

PHOTOGRAPHING HUMMINGBIRDS

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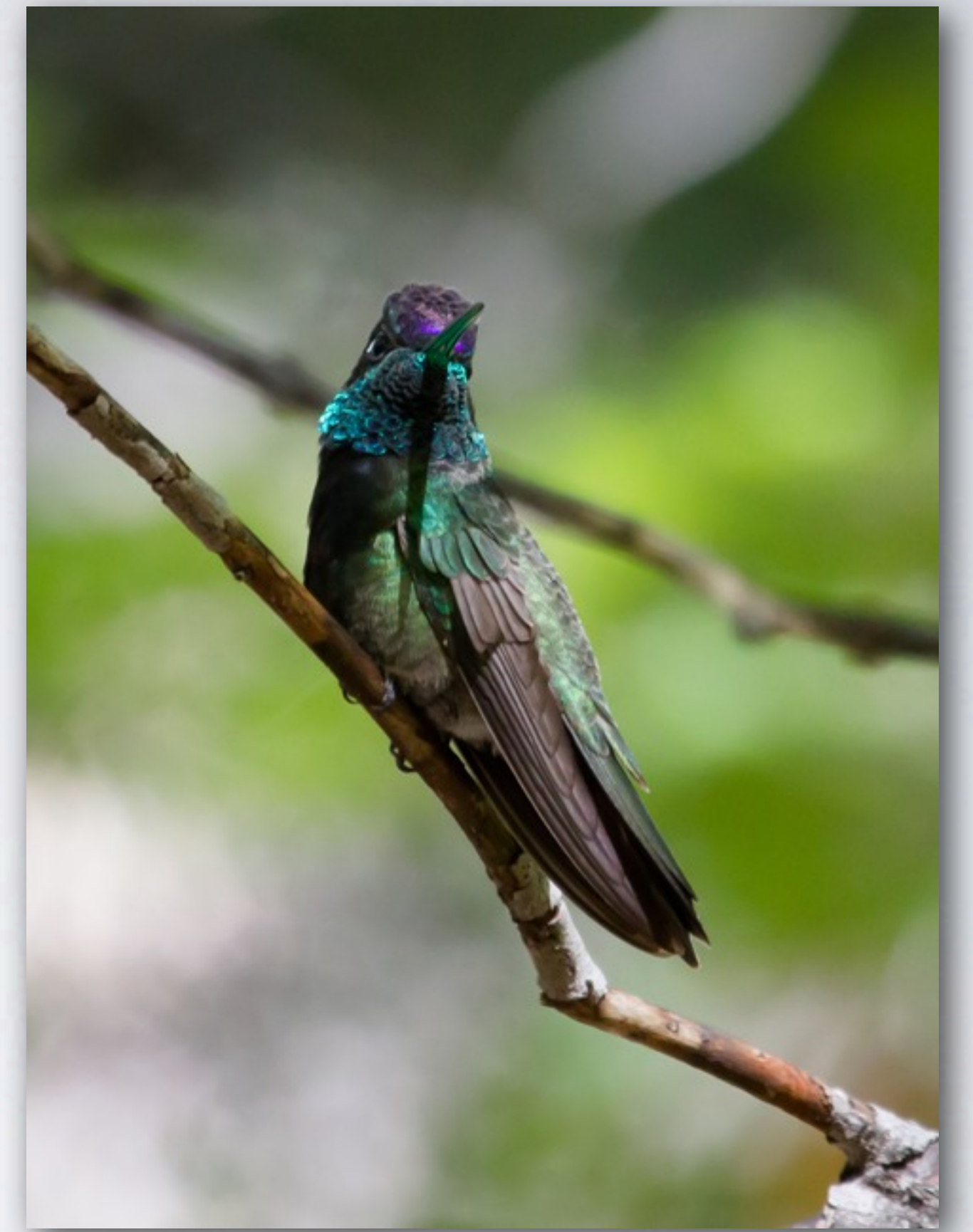
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Female Broad-tailed Hummingbird
Canon 7D on tripod, ISO 200, f/5.6, 400mm 1/400 sec

About Hummingbirds

- Hummingbirds are found only in the Western Hemisphere.
- 356 Species, most of which live in Central and South America
- 27 Species found in the United States
- 10 species in Colorado from May to early September, but only 4 of these are common in northern Colorado.
- Best place to find Hummingbirds in Northern Colorado:
 - * From the foothills to the mountains
 - * Near feeders at homes, visitor centers and lodges. Occasionally in gardens.



