

SUBSPECIES OF THE RED-TAILED HAWK IN THE NORTHEAST

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The heavily streaked, richly colored population of the Red-tailed Hawk (*Buteo jamaicensis*) nesting in the spruce-fir belt of Canada from the Peace River Delta of Alberta east to Nova Scotia was named *Buteo jamaicensis abieticola* by Todd (1950). Parkes (1952) recognized the subspecies, and in his unpublished thesis "The Birds of New York State and Their Taxonomy" he listed by museum number and locality the specimens he had identified as *abieticola* in the collections of the American Museum of Natural History (AMNH), Cornell University (CU), and the National Museum of Natural History (USNM). However, the taxonomy of the U.S. and Canadian populations has been confused, and *abieticola* has not received general recognition. The most recent author to mention it, Godfrey (1986), stated that he had seen insufficient material to evaluate its validity.

Peters (1931) was misled by certain heavily pigmented eastern specimens (*i.e.*, those later to be named *abieticola* by Todd), believing them to be the same as the richly colored but finely streaked western populations generally called *calurus*. He therefore considered *calurus* to be a synonym of the eastern *borealis*. Bull (1974), who (as noted earlier; Dickerman 1986) had Parkes's thesis available during the preparation of "Birds of New York State," wrote that two distinct races occur in New York, "the large race *borealis*" and "the race *calurus* (darker and more heavily marked below than *borealis*, also much more variable and highly polymorphic)." Although a large series of true *calurus* was available to him in the AMNH, Bull misunderstood the characters of that subspecies. To dispose quickly of size, Todd (1950) specifically stated that *abieticola* does not differ in size from *borealis*, and comparison of his measurements of the former with those of *borealis* given by Friedmann (1950:239) bears this out. Friedmann's measurements of *calurus* (1950:247) suggest that this race averages slightly larger than *borealis*, the opposite of what Bull indicated. As for color, the dark ventral markings of true *calurus* (except on the thighs) are little if any heavier than in *borealis*. Furthermore, *abieticola*, which is more heavily marked on the underparts, is not "highly polymorphic" and is no more variable individually than is *borealis*.

Bull went on to say that "At least 13 specimens of *calurus* have been taken within the state, chiefly in late fall of various years. Most of these [were] examined by the writer . . . and were listed by Parkes (1952) who, however, used the name *abieticola* (a synonym of *calurus*)." Bull gave no reference for this synonymy. Later, in the revision of volume

1 of the "Check-list of Birds of the World", Amadon (unlike Peters) recognized *calurus*, and inserted *abieticola* with a query (?) in its synonymy (in Stresemann and Amadon 1979).

Recently, while identifying a specimen of Red-tailed Hawk from New Mexico, Dickerman undertook to reidentify the four cases of specimens of this species in the AMNH, and to rearrange them into an acceptable order. In the process, he searched for the specimens identified by Parkes as *abieticola*, and for specimens from New York and elsewhere in the northeast that might correctly be assigned to *calurus*. In brief, he found all but one of the specimens examined by Parkes some 35 years earlier, and found additional specimens of *abieticola* from New York, New Jersey, and elsewhere, as detailed below. He found none from the northeast that could be identified as *calurus*. We therefore decided to reevaluate records from New York and other northeastern states and provinces. Todd did not compare *abieticola* with *calurus* in his original description, but later (1963:220) published such a comparison made for him by Parkes. The present paper is probably the first to give comparative characters for all three subspecies.

The three races on which we are focusing are *borealis* (Gmelin), 1788, type locality "Carolina"; *calurus* Cassin, 1856, type locality vicinity of Fort Webster, New Mexico, and *abieticola* Todd, 1950, type locality Sainte Margaret Falls ([2 miles] above Clarke City), Quebec, on the north shore of the Gulf of St. Lawrence. Specimens in predefinitive plumages, as already indicated by Todd, are more difficult to identify; only exceptionally well-marked individuals of *abieticola* are listed below.

