

THE OCCURRENCE OF THE INCUBATION-PATCH
IN SOME BRAZILIAN BIRDS *

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FROM September 1942 to January 1943, a series of more than a thousand birds was collected at Teresopolis, State of Rio de Janeiro, Brazil, for the purpose of determining the breeding season. In addition to the usual data (date of collection, locality, etc.), the presence or absence of an incubation-patch and the age (as determined by the ossification of the skull and the size of the bursa of Fabricius) were noted. The sacrum of each individual was cut out and preserved in Bouin's fluid. The gonads were removed under a dissecting-scope and sectioned for an accurate determination of the breeding condition. The patch was considered present in the species if present in one or more individuals of either sex in active breeding condition; absent in the species if absent in two or more individuals in active breeding condition.

Brood- or incubation-patches are "specially modified areas of bare skin" which are "adaptations providing for the closest possible application of the eggs to the warm surface of the body, and, what is more, to an area rendered particularly suitable for the purpose by a heightened blood supply and other changes. . . ." (Tucker, 1943:22). Although not all species of birds have the patch, the majority do, and the patch is obviously an important factor in incubation (Ryves, 1943:10); in some species only one sex has the patch, and its presence (or absence) may be used in the determination of sex (Nice, 1937:4; Kendeigh, 1941:11).

The patch occurs only in the breeding season: species and sexes that showed patches in the breeding season showed none in the non-breeding season; and no individual with inactive or progressing gonads showed the patch. The occurrence of the patch in the series studied is shown by sex and species in Table 1. The patch was found in one or both sexes of 43 species (representing 16 families). In no species investigated was the patch absent in both male and female, but both sexes were not collected for all species.

The occurrence of the patch invariably agreed with the incubation habits when these were known. Ticehurst (1931:582-583) determined the occurrence of the patch in 35 species of shore birds and found almost perfect correlation with what was known of the incubating habits. So very few Brazilian birds have been intensively studied that it is not yet possible to completely correlate the occurrence of the patch with in-

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TABLE 1
THE OCCURRENCE OF THE INCUBATION PATCH IN MATURE BREEDING SPECIMENS
OF SOME BRAZILIAN BIRDS

		Present		Absent	
		♂	♀	♂	♀
Tinamous (Tinamidae)	<i>Crypturellus obsoletus</i>				2
Parrots (Psittacidae)	<i>Pyrrhura frontalis</i>			2	
Cuckoos (Cuculidae)	<i>Piaya cayana</i>	1			
	<i>Guira guira</i>	2	1		
Hummingbirds (Trochilidae)	<i>Eupetomena macroura</i>	1			
Trogons (Trogonidae)	<i>Trogonurus rufus</i>	1	1		
Woodhewers (Dendrocolaptidae)	<i>Xiphocolaptes albicollis</i>	2	2		
	<i>Lepidocolaptes fuscus</i>			5	
Ovenbirds (Furnariidae)	<i>Certhiaxis cinnamomea</i>		1		
	<i>Syndactyla rufosuperciliata</i>	2	2		
	<i>Automolus leucophthalmus</i>			3	
	<i>Cichlocolaptes leucophrys</i>	1			
	<i>Heliobletus contaminatus</i>		1		
	<i>Sclerurus scansor</i>	2	1		
Antbirds (Formicariidae)	<i>Batara cinerea</i>		2		
	<i>Drymophila ferruginea</i>	1			
	<i>Drymophila milura</i>	1			
	<i>Pyriglena leucoptera</i>	1			
	<i>Myrmeciza loricata</i>	1			
Cotingas (Cotingidae)	<i>Attila rufus</i>		2		
	<i>Pachyrhamphus polychopterus</i>			2	
	<i>Tityra cayana</i>	1	1		
	<i>Procnias nudicollis</i>			2	
Flycatchers (Tyrannidae)	<i>Myiodynastes solitarius</i>	1	1		
	<i>Myiozetetes similis</i>		1		
	<i>Empidonax euleri</i>	1	1		
	<i>Myiobius atricaudus</i>		1		
	<i>Onychorhynchus swainsoni</i>		1		
	<i>Hemitriccus diops</i>			4	
	<i>Elaenia mesoleuca</i>		1		
	<i>Phyllomyias griseocapilla</i>	1			
Wrens (Troglodytidae)	<i>Troglodytes musculus</i>		1		
Mockingbirds (Mimidae)	<i>Mimus saturninus</i>		1		
Thrushes (Turdidae)	<i>Platycichla flavipes</i>		3	3	
Blackbirds (Icteridae)	<i>Molothrus bonariensis</i>				11
	<i>Ostinops decumanus</i>		1		
Tanagers (Thraupidae)	<i>Tanagra chalybea</i>		1		
	<i>Thraupis ornata</i>		2	2	
	<i>Habia rubica</i>		1		
	<i>Trichothraupis melanops</i>		1		
	<i>Thlyptis sordida</i>		1		
	<i>Schistochlamys ruficapillus</i>		1		
Sparrows, Finches (Fringillidae)	<i>Haplospiza unicolor</i>			4	

cubation behavior, but the few species for which data are available are mentioned below.

Absence of the patch in the two tinamou specimens (both female) agrees with the conclusion (drawn from field observations by earlier workers) that only the male incubates the eggs in this family. Presence of the patch in both sexes of the cuckoo *Guira guira* agrees with the observed fact that both sexes incubate. The presence of a patch in the one specimen (with fully active testes) of the Swallow-tailed Hummingbird (*Eupetomena macroura*) is surprising and requires confirmation; however, Robert T. Moore (1939:315—also in Bent, 1940:471) reports: "In Ecuador I have observed the male and female [of *Colibri cyanotus*, the Violet-eared Hummingbird] take turns incubating at the same nest and collected both sexes to substantiate this observation." The patch is presumably present in all females of the Dendrocolaptidae, Furnariidae, and Formicariidae, but breeding females were collected for only six species in these families. Two specimens, male and female, of the cotinga *Tityra cayana* showed the patch; both had been observed to incubate. The male of the related *Procnias nudicollis* has not been observed to incubate, and in the two males collected, the patch was absent. The presence of the patch in the females of the Tyrannidae is expected, but its presence in males of three species (*Myiodynastes solitarius*, *Empidonax euleri*, and *Phyllomyias griseocapilla*) is noteworthy. The absence of the patch in all 11 female specimens of the Shiny Cowbird (*Molothrus bonariensis*) is, of course, to be expected because of the parasitic habits of the species.

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