Magnificent Hummingbird
Southern Arizona
Canon 7D on tripod
ISO 800, f/5.6,
400mm 1/400 sec

Common Colorado Hummingbirds



Broad-tailed Hummingbird
Most common species around Ft. Collins.
Often mistaken for a Ruby-throated.



Black-chinned Hummingbird
Common in mountains and western slope
Rare in Ft. Collins



Rufous Hummingbird
Migratory through Colorado, including
Front Range



Calliope Hummingbird
Smallest bird in North America. Migratory through Colorado, breeding in
high elevations. Migrates 5600 miles. Can weigh less than a penny.

Other species seen in Colorado include Anna's, White-eared, Blue-throated, Ruby-throated, Broad-billed, and Magnificent

Feather Color in Hummingbirds

- The iridescent colors are caused by constructive and destructive interference of light of different wavelengths (colors) interacting with microscopic structures in the feathers. This optical effect is called *structural color*.
- The color varies based on the relative angles between the light, feathers, and the viewer, but especially the last two.



Female Rufous Hummingbird

Note the dark and green color of gorget (throat) feathers on the left compared to the bright orange color of the same feathers when viewed straight on.



Male Broad-tailed Hummingbird

Viewed at 90° (not quite shown) the gorget appears coal black yet viewed straight on the color is bright red.

Hummingbird Behavior

- Hummingbirds are the most active in the early morning and late evening. In mid-summer this is 7:00-10:00am and 6:00pm-sunset.
- They like trees and bushes near feeders where they can rest, hide, or wait for their turn at the feeder.
This is a great place to get pictures.
- Hummingbirds need to eat every 20 minutes and will often arrive in loose groups. 5-8 birds may arrive and swarm the feeders for 5-10 minutes then leave at around the same time. Patience is key because in another 10-15 minutes they'll be back.
- Hummingbirds are amazingly tolerant of people if we are quiet and move slowly.
- The males can be aggressive - chasing other hummingbirds away from feeders even when the males are full. Rufous Hummingbirds are the most aggressive and Calliopes are the meekest.
- If you hear a whistling sound it is likely a male Broad-tailed Hummingbird. The whistling comes from their feathers.

Attracting Hummingbirds

- Any kind of feeder will work - the more feeders the better.
- It can take a couple of weeks for Hummingbirds to find the feeders.
- Use only white, granulated table sugar in a 1:4 ratio with water. NEVER use honey, artificial sweetener or coloring.
- If feeders are in the sun, change the sugar water daily.



This feeder provides an unobstructed view of the birds.
Putting it on a pole instead of hanging it is ideal.

A few more feeder tips ...



- If you trim the perch off with snips (easy to do) , the birds will hover more.
- These feeders are available from Wild Birds Unlimited in Ft. Collins, on the SE corner of Horsetooth and College. They are also available from Amazon.com
- For this feeder, I made my own stand from a wood dowel and painted the base white to reflect some light back up under the hummingbirds

Getting Natural Pictures of Perched Birds



Canon 7D, tripod, ISO 400, 400mm,
f6.3, 1/80 sec

- Look for a place where birds rest before going to the feeder.
- If there isn't a good place you can create one with a loose branch attached to a chair, ladder, or feeder stand.
- Pick a position to sit or stand and be prepared to wait. Try to get eye-level with the bird.
- Use a tripod and pre-frame the picture to minimize hand movement when taking pictures.
- Use spot focus and focus on the eyes.
- If manually pre-focussing, position the focus point where you anticipate the eyes to be. It is surprising how much a thin branch can bend when a bird lands on it, so be prepared to frame low.



