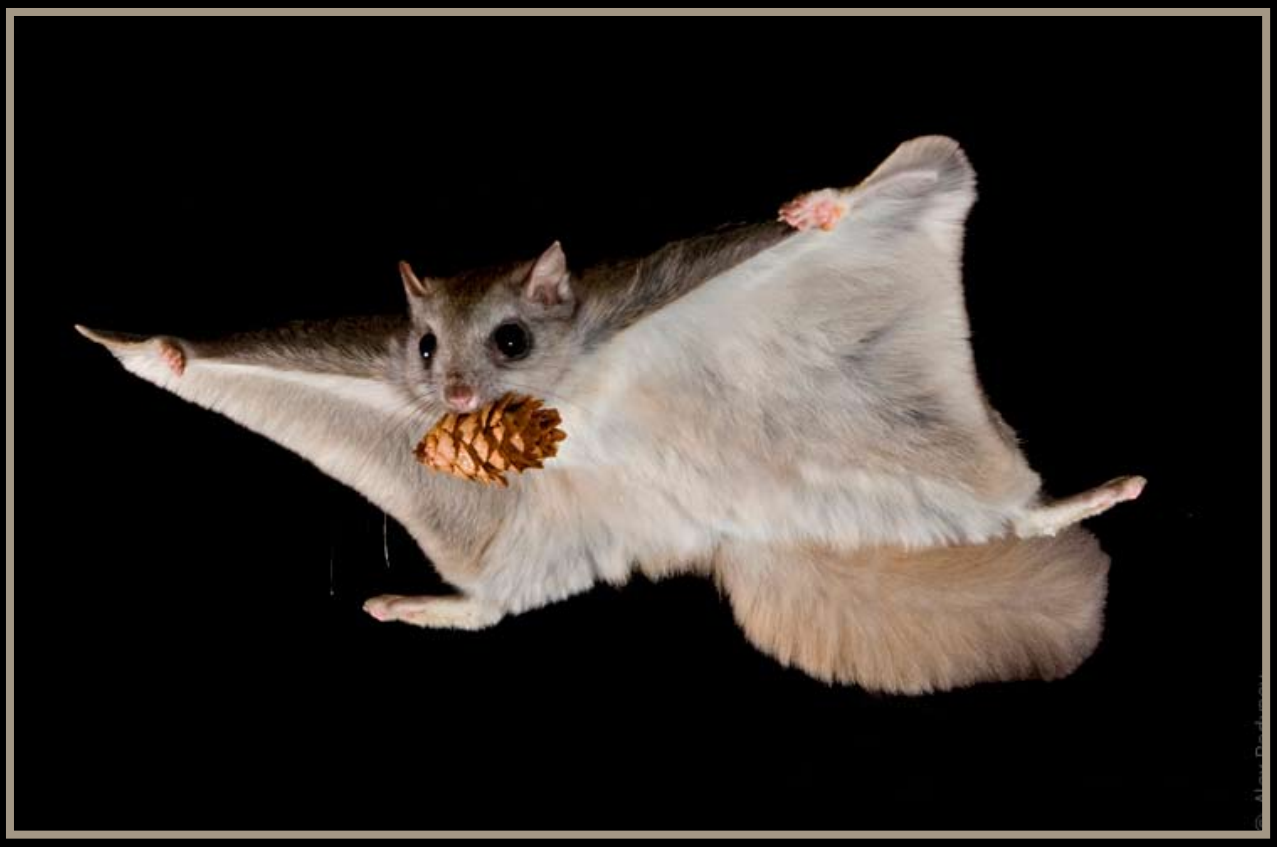
PORTFOLIO

UNSEEN AMERICA *by Alexander Badyaev*



In my dual career as a scientist and photographer, I have been fortunate to travel to some of the planet's wildest corners. However, I've learned that long-term observations made close to home often reveal the most fascinating and seldom-seen natural phenomena. These photos show the remarkable behaviour of common North American mammals, recorded within just a few kilometres of my study sites at opposite ends of the USA: in northern Montana's Rocky Mountains and the Sonoran Desert in southern Arizona.

ALEX BADYAEV

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ABOVE A flying squirrel grasps a spruce cone as it takes a gliding leap from its stash to avoid predators.