This paper is based largely on the Red-tailed Hawk specimens in the AMNH and CU (the two largest series of specimens from New York), and in Carnegie Museum of Natural History (CM), where the type series of *abieticola* is housed. Additional specimens were examined by Dickerman in the National Museum of Canada (NMC) and the USNM. Specimens of *abieticola* listed by Todd in his original description are not cited here.

Buteo jamaicensis borealis (Gmelin)

This is the most common soaring hawk in most parts of eastern North America. It is characterized in definitive (= adult) plumage by its generally pale (white or near white) ventral coloration, with a broken belly-band of fine dark streaks. The throat usually is pure white or lightly streaked, occasionally heavily streaked with black. The thighs ("flags") usually are unmarked, at most only weakly barred with cinnamon. The (unfaded) tail is dark reddish brown, normally with only a single sub-terminal band of black, occasionally with a few additional black markings. This is the breeding subspecies throughout the eastern United States except for the Florida Peninsula, home of the resident subspecies *umbrinus* Bangs.

Buteo jamaicensis abieticola Todd

This is the breeding race of the spruce-fir belt of Canada west to Alberta. In the definitive plumage, it differs from both *borealis* and the western subspecies characterized below in having bold, heavy, dusky to black streaking on the feathers of the belly-band. The throat is never pure white as in many *borealis*, and may be so heavily streaked as to appear almost solid black (see photograph in Todd 1950). The ground color of the underparts of *abieticola* averages more richly colored (buffy) than in *borealis*, overlapping somewhat with the palest individuals of *calurus*; most "normal" (i.e., not erythristic or melanic) individuals of the latter race have underparts that are distinctly orange-buff. The westernmost specimens of *abieticola*, as one might expect in an area of intergradation with *calurus*, are the most deeply colored ventrally. The thighs of *abieticola* may be immaculate or barred (the latter similarly more prevalent in western examples), but the barring is sepia rather than the reddish brown of *calurus*. The tail is dark reddish brown as in *borealis* with, in most examples, only a single black subterminal band. Todd (1950) stated that the black tail band is wider in *abieticola*, but specimens we have examined show that this is only an average difference, with extensive overlap. Specimens of *abieticola* in predefinitive ("immature") plumage often may be identified as such by the greatly increased area of blackish ventral streaking, in some instances forming almost a solid band.

Buteo jamaicensis calurus Cassin

This subspecies has a wide range in western North America, from the interior of British Columbia south to Baja California and east to the Great Plains. The borders of its range with respect to those of adjacent races have not been fully worked out: those not previously mentioned in this paper include *alascensis* (southwestern Alaska and coastal British Columbia), *harlani* (interior of Alaska, southwestern Yukon Territory [Mindell 1983] and northernmost British Columbia [Godfrey 1986]), *fuertesii* (southwestern Texas and adjacent Mexico to southern Arizona, possibly north to southernmost Utah), and *kriderii* (traditionally a whitish race of the northern and central Great Plains; Dickerman believes that its status as a discrete subspecies requires thorough study). The underparts of non-melanistic *calurus* are finely streaked as in *borealis*, but with a richer buff ground color that frequently is cross-banded with orange-buff, especially posteriorly. There is a high frequency of melanistic and erythristic individuals; in the latter, the redness often invades the dorsum. The throat, as in *abieticola*, is never pure white. The thighs are always barred, from faintly to heavily, with some shade of reddish brown. The tail generally is a paler red than in the eastern and northern populations as defined above, with additional black markings varying from flecks to complete cross-barring.

Table 1. Specimens of *abieticola* not listed by Todd (1950), taken outside of breeding range

