC

3) *Is there a date entry form template available?*

Not yet. The **Colony/Site Type** section, which requires relatively little explanation or interpretation, is formatted so that it can be cut and pasted directly into a field data entry form if desired. A standard data collection form for the **Status** components (and/or a standard site record form) has not yet been developed. This could be done either in a text-based checklist format with all the options available for selection (with brief category explanations included or available as a separate document) OR as a separate blank table with columns for entering the appropriate status codes. Please create one, make any necessary revisions, send us a copy and let us know how it worked. -BC

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