

## BLACK SWIFT SURVEY METHODOLOGY – MT Regions 1,2,3,4,5 and Glacier National Park

**Survey Methods and Objectives:** The intent of this research program is to remove the Black Swift from the state Species of Greatest Inventory Need (SGIN) list as accomplish by:

- (1) Demonstrating sufficient survey effort using suitable standardized surveys in appropriate habitats across the species known range in Montana.
- (2) Developing a simple/logistically feasible/inexpensive survey methodology that is consistent among surveyors.
- (3) Collect adequate data (presence or absence) through systematic surveys and incidental sightings to better understand seasonal (breeding) distribution and habitat use.

The probability of detecting a new Black Swift colony is highest when they are feeding young, which, in the Rocky Mountains, is **mid-July to early September**. Most Black Swifts nest colonies are located **under or near waterfalls**. The most productive time to count flying birds is the **final two hours of daylight** when adult swifts return to the colony to roost and feed young. Estimates are made of **the minimum number of adults** flying about or roosting on the nest cliff. Therefore, your observation location should **maximize the view you have of aerial access to the potential nest cliff**. At waterfalls, this will usually be near the base where there is a clear view of the sky, especially in the dim light conditions just before dark. Sites where birds are found to be roosting can be checked during the daylight hours for nests. **Waterfall characteristics** can also be recorded during daylight hours.

Ideal **weather conditions** have light winds, little or no overcast, little to no precipitation, and seasonally mild temperatures. For safety reasons, there should be two observers present at all visits, with both observers watching from the same location. Always carry a primary and backup flashlight with spare batteries because you will be hiking out after dark. Be aware of lightening and shifting weather conditions, and be careful around wet, moss-covered cliffs, and during small stream crossings. This work is inherently dangerous, especially in bear country after dark. BE CAREFUL. Make noise.

### **Habitat type to focus survey effort:**

Black Swifts are found nesting underneath and along-side of waterfalls fed by alpine streams, glaciers, and snow fields. They are often found nesting in moss cups within niches in dark recesses of the falls, in areas that have easy aerial access for adult birds and difficult access for predators. So far they have primarily been found nesting primarily west of the continental divide in Montana, and often found nesting near American Dippers and Cordilleran Flycatchers, in the foraging habitat of Hermit Thrush and Pine Siskins. Black Swifts are occasionally found foraging over large lakes throughout both regions, and are seen foraging with Vaux's Swifts at times. During periods of overcast skies before storms, Black Swifts may forage lower in the sky and may be seen more easily. At dusk birds are easily confused with species mentioned above, as well as bats.

**Types of Waterfalls:** Descriptions are from Marc Conly's 1993 book, Waterfalls of Colorado, Pruett Publishing Co.

- **Plunge:** water is free-falling for most of its height without coming into contact with the underlying rock
- **Horsetail:** water maintains some contact with underlying rock for much of its height
- **Fan:** like a horsetail, but the stream of falling water gets wider as it descends
- **Cascade:** water flowing over a broad face with too many small leaps or segments to count
- **Segmented:** water is divided into two or more streams falling parallel to each other
- **Tiered:** the length of the water's drop is broken into distinct falls that are separated by short runs or pools

### **Black Swift Habitat Characteristics:**

**Flowing Surface Water:** The most documented nesting habitat requirement is close proximity to falling water. No Black Swift nests have been found along intermittent streams, thus year-round flows appear to be required. The nest structures are usually in small cavities within the spray zone or directly behind the sheets of falling water, and are described as wet and dark. Occasionally, nests are located away from the spray zone but these are usually on ledges that are moist from other water sources.

**Commanding View (relief):** The second most commonly noted nesting habitat attribute is a commanding view from the nest colony over the surrounding terrain. The ability of a swift to fly straight out from the nest colony and very quickly be hundreds of feet above the valley floor appears to be very important for site occupancy. Swifts are known to nest in the bottom of deep canyons and in caves but in these cases there is usually a broad view from the nest cliff down the canyon or from the mouth of the cave.

**Number of Nest Niches and Accessibility to Ground Predators:** Black Swift nests are almost always built in a small pocket or ledge on a sheer face. Occupied nest niches are always inaccessible to mammalian ground predators. The placement of nests out of reach of ground predators may be an evolutionary response to low reproductive rates. All reports of Black Swift clutch sizes are of one egg only and they rarely if ever re-nest. Therefore, failure of the nest structure itself is the leading cause of reproductive failure.

**Unobstructed Aerial Access:** A third habitat attribute that is related to commanding views is that aerial access to the nest niche is usually free of obstructions to flight. Black Swifts appear reluctant to fly near or through tree crowns and branches to access nest niches. Therefore, screening of potential nest cliffs by trees or other debris appears to significantly reduce the likelihood that otherwise suitable nest cliffs will be occupied by swifts.