PLOTTING THE DOWNFALL

Early autumn sees the American beavers of northern Montana engage in frantic tree-felling, attempting to store up enough food to last the long winter. Nocturnal in this part of their range, beavers are rarely photographed engaging in their iconic activity of felling trees. I was fortunate to witness this matriarch and her year-old son use their considerable engineering talents to save time and effort: taking turns alternately gnawing and assessing their work, they nicked the trunk of this lakeside pine just enough to ensure that the next strong wind would topple it into the lake, not onto land. By sunrise they had similarly notched three more mature pines along the shore. A few days later, a powerful storm brought down all four trees, ensuring provisions for the five months during which ice clad the lake.

MAKING A SPLASH ▲

The beaver's powerful tail has more than one use. As well as acting as a rudder for steering, it's also an intruder alarm: when frightened, the rodent will slap its hindquarters on the water's surface to startle (and soak) a potential predator. The sound also alerts its neighbours, which respond by paddling away into deeper waters or retreating to their lodges. The signalling animal then commonly shepherds the intruder off the lake with more slapping. I watched kits as young as two weeks old try repeatedly – and unsuccessfully – to imitate their mothers' tail-splashing; when they did achieve a splash worthy of the name, they invariably frightened only themselves.

LANDSCAPE ARCHITECTS ▸

Beavers have an unmatched ability to induce habitat succession. Here, less than three summers after settling in a remote area of dry hills and coniferous forests in northern Montana, this family created a large lake by building a series of dams on two local creeks. The newly flooded wetland was soon colonised by cranes, terns, shorebirds and waterfowl, populating an island of biological diversity in an otherwise dry habitat – and all within a single generation of beavers.

UNWELCOMING COMMITTEE ▸

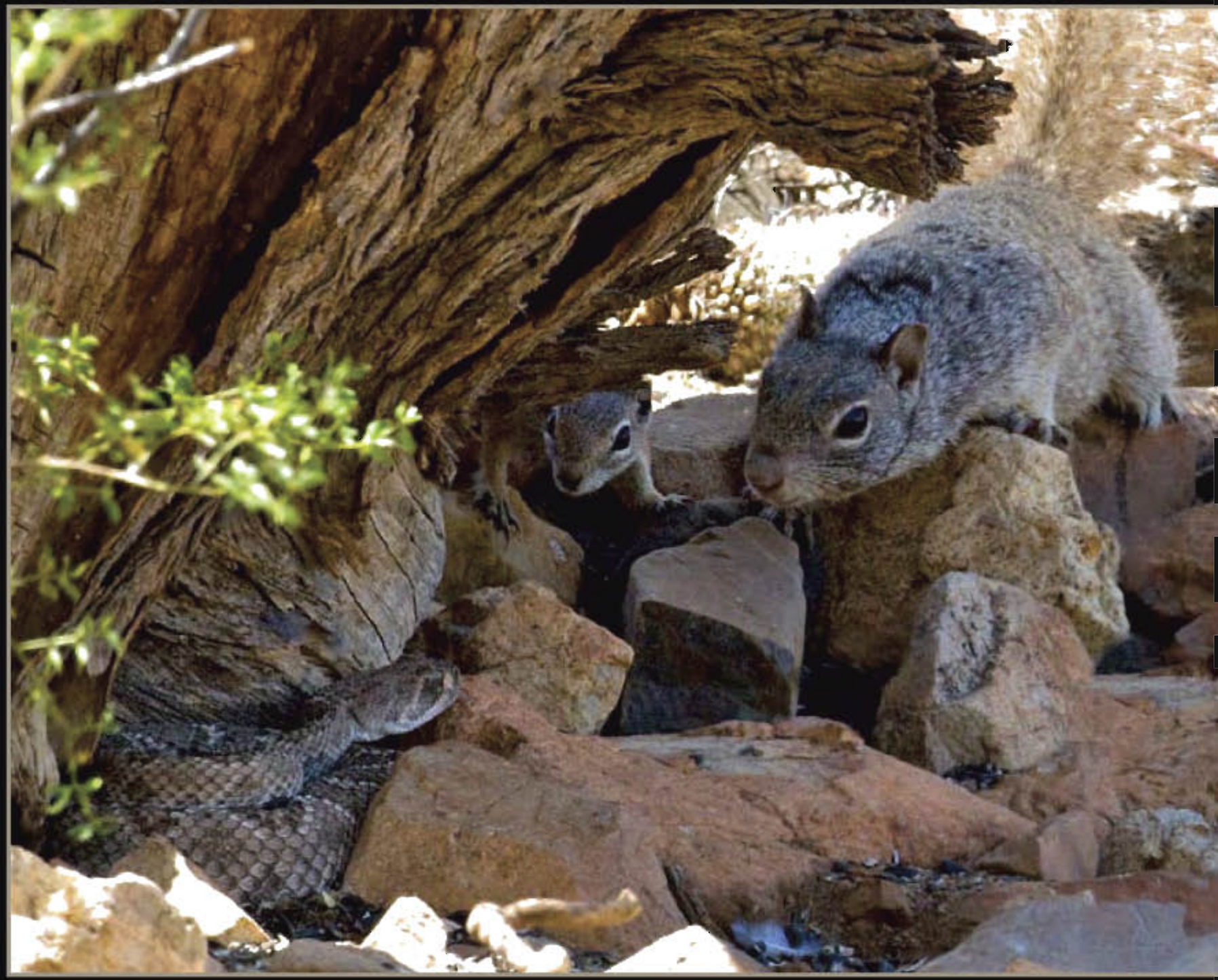
A Harris' antelope squirrel (*left*) and a rock squirrel briefly unite for the greater good: to mob a western diamondback rattlesnake. All of this reptile's potential prey species in the Sonoran Desert have developed complex behavioural rituals to make the predator aware that it's being monitored. In this case, both rodents crouch close while fanning their tails, then shovel sand and small rocks on top of the snake. This doesn't harm the reptile, and eventually the squirrels will go about their business, leaving their enemy in peace.

