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Identification & Survey Techniques

Bank Swallow Colony Inventory

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Outline

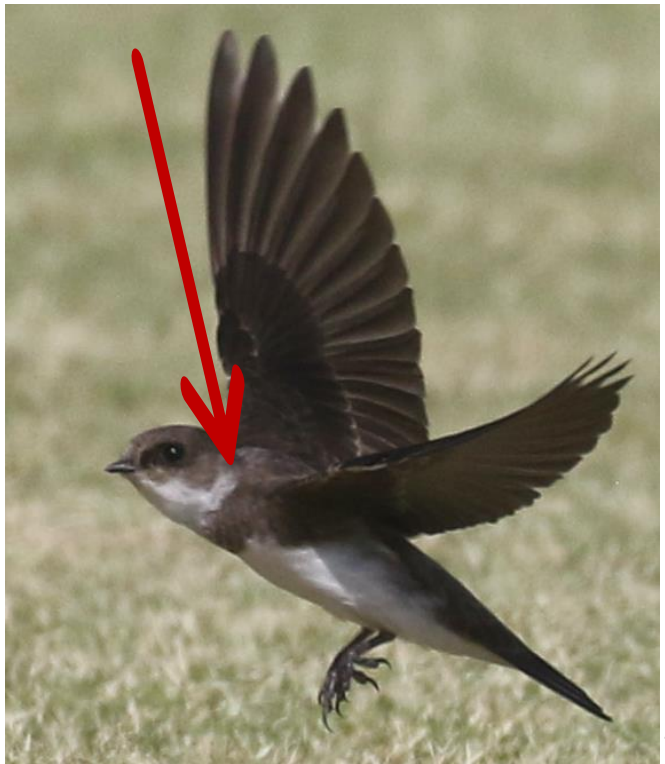
- Bank Swallow Identification
- Methods of Estimation
- Colony Structure
- Vegetation Classification
- Species Easily Confused with Bank Swallows
- Other Swallows and Swallow-Like Species
- Survey Skills Practice
- Identifying Potential Nesting Habitat Using Google Earth Imagery

