C.F.O. Journal

Official publication of the
Colorado Field Ornithologists

Flammulated Owl

Photo/R. E. Marquardt

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The C.F.O. Journal, formerly the Colorado Field Ornithologist, is a journal devoted to the field study of birds in Colorado. Articles and notes of scientific or general interest, and reports of unusual observations are solicited. Send manuscripts, with photos and drawings, to Hugh Kingery, Editor, 869 Milwaukee Street, Denver, Colorado 80206.

C.F.O. JOURNAL STAFF:

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Assistant Editor	Bob Andrews		Vi Hubka

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The last two or three issues of the C.F.O. Journal have indicated the directions we would like to see the magazine take. We welcome contributions by Coloradans, whether members of C.F.O. or not, to assist us in our attempt to boost field ornithology in the state.

We repeat for you our objectives, expressed in the Spring, 1975 issue, and invite your contributions on these subjects:

We see the function of the C.F.O. Journal as one of reporting on trends and ornithological events, field trips, notable observations, and augmenting the abbreviated summaries in American Birds; of assisting field identification techniques and activities, and disseminating more information about field marks; of providing status reports on various birds and groups of birds in Colorado; of promoting studies of bird associations and populations; in short, of boosting field ornithology.

If you have any subjects you would like to see covered, let us know, and if you have any information to contribute, do contribute it.

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American Birds promises an article in the next (December) issue on identification of the Thayer's Gull. In view of a number of observations of this newly-recognized species in Colorado during the past several winters, we expect to find the data quite useful.

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C.F.O. Schedule

The C.F.O. announces two changes in field trips:

C.F.O. Convention: now scheduled for June 5-6 and will be held in conjunction with the Western Bird-Banding Association meeting.

April 10 trip to Gunnison: Dr. Richard Marquardt will lead this trip, having as its special aim a check of Sage Grouse leks. (This may be the ultimate in an ordinarily rugged piece of ornithology; Sidney Hyde tells us that simetimes Dr. Marquardt can watch a lek from his living room window...)

Identification of Purple and Cassin's Finches

By J.V. Remsen, Jr.*

In Colorado, the Cassin's Finch (Carpodacus cassinii) is a fairly common resident in the mountains and is found irregularly on the plains of eastern Colorado in winter. The Purple Finch (Carpodacus purpureus) is represented from Colorado by only a single specimen (southeast of Denver, November 11, 1885) and a few sight reports (Bailey and Niedrach 1965; Kingery 1975). Earlier, I expressed the opinion (Remsen 1972) that the Purple Finch may be more regular on the eastern plains than supposed and that Colorado observers may be overlooking Purple Finches, assuming birds on the plains in particular to be Cassin's. The increase in reports from eastern Colorado over the last few years (Kingery 1975 and previous American Birds reports) suggests that Purple Finches are very rare but regular in eastern Colorado. The following is a summary of characters useful in field identification of these two species so that Colorado observers can better judge future sight records of these birds.

I. Birds in any plumage

A. Bill shape. The bill of the Cassin's Finch, while having the same depth as the Purple Finch, averages about 1.6 mm longer in culmen length. This difference may seem minute, but it does give these two birds a very different look (Fig. 1) which is noticeable in the field. Additionally, the culmen of the Purple Finch is slightly more decurved throughout its length, whereas that of the Cassin's Finch is straighter, usually curving only at the tip (see Fig. 1); this difference is exaggerated by the steeper angle made by the Purple Finch's culmen with the mandibular tomium (cutting edge).

B. Undertail coverts. Ridgway (1901) states that the undertail coverts of Cassin's Finch are always streaked while those of Purple Finch are not. In museum skins this works fairly well unless the undertail coverts have not been arranged properly in preparation of the skin. Unfortunately I have not had the chance to test this character's utility in the field, but it may be of considerable use for a bird seen from below. The streaking is more difficult to see in males than females.