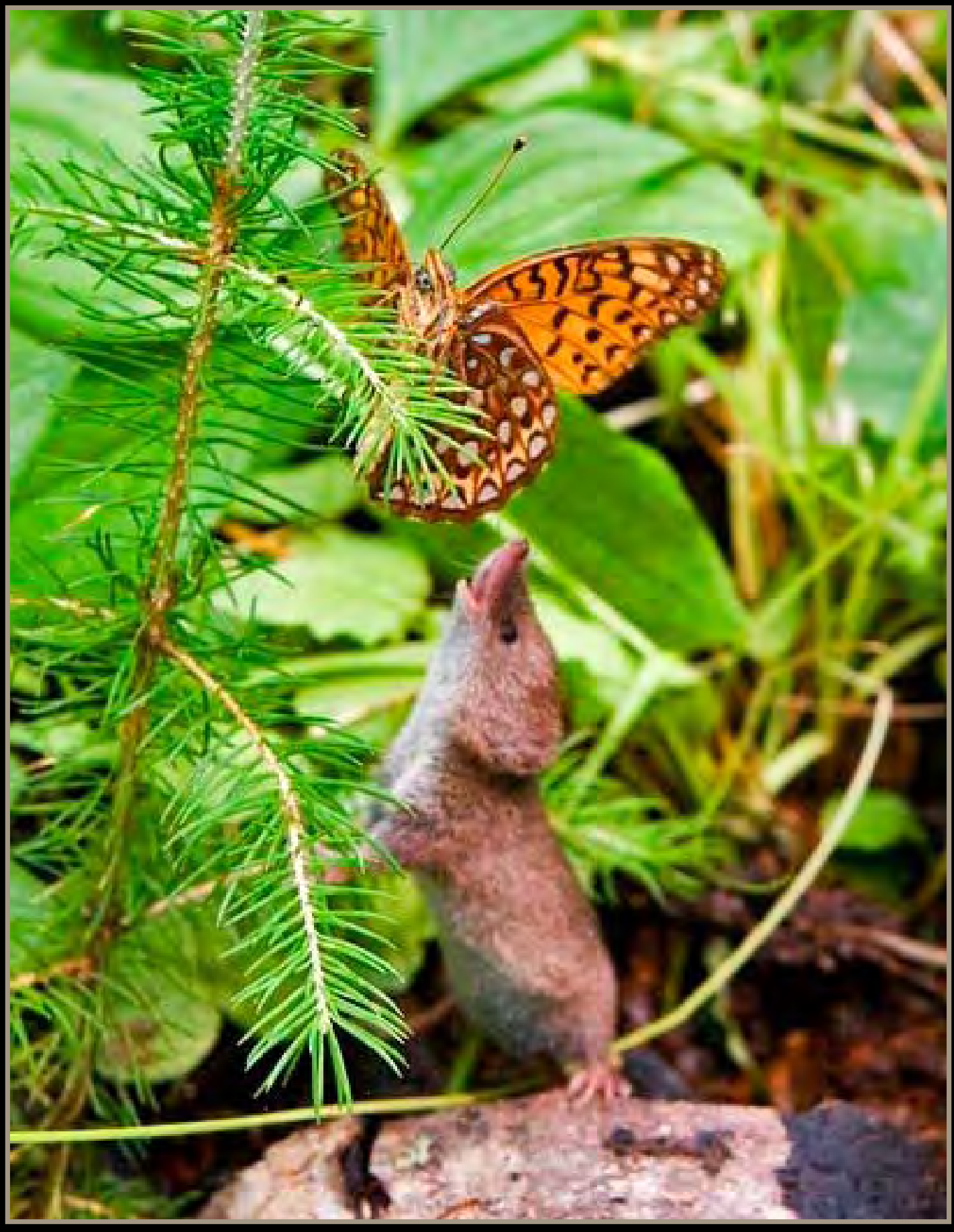
CAUGHT ON THE HOP ▲▲

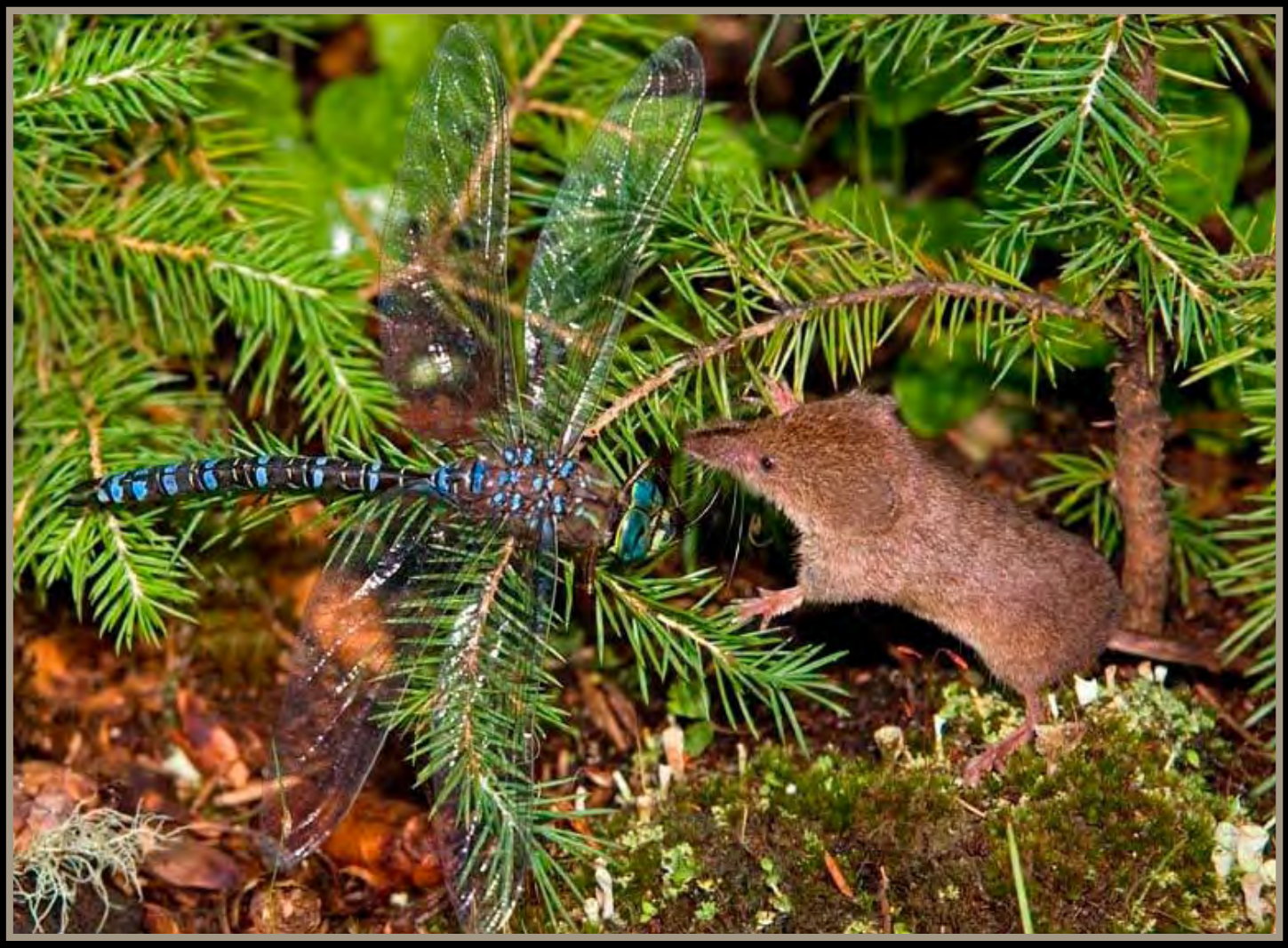
In the Sonoran Desert, two juvenile Harris' antelope squirrels goad each other into teasing a western diamondback rattlesnake. When the inevitable strike comes, they rely on soaring leaps to avoid a fatal bite. This is a key learning ritual: in the late summer months I saw countless young squirrels playing chicken with snakes – not all lived to tell the tale.