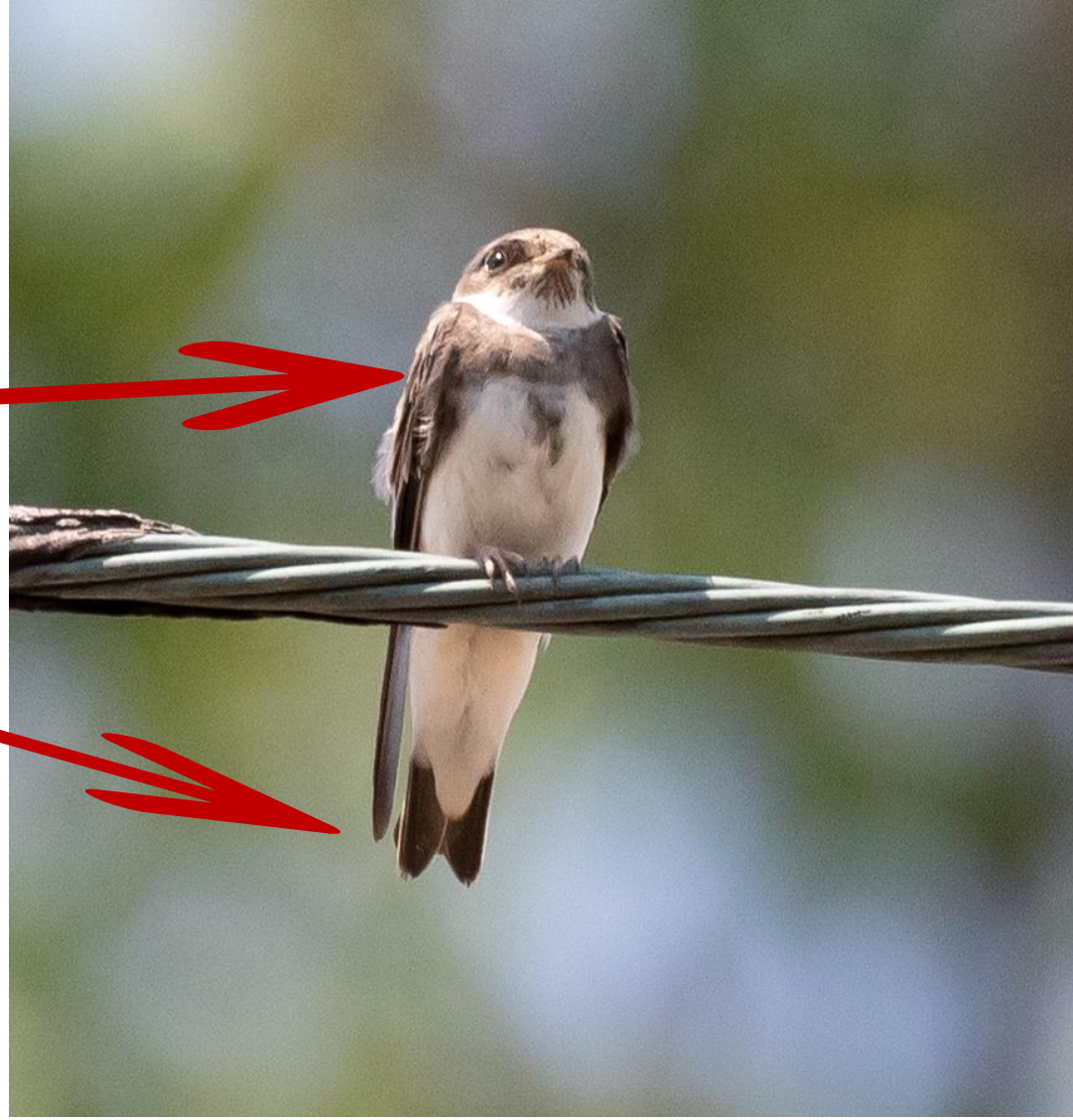
Bank Swallow Identification

Bird Characteristics

Distinguishing Characteristics:

- Dark brown breast band
- Slightly notched tail
- White chin extending around the sides of the head





Colony Characteristics

- Burrows are dug in nearly vertical, eroding dirt surfaces with little or no vegetation
  - Generally arranged horizontally along favorable strata, in an organized layout
- Colonies are often located along stream and lake banks and coastal bluffs
- Can also be found in gravel and sand pits, along roadcuts, and in coastal dunes

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Burrow Characteristics

- Usually oval in shape, about 3 inches wide and 2 inches tall
- Erosion and predation can lead to some variation in shape and size

Methods of Estimation

How to Count Birds in Flight: Grid Method of Estimation

- Step 1: Visualize a grid laid out over the flock you are attempting to count.
- Step 2: Choose an area to focus on (a.k.a. a “box”) and count the birds within it.
  - Counting in multiples of 5, 10, or more can be helpful with larger, fast-moving flocks.
- Step 3: Multiply the number from Step 2 by the number of grids you originally visualized in Step 1.
  - This final number will be your estimated size of the flock.

How to Count Birds in Flight: Example

- Step 1: Visualize a grid laid out over the flock you are attempting to count.
  - In this example we use 4 grids, however, the number used can vary.
  - Choose the number of grids that allows you to best count a portion of the flock and generate an accurate estimate; for example, you might want to use more grids for larger and denser flocks, and fewer grids for smaller flocks with birds that are easily distinguished (as seen here).

How to Count Birds in Flight: Example

- Step 2: Choose a “box” and count the birds within it.
  - Within this box, there are 21 birds
    - For this example, only birds that were >50% inside the box were counted
- Step 3: Multiply this number by the number of grids you originally visualized.
  - 21 birds x 4 boxes = 84 birds

How to Count Birds in Flight: Example

- When we count the number of birds within this picture without the grid method of estimation, we get 89 birds; only five more than our estimated number!

How to Count Burrows

- Unlike estimating birds in flight, it is best to count each individual burrow.
- Holding your arm out and pointing at the burrows as you count can help with keeping track.

Jeremy McFarland

Counting Burrows

Fresh/potentially occupied burrows

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- Clean and well-maintained, may have whitewash or guano at the entrance. Appear inky black (deeply dug) and generally have a smooth, uniform appearance. May have short/shallow swallow claw marks at the burrow entrance, or deeper gouges from predators.[1]

Old burrows

CDFW

- Often rough or craggy and lacking scrape marks and whitewash. May appear grayish because they are shallow, incompletely dug, or collapsed. Spiderwebs may crisscross burrows (not to be confused with root fringes which may occur at the edges of occupied burrows).[1]