C. Wing length. Ridgway (1901) shows that the two species do not overlap in wing length measurements (for a small sample size) and that there is a full 10 mm difference in mean wing lengths; the longest Purple Finch was 86.36 mm and the shortest Cassin's was 87.12. The means for the two species were 81.79 and 91.19 mm. Cassin's Finch is a slightly larger bird overall, and although there is a substantial difference in absolute length, relative lengths may not be so different. I have not been able to see this difference in the field. Birds captured at banding stations,

*Department of Zoology, University of California, Berkeley, California 94720.

collected, or found dead should certainly be measured.

D. Flight calls. The Purple Finch gives a soft, dry "pick" in flight. Cassin's gives a richer double note "chee-dlup" or "chew-weet", somewhat like the call notes of some Empidonax flycatchers. Cassin's seems to call much less frequently.

II. Adult males

A. Overall coloration. The red of the Purple Finch shades more towards a burgundy; that of the Cassin's is a rosier red.

B. Extent of red on underparts. On the average, the red on the Purple Finch extends farther down the breast.

C. Crown color. Cassin's Finch has a much shinier, glossier crown which contrasts more strongly with, and is set off more sharply from, the nape and back, giving it a distinctly capped appearance. The crown of the Purple Finch is duller and blends in more with the coloration of the head and back. Cassin's Finch also seems to have more of a crested appearance and often raises a few of its crown feathers.

D. Back color. The Purple Finch's back is much redder and the streaks are not as easy to see as in Cassin's, in which, lacking as much red coloration, the streaks stand out much more sharply.

E. Rump color. Purple Finch has a very bright reddish rump and lower back, whereas the rump and lower back of the Cassin's Finch is much duller and not as solidly colored.

F. Song. The song of the Purple Finch is not quite as varied in pitch or syllable content and is shorter in duration than that of Cassin's Finch. The Cassin's Finch often incorporates calls of other locally occurring species as syllables into its song; the Purple Finch does this only occasionally. These statements are based on my experience with California birds, and I do not know to what extent they apply to birds occurring in Colorado.

III. Females and young males

A. Breast streaking. The streaks on the underparts of the Purple Finch are much broader, blurrier, and less sharply defined and in general resemble those of the House Finch (Carpodacus mexicanus). The streaks of the Cassin's Finch are more distinct, more like those of the Pine Siskin (Spinus pinus) giving it a cleaner look; the individual streaks are also longer. However, there are birds of both species which overlap with the other species and cannot be distinguished on this character alone.

B. Face pattern. The Purple Finch has a solid grayish-brown patch behind the eye which is fairly well defined, whereas the Cassin's Finch lacks this patch, or if present, is very poorly defined and paler. The more distinct patch accentuates the eyebrow of the Purple Finch.

C. Back streaking. The Purple Finch is less conspicuously streaked on its back, nape, and crown. The Cassin's Finch always appears very sharply streaked on the back because the background color between the streaks is much lighter, giving more contrast between the background and streaks.

D. Overall coloration. Purple Finches are browner and darker overall than Cassin's, but individual variation exists, and this character is subtle and hard to judge without both birds together.

* * *

The California race of the Purple Finch (C.p. californicus), which is unlikely to ever occur in Colorado, has shorter wings, darker rump (males), and more of an olive-brown overall coloration (females) than the eastern Purple Finches (C.p. purpureus and C.p. nesophilus).

Very few of the above characters are diagnostic in themselves and observers should use them with caution. Most are subtle but easy to see when the two species are compared side by side, but even greater care should be taken when comparisons are not possible. A positive identification can be made only by using several of the characters above.

The color plate in Peterson (1961; Plate 55) shows many of the differences listed above, although Peterson may not mention them specifically in the text, attesting to the accuracy of Peterson's illustrations. My only criticism is that the rump is actually duller and the cap brighter than is shown for the male Cassin's Finch.

