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when I first became interested in bird photography as a serious activity -- years after a boyhood preoccupation with the larger and more conspicuous species such as the marsh hens and bitterns of the skokies of northern Illinois or the gulls, herons, and fish hawks of the Maine coast -it was the small birds belonging to the passerine families that excited me most and whetted my ambition to photograph them. These birds did not attract the universal attention that the colonial nesting sea birds and long-legged herons formerly elicited from country folk and school boys. In the days before the trend towards urbanization had so strikingly changed the face of the land surrounding our cities by pre-empting large wild tracts for subdivisions and by draining and filling marshes and estuaries; and before changes in agricultural practice had led to the depopulation of the countryside, the existence and location of heron rookeries in rural areas and gull and tern colonies on offshore islets were generally known to country and sea shore villagers. The size and numbers of these larger birds made their recognition inevitable, and they also, for the same reason, drew the attention and aroused the curiosity of budding child naturalists. Ease of observation of gregarious birds further contributed to the larger proportion of young amateur ornithologists who have concerned themselves with them rather than with the small passerine species. Moreover, the larger raptors, because of their aggressive and open way

of life, have also been a favorite group for study and photography by these amateurs. The greater interest in them manifest by beginners in bird studies partakes, I believe, to a considerable degree of those idiosyncratic qualities and traits of personality inherent to the falconer and hunter which drive men, if not to kill for pleasure and trophies, then to dominate, control, and possess creatures of the wild.

Many people who collect and tame wild animals do so ostensibly from the most humane, motives, to save the lives of cripples, for instance, or to treat sick and injured individuals which on recovery are released again. Too often, however, the animal that has been nursed back to health or was captured when young and raised to adulthood is kept in a cage for the rest of its life as an exhibit in a private zoo -- half tame, half wild -- for no better purpose than to satisfy the ego of its owner. The urge among too many kindly lovers of nature to tame and dominate, to make subservient to their wishes, a wild animal is a terrible and irresistible temptation. Sadder still is the fate of the tamed animal whose owner, finding its care a burden-some and exacting responsibility, disposes of the animal to an institutional zoo where the tenuous personal relationship painstakingly established with its human captor is wiped away and it becomes simply an exhibit.

Some zoos and a few sincere individuals capture rare animals in danger of extinction for breeding and raising in

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captivity, safe from natural perils, in order to build up a reserve stock from which the wild population can be replenished. Prevalent, however, is a zoo mentality, a possessive point of view which regards animals as the rightful subjects for man's exploitive instincts to incarcerate for his entertainment under the dubious justification of an educational value. What understanding children can be expected to gain about the lives of animals in the wild state and about the role they play in the natural system of living things from seeing frightened, dispirited, and frequently tormented animals is beyond comprehension.

The song birds soon came to have a greater fascination for me, and to present a greater challenge, than their larger, less specialized relatives. They are, at least, harder to find, if not always to identify, and, as to their habits and behavior, are much more difficult to observe because they live by and large as independent individuals and mated pairs rather than in social groups. The identification and listing of the various species grouped in families that compose the entire passerine order became long ago a game played by the members of local bird clubs to outdo one another in the number and rarity of species seen. Especially during the spring migration these birders would arise early journey to the nearest open country or park land or cemetery, field glasses in hand, to spot, identify, and mark off on their check lists as many species as possible before they had to return to

With the notable exception of scientific zoological societies and the more advanced live animal museums which provide an invaluble educational function, the prevelent municipal zoo mentality promotes a possessive point of view that regards animals as the righful subjects for man's exploitive propensities instincts. In these marginal institutions and roadside prisons animals are incarcerated under the untenable justification that they serve as sources of enlightenment, but in truth sebecome pitiful targets for cruel entertainment and sadistic gratification.

their mundane duties. Skill in song recognition and an ability to distinguish the fine differences between the similar songs of related species was always a great help in the location and visual identification of the singer.

Much kudos would accrue to the tyro who spotted the song of an uncommon warbler and then was able to establish its identification to his companions by picking out the bird with his binoculars. Whereas the prima donna could astound his envious rivals by designating by song alone a dozen warblers that were contributing to the morning chorus and then pointing themall out to prove the sharpness of his ear. But when all is said and done this kind of pleasurable pastime adds little more than a numerical record to the sum total of knowledge about birds.