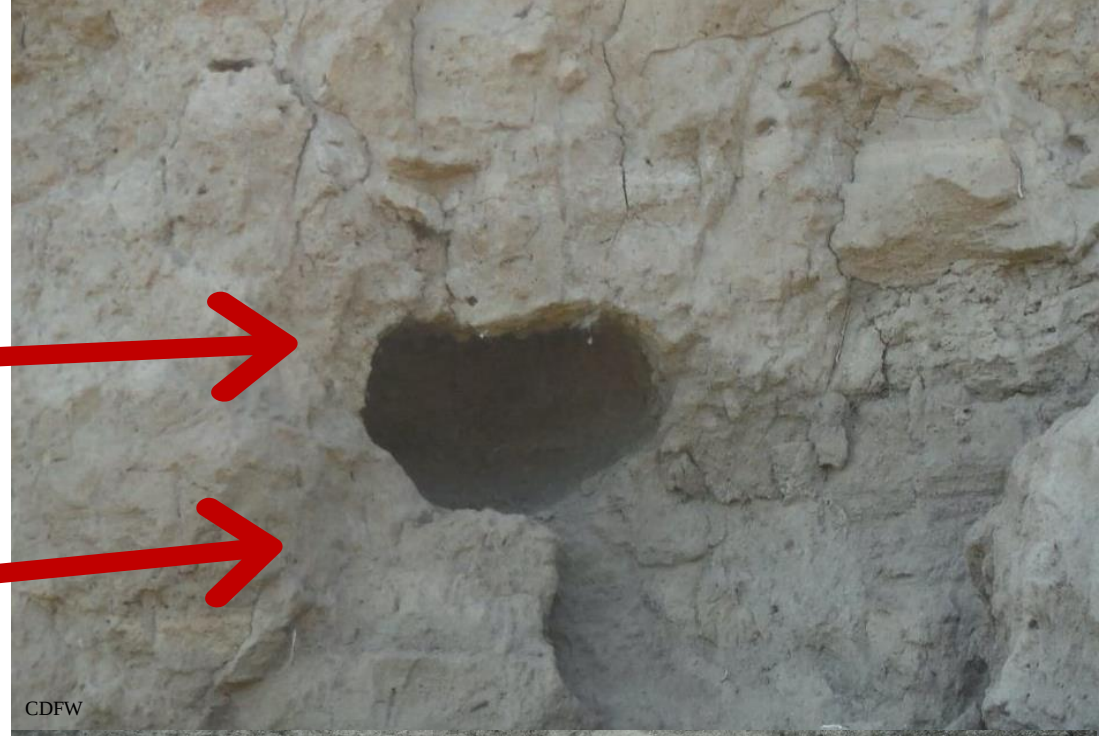
(Note: Minor changes made for brevity, otherwise definitions are quoted directly from source.)

Counting Burrows

CDFW

Counting Burrows

- Old nest cups (where the nests are built, located at the very back of a burrow in fresh burrows) can be mistaken for fresh/potentially occupied burrows.
- Nest cups are light gray in color, larger, and often more irregular in shape than a typical bank swallow burrow.
  - Note: Active nests may be exposed as burrows erode during the breeding season. Look for guano, feathers, and fresh nesting material such as grasses, to identify these active nests. Exposed nests are more likely to be observed towards the end of the breeding season. Include active, exposed nest cups in the burrow count.
- Fresh/potentially occupied burrows are inky black, narrower, and have the 2 in. x 3 in. oval shape highly characteristic of bank swallow burrows.



Counting Burrows

Old burrows (nest cups, no sign of whitewash, feathers, or nest material indicating recent erosion during current breeding season)

Fresh/potentially occupied burrow

Nest cups for multiple burrows have been exposed, and walls separating burrows have collapsed.

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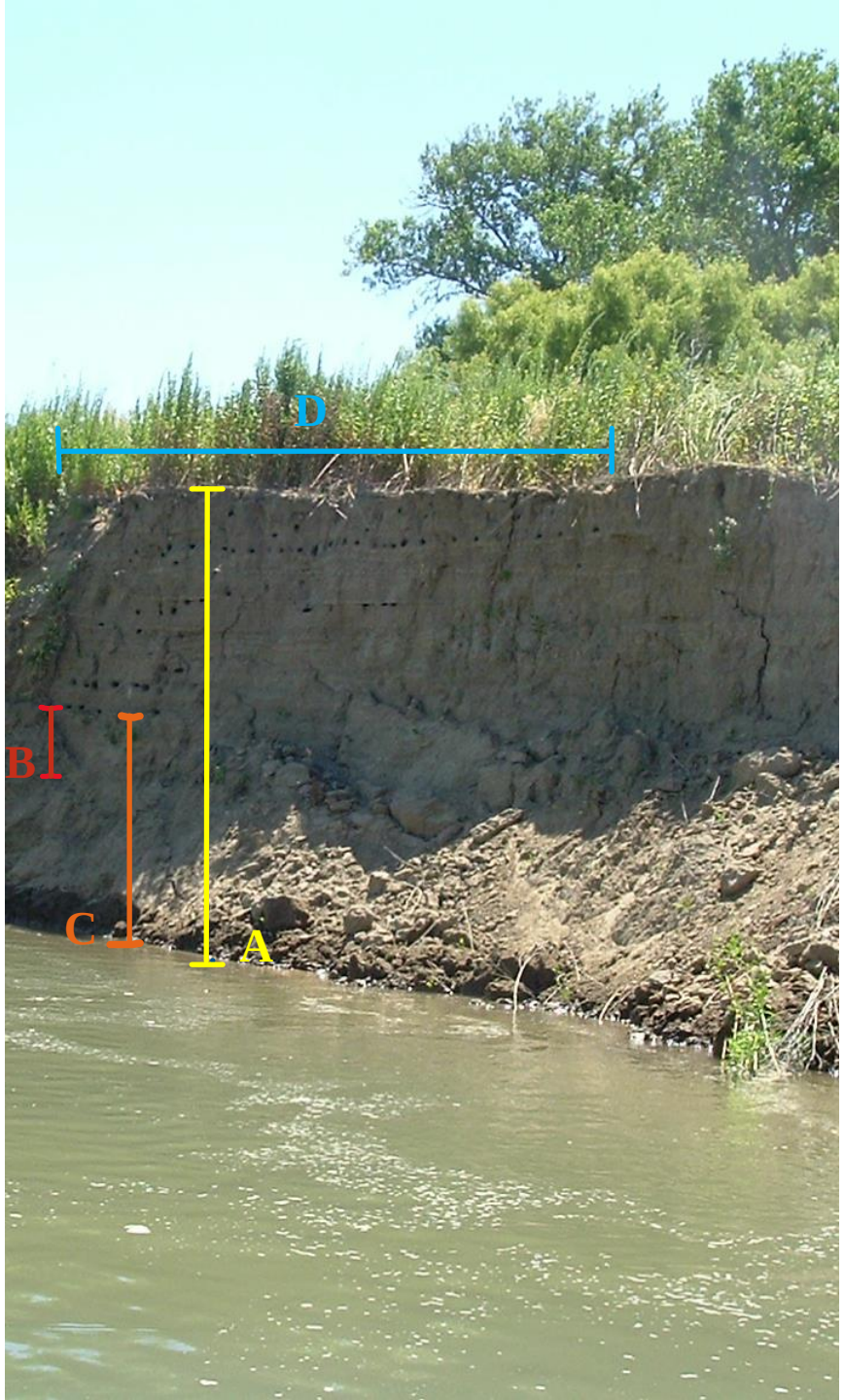
Colony Structure