**Shaded Nest Sites:** Black Swift nest ledges are rarely sunlit, and then only late in the day as ambient air temperatures decline. The nest structures are invariably placed in microsites that are in deep shade the majority of the day. However, nestlings do not appear bothered by sunlight and often become more active while in direct sunlight.

**Moss Availability:** The nest niche often has water flowing around or in front of the opening but the nest cup itself is usually dry. Because of their dampness and darkness, the nest niches are often covered with moss and other hydrophytic plants, and due to their ready availability, swift nests are constructed almost exclusively of mosses, lichens and other fine plant material collected locally.

**Weather Codes: Sky Codes** are (0) Clear or few clouds; (1) Partly cloudy (scattered) or variable sky; (2) Cloudy (broken) or overcast; (4) Fog or smoke; (5) Drizzle; (7) Snow; (8) Showers. **Wind Codes** are (0) Smoke rises vertically (<1mph, <2kph); (1) Wind direction shown by smoke drift (1-3mph, 2-5kph); (2) Wind felt on face and leaves rustle (4-7mph, 6-12kph); (3) Leaves, small twigs in constant motion (8-12mph, 13-19kph); (4) Dust rises and small branches move (13-18mph, 20-19kph); (5) Small trees in leaf begin to sway (19-24mph, 30-38kph).

**How to Survey:** Arrive at your site giving yourself plenty of time to get comfortable at least two hours (preferably three) before sunset hits (~7pm). When you arrive, use the Black Swift Waterfall survey form\* to describe the location of your observation and the characteristics of the falls you are observing. Be sure to record detailed survey site access information so that others can find your location in the future, and be sure to note American Dippers seen on the hike in. These birds are known to indicate the presence of Black Swifts. Take time to note any white-wash near niches and crevices in the waterfall as these could indicate potential nest sites. Photograph the area and any interesting pockets of moss or potential nest sites. When you have finished waterfall characteristic data, position yourself below the waterfall survey site so that you maximize your sky view and view of the cliff areas with aerial access to niches. Be patient and try as hard as possible to not look away from this site until dark. Surveying with a partner is essential, and using a 10 minutes on and off schedule for keeping your eyes on the falls can help ensure you are not missing birds. These birds are incredibly hard to confirm as present because of the speed at which they enter the falls. Record the maximum number of birds seen per survey time period on the evening survey form\*, and describe any behavior you observe (including number of passes in and out of nests). If birds are seen, note the location on the cliff so that nests can be searched for during daylight hours. Keep your ears open for the Black Swift's infrequently heard chattering calls. Remember, even looking away for a second can make you miss this illusive bird!

\*Note that some information on these two data sheets is the same. Waterfall characteristic data can be collected any time of the day with or without the completion of an evening swift observation. When doing an evening survey, please fill out both forms. Be sure to give yourself plenty of time to fill out the waterfall characteristics sheet.

When visiting waterfalls, be sure to respect land ownership and the potential need for permission to visit certain areas. Be especially aware when visiting tribal lands that may require permits and or may be closed during certain time periods.

**Survey Gear List:** Binoculars, notebook, data sheets, pencils, compass, mirror, gps, timekeeping device, rain gear, headlamp with extra batteries and spare flashlight, warm/extra clothes, hats, lens cleaners, gloves, sitting cushion, camera, food, water etc. Surveys may take >8 hours to complete so please pack appropriately.

**Completed Forms and questions:** Send **copy of form and map** or **direct questions** to Amy Seaman, Montana Audubon. P.O Box 595 Helena, MT 59624. [aseaman@mtaudubon.org](mailto:aseaman@mtaudubon.org). A special thanks to Jason Beason and Dan Casey and others support development of the protocol and the project over the years.

BLACK SWIFT WATERFALL SURVEY FORM

Observer Name: \_\_\_\_\_ Date: \_\_\_\_\_ Begin Time: \_\_\_\_\_ End Time: \_\_\_\_\_  
Your phone number and e-mail address: \_\_\_\_\_

Site or Waterfall Name: \_\_\_\_\_ Stream Name: \_\_\_\_\_ County: \_\_\_\_\_  
State: \_\_\_\_\_ Aspect (direction falls face): \_\_\_\_\_ ° Elevation (top of falls): \_\_\_\_\_ ft  
Has this site been surveyed before? Yes No  
Ownership: Public Private Management Area/Owner: \_\_\_\_\_

Black Swifts Seen? Yes No If Yes, Estimate Minimum Colony Size (# of adults): \_\_\_\_\_  
Number of Nests: \_\_\_\_\_ Number of Nestlings: \_\_\_\_\_ Nest Niche: Ledge Pocket Other  
American Dippers Seen? Yes No  
If Yes, Number of Dippers: \_\_\_\_\_ Number of Dipper Nests: \_\_\_\_\_