Of all the groups of passerine birds the one that has stimulated the greatest interest among photographers and amateurs is the paruladae or wood warblers, with the sparrows perhaps coming in a close second. The warblers are particularly attractive to bird watchers on account of the brilliant plumage the males of most species assume during the breeding period. They are readily identified at this time, even the more somber presenting usually little difficulty. After the autumn molt the situation is entirely different. Then the sexes become much alike by the acquisition of more drab plumage, and even the differences in appearance between congeneric species is so greatly reduced that identification in the field requires great skill and familiarity with the characteristic details

of their winter feathers. Certain identification may under some circumstances be impossible without collecting the bird. Because of their beauty and the varied nesting habits of the different genera the warblers held for me a special interest and I have devoted a great deal of time to photographing them.

But I have not ignored other bird families. They all have characteristic traits of structure and behavior that easily monopolize the attention of anyone be he scientist, artist, or merely a weekend bird watcher who has become enamored of birds. The sparrows and flycatchers are especially interesting groups for the photographer because of the challenge they present him to portray precisely the subtle distinctions of marking and color that differentiate them. This is especially true of the feather colors and patterns of the sparrows in which the shades of hue are often definitive identification marks.

The opposite side of the coin is the situation that dominates the state of affairs with the empidonax flycatchers, that small group of birds whose similarities have so confused the field observer that unless their nesting practices are observed they are all lumped together. Even the taxonomists who collect and measure their specimens continued to debate the proper classification of these flycatchers, until studies on their breeding and nesting behavior, their geographical distribution, and recordings of their songs and call notes finally established a valid

basis for sub-specific differentiation. The empiodonax fly-catchers which inhabit the eastern United States include the Acadian, Yellow-bellied, Least, and Traill's.

The dispute over the last, as to whether it represented a single species complex composed of closely related but geographically separated races, or whether the observed differences in habitat preference, nest construction, and song mirrored genetic differences sufficient to warrant designation as two distinct species, continued for years. Field observers had noted striking distinctions in behavior, as well as slight plumage variations, which distinguished the Traill's or Alder Flycatcher of the Appalachian highlands. New England, the Canadian and boreal zones from the Traill's inhabiting the lower altitudes of the middlewestern and prairie states. The former, darker variety is associated with moist boggy pastures and sprout lands where it builds loosely constructed nests of dried grasses with many trailing stalks hanging from the main structure very much like that of the Song Sparrow. The nests are usually placed low in the dense foliage of wild rose, spiraea, and raspberry bushes or in blackberry tangles. The song of this Traill's is acceptably described syllabically as wee-be-o, and the bird is commonly referred to as the wee-be-o type. The lowland western paler Traill's Flycatcher prefers drier bushy fields and marshes where its nests are saddled in the upright crotches, at a higher level than the former, and not so well concealed in dogwood, alder, elder, or willow. The materials used for the nest are thistle down and gray plant fibers stripped from weed stalks and dead twigs which are woven into a more compact, neater cup than the nest produced by the eastern Traill's and is like a Yellow Warbler's or Redstart's nest. The two syllable song of this race is given as fitz-bew.

The ranges of the wee-bé-o and fitz-bew types overlap in the central New York State valleys where both are found in close proximity occupying their respective characteristic habitats, and where there is some evidence that interbreeding occurs with the production of intermediate types marked by nests and songs that do not place the individuals clearly in either category. It has been proposed that during the Wisconsonian glaciation the prototype of Traill's Flycatcher was split into two discrete populations, one isolated in the southern Appalachian highlands and the other in the southwestern plains. With the melting of the ice both groups spread northwards advancing into New England and Canada on the one hand, and into the Great Lakes prairie region on the other. They were prevented from meeting as their territories expanded by the development of coniferous followed by broadleafed forests which pre-empted the land vacated by the retreating ice sheet, and which presented an effective ecological barrier covering western New York, northern Pennsylvania, and Ohio. As the settlement of North America by Europeans progressed this forest cover was largely removed to make way for farming, and with the destruction of

the forest and the establishment of fields and pasture land the habitat unfavorable to remergence of the two races was cleared away. Into the newly created ecological vacuum both types, one from the east and the other from the west, migrated, meeting utlimately in western New York State. During the prolonged period of geographical separation each group advanced along an independent evolutionary path determined by disparate environmental influences and by its unique mutational accidents which resulted in the birth of two races differing in song and nesting habits. Had the separation lasted longer this process of speciation might have produced distinct species which would have been able to maintain their identities in the face of the forces driving the two variants along the path of coalescence through the homogenous influence of interbreeding, to which the two races at present are being subjected in their areas of sympatry.