Colony Measurements

- **Total Bank Height (A, yellow):** measured from level ground or water level to the top of the bank[1] (estimate to the nearest half meter).
- **Height to First Burrow:**
  - From slope break (B, red) – Height to the nearest half meter from slope break to the first row of burrows.[1] On steep banks, this may be the same as total height to first burrow.[1]
  - Total (C, orange) – Height to the nearest half meter from level ground or water level to the first row of burrows.[1]
- **Colony Length (D, blue):** estimate the length of the colony to the nearest half meter.



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Colony Resurfacing

Do hydrologic processes refresh burrows as a result of normal highwater events?

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- **Yes:** If the colony bank is likely to slough or be resurfaced due to water movement.

Larry Jordan

- **No:** If the colony bank is not influenced by water movement and/or is generally located above the flood stage.

Vegetation Classification

Overview

- The classification process is the same for vegetation both directly above and beyond colonies.
- First:
  - Choose one of the following categories that best fits the dominant vegetation structure at the survey location:
    - Tree
    - Shrub
    - Grass/herbaceous
    - Agriculture
    - Other (describe)
- Then:
  - Describe the plant community type (e.g. oak woodland)
- Lastly:
  - Describe the dominant plant species present, if known (e.g. Valley Oak and Blue Oak)
    - List species in order of dominance, and keep in mind that trees generally play a larger role in shaping communities than shrubs, and shrubs play a larger role than grass/herbaceous species. For agriculture, describe the type of crop.

Vegetation Above Colony

- This is the vegetation found directly above the colony, including vegetation both on and overhanging the bank.

Vegetation Beyond Colony

- This is the vegetation found beyond the area directly above the colony/the bank edge.
- The same vegetation structure categories are used to classify the dominant vegetation type. This may include the riparian zone or upland habitats depending on where the colony is located.
- For this entry, also include comments about nearby land use, such as grazing.

Example


Vegetation beyond bank
Vegetation above bank
No actual colony or bank present.

Example – Continued

Vegetation Above Colony/Bank

CDFW

- Tree-dominated riparian corridor featuring willow, cottonwood, and eucalyptus trees.

Vegetation Beyond Colony/Bank

CDFW

- Beyond the stream banks, the dominant vegetation type is grassland, with a couple of scattered eucalyptus trees.

Species Easily Confused with Bank Swallows

Northern Rough-winged Swallows

Distinguishing Characteristics

- Are slightly larger
- Have a dirty white-colored underside, chin, and throat
- Do not have a breast band
- Have a square tail

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Northern Rough-winged Swallows

Burrows

- Are not dug by northern rough-winged swallows; instead, burrows are constructed by other species
- Vary in shape and size
- Can be found on the edges of bank swallow colonies
- Often occur singly
  - If in small groups, burrow placement appears sporadic