SKIN TRADE ▲

A mother rock squirrel brings a shed western diamondback rattlesnake skin to her two recently emerged pups, which obsessively study its smell, taste and texture until the fragile remains disintegrate. This will be the youngsters' first introduction to the life-long neighbour and enemy that shares their habitat in the Sonoran desert ecosystem.





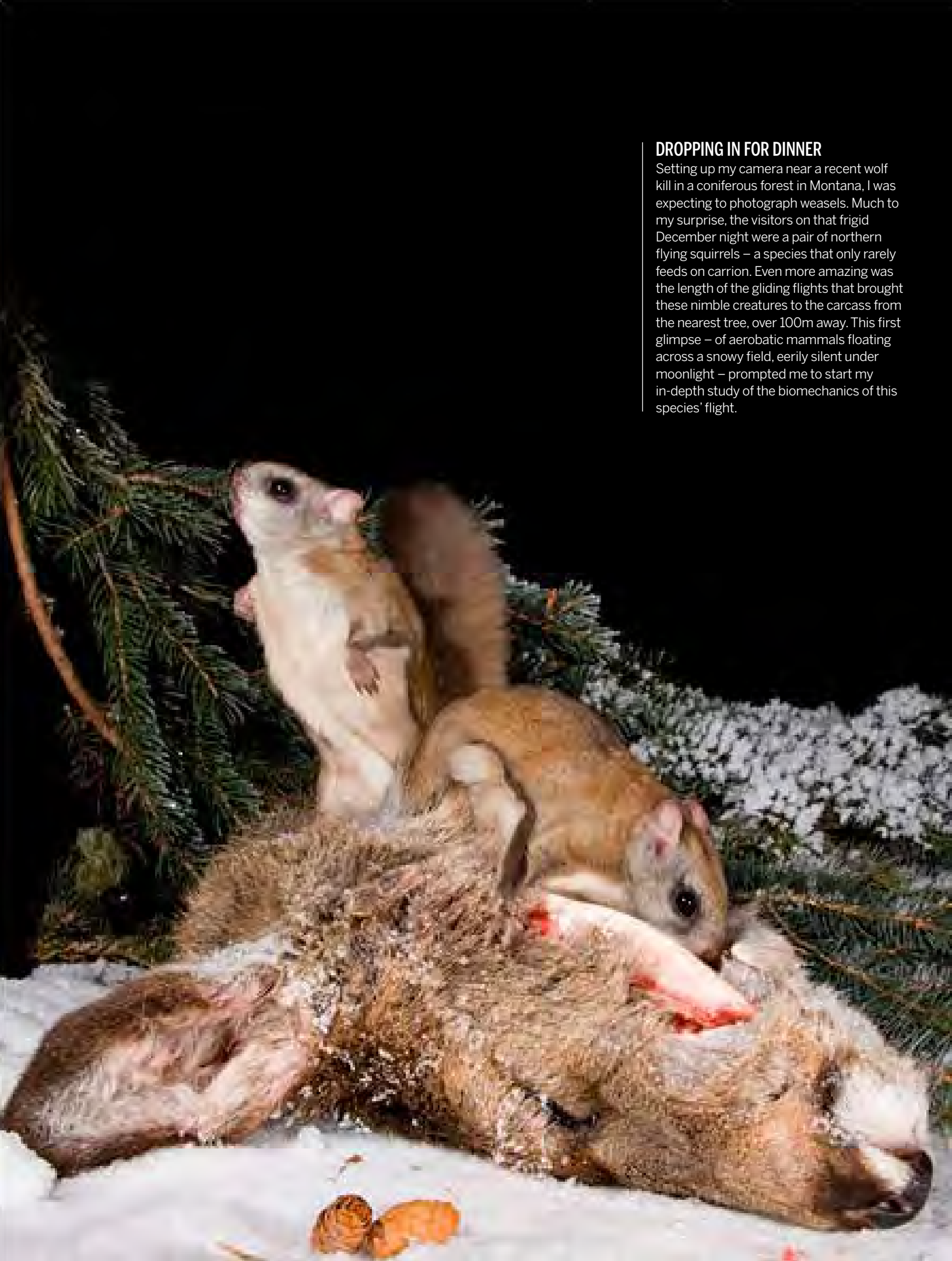


FIGHT OR FLIGHT ▲

For several years I was puzzled to find the 'shells' of large dragonflies littering the lakeshore on midsummer mornings. Eventually, I discovered the culprits: montane shrews that patrol patches of spruce saplings before sunrise, shaking down and subduing dragonflies still half-frozen from the chill night. The tiny predator pictured is attempting to overpower a large darner dragonfly; if successful it will pry open the shell with pincer-like incisors, eating flight muscles and discarding the beautiful carapace for me to find.

TOO BIG TO BITE? ◄

In a northern Montana spruce bog, a young masked shrew investigates an unlikely prey – a fritillary, still lethargic in the early morning air. Juveniles – like this curious individual – engage in trial-and-error tasting sessions before they settle on their local diet. Shrews use remarkably constant routes, marked with their scent glands, to move through the forest. Lying in the understorey along these paths, with a few flashes behind me, revealed a world that had never before been photographed in the wild. I discovered that their break-neck dashes are punctuated by split-second pauses, often – as here – accompanied by a burst of echolocation to investigate prey at close range.



DROPPING IN FOR DINNER