Color photographs of the genus Empidonax, if carefully made, clearly illustrate the striking similarity as well as the shades of plumage difference that prevail between the species of the group.

A small Empidonax flycatcher which to me is the most appealing of the genus for its under plumage is worked in subtle graded yellow is the Yellow-bellied. It is a summer inhabitant of the dark, damp coniferous forests and the sphagnum, alder and black spruce bogs of the Canadian zone from Maine to Minnesota. With its close western analogue the Western Flycatcher they are the only North American

Flycatchers that build their nests on the ground. None of the Yellow-bellies nests I have seen have been in the open. The birds seem to prefer the wooded areas of bogs shaded by young spruces or an over-story of broad leaves in alder thickets. My first Yellow-belly nest, I found in a spruce wood on Great Spruce Head Island, Maine. It was sunk in a mound of moss at the base of a spruce tree. All the others I have seen in northern New Hampshire, Michigan, and Minnesota were found by my friend Dr. Powell Cottrille of Jackson, Michigan who has become a past master at finding them. He has an even greater affection for Yellow-bellies than I do and can scarcely resist the urge when he has detected the presence of the birds in a suitable habitat to track down their nests, even though he may have no intention to photograph them. I do, however, share his appreciation for the beauty of the setting these birds seem inevitably to select. A hollow in the side of a moss-covered hummack is chosen where the nest is well concealed by hanging leafy stems that render the female, nestled down on her eggs, nearly invisible on close inspection even when the precise location of the nest is known. Only her unblinking black eye and wide bill are seen above a narrow rim of grasses that compose the only visible part of her nest. But bryophytes are never the sole contributers to the mystery of these hidden sites. Poking out between the leafy thalli of sphagnum or cranebill moss slender spears of grass arch over the mound to add a tremulous disarming disguise, while the fronds and

blades of a sturdier flora contribute variety to the setting. It may be the drooping, lacy fronds of Spinulose Fern or the cycloidal trefoils of wood sorrel or the stubby dark leaves of leatherleaf or the accordian pleated, fruitless blades of Clintonia and Maianthemum or miniature snowberry vines — leaves opposed — tangled in the moss which create an atmosphere of microcosmic unity.

The gentle, secretive Yellow-bellied Flycatcher arrives on its breeding grounds in late May or June and departs again for the tropics in August so its stay in the north is brief, but almost all that is known about its life and habits have been obtained from observations made during this short period. So we think of the bird as indigenous to the temporate climatic zone -- as we do in the case of most migrants that come north to reproduce their kind -- and discount the influence played, over the greater part of its life span, by/climate and environment/ by its survival and to mold the behavior of the species. So to us the Yellow-belly is a bird of the northern swampy woodlands occupying a position in a narrow ecological system to which it appears uniquely adjusted. It lives in a tightly circumscribed boggy atmosphere where it remains constantly close to the forest floor, where it builds its nest and rears its brood. and where it forages for itself and its young, seldom if ever deserting this habitat to explore the upper levels and reaches of the forest. The Yellow-bellied Flycatcher moves through this mesic environment like a ghost flitting moth-like

from one low perch to another, snapping up small insects with a faint click of its bill and darting on. But it does not travel completely silently, and herein lies the secret of the way to find this flycatcher's nest. My friend Powell Cottrille learned by patient watching and listening in these black-fly and mosquito infested bogs that the female flycatcher utters a characteristic note -- not identical with the song of the male -- during the brief intervals when she leaves her nest unattended in her search for food. The male's song is more incisive than that of the female, and is variously rendered as consisting of two notes, although it could be three, with the accent on either the first or second syllable, thus: chu-wee or pee-weep. The female utterance, which Powell refers to as the nest song, is a more drawn out, soft, plaintive syllibance like peee-weee without accent, which the bird produces at frequent intervals. It has a sweet, sad quality more squeekey than melodious and when heard is, Powell says, a sure indication of a Yellowbellie's nest hidden in the vicinity. By locating the author of the sound and discretely following her through the lower story vegetation, if she can be kept in sight, she will conduct one to her nest. The principle is simple enough but in practice/ability to keep track of a small well-disguised bird in the leafy environment of a sphagnum bog requires more skill and experience than even the enthusiastic novice realizes.