Jeremy McFarland

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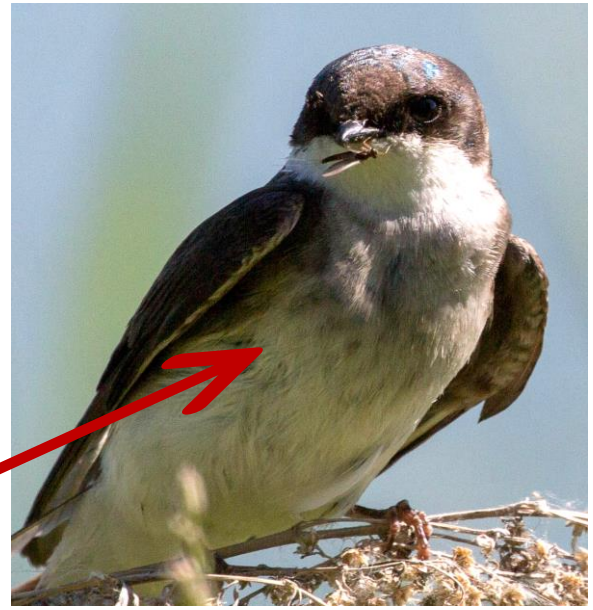
Tree Swallows

Distinguishing Characteristics:

- Slightly larger than bank swallows
- Small white crescent on either side of their rump
- White throat does not wrap around the sides of their head; sharply contrasting throat and head coloration
- Iridescent blue-green color

Similar Characteristics:

- Females and immature birds can resemble bank swallows
- Females have a brown cast dulling their iridescent blue-green coloring over their head and back, and a white underside that can feature a weak breast band
  - Immature birds are brown with a white-ish underside and can have a weak breast band



Other Swallows and Swallow-Like Species

Violet-green Swallows

Similar Characteristics:

- Immature birds are brown with a white-ish underside

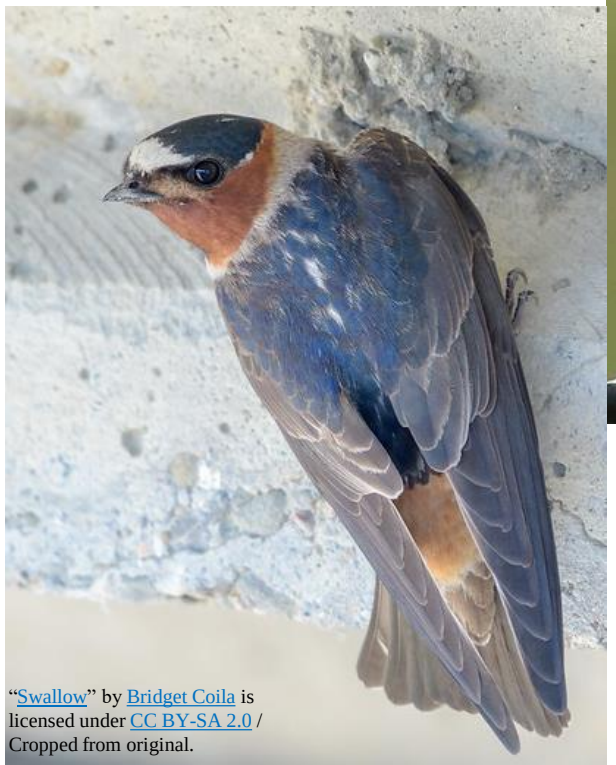
Distinguishing Characteristics:

