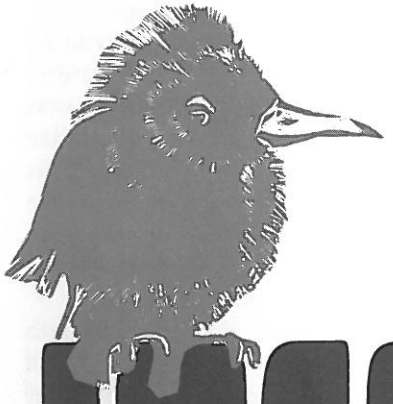

JACAMARS

Insect-eaters of the American Tropics by Alexander F. Skutch

Imagine a bird the size of a catbird, with a hummingbird's metallic glitter, daintiness, and vitality. Such a bird is the rufous-tailed jacamar *(Galbula ruficauda),* the most widespread and common of the 15 species of the Galbulidae, a family of birds allied to the woodpeckers, toucans, barbets, and puffbirds. It ranges from southern Brazil to southern Mexico, and is the only jacamar found north of Costa Rica. Most of the other members of this family confined to continental tropical America live in the Amazon basin and neighboring regions.

The resemblance of the rufous-tailed jacamar to an overgrown hummingbird is reflected in several of its popular names. Indeed, Brazilians use the same designation, *beija-flor,* for both hummingbirds and jacamars; and in Venezuela it is called *tucuso de montana,* or "forest hummingbird."

The rufous-tailed jacamar, a bird with iridescent plumage of glittering metallic colors, is rarely still or silent for very long. It seems to live in a state of perpetual excitement.

I still recall the difficulty I had writing a description of the first jacamar I ever saw, in the dim light beneath a grove of noble palm trees beside the Ulua River in Honduras, on a cloudy afternoon many years ago. Its plumage was so marvellously iridescent that I could not decide whether the predominant color was blue or green. Later, when I encountered a male jacamar in the open, it was clear that the upper plumage, including the central feathers of the bird's long tail and a broad band across its chest, were shining metallic green, with glints of gold and copper and bronze, as in hummingbirds. Its throat was pure white, and behind the broad green breast-band, the underparts were rufous-tawny or cinnamon, which was also the color of the outer tail feathers. The female differs chiefly in having a buffy instead of a pure white throat and a slightly paler abdomen. The long, sharp black bill is often held uptilted. The legs are short, and the feet have two toes directed forward and two backward, as in woodpeckers.

Rufous-tailed jacamars are rarely still or silent for very long. Like hummingbirds, they catch flying insects with a beak that appears too long and slender for such work; a flycatcher's broad bill would seem to be more effective for the job. But while hummingbirds concentrate on scarcely visible volitant midges, jacamars pursue some of the largest and most spectacular insects, including the blue morphos and other brilliant butterflies, dragonflies, and glittering beetles, as well as many smaller and more obscure flying creatures.

From an exposed lookout perch, usually at no great height, they make dashing sorties after passing insects, often twisting and turning with admirable skill. A jacamar seizes its victim in the tip of its bill, then carries the prey back to its perch. If the prey is large, it is beaten against the perch often until its wings become detached and flutter downward, before the bird swallows it. Jacamars seem never to eat fruit.

Few birds not classified among the songbirds sing so much and so pleasingly as rufous-tailed jacamars. Their high-pitched, rapid utterances combine with their appearance and actions to create the impression of a bird that lives much of the time at the highest level of excitement. The usual call is a sharp note – a squeak, a squeal, or a whistle. Similar notes are delivered with accelerated tempo and rising pitch to form an ascending trill. Often the trill is beautifully clear and soft. To hear two male jacamars competing songfully for a mate is a memorable experience.

Contemplating the jacamar's long, slender bill, one would expect to find it weaving a delicate fabric, perhaps a pensile pouch such as oropendolas and certain orioles make for their eggs. But this surprising bird does nothing of the sort; it digs itself a burrow in the hard earth or in an even harder termites' house. In Central America, I have found rufous-breasted jacamars nesting only in the ground, but in Venezuela I discovered two nests in

large, terrestrial termitaries, and in the same locality, one in a low stream bank. Jacamars will sometimes settle for a trailside bank only a foot high, or even a moderately steep, wooded hillside. Sometimes they dig their burrow in the vertical mass of clay heaved above the ground by the roots of a great, fallen tree.