The western counterpart of the Yellow-bellied Flycatcher, the Western Flycatcher, inhabits moist canyon bottoms in

Northern New Mexico where I have found them in considerable numbers. The breast and belly plumage of the Western is paler or whiter than *** the eastern Yellow-bellied. Although its nesting habits are analagous in some respects to its eastern relative there are also striking differences. In Pacceco Canyon on the west slope of the Sangre de Cristo Mountains a few miles north of Santa Fe a suitable habitat at about 8,000 feet is found for these birds. For a considerable distance the canyon is narrow and shaded supporting a mixed vegetation of stream-side willows, wild currant bushes, aspens, Ponderosa pines, white and Douglas firs. The firs thrive in the wet, dark bottom of the canyon, whereas the pines grow also up the dry sides of the canyon where they intermix on the ridge tops with Gambel's oaks and scattered junipers. Western Flycatchers nest in this canyon bottom along with Macgillivray's Warblers, Audubon's Hermit Thrushes, House Wrens, Red-naped and Williamson Sapsuckers. I have found their nests in varied situations, the most conventional being on narrow ledges in steep banks covered with moss, but also several feet high in rotting stumps,

Two other Empidonax Flycatchers occur in and on the nearby slopes of Pacceco Canyon. The Hammond's builds its nest in the high branches of the tallest pines growing out of the canyon floor. The Wright's or Dusky many of whose nests I have found prefers the Gambel's Oak thickets on the dry slopes and

and, most unexpectedly, on joists under bridges like

Phoebes.

ridges. Their nests are constructed of plant down and fibers, neat, compact cups attached to the forked oak branches, rarely more than five feet above the ground. They look like the nests of the <u>fiz-hew</u> Traill's flycatcher or of the Black-throated Gray Warbler, a species which breeds in the Pinon-Juniper association at a 1,000 foot lower altitude. Associated with the Wright's Flycatcher on these oak ridges are Spotted and Green-tailed Towhees, Virginia and Orange-crowned Warblers — all ground nesters — Black-headed Grosbeaks which also prefer the oaks, and Western Tanagers and Steller's Jays in the Ponderosas.

The last member of the Empidonax genus which I have sought out and photographed is adapted to the broad-leaf deciduous forests of the middle-western and southern states. It is found nesting only where a high forest crown produces a penumbrous condition, as in temperate climate forests as opposed to the glooms of the tropics, characterized by discontinuous light and shade in which the seedlings of the climax growth and shade-tolerant dogwoods find a favorable balance. The small flycatcher here is the Acadian, a misnomer owing to the erroneous designation of a specimen taken in Nova Scotia (Acadia) as the type of the species. This mistake was discovered when it was established that the Acadian Flycatcher never reaches Nova Scotia and that the bird in question was indeed a Traill's. The scientific name was thereupon changed from acadicus to virescens, although the common name remained as before. Virescens is an appropriate appelation

since the species is the greenest of the group. Nevertheless, identification of the Acadian in the field by sight alone is uncertain if not impossible necessitating reliance on the other attributes of the species, of which the most positive are habitat and nest structure. The Acadian is the only Empidonax flycatcher commonly found resident in the woodland conditions described above; the Traill's types requiring bushy open country, pasture land, and alder swamps, whereas the Yellow-bellied is associated with coniferous forest bogs. The Acadian Flycatcher builds its nest in the under-story shrubbery, usually less than fifteen feet high, selecting for the site an horizontal fork of a small tree. dogwood or a sapling of the principle climax species, and there fashions a shallow pendant cup of grasses and plant fibers in the manner of the vireo's suspended nest at the junction of two branches. But the Acadian's hanging nest is a frail structure compared with that of the vireo; the mesh of nest material is so open that the eggs are visible through it from below, and the whole fabric is so insubstantial that it rarely last the winter out. On the other hand vireo nests often survive several seasons before they are disintegrated by the natural forces of nature.