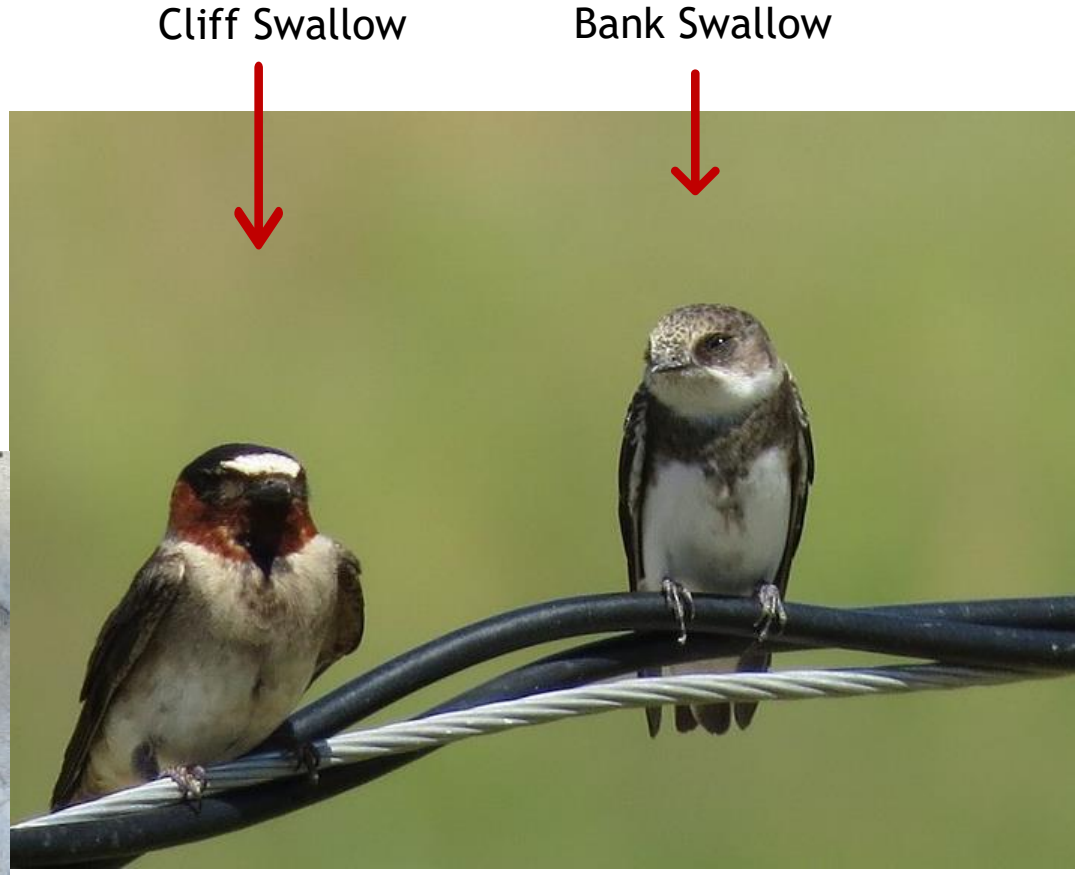
- Are slightly larger than bank swallows
- Have large white rump patches
- Adults have a green head and back, with darker wings and a purple rump in males

Cliff Swallows

Distinguishing Characteristics

- Distinct blue on top of head and back
- Clean white forehead
- Dark chestnut-colored throat, with a slightly lighter rump