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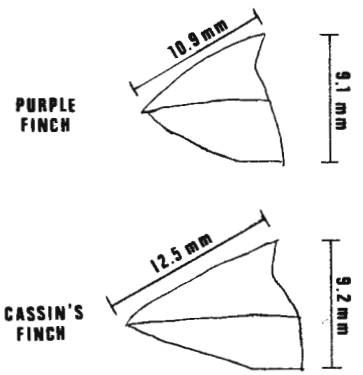

Bill shapes of Purple and Cassin's finches. Two measurements are shown in the figure, length of the culmen and depth of the bill, both measured from the base of the culmen. Twenty individuals of each species (10 of each sex) were measured in the Museum of Vertebrate Zoology, Berkeley, California. Specimens of Purple Finches were of the nominate race C.p. purpureus taken from various areas in the mid-west; specimens of Cassin's Finches came from the Rocky Mountains in Colorado, Montana, and Idaho. The numbers given in the figure are the pooled means of both sexes of a given species. Culmen lengths for Purple Finches ranged from 9.9 mm to 11.4 mm and for Cassin's from 11.9 mm to 13.3 mm. Bill depths for Purple Finches ranged from 8.4 to 9.9 mm and for Cassin's Finches from 8.8 to 9.7mm. Mean culmen lengths for the two species were statistically different (t-test, $p < .05$), but bill depths were not significantly different. Within a species there were no statistically significant sexual differences. Interestingly, bill measurements for Purple Finches (C.p. californicus) from central California show that the California birds have a somewhat different bill shape, with a longer culmen length (mean 11.2 mm, sample size 20) and shallower bill depth (mean 8.6 mm, sample size 20) than eastern Purple Finches; these differences were statistically significant (t-test, $p < .05$). Thus, California Purple Finches have a longer, slimmer bill more similar in shape to that of the Cassin's Finch.

STICKY PROBLEMS OF HAWK IDENTIFICATION
A PANEL DISCUSSION

SECTION II

The Buteos

RED-TAILED HAWK

Field-guide summary: Heavy-bodied; wing-span about four feet. Dark on back, light underneath. Long, broad wings and short tail. Key field marks in adult: cinnamon red top of tail, visible when the bird wheels in flight, and often visible from below, in bright sunlight; dark, ragged belly-band of streaks, visible just forward of where the legs join the body. In immatures: the belly-band. (The tail of the immature is brown and finely barred).

SCHEIDER: This business of the belly-band--it's a wonderful mark in the East, but you get out West, and they are terrible.

(ROBBINS: Out West, where there are dark-phase birds, it is not reliable).

(DEBENEDICTIS: The belly-band as a field mark does not apply to pale races of the Great Plains, and the mark is occasionally absent in eastern redtails).

HAAS: At Hawk Mountain Sanctuary we have one bird that hovers (holds an aerial perch on steady wings), and that's a Red-tailed Hawk. It will just face into the wind, and it will hold there like a kite on a string and not budge an inch. During October or November, with a nice northwest wind blowing, if you see a bird three miles up the ridge and it's just a dot, but it's staying right where it is, you know it's a redtail. And when we see redtails coming at us from a great distance, the wrist is very, very light, and it sort of looks as if the hawk has two headlights.

FYFE: We do have melanistic (blackish) redtails occasionally. But the uniform redtail is pretty obvious in the adult, and the primaries and secondaries, which are pale (from below), also help.

We also have the odd Harlan's Hawk go through, with the slightly different tail pattern.

PERSHING HOFSLUND, from the floor: Is there red in the tail of the Harlan's Hawk? My impression is Yes.

DEAN AMADON: Harlan's Hawk may interbreed with other races of redtails around the entire periphery of its range, and hence some of the birds do have a certain amount of red in the tail.

FYFE: Just very briefly: we have had a few Harlan's Hawks in hand. In the immature plumage the Harlan's has a barred tail, when seen from above, but unless you had that bird in hand you'd never know it, and if you were to see it turn in flight, it would appear to have a totally dark tail from above. We had one immature bird that couldn't fly, for no apparent reason--it may have strained a muscle--and we held it over winter. It molted during that time, and the tail then had a dark band at the tip, with little flecks--kind of a mottled effect--going (forward) into the body, with a definite brick red on either side of this mottling.

(The question of melanistic redtails was raised).

FYFE: Usually the melanistic birds that I see are not really black. They're a very deep brown, chocolate brown color.