Canon 5D III, 500mm+2XTC
f/8 ISO 400 1/320 sec
Tripod

Tips for Good Perched Bird Pictures



Canon 7D, ISO 400, 400mm, f/8,
1/400 sec

- Keep your hand near the shutter button. If you raise your arm to take a picture it can startle the bird.
- You can use a remote shutter release so your arm isn't held up for long periods of time.
- Best light is early morning on a calm day when the sunlight is diffuse. Later in the day can work if there are clouds to soften the light, as long as you don't end up with the bird in the shade and the background in bright sun.
- Pay attention to the background. It helps if it has a natural and undistracting texture and color, and is a little darker than the bird.
- Take a lot of pictures. I use burst a lot. The gorget (throat) colors can change quickly with small amounts of head movement. If you're lucky you might even get a good take-off shot.

Be Ready for Unexpected Opportunity



This shot was not planned.

The feeders were put up a few days before in May. It was a cold, snowy day and I just happened to glance outside and see this Broad-tailed Hummingbird sitting on a branch on a wild rose bush. I grabbed my camera and voila.

Canon 7D, ISO 800, f/5.6, 400mm, 1/100 sec

Setting up for In-flight Pictures

With and Without Flash

- Dress in earth-toned clothes. Remove flashy jewelry.
- Bring all of the feeders except one inside where the birds can't see them.
- Cover the holes in the feeder closest to you with masking tape or a sticky-note. This way the birds will be facing you or facing sideways when feeding.
- Position your tripod and chair (if using them) 7-10 feet from the feeder.
- Adjust the height of the feeder and camera so the feeder is a few inches below the level of the camera. The birds should be at eye level or slightly up when hovering over the feeder.
- Get comfortable. You should not be hunched over. Adjust your tripod and chair accordingly.
- Take some test shots. I put a small fuzzy toy chick on top of the feeder to check settings and composition. Also check the histogram and adjust flash power, flash distance and aperture accordingly.
- Check the background. Ideally it is a little darker than the birds, out of focus, and natural looking. Grills, swing sets, and houses don't make good backgrounds.