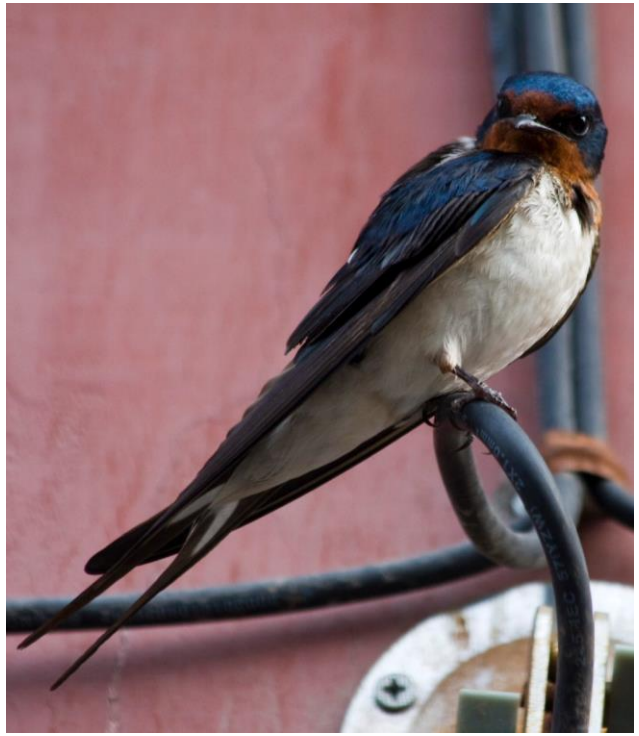


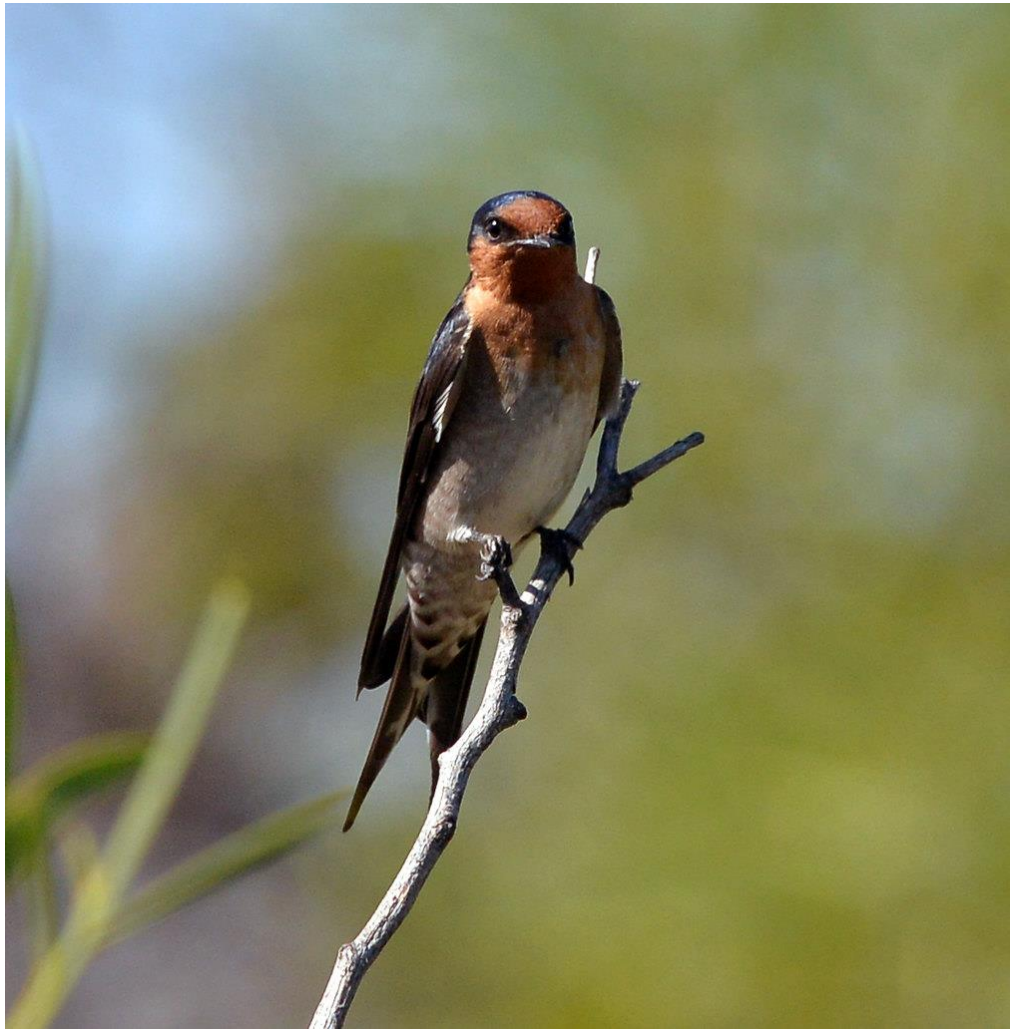


Barn Swallows

Distinguishing Characteristics:

- Long, deeply split tail
- Blue-black head, wings, and back
- Bright chestnut forehead and throat