Location: USGS Quad Map: \_\_\_\_\_ UTM – Zone (NAD 83): E: \_\_\_\_\_ N: \_\_\_\_\_  
or Degrees Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_  
Legal Description: Township: \_\_\_\_\_ Range: \_\_\_\_\_ Section: \_\_\_\_\_ ¼Section: \_\_\_\_\_

Directions to Falls and Best Observation Point (Please attach copy of topographic map with falls marked on map): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Waterfall Type and Height:**

Total Height of Falls \_\_\_\_\_ ft Plunge: \_\_\_\_\_ ft Horsetail: \_\_\_\_\_ ft Fan: \_\_\_\_\_ ft Cascade: \_\_\_\_\_ ft  
Segmented? Yes No Tiered? Yes No

**Flowing Surface Water during late summer :** Points: \_\_\_\_\_  
No flowing water (1) Flows weak (2) Flows moderate, little spray (3)  
Flows moderate, some spray (4) Flows heavy, much spray (5)

**Relief (commanding view) from Top of Falls over Surrounding Terrain :** Points: \_\_\_\_\_  
Falls at bottom of terrain (1) Little view from falls (2) Moderate view from falls (3)  
Good view from falls (4) Commanding view from falls over terrain (5)

**Number of Suitable Nest Niches (pockets or ledges) and Accessibility to Ground Predators:** Points: \_\_\_\_\_  
No suitable niches present (1) Few niches and/or all niches accessible (2)  
Some niches and/or most niches accessible (3) Some niches and/or most niches inaccessible (4)  
Many suitable niches and/or all niches inaccessible (5)

**Unobstructed Aerial Access to or from Nest Niches:** Points: \_\_\_\_\_  
No clear access (1) Clear to ¼ of niches (2) Clear to ½ of niches (3)  
Clear to ¾ of niches (4) Clear to all of niches (5)

**Shading of Nest Niches:** Points: \_\_\_\_\_  
Nest niches sunlit all day (1) Sunlit >3hr/day (2) Sunlit 1-3hr/day (3)  
Sunlit <1hr/day (4) Shaded all day (5)

**Moss Availability :** Points: \_\_\_\_\_  
No moss present (1) Trace of moss (2) Scattered moss (3) Frequent Moss (4) Abundant moss (5)

**Total Points: \_\_\_\_\_**

Weather, observations, comments, nests, (location, height, distance from falls, presence of whitewash) etc.: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Site Name:	Site ID #
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**BLACK SWIFT EVENING SURVEY FORM**

Observer Name: \_\_\_\_\_ Date: \_\_\_\_\_ Begin Time: \_\_\_\_\_ End Time: \_\_\_\_\_  
 Your phone number and e-mail address: \_\_\_\_\_

Site or Waterfall Name: \_\_\_\_\_ Stream Name: \_\_\_\_\_ County: \_\_\_\_\_  
 State: \_\_\_\_\_ Aspect (direction falls face): \_\_\_\_\_ ° Elevation (top of falls): \_\_\_\_\_ ft \_\_\_\_\_  
 Has this site been surveyed before? Yes No  
 Were you able to fully complete this survey using the evening protocol? Yes No  
 Ownership: Public Private Management Area/Owner: \_\_\_\_\_

Black Swifts Seen? Yes No If Yes, Estimate Minimum Colony Size (# of adults): \_\_\_\_\_  
 Number of Nests: \_\_\_\_\_ Number of Nestlings: \_\_\_\_\_ Nest Niche: Ledge Pocket Other  
 American Dippers Seen? Yes No  
 If Yes, Number of Dippers: \_\_\_\_\_ Number of Dipper Nests: \_\_\_\_\_

Location: USGS Quad Map: \_\_\_\_\_ UTM – Zone (NAD 83): E: \_\_\_\_\_ N: \_\_\_\_\_  
 or Degrees Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_  
 Legal Description: Township: \_\_\_\_\_ Range: \_\_\_\_\_ Section: \_\_\_\_\_ ¼Section: \_\_\_\_\_

Directions to Falls and Best Observation Point (Please attach copy of topographic map with falls marked on map): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Start**

**End**

Time	
Sky Code	
Wind Code	
Temperature	

Time	
Sky Code	
Wind Code	
Temperature	

Number of adult BLSW seen during each time period

1830-1845	1845-1900	1900-1915	1915-1930	1930-1945	1945-2000	2000-2015	2015-2030

2030-2045	2045-2100	2100-2115	2115-2130	2130-2145	2145-2200	2200-2215	2215-2230

Site evaluation: (If occupation by BLSW has not been observed at this site, does it merit continued monitoring? Yes No  
 (Circle and explain – if a survey was not completed for any reason please explain why)

Other Notes including observation quality and other species:

Site Name:	Site ID #:
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