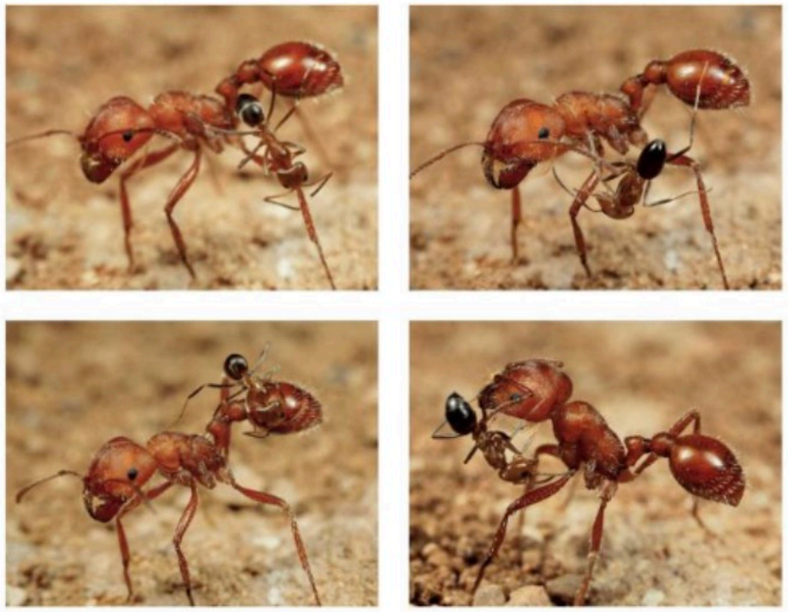
If there is one lesson I've learned from 25 years studying ants in the field, it's that a new surprise awaits under every fallen leaf or strip of bark.

Able Bodies

Text and photographs by Mark W. Moffett

Set off by the touch of a prey insect against sensitive trigger hairs, the mandibles of the trap-jaw ant *Odontomachus hastatus* snap shut in the fastest reflex ever recorded in the animal kingdom. The ant's jaws accelerate from zero to 143 miles an hour in 0.13 milliseconds—2,300 times faster than the blink of an eye. When sprung against a hard surface or the body of a predator, the explosive thrust of the jaws flings the ant into the air and out of harm's way.

ODONTOMACHUS HASTATUS, 16 MILLIMETERS (APPROXIMATE SIZES GIVEN)



Intimate Strangers

Most ants are highly fastidious, and some species spend over half their time cleaning themselves or grooming nestmates. But until last year I'd never witnessed what appears to be cleaning behavior across species. While observing seed-harvester ants in the desert flats west of Portal, Arizona, I noticed workers would approach a nest of a tiny, unnamed species of the genus *Dorymyrmex*. A harvester would rise up on her legs with abdomen lifted and jaws agape, seemingly frozen in place. Soon one or more of the little *Dorymyrmex* would climb aboard, licking the harvester here and there. This odd behavior brings to mind the interaction between some reef fish species and typically smaller "cleaner fish." The bigger fish strike a rigid pose, which attracts the cleaners to come and pick parasites off the reef fishes' bodies and even inside their mouths—a danger zone visited by my "cleaner ants" as well. The cleaner fish may get a meal of parasites, which presumably helps keep the reef fish healthy. Whether or not harvester ants tolerate the cleaner ants for the same symbiotic reason is unclear, but after a couple of minutes they seem to tire of the intrusion, especially when a cleaner ant gets carried away and nips a leg (right). The harvester responds by kicking everybody off.

DORYMYRMEX N. SP., 3 MM; *POGONOMYRMEX MARICOPA*, 7.5 MM

Society Grant This Expeditions Council project was supported by your Society membership.