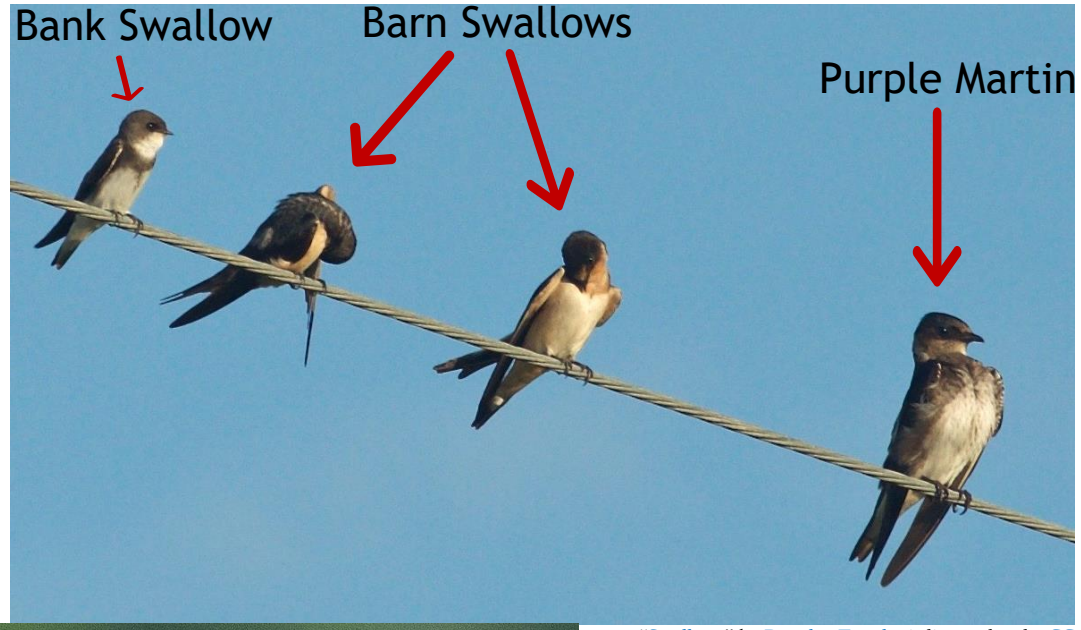


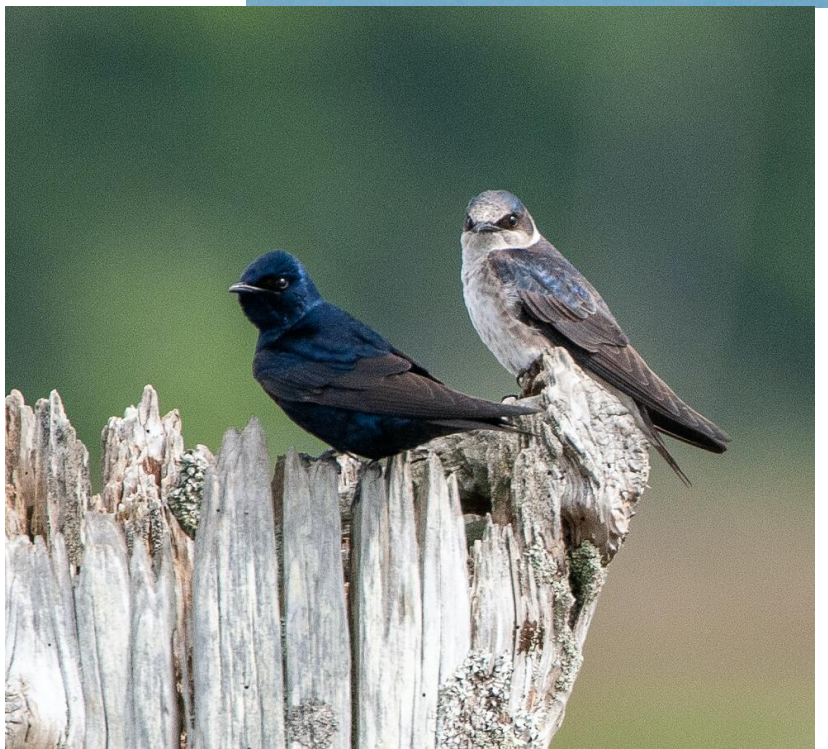


Purple Martins

Distinguishing Characteristics:

- Large size
- Forked tail
- Males are a blue-black color throughout their body and wings
- Females have a white-gray forehead and wide collar, and have a blue tint over their shoulders and the back of their head





Survey Skills Practice

What species is this?

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How many birds are in this flock?

(Use the grid estimation method.)

What species is this?

See answer page for attribution.

Should this burrow be considered fresh/potentially occupied, or old?

Larry Jordan

What species is this?

See answer page for attribution.

The four smaller birds in this group are from the same species; what is it?

Bonus Question: What species is in the middle of the group?

See answer page for attribution.

Answers to Practice Questions on Next Slide

Answers

- **Practice Slide 1**.....Tree Swallow
- **Practice Slide 2**.....77 birds
  - It may be harder to accurately estimate this flock size, as the birds are not as evenly spaced throughout the picture as they were in the example. This is often the case in the real world, which is why we perform multiple bird counts during each survey.
- **Practice Slide 3**.....Northern Rough-winged Swallow (muddy breast but no clear band, white does not extend along jaw to back of head)
  - Photo: "Northern Rough-winged Swallow" by Shawn Taylor is licensed under CC BY 2.0 / Cropped from original.
- **Practice Slide 4**.....Fresh/potentially active
- **Practice Slide 5**.....Bank Swallow
  - Photo: "Bank Swallow" by sam may is licensed under CC BY 2.0.
- **Practice Slide 6**.....Bank Swallows; Bonus: Purple Martin
  - Photo: "Purple Martin with Bank Swallows" by seabamirum is licensed under CC BY 2.0.

Identifying Potential Nesting Habitat Using Google Earth Imagery

Examples of Good Potential Habitat

→ Bank lacks vegetation, dark shadow indicates nearly vertical cut in bank.

North view of bank

South view of bank

Examples of Good Potential Habitat

→ Bank lacks vegetation, nearly vertical, eroding cut section clearly visible.

North view of bank

South view of bank

Examples of Good Potential Habitat

→ May be hard to distinguish, but smooth dark shadow indicates presence of clean, nearly vertical, vegetation-free cut bank. Even though the surrounding area and banks appear to be mostly flat rangeland, this bank would still be considered good potential nesting habitat.

North view of bank

Southeast view of bank

Examples of Unlikely Habitat

→ Banks narrow, covered in vegetation, bordered by levees and roads that restrict stream movement. No apparent nearly vertical, cleanly cut/eroded sections visible.

North view of banks

South view of banks

Examples of Unlikely Habitat

→ Heavily vegetated, gently-sloping banks with no apparent cleanly cut/eroded sections.

North view of banks

West view of banks

Examples of Unlikely Habitat

→ Heavily vegetated, gently-sloping banks with no apparent cleanly cut/eroded sections.

North view of banks

South view of banks

References

References

[1]Golet, G., A. Henderson, J. Isola, R. Martin, R. Melcer, N. Seavy, J. Silveira, D. Tsao, and D. Wright. 2017. Bank Swallow Survey Methods for the Sacramento and Feather Rivers, California. Version 1.0, January 2017. Prepared by the Bank Swallow Technical Advisory Committee (BANS-TAC) Research and Monitoring Subcommittee. 12 pp.
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