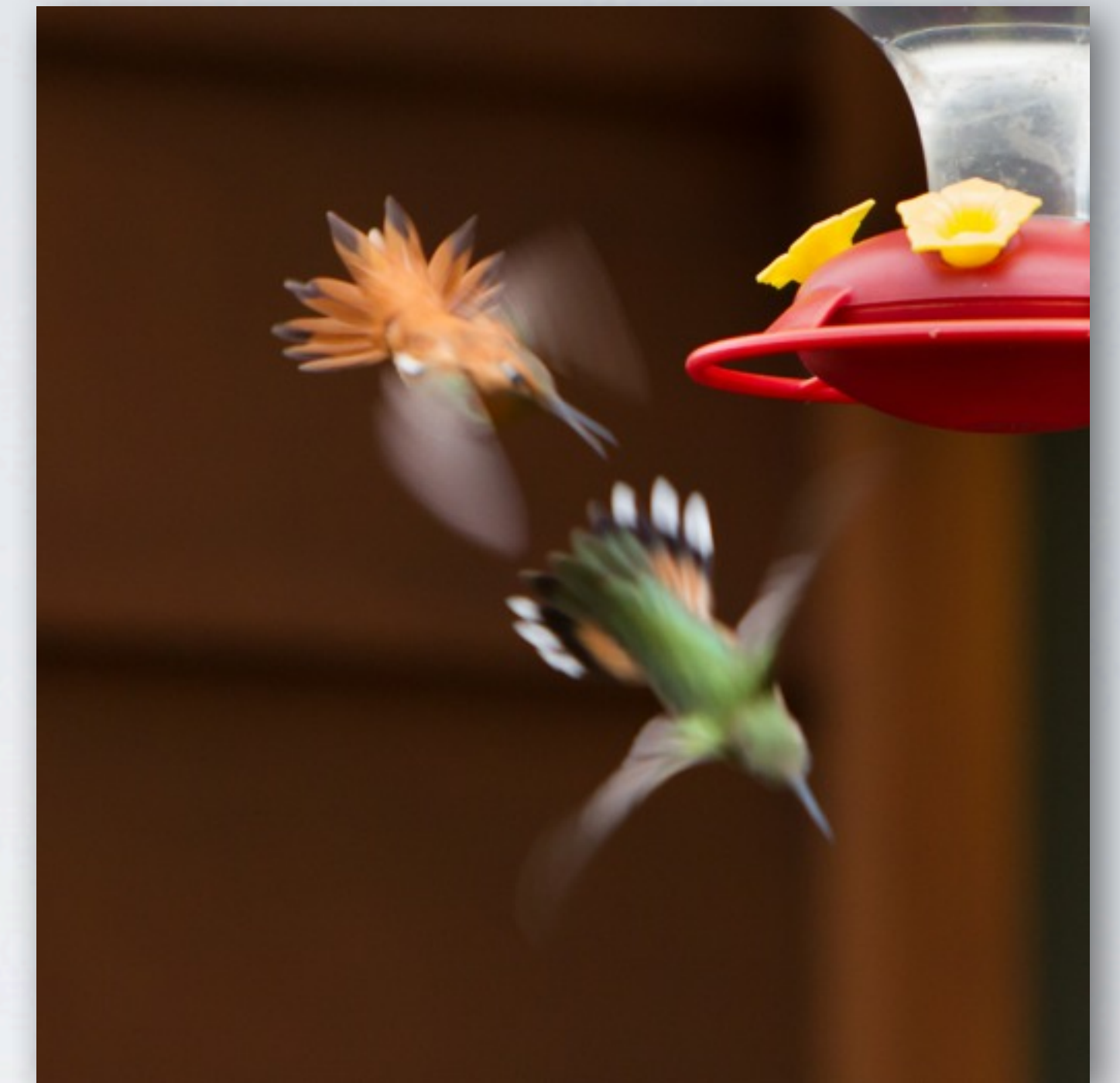
In-Flight Pictures Without a Flash



Handheld ISO400,
220mm, f5.6, 1/2500 sec



Handheld ISO400,
220mm, f5.6, 1/2500 sec



Handheld ISO640,
190mm, f2.8, 1/400 sec

- Best lighting is bright sun or thin cloud cover in middle of day.
- Use the largest aperture on your lens.
- Use a high enough ISO to get 1/2000 sec or faster. ISO 400-1600.
- Tripod or handheld are both good - the shutter speed will be so fast that a tripod is not as critical.
- Placing a large white sheet or white foam core under the feeder will help reduce harsh shadows.

Photo Equipment for an Outdoor Studio

- At a minimum you will need a camera with at least a 200 mm focal length lens. 300mm is better, and 500 can be too much unless you have room to back up.
- A tripod helps with pictures of perched birds; adding a gimbal head helps with in-flight shots. However, I've gotten dozens of great hummingbird pictures hand-held.
- For creating an outdoor studio for taking in-flight hummingbird pictures:
 - * 3-4 flash units and some way to sync them. Pocket Wizards work well for syncing. Using the built-in optical or wireless syncing capability of Nikon/Canon flashes also works.
 - * Light stands for the flash units. I use Impact light stands, but when I started I used 2x4s with 1/4" bolts from the hardware store screwed in to the bottom of the plastic stands that came with my flashes.
 - * 300mm prime lens. I use a Canon 100-400mm f/4-5.6 zoom, lens but prime lenses are sharper and focus faster.
 - * A matte backdrop and background stands or something to hold the background behind the feeder. A ladder and some clamps can work just as well as a light stand and may be sturdier in a breeze.

Outdoor Studio for Flash Photography



Camera Settings for In-Flight Flash Pictures

Flashes: Manual, 1/16 to 1/32 power, which is 1/15,000 to 1/20,000 sec! Zoom flashes to 50 mm. Aim slightly above the far feeder hole. Locate about 3 feet from the feeder. Set the upper left flash power to one stop up or down from the upper right flash. Position 3rd and 4th flashes below bird aimed up. If there is not enough spill onto the background, add another flash pointed at it.

Aperture for decent field-of-view: f/8 to f/11 for cropped format cameras, f/11-f/14 for full-frame cameras. For side shots you can some times drop to f/5.6, but watch for too much ambient light at the larger aperture. For face on, even f/13 won't get everything in focus.

ISO: 200-400. For full-frame sensors you can easily use ISO 800 but be aware that this increases ambient light.

Shutter speed: Manual. Use the camera's max shutter sync speed. Typically 1/200 - 1/250 sec. High Speed Sync not recommended unless you are in brighter light and have no other option.

Focal length: 300-400mm. Birds move so fast it is usually good to over-frame and crop later.