Setting up my camera near a recent wolf kill in a coniferous forest in Montana, I was expecting to photograph weasels. Much to my surprise, the visitors on that frigid December night were a pair of northern flying squirrels – a species that only rarely feeds on carrion. Even more amazing was the length of the gliding flights that brought these nimble creatures to the carcass from the nearest tree, over 100m away. This first glimpse – of aerobatic mammals floating across a snowy field, eerily silent under moonlight – prompted me to start my in-depth study of the biomechanics of this species' flight.

LOOK BEFORE YOU LEAP ▲

Watching this flying squirrel explode from its snow-buried cache of fir cones, like a cork popping from a bottle, was a startling experience. The agile rodent relies on the thrust from its powerful hindlegs and the stabilising effects of its flattened tail to gain height, before spreading its flying membrane and gliding to the safety of a nearby tree, leaving potential predators dazed. This defence is less effective against sophisticated aerial predators: flying squirrels rustling under snow, too confident of their escape strategy, are a staple food of great horned owls.

FLIGHTS OF FANCY
Mid-February marks the onset of the mating season for northern flying squirrels in Montana. Under the full moon and in temperatures dropping to –40°C, this female is escorted by a pair of squabbling males (only one, above, made it into the frame). During these flights, males display a remarkable array of acrobatic manoeuvres not seen in simple foraging glides. To record such agility, I mapped the nightly routes of resident females between their caches and placed elevated flashes in canopy gaps, firing my camera from the ground when I heard the squirrels jumping. The resulting images revealed a range of aerodynamic feats never before documented in the wild.

FIND OUT MORE

Alex Badyaev will be speaking alongside some of the world's finest wildlife and environmental photographers at WildPhotos – the UK's largest symposium for nature photography, held on 21–22 October 2011 at the Royal Geographical Society, London. ***www.wildphotos.org.uk***

ON OUR WEBSITE

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www.discoverwildlife.com/gallery