To return to the wood warblers; they were the first group of small song birds that began to attract my attention, not simply as photographic subjects, but because they are a distinctive and colorful family. They could be recognized by their songs; they varied tremendously in behavior, in

their specific adaptations to diverse plant associations, and in their nesting habits. To find their nests very early became a game that challenged my sleuthing skill and all the woodcraft art I had absorbed during my outdoor school boy days, that required training to observe and alertness to the slightest departure from the usual non-breeding behavioral patterns, and to the first indication birds display of alarm or distress at the presence of potential danger. All this incipient concern with warblers took place on Great Spruce Head Island in Maine. It began in the mid-1930's and by the end of the decade I was recording what I saw and found. For causes that I no longer can trace and for reasons I cannot well explain the making of photographs of birds, capturing them on film in completely spontaneous positions in their natural surroundings, seemed to me a most wonderful thing to be able to do. Under different circumstances of conditioning by education and parental influence I suppose I might have become a painter of wildlife. But this was not my fate; photography was the most satisfactory means for expressing the excitement and awe that the beauty and enigma of birds aroused in me. Photography in those first years may have served as a sublimative process, as a releaser of tension, and as an instrument for establishing illusory rapport with the secret lives of wholly unapproachable, inscrutable beings.

In 1938 I began to keep a count of the nesting birds on the Island in Maine. That spring I identified 18 warblers

several of which were transients but 9 I knew from finding their nests were residents. This number grew during later years to 12 confirmed nesting species, with 3 to 4 more presumptive nesters and a total of 20 including migrants. The latest checklist of all nesting birds on Great Spruce Head and neighboring islands contains 66 species, while the total number recorded during the summer months is 95.

During these early pre-war years searching for nests on Great Spruce Head Island I learned a lot about the habits of some of the common warblers. Not only did I become familiar with their songs and knew that certain species sang different versions, I also could recognize the scolding notes and chips of several kinds. For example the Magnolia when disturbed near its nest utters a peculiar squeaky alarm note not usually heard at other times which is so certain a sign that the bird is nesting that it has led to my discovery of many nests. The rasping scold note of the Northern Yellowthroat in Maine was another distinctive bird sound I soon learned. The earliest date/I ever went to Maine was on May 8th in 1938. The birch and alder buds were just beginning to open while those on the spruces were still sealed in their brown papery caps. But the woods were buzzing with bird song. This was the first wave of the spring migration to arrive on the Maine coast 200 miles from Massachusetts. Many of the warblers were represented by both sexes which proves that the males do not always arrive first to delineate their breeding territories. Many of the

individuals were merely pausing to refuel after a night's flight across the Bay of Maine before continuing on to more northerly ranges or spreading out over the mainland. Besides a goodly number of Black Polls, Blackburnians, and Blackthroated Blue Warblers with a fair representation of many other species, the majority were Myrtle Warblers, Blackthroated Greens, and Parulas. These last were in those years among the commonest breeders on the Island and some would certainly stay to rear their broods. On this morning I heard both variations of the Black-throated Green's song, and in view of recent studies on the significance in relation to breeding of these songs this fact seems to indicate that the meaning of the songs is not as clear-cut as they claim. It was observed that the Black-throated Green male sings one pattern when near his nest or in the presence of the female and the other having a more aggressive purpose at the boundaries of his territory or in confrontation with another male. Unmated males were noted to sing only the latter song. An analagous situation has been recorded for Yellow and Chestnut-sided Warblers both of which sing and accented and end non-accented songs, the former in the presence of the female and the latter more commonly as a territorial warning in the presence of a consorcions male. Apparently many other warblers sing two or more distinctive songs the patterns of which have meaning related to the reproduction process or to intra-specific and possibly inter-specific rivalry. My friend Betty Cottrille recognized a song of the Blue-winged Warbler different from the usual territorial song, which she found was sung only when the birds were nesting and was an observation which she used to great advantage in locating their nests.