NEW YORK				
AMNH	416818	Im.	Queens Co., St. Albans	24 Jan 1934
AMNH	65152	Im.	Queens Co., Seaford	10 Feb 1891
AMNH	168728	Ad.	Suffolk Co., Huntington	10 Feb 1922
AMNH	816385	Ad.	Dutchess Co., Poughkeepsie	19 Feb 1969
USNM	307938	Ad.	Orange Co., West Point	20 Mar 1927
CU	3825	Ad.	Cayuga Co., Auburn	4 Oct 1894
CU	960	Im.	Tompkins Co., Ithaca	23 Oct 1899
CU	968	Im.	Tioga Co., Owego	30 Oct 1925
CU	14831	Ad.	Tompkins Co., Newfield	— Nov 1943
CU	28546	Im.	Tompkins Co., Ithaca captured	— Nov 1956
CU	3824	Ad.	Cayuga Co., Cascade	1 Nov 1919
AMNH	352347	Ad.	Sussex Co., Branchville	3 Nov 1900
CU	966	Ad.	Westchester Co., Ossining	5 Nov 1921
AMNH	181123	Ad.	Sullivan Co., Glen Spey	10 Nov 1922
AMNH	129283	Ad.	Dutchess Co., Arthursburg ca.	26 Nov 1914
AMNH	352350	Im.	Westchester Co., Sing Sing	13 Dec 1889
AMNH	65154	Ad.	Suffolk Co., Coran	15 Dec 1813
NEW JERSEY				
AMNH	147510	Ad.	Sussex Co., Kittatinny Mts.	7 Oct 1918
AMNH	188714	Ad.	Sussex Co., Stag Lake	7 Oct 1925
USNM	309397	Ad.	Sussex Co., Andover	13 Nov 1926
PENNSYLVANIA				
CM	94930	Ad.	Allegheny Co., Emsworth	5 Apr 1924
CM	143855	Ad.	Somerset Co., Summit Twp.	18 Dec 1968
MARYLAND				
USNM	598208	Ad.	Dorchester Co. E. New Market	10 Mar 1980
USNM	598209	Im.	Dorchester Co., Cambridge	30 Nov 1980
IOWA				
AMNH	352423	Ad.	Henry Co., Hillsboro	12 Nov 1895

Discussion

Except for a series of nesting specimens from Alberta in the CNM (see below), the breeding range of *abieticola* has been poorly documented. Although New York State is generally considered to be well within the breeding range of *borealis*, we know of only two breeding specimens collected within the state. As *borealis* is, in general, associated with hardwood forests, it would be desirable to have at least a small sample of the breeding population of the Adirondacks, to see whether these birds show any approach to *abieticola* of the Canadian spruce-fir belt.

**Table 2. Specimens of *abieticola* not listed by Todd (1950),
from the breeding range**

NOVA SCOTIA			
NMC	59159	Im.	Hants Co., Avondale 4 Jan 1973
NMC	40001	Im.	Cape Breton Co., Baddeck 13 Jul 1954
NMC	34164	Ad.	Kings Co., Wolfville 11 Oct 1948
PRINCE EDWARD ISLAND			
NMC	28952	Ad.	Queens Co., Fredericton "summer" 1938
NMC	28953	Im.	nestling taken with above female
NEW BRUNSWICK			
NMC	17323	Im.	Gloucester Co., nr. Bathurst 25 Aug 1921 (recently fledged)
ONTARIO			
NMC	78933	Im.	Frontenac Co., Glenvale — Jul 1983 (large nestling or recently fledged)

In his search through several museum collections, Dickerman was unable to find any specimens of *calurus* from the northeastern states and provinces. Friedmann (1950:247) stated that this race was "accidental in western Pennsylvania and New Jersey (Andover)." Rand (1948) reported a specimen in the CNM taken at its nest on Prince Edward Island that he considered to be "inseparable from western *calurus*." Nevertheless, he stated that "it seems advisable to consider this specimen as an aberrant *borealis* rather than to say that *B. j. calurus* breeds on Prince Edward Island." Dickerman has examined the New Jersey specimen in the USNM and the Prince Edward Island specimen (plus its nestling, not mentioned by Rand) in the CNM, and identified all of these as *abieticola* (which had not yet been described when Friedmann and Rand published their records). The western Pennsylvania record was originally published by Todd (1940). The mounted specimen, collected near Racine, Beaver County, 18 November 1912, is CM 122330. It is a strange-looking bird. It has a normal, although somewhat dark, immature tail. The under tail coverts are broadly barred with a light color somewhat paler than the Pale Pinkish Buff (121D) of Smithe (1981) and a dark color between Raw Umber (223) and Mars Brown (223A). The lores and a few narrow streaks at the base of the bill are pale buff. These are the only discrete markings on the entire bird when the wings are folded (the inner webs of the remiges are barred). The dorsum, wing coverts, and outer webs of the remiges are virtually uniform, near Sepia (219 of Smithe 1981). The feathers of the nape and hindcrown are Sepia only at the tip, being white at the base with a narrow border of Cinnamon-Rufous (40 of Smithe 1975); when the feathers are slightly