Single-shot. Burst mode isn't recommended since flashes don't have time to recharge between pictures.

Focus: Continuous (AI Servo on Canon, AF-C on Nikon), center focus point selected.

In-Flight Flash Pictures - Freezing the action



- Take pictures early in the morning with the feeder and background *in the shade* so that most light comes from the flashes.
- Verify that some flash light is hitting the background and that the background is far enough back to not have bird shadows.

A Flash Picture is really two pictures in one:

A 1/250 sec picture in ambient light + a 1/15,000 sec picture exposed by flashes



The ratio of light contributed by these two exposures effects whether the picture is artsy, natural looking, tac sharp, a strange piece of junk, or some combination of these.

Wing movement in 1/250s

Underside of bird is dominated by light from the flash, so motion is completely frozen and tac sharp.

Bird movement during 1/250 sec produces what looks like a drop-shadow on left side of rump.

I try to minimize the amount of ambient light by using a small aperture (f/10 - f/13) and taking pictures in the shade early in the morning.

Canon 7D, ISO 200, 310mm f/10, 1/250 sec

Manual Flash Power: Upper left 580EX-II 1/16, Upper Right 580EX-II 1/32, Lower Center 430EX 1/16

Two ways to use Flash to Freeze Action

Also applies to high speed photography like water drops, popping balloons, etc.

Traditional Sync (preferred)

- Exposure time up to the sync speed, typically 1/200 - 1/250 second.
This only works in lower light like early morning in the shade, otherwise you get too much ambient light contributing to the image.
- Flash power can be set to 1/16 or 1/32 power, which has several advantages:
 - *The flash time at this low of a power is 1/15,000 to 1/20,000 second - enough to freeze wing motion.
 - *The flash recharges very quick since you are only using a little power
 - *The lower light level startles the birds less.

High Speed Sync

- Uses any shutter speed up to the fastest speed supported by the camera, often 1/8000 sec. This allows you to work in brighter light conditions.
- The camera accomplishes high speed sync by firing the flash thousands of times (40,000 is common) while the front and rear curtains move across the sensor. This produces a lot of light, which significantly startles the birds.
- Although motion won't be frozen as tightly as with traditional sync + low power flash, it avoids some of the motion artifacts seen with traditional sync. Sometimes these artifacts are desirable (wing motion) and some times they are undesirable (body shadow).

In-Flight Pictures - Getting good focus

- Focus zone: center spot focus.
- Focus mode: Continuous
- If the lens supports focus limits, use them to limit how far the camera searches for focus.
- A matte, blurry background positioned in the shade 3-6 feet behind the feeder avoids giving the camera anything interesting to focus on except the Hummingbird.
- The background used here is cardboard painted with flat spray paints of natural green, tan, and brown colors, clamped to a ladder.



Fun with Backgrounds



Background is a poster-sized print from a trail on Orcas Island in the San Juan Islands west of Seattle printed at a cheap on-line poster company. \$12.



Background is a poster-sized print of a scene near Crested Butte. Picture was significantly blurred in Photoshop prior to printing on HP Fine Art Paper.

Fun with Backgrounds



Background is a 13x19 intentionally blurred print of Aspen trees near Alamosa Colorado.

Printed on Satin Photo Paper.



Background is a poster-sized print intentionally blurred of mountains, snow and blue sky from Crested Butte, Colorado.

Printed on HP Fine Art Paper

Natural Background - wild rose bush



Flower Pictures



- Use Petunias or other trumpet shaped flowers. Red seems to work well. You can use a whole potted plant or a single bloom in a test-tube-sized water holder clamped to a stand.
- Put the feeders out of sight and position the flowers where the feeders were.
- Use an eye dropper to put sugar water in the flowers and refill as needed.
- It can take 15 minutes for the Hummingbirds to discover the sugar water in the flowers.

Editing Tips



- On multi-flash shots, there may be 2 or 3 glints in the eyes. Use the clone tool to remove all but one glint. I usually leave the top, most centered glint. Birds look better with a glint than without one.
- No matter what else is in focus, the eyes need to be tack sharp.
- Every picture in this presentation is significantly cropped - Hummingbirds are small!
- Leave a little more space in the direction the bird is looking.

~ *Fín*