The burrow is dug by the male and female working alternately. They loosen the earth with bills that seem too fine for such coarse work and kick the dirt behind them, just as kingfishers and motmots do. The work proceeds with much excited calling and trilling, and between spells of digging, the male may fortify his mate with a choice insect that he has caught. Completed tunnels in the earth range from about 12 to 20 inches in length, and at the inner end they expand into a chamber where the young are raised. Two burrows in termitaries that I examined were likewise horizontal, and each was about a foot long.

The pure white eggs are laid on the unlined floor of the chamber. Three seems to be the usual number of eggs, but sets of two and four occur. The female incubates through the night, and by day the two sexes alternate on the eggs, usually sitting from one-and-a-half to two hours at a stretch. While incubating, they regurgitate the indigestible chitinous parts of the insects they have eaten, including glittering beetle shards. This material accumulates to form a bed beneath the eggs.

The eggs incubate for 19 to 23 days, according to my observations made at several nests. Although most birds of the woodpecker alliance, including woodpeckers, barbets, and puffbirds, hatch with no trace of down, jacamars emerge from the shell bearing long, white filaments that are especially abundant on the chin and throat. Contrasting with the nestlings' bald heads, the fringe of filaments gives the newly-hatched chicks an aspect of bearded senility. However, this down is not sufficiently dense to hide the nestlings' pink skin. Their eyes are tightly closed; and on their heels are callose pads, nearly smooth rather than papilose or spiked as in some other picarian nestlings. The pads support the weight of the young birds, protecting the heels from abrasion as the young jacamars shuffle around on the nursery's rough floor.

Even before their eyes open, the nestlings exercise their voices while waiting for their parents to bring food. Soon they are calling and trilling like their parents, but with weaker voices.

Such volubility seems most imprudent on the part of nestlings raised in an easily accessible burrow in woodland where enemies abound. Once, however, I watched a coatimundi pass apparently unaware within 10 feet of a burrow from which the songs of young jacamars were issuing.

The parents bring the young a variety of insects, which if large are beaten against a branch before being taken into the burrow, one at a time. Although no effort is made to cleanse the nest, the nestlings' expanding plumage remains clean and fresh. Some young jacamars leave at the age of 19 days, when they are already feathered and can fly, but in wet weather the nestling period may be prolonged to as much as 26 days.

In light woods in northern Venezuela, I found a pale-headed jacamar *(Brachygalba goeringi)*, a species smaller and duller than the rufous-tailed jacamar. Its head and neck were pale grayish brown, and the rest of the upper plumage was dull black, faintly glossed with blue and purple. The breast was crossed by a broad band of chestnut, above which was a white triangle surrounded by dark brown. The lower abdomen was dull white. Its long, dark bill was even more delicately slender than that of the rufous-tailed jacamar.

I soon learned that this bird had a mate, and that the pair were feeding nestlings, already becoming feathered, in a burrow 31 inches long and evidently dug by the parents in a high clay bank. In contrast to the rufous-tailed jacamars, which forage chiefly in the woodland shade, these pale-headed jacamars hawked for insects from the treetops, darting out from a lofty, exposed perch at the roof of the woods. They were nourishing their four nestlings chiefly with dragonflies and butterflies. Of the latter, they preferred the stout-bodied skippers (Hesperiidae), easily recognized by their short wings and hooked antennae. The birds held the dragonflies conspicuously, always one at a time, in the tip of their long bills. These jacamars ignored the striped-winged, slender-bodied heliconian butterflies that swarmed in incredible abundance in a neighboring wooded dell and, as is well known, are distasteful to birds.

While attending their brood, these jacamars were loquacious, often calling "weet weet" in a high, thin voice. The sound reminded me of the call of a small flycatcher, such as the wood pewee. Sometimes the jacamars delivered a series of these notes, which became faster and higher in pitch until they merged into a sharp little trill. At times the nestlings called with a similar "weet."