One of the commonest breeding warblers on Great Spruce Head Island in the late thirties was the American Redstart. These birds inhabited the alder swamps and birch groves in much larger numbers then they do now. I found many nests simply by searching the young alders within a short radius of the singing perches of the males. They were usually built in vertical crotches of the smaller alders, common elders, and sapling paper-bark birches quite low down in the latter two trees and seldom more than ten feet high in the alders. The nesting materials varied considerably depending on what was available nearby, although all nest contained silverygray plant fibers in their outer structure, some had incorporated in them or rested on a foundation of shreds of birch bark. For nests near our habitations and boathouse females were seen to pull out fibers from frayed manila rope or to pick up scraps of cotton waste, a by-product used in those days for wiping up grease around marine engines, and once I found a nest neatly plated on the outside with bits of white tissue paper. The nests were lined with grass, rootlets and occasionally a few feathers, but deer hair and other kinds of hair, a common nest lining material used by many birds, was not available on the Island.

In the spring after pair formation has taken place most birds sing to announce their breeding territories and to warn other males of the same species that the area is already pre-empted and will be defended against interlopers. Defense of a territory seldom becomes physical combat, amounting to a singing confrontation and perhaps a chase in which the tres-passing male invariably gives way. The avoidance of actual conflict under such circumstances resulting in the offending individual's withdrawalor submission is a widespread phenomenon among mammals and birds and undoubtedly has by virtue of a survival value been genetically imprinted in the species. Song in this connotation is almost exclusively an attribute of the male bird; singing females have been noted, though they are exceptional, and in some species both sexes sing, as among the grosbeaks, but they are decidedly a minority. Before I understood the significance of this function and the exclusive part in it played by the male, I had observed what appeared to be female Redstarts singing. That only a few of these imputed singing females were seen was puzzling, and I wondered what special circumstances caused them to indulge in such unusual behavior. But what I did not know also was that male Redstarts do not acquire their full adult plumage before the second year and that during the first year of adulthood they closely resemble the female. The mystery of the situation was cleared up when I discovered a nesting both partners pair of Redstarts which appeared at first sight both to be

females, and I saw then at last that the singing femalelike male did not in fact very closely resemble the female. Without the glossy black plumage of the fully mature male, he yet was considerably darker than she with brighter yellow on tail and wings.

As the years went by the Vegetation on the Island slowly changed. The alders which had taken over the wetter parts of cleared land grew to large size, sproutland disappeared, spruces began to fill in the upland meadows and pastures, the young birch copses matured and as the smaller trees were overshaded and died the woods became more open and freer of tangled undergrowth. These changes had a marked effect on the Redstart population and on individual nesting behavior as the birds adapted to the altered forest condition. Fewer birds nested in the aging alders. The birch groves and mixed growth of birch and spruce were chosen in their stead and because, with the growing up of the sproutland seedlings, the number of nesting sites in young trees had diminished, they moved up into the higher branches of the birches. In 1968 and 1969 and again in 1971 the majority of the nests I found were over 15 feet high and many on birch limbs as high as 30 feet from the ground, in the tall birch trees growing on the borders of clearings and away from other trees. Moreover, because of the changing habitat the numbers of breeding Redstarts on the Island seem to have become fewer than they were thirty years ago, or perhaps this impression can be explained simply by the

greater difficulty in finding higher nests.

This nesting adaptation of Redstarts to the vegetative succession in a maturing forest has made possible an observation on the behavior of incubating females which the thicker foliage surrounding lower nests obscured. Incubation of the eggs, as far as I have been able to observe, is performed entirely by the female. During the thirteen days she is thus occupied, she must leave the nest at frequent intervals to drink and forage for food. The male Redstart does not feed the female on the nest as is the customary behavior with some other bird families, the fringilids for example. When she leaves her eggs she searches intensively for food, ranging rapidly through the open woods in the vicinity of her nest in a manner typical only of an incubating female. She flits about nervously from branch to branch picking up small insects and larvae on leaves and twigs, her tail fanned out and her wings partly spread, and as she feeds she chips continuously. These sharp chipping sounds are what have frequently attracted my attention. The jerkiness of her flight and her scolding notes suggest a very agitated bird attempting to focus the attention of a predator away from her vulnerable nest during this period; and possibly this is exactly the purpose her actions serve. If she is kept in sight while thus engaged, which never lasts very long, she can be followed back to her nest. Should, however, track of her be lost, she can almost certainly be picked up again on a subsequent feeding foray.