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Abstract: Focuses on the Madagascar paradise flycatcher, a colorful bird. Different morphs--color types--of the paradise flycatcher male; Theory that the reason why the different morphs, a rare phenomenon in birds, did not evolve out of the species is because both morphs successfully attract female flycatchers in different situations; Evidence that the white morph experiences more predation.

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Birds of a different color

[THE PROJECT](#)

DATE: 1996 to present

PLACE: Bealoka reserve, Madagascar

GOAL: To discover why dichromatism evolved in male Madagascar paradise flycatchers (Terpsiphone mutata)

RANGE OF BIRDS: Madagascar, Comoro Islands

PERILS TO RESEARCHERS: Thorny plants, feisty wasps

In the dry southern tip of Madagascar, an aging bridge crosses what's left of the Mandrare River, now throttled by silt from deforested lands upstream. The bridge leads to a lush 300-acre patch of forest known as the Bealoka reserve. Some of it is dark and gloomy, cloaked by a high canopy of tsatsake trees. Sunlight filters through more open parts where tamarind trees grow. Throughout the forest echo the calls of about a hundred bird species.

One of the most recognizable is the harsh retreat retreat of the Madagascar paradise flycatcher. Males are visually unmistakable, with tails three times their body length

streaming behind them--and with a colorful twist that has drawn biologist Raoul Mulder to camp in Bealoka for parts of the past nine years.

Adult male Madagascar paradise flycatchers come in two distinct color types, or morphs, a rare phenomenon among birds. (Males of only one other known bird species, a Eurasian sandpiper called the ruff, have such color variations.) One flycatcher morph, the rufous type, is reddish brown; the white morph is mostly white and black. Once these plumages emerge--after about three years or so--they're permanent. But why the two different hues?

In nature, color evolves in part to attract mates. If one male flycatcher color had a mating advantage, the other should have gone extinct. It hasn't, so each color must provide some sort of benefit--and that's where things get complicated.

It's possible, says Mulder, that female flycatchers choose to mate, with whichever morph type is less common at the time, a form of sexual selection known as the rare-male effect.

Geographic location may also play a role. One morph color may stand out better--and thus attract more females--in bright, open spaces, while the other may be more visible in dense shade. But he who gets the most dates may also die young, because the morph color that females prefer may also be more visible to forest predators.

Mulder thinks the white morph is more susceptible to predation. "Our color measurements show that white morphs are more conspicuous than rufous males," he says. "We've set up trials using stuffed mounts of both male types. The white ones are always attacked first. The predators are sparrow hawks, and we've seen them kill white males."

So, do females prefer their mates in white? "Since white males suffer more predation, you might expect them to have a mating benefit to compensate for this cost," says Mulder. "But the data suggest that females are highly unfaithful to both male types."

In breeding season, a female lays up to three eggs on consecutive days. Though she pairs with one male that helps tend the nest, she may also copulate with males in nearby territories and can store their sperm, so each egg could be fertilized by a different father.

Using DNA analysis, Mulder and his team have determined the paternity of some 700 nestlings. Half the nests held chicks fathered by different males of one or both colors. "Females apparently do not have fixed preferences for particular males or morph types," says Mulder. In future studies he hopes to detect paternity patterns that may shed more light on the mystery of flycatcher color.

PHOTO (COLOR): GRANTEE; Raoul Mulder, Biologist, University of Melbourne, Australia; "Why did evolution product two such different male colorations in this bird? It's fascinating, and there isn't an obvious answer."

PHOTO (COLOR): Eleven-day-old paradise flycatcher chicks beg their father for a bit of food. Some male flycatchers are white and black while others, like this one, have a reddish hue. Such a dual palette among male birds of the same species is extremely rare.

PHOTO (COLOR): Taking to the air for science, researcher Ernest Rasombinirina climbs to a nest to retrieve flycatcher chicks for banding.

PHOTO (COLOR): A week-old chick wears a blue numbered tag on its leg.

PHOTO (COLOR): Mulder gently removes a flycatcher from a net before banding it. He and his team have already logged more than 1,500 Individuals.

PHOTO (COLOR): A chick struggles to swallow a dragonfly offered by its mother, who displays the short tall and red hue of all females.

PHOTO (COLOR): A white-morph male brings food to his brood. Mulder hopes to learn whether females prefer red mates or white.

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By John L. Eliot, National Geographic Senior Writer

Photographs by Cyril Ruoso

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