While I sat on a steep slope watching the burrow of the pale-headed jacamars, a tayra, a large weasel of omnivorous habits, almost bumped

into me, then turned sharply and ran just above the burrow's mouth without seeming to notice it.

I had the good fortune to witness the departure of two of the four nestlings. The first rose from the burrow's mouth to a tree directly in front of me, where it was promptly joined by both parents, which burst into song. Their singing consisted of crescendos of tweets and twitters, running off into high, thin trills. While performing, they turned their bodies from side to side and twitched their tails rapidly up and down, as though beating time to their notes.

They seemed to be jubilantly celebrating the fledgling's graduation from the burrow to the treetops, and at intervals the young bird joined in with its weaker voice, also flagging its shorter tail. The emergence of another fledgling later in the morning was also greeted by song, but much less prolonged than that occasioned by the first one. The youngsters, which still bore tufts of natal down on their fresh plumage, flew well and soon vanished through the treetops.

A few days after the last of the nestlings left, I returned to make some measurements and notes on the burrow. When I pushed in a flexible vine to probe its length, two jacamars unexpectedly flew out. Peering in then with my flashlight, I detected two more white-throated juveniles gazing down the tunnel at me. It was then only 5:30 in the afternoon and the sun still shone; the young jacamars had retired early. I continued to watch until the two juveniles which had fled were led back to the burrow by the parents. Then the parents entered.

Until I left them seven weeks later, the two parents and four young birds continued to pass their nights in this burrow. Perhaps this explains why pale-headed jacamars, although smaller, dig deeper burrows than rufous-tailed jacamars, which do not use their nesting burrows as dormitories. Unfortunately, lacking additional records of pale-headed jacamar nests, I cannot be sure that all or most are as long and as well situated as the nest I observed.

One morning last year, while wandering through a cacao plantation in the Caribbean lowlands of Costa Rica, I found the great jacamar *(Jacamerops aurea)*. It is one of the largest members of the family and, at least in Central America, a rare bird. A pair of great jacamars were perched high in a tree near the edge of a great tract of forest. Nearly a foot long, they were decidedly larger and heavier than their neighbors, the rufous-tailed jacamars, and their slightly down-curved bills were shorter and much stouter. Over their shining green upper plumage flickered glints of gold, copper, and blue. Below, they were largely rufous-tawny, except the throat, which was metallic green like the upper plumage. On the lower throat of the male was a patch of white that was lacking on his mate.

While I watched, delighted by the splendor of these birds, the male flew out, traced a long, tortuous course through the branches of the trees that shaded the cacao, and seized a large butterfly in his bill. He knocked his prey vigorously against his perch, but the four fluttering wings were still attached when he passed the insect to his mate. She continued to beat it against a branch until two wings fell off and drifted slowly earthward, then with difficulty she gulped the butterfly down along with the two remaining wings.

Presently the male jacamar flew to a small, roundish termitary 50 feet up the trunk of a tall tree. He stuck his foreparts into a small opening that the pair had evidently made in the side, then rejoined his mate on a neighboring branch. Soon the female went to the termites' nest and started to work. Her golden-green rump contrasted brilliantly with the black termitary to which she clung. With her head and shoulders inside the excavation, I could not see what she was doing, but tapping and crunching sounds revealed that she was enlarging the hole. She worked for a quarter of an hour, then her mate took a turn at carving into the structure. Thus, like the rufous-tailed jacamars, the two alternated at the task of preparing a chamber for their eggs; although the male did the smaller share of the work, he compensated by feeding his partner from time to time. Between spells of work, these jacamars caught insects on aerial sallies. In contrast to the volubility of rufous-tailed jacamars while digging a burrow, these big jacamars were rather silent. Once the male uttered a high, clear note as he alighted beside his partner with an insect, which she accepted with a grating or rasping sound. Other observer's have heard great jacamars deliver high-pitched whistles and nasal mews.

I was vastly disappointed when these splendid jacamars abandoned their work unfinished, apparently because their termitary had been built around some branches of an epiphytic cactus that obstructed their carving. As far as I know, nobody has ever seen the eggs of the great jacamar or followed its nesting. Indeed, as with a number of other families of tropical American birds, the details of the lives of jacamars are little known and remain for future naturalists to disclose.