disarranged, the nape and crown appear mottled. The feathers of the underparts are also Sepia at the tip; those of the upper breast grade basally into a somewhat paler and definitely more reddish color; those of the lower breast and abdomen have fully concealed lateral spots of pale buff. Todd (1940) quotes Friedmann as having told him that he had seen no bird to match this among 2000 specimens of *Buteo jamaicensis*. It somewhat resembles the photograph of "dark-phase" *calurus* in Farrand (1983:247), which, although not so labeled, is an immature bird. However, the pale bands of the tail are grayish brown, not rusty as in the photographed bird, and all of the upperparts are much more uniform, without conspicuous orange-buff edgings. The photographed bird also lacks the whitish lores and forehead streaks of the Pennsylvania specimen. The general Gestalt of the latter bird, except for the tail, is oddly like that of a tiny Golden Eagle!

In view of Friedmann's statement mentioned above, and the fact that, at least at CM, none of the numerous specimens collected subsequent to Friedmann's study resemble CM 122330, it is at least possible that this specimen represents a very rare color morph of *borealis* rather than a genuine *calurus* from the west. As there are no significant size differences between these races (and the specimen was not sexed), it will not be possible to attribute the Pennsylvania bird to any subspecies until a similarly colored specimen is found somewhere in the breeding season.

Notes on Intergradation

With the characters of the northern races of Red-tailed Hawk so poorly understood, it is not surprising that intergradation between the races is even less well documented. Authentic breeding specimens from critical areas are often lacking, so that intergradation frequently must be deduced from the characters of migrants. One of the few adequate series of breeding birds is that from Alberta, an area where no fewer than five subspecies meet, in the NMC. This important series, which Dickerman has examined, includes the westernmost specimens attributable to the range of *abieticola*. While some of this series are fairly typical of that subspecies, others show varying degrees of intergradation with *calurus*, *borealis*, *harlani*, and *kriderii*. Prior to the description of *abieticola* this series had been studied and reported on by Taverner (1927, 1936); the color plates in his first paper and the map in his second clearly show the importance of Alberta as a zone of intergradation. We have examined some migrants displaying such intergradation, such as CM 122832, Monterrey, Nuevo Leon, Mexico, 3 February 1938, and CM 124679, Red Rock, Grant Co., New Mexico, 5 December 1939; both of these appear to be *calurus-abieticola* intergrades. Wintering birds of this

kind would not be unexpected farther east. The Iowa specimen assigned to *abieticola* by Todd (1950), CM 23819, Hardin Co., 24 March 1905, although reasonably typical of that race in other ways, has a pale tail with traces of the blackish "marbling" characteristic of the dark northwestern race *harlani*. An adult from Poland, Mahoning Co., Ohio, 9 February 1977 (CM 151576), is almost completely typical of *borealis* in body plumage, including immaculate thighs, except for slight cross-barring on the lower underparts. However, it has a pale, heavily barred tail like that of many specimens of *calurus*. Finally, an occasional migrant in the northeast is so whitish, with a concomitant reduction in reddish colors, that it would appear to represent intergradation with the very white form currently considered to be a prairie race *kriderii*; e.g., CM 152083 (immature), Buffalo Township, Butler Co., Pennsylvania, 4 February 1978. Although we have not discussed *harlani* and *kriderii* in this paper, it is not far-fetched to believe that individual migrant Red-tailed Hawks typical of these races may someday be reported in New York, particularly as *harlani* has been collected as far east as southwestern Pennsylvania (Todd 1940). Parkes has reexamined this specimen and believes it to be correctly identified.

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