Slow Motion

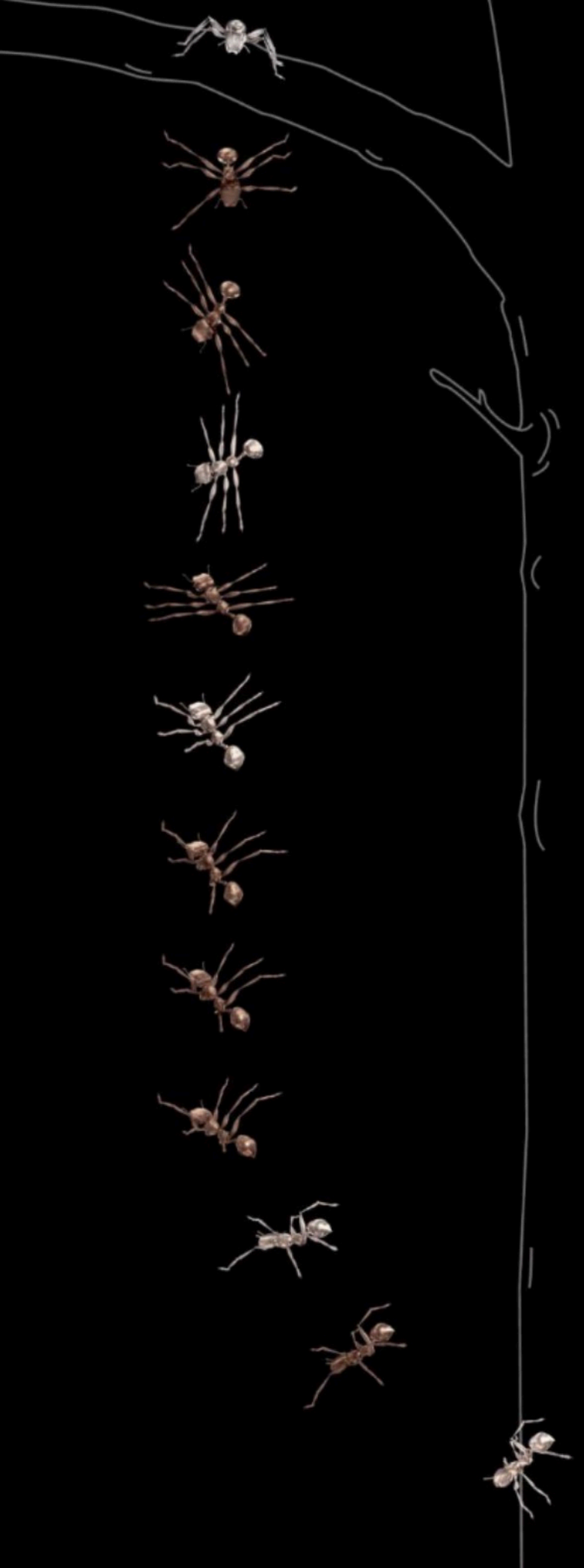
One species of ant that will never win a prize for cleanliness is *Basiceros singularis* of Ecuador. Once thought to be rare, they are in fact fairly common ants that are uncommonly dirty, camouflaging themselves with mud held in place on their bodies by feathery hairs. Workers move at a snail's pace—not a problem if your favorite prey is, in fact, snail. The chase ends—finally—with a strike. The ant then drags her booty home to a nest in the rain forest leaf litter composed of only a dozen or so workers and their queen. Stooped over a little colony I'd captured in a petri dish, I photographed a worker feeding a snail to a larva, which gobbled it up from its shell with the enthusiasm of a child lapping ice cream from a cone.

BASICEROS SINGULARIS, 4.5 MM

The Tiniest Tool User

A rain forest ant I call the "doormaker ant" *(Stenamma alas)* fashions a defensive stronghold to elude army ants and other predators. On a clay bank in Costa Rica, National Geographic Society grantee Jack Longino of the Evergreen State College discovered that these sophisticated builders construct slightly elevated nest entrances with a pebble always placed nearby. Alerted to the presence of invaders, an *S. alas* worker in Ecuador pulls the pebble over the opening to make an impregnable stone door (above). The ants will create multiple doorways leading to empty nests in order to confuse marauding army ants, such as the one I saw investigating a false lead (left).

STENAMMA ALAS, 3 MM



Skydivers

Ants running along branches or leaf surfaces in the forest canopy are in danger of being swept off by wind, rain, or a passing monkey. Two years ago Steve Yanoviak of the University of Texas Medical Branch in Galveston showed that the turtle ant species *Cephalotes atratus* in Peru survives a fall by "hang gliding." Falling *C. atratus* adopt a spread-eagle strategy similar to skydiving humans, who control their descent by tilting their limbs and body. The ants glide with their hind legs and abdomen oriented toward the tree trunk, often making 180-degree turns toward the target in midair. With support from the National Geographic Society, Steve and his colleagues Robert Dudley of the University of California, Berkeley, and Michael Kaspari of the University of Oklahoma have documented the same behavior in other arboreal ants in lowland forests in Peru and Panama. Among the team's objectives: solving the mystery of how the ants manage to steer so well.

CEPHALOTES ATRATUS (AT LEFT) SHOWN ACTUAL SIZE

SOURCES: STEPHEN P. YANOVIAK; ROBERT DUDLEY, UNIVERSITY OF CALIFORNIA, BERKELEY

ART BY MARIEL FURLONG, NGM ART

How to Prep a Porcupine

Devouring a millipede demands unusual prep work for the elusive ant I call "Hannibal Lecter" *(Thaumatomyrmex)*. This fearsome but fussy predator has pitchfork-like mandibles that when retracted form a formidable face mask (above). When extended, the prongs of the pitchfork are used to grasp polyxenid millipedes, seemingly the ant's only prey. Polyxenid millipedes are covered with long, densely packed bristles, like miniature porcupines. Before the ant can feast, it grips the millipede with its jaws and strips off these unpalatable bristles with its forefeet, aided by the mandibles (right). Once the prey's body is plucked clean, Hannibal chows down, starting at the millipede's head and working toward the tail. □

THAUMATOMYRMEX SP., 2.5 MM

Ant Exclusive See how Mark Moffett's "Hannibal Lecter" ant preys on a bristly millipede, witness ant hygiene, and more at **ngm.com/0708**.