AMADON: Some of these dark-phase redtails--and ferruginous as well-- are almost rufous, which is sometimes called an "erythristic" phase.

DEBENEDICTIS, from the floor: I've seen only a few dark eastern redtails, and they've all struck me as having a lot of red in the general body plumage, as compared to the black ones that you see in California. In California, I have seen redtails that were black from the head to the tip of the tail--no white anywhere, no red anywhere.

EVANS: One interesting thing: with three melanistic redtails that I caught and banded, all had golden hackles on the back of the head, just like a Golden Eagle.

DEBENEDICTIS: Swainson's Hawks that are dark usually show a pattern of the flight feathers darker than the wing linings. Redtails that are black usually show the pattern of the flight feathers lighter than the wing linings--although the contrast is never as good as in a light-phase bird.

RED-SHOULDERED HAWK

Field-guide summary: Broad tail and long, rounded wings. Adult is dark on back, the dark brilliantly set off by narrow white barring across wings and tail, and by chestnut "shoulder" patches in the leading edge of the top of the wing--from the joint of wing and body out to the wrist. From below, adult has dark tail crossed by thin white lines; flight feathers are pale, and wing linings and body are cinnamon. Immature is brown above, streaky brown below, with tail feathers finely barred in black. Key field marks in adult: wings and tail relatively longer than in redtail; chestnut shoulders, cinnamon body and wing-linings, dark tail finely striped with white, and translucent crescent-shaped "windows" at the base of the primaries near the wingtips. In immature: the relatively more slender wings and longer tail than the redtail or broadwing; the "windows" (generally).

HAAS: The wing-window in the redshoulder is visible from underneath, from on top, in good light, in poor light, in almost any condition. The only time I've not been able to see the window in a redshoulder's wing was when it was just too far away, when you couldn't see any markings at all.

HEINTZELMAN: This window business on redshoulders certainly is useful, but I don't think it can be emphasized too strongly that there are many, many other species of hawks that can show windows. Time and again I've seen people call--you name it--all sorts of birds redshoulders, when in fact they were something else. Practically any hawk can show a window if you get it in the right position with the sun shining through the feathers.

HAROLD H. AXTELL, from the floor: On two occasions I have seen adult Redtailed Hawks with windows that were, so far as I could distinguish, identical to those of a typical redshoulder. Both of them seemed so incredible to me that I had to force myself to pay attention to the field marks that made them redtails. I have also seen maybe three or four Red-tailed Hawks with windows, well-defined, readily visible from above. I don't recall now whether I was unable to see those particular individuals from underneath or whether this characteristic was invisible from underneath.

(Frank Haas, discussing the windows in redshoulders, noted that a redtail in molt will often show a kind of wing-window at the tips of the wings because of missing primaries, which leads to redtails being misidentified as redshoulders).

(DEBENEDICTIS: Note that the redshoulder has crescent-shaped windows, whereas other wing-windows are circular to rectangular. As far as I know, the only time the window is obscure in a redshoulder is when the bird is in heavy primary molt).

HAAS: To me, the two most difficult birds to tell apart at Hawk Mountain are the Red-shouldered Hawk and the Red-tailed Hawk at a distance. A soaring redshoulder, going up on a thermal, very far out, and a redtail doing the same to me look almost identical, and those are most of my "unidents." These two birds are very difficult to tell apart on shape. I'd like the comments of the other panel members on shape differences of these two birds, and discriminating between these two at a distance.

SCHEIDER: There's a group of birds that you can put together. The Redtail, broadwing, and in Texas the White-tailed Hawk have a common feature. This is that the depth (wideness) of the wing at the body is about the same as the distance from the trailing edge of the wing at the body to the end of the tail. In the Red-shouldered and Harris it's longer; in Harris, roughleg, and ferruginous, it's very definitely longer.

A very high broadwing, on full fan, if you don't know the distances, you can make into a redtail, and vice versa. I think most of the buteos can be grouped by the wing-tail ratio: is the tail longer than the wing at the base is wide? Or is it equal, or is it shorter? I had one Short-tailed Hawk in my checkered career, and I'd love to go back and look at that thing and see if it is one of the few in which the tail is actually shorter than the width of the base of the wing.

(DEBENEDICTIS: It's variable, but more like the redtail than anything else).

HEINTZELMAN: Frank Haas was talking about trying to sort out redtails and redshoulders, presumably in some marginal or very unfavorable situation. My reaction first would be to try to "scope" the bird, if at all possible, and see if you can see a belly-band, which would make the bird a redtail. If you really can't see any coloration at all on the bird, then hopefully you would be able to get some sort of flight pattern, and there's a very definite difference in the wingbeat of redshoulders and redtails. Redshoulders in flight--to me, in any event--many times almost resemble an accipiter--wingbeats, some sailing, and wingbeats. Whereas a redtail normally would not do that. And if you can't get any of that, you've got a unident.

HAAS: Right. I agree with that. I know the flight differences. The redshoulder is often mistaken for an accipiter at a distance. However, I'm talking about the soaring birds that don't flap.

BROAD-WINGED HAWK

Field-guide summary: Shaped like redtail, but smaller; wingspan less than 3 feet. Adult's back brown, tail above and below barred with alternate equally broad black and white bands; body below heavily barred with cinnamon brown, and underwings pale except for dark tips of flight feathers. Immatures dark brown above, generally light below with brown lengthwise streaking; tail finely and evenly barred, with broader sub-terminal band. Key field marks in adult: shape, bands of equal width in tail, and lack of redtail's belly-band. In immature: shape, lack of belly-band. Often, but not always, migrates in large, swirling flocks.

HAAS: The Broad-winged Hawk, to me, is noteworthy for lack of markings. It's a very drab bird, except that the adult does have a beautiful banded tail. The immature is very drab. However, the immature broadwing has one distinguishing feature--aside for the fact that it comes in very large numbers: the terminal band on the tail, the last dark band, is broader than all the rest, and usually this will separate it from all the other immature buteos that have streaked underparts.

SCHEIDER: One of the things you should be aware of, at least in the East, is that if you look at the redtail or redshoulder from the top, you see a variegated back, but with an adult broadwing, it's a beautiful, clean, even brown. There is very little white mixture in the back.

HEINTZELMAN: There's a single "headlight" on the Broad-winged Hawk--the light cere (at the base of the upper bill). Many times, as broadwings are approaching head-on, you see this; it's quite a diagnostic mark. In many cases, you can identify a broadwing at a considerable distance by that characteristic alone.

(EVANS: I had an adult redtail perched 30 feet from me, with a very obvious single headlight...In fact, I could hardly believe it was a redtail, because the white spot was so large. However, this is not the norm).

(DEBENEDICTIS: Re the single "headlight" as a broadwing field mark,

Swainson's might be similar).

(ROBBINS: Note the broadwing's very plain, light-colored wings (from below) with contrasting dark tips. This is a good field mark of both adults and young).

SWAINSON'S HAWK
Field-guide summary: As big as a redtail; wingspan 4 feet. Two color phases. Pale phase has dark back and breast, with considerable variation in the extent of dark on the breast. Dark-phase adults are completely dark underneath. Key field marks: in adults of any phase, dark flight feathers that contrast with pale wing-linings in forward part of wings; heavy black terminal band in thinly-barred tail. In immatures: streaky beginnings of breast-band just below throat, tail rather evenly banded, underwing pattern similar to adult. In all Swainson's: frequently migrates in flocks, and soars with wings held well above the horizontal, like a Harrier.

FYFE: The variety of breast patterns in the fall is something else, really. But the light color in the leading edge of the wing is usually a pretty good mark. The fall movement of the Swainson's is the one time prairie people get to see any numbers of migrants from beneath, because sometimes we have beautiful boils of Swainson's Hawks, flocks of hundreds of birds.

The young ones have the light pattern on the leading edge of the wing, like the adults, but the breast pattern is not nearly as definite in the first two years as it is in the adults.

We have a lot of dark-phase Swainson's, but even in some of them you'll get a pale area under the chin, like the white area in normal-phase birds.

It might help, if you're looking for Swainson's in the East, to remember one characteristic: if you ever see a buteo soaring that has this marked dihedral in the wings, almost like a marsh hawk, take a real good look at it.

ROUGH-LEGGED HAWK
Field-guide summary: Big, long-winged, long-tailed buteo. Wingspan more than 4 feet. Has two main color phases, but in any case a boldly-marked bird. Adult in light phase has dark back except for white tail, which is broadly tipped in black from above and below; underwings pale, with black markings at wrists and black tips to all flight feathers; breast streaked with black, running into a broad, solid belly-band. Dark phase birds show much less white on upper surface of tail, but underside of tail looks much as it does in light phase; wing-linings and body all black; flight feathers pale beneath with black tips. Frequently hovers, beating wings.

FYFE: As soon as a buteo is seen hovering in our part of the world, it is always a "roughleg," usually in migration. In actual fact, I have observed redtails and Swainson's Hawks and ferruginous all hovering, beating their wings in one spot, and at a distance you just have to be very,

very careful. Those blanket characteristics simply do not apply, any more than accipiters gliding-flapping all the time. Birds will vary.

(DEBENEDICTIS: Only roughlegs and ferruginous, among North American hawks, do this regularly, though).

HAAS: There are three main color phases of the Rough-legged Hawk: the true light phase (left, below), the normal phase (center), and the dark phase (right). The light phase is not shown in any field guide that I've seen; however, they do occur here in the East.

HEINTZELMAN: Tom Cade published a paper in the Condor in which he did a critical study of specimens of North American Rough-legged Hawks. What he found, essentially, was that there was a continuum of coloration from light to dark, and that in fact there really weren't color phases, although it might be convenient for practical field-guide identification purposes to sort them into phases.

FYFE: One of the things that has amazed me in the Arctic is that the bulk of the adult roughlegs that we see on the nesting ground in most areas approximate the very light phase more than they do any other. The "normal" phase as depicted in some books tends to be in our experience more the immature roughleg. The adults on the nesting ground have a very mottled breast, very often, and a sort of mottled appearance--which you seldom see on migration.

PERSHING HOFSLUND, from the floor: We do get a number of these hawks coming through Duluth. One of our interests now is, are we seeing an adult bird or an immature?

TOM CADE, from the floor: That's complicated by the problem of sexual

differentiation. The adult males tend to be rather lighter on the breast; they tend to have multiple barring in the tails. The immatures and the adult females look much more alike than the immatures look like adult males. Basically the difference between female and immature is that the typical immature has a much darker terminal portion to the tail; in other words, a half or more of the lower part of the tail may be dark, with a very faint, darker subterminal band mixed into it, whereas the female's tail has a very prominent band, with no suffusion of brown near that band. The female also has a less solid black bib, or whatever you want to call it, in the belly; it tends to be a bit broken up, a bit patchy. Typically, it's in two patches, actually, with a lighter area between them, whereas the immature has a very solid brown belly and lower breast.

Melanistic birds, on the other hand, the really dark ones, are more difficult to sex, but quite frequently--at least when you have specimens in the hand--you can still see multiple barring in the tail even in a very melanistic black male, and only a sub-terminal, wider band in the case of a melanistic female.

By the way, this method of sexing roughlegs doesn't work for European specimens; only for North American. Don't ask me why.

(EVANS: The white in the tail of dark-phase roughlegs is quite variable. Very dark birds will have essentially no white on the upper surface of the tail. And from underneath, the tail may show the same pattern as a light-phase bird, but several shades darker).

SCHEIDER: One of the things that's very helpful on Rough-legged Hawks here is that when the birds are gliding at you, from the body to the wrist there's a slight dihedral, and the wing from the wrist to the wingtip is flat. It has a faintly Harrier-like or vulture-like look to it. The bird also--at least in migration--has a rather slow, graceful, almost kite-like beat, or somewhat like a Harrier. The redtail has got power; a roughleg has grace to it. But the positioning of the wings, I think, is a very good mark, particularly since we see these birds coming at us at Derby, in many cases, low over the woods, at eye-level. You're looking for the flat-ness--redtail--versus the dihedral between body and wrist--roughleg.

EVANS: My impression of pumping roughlegs and redtails is that the rough-leg's wing describes a slightly longer and fuller arc, giving the impres-sion of more wrist action. The redtail's wing seems to move from the body, and the roughleg's wing seems to have motion from the wrist as well.

(The FERRUGINOUS HAWK was not mentioned much in the session, but Richard Fyfe talked about it in the context of the discussion about the roughleg. Ferruginous Hawks, he said, "tend to be fairly straightforward to identify in the breeding areas. They have these "windows" that you've referred to, on top of each wing (DEBENEDICTIS: i.e., the round type), and they usually have a very pale tail. If you get a bird in an area where you also have redtails and Swainson's, any time the ferruginous is soaring and it turns, you can see these characteristics very, very easily.

Of course, underneath a normal light-phase bird, if you should be so lucky, you can see the dark leg pattern, which is so often mentioned.

"Dr. Scheider mentioned wing angles. We find that in prairies we can usually distinguish soaring buteos by the wing angle with some reliability. You still should check them, but generally speaking, the redtail tends to hold its wings the flattest of the three common buteos in the plains--flat, with the wingtips going up, the Swainson's of course, has a very marked dihedral; and the ferruginous is right in between them").

The Eagles

GOLDEN EAGLE

Field-guide summary: Very large, dark brown bird, with a wingspan of 6½ feet or more. Broad wings only slightly rounded at the tips. Key field marks in adult: size, all-dark coloration, golden sheen on back of neck, feathers on legs all the way to the talons; may also show varying amounts of white in tail, or none. In immature; size, generally dark color set off by more or less white in defined areas at base of flight feathers and base of tail feathers (gives tip of tail the appearance of a definite brown band).

(Commentary follows Bald Eagle, below).

BALD EAGLE

Field-guide summary: Very large, with a wingspan of 6 feet or more, sometimes as much as 7½ feet. Broad wings rounded. Key field marks in adult: size, white head and tail. In immature: size, white mottling in wing-linings and tail, sometimes on body and in flight feathers, too; legs feathered only halfway down toward the talons; much larger head and beak than on Golden Eagle, and wings longer, tail broader in relation to rest of body. Peterson notes that Bald Eagle flaps more and soars less than golden; Robbins points to deep wing strokes of Bald Eagle.

HAAS: The Bald Eagle, of course, has the much larger head of the two North American eagles. It sticks out much farther. The wings look longer than the Golden Eagle's, and they are more slender. Also the Bald Eagle, in a glide, generally holds its wings much flatter, or gently curved downwards, while in the Golden Eagle, approaching you, the wings are either held in a dihedral--tilting up above the horizontal--or arcing up, giving the eagle the shape, head-on, of a mustache.

SCHEIDER: One of the clues that I think helps in distinguishing the eagles is that a Bald Eagle literally sticks out as much in front as it sticks out in back. A Golden Eagle's tail is about three times the length of the head sticking out in front. And this mark is enhanced by the fact that the Golden Eagle's wing is pinched inward at the base somewhat.

This business of dihedral in the Golden Eagle's wings--they have dihedral, but I like Frank Haas' description, of its being like a mustache. All depends on whose mustache, but the point is that the wing is frequently

flat, from the body to the wrist, and then there's a dihedral out beyond the wrist. This is a good clue when you've got one of these miserable black roughlegs way out--with which the dihedral is somewhat reversed--that is, up from the body to the wrist, and flat from the wrist to the tip.

(UNIDENTIFIED), from the floor: Would you comment on aging Golden Eagles?

SCHEIDER: It's...very...difficult.

EVANS: I've seen an immature golden that had just gone through its first molt, and the new tail feathers were about the same as the remaining old ones. It molted in about six tail feathers, and at a distance of ten feet you could barely distinguish them from the other six. By the third year, most of the white area in the wing is pretty well gone; it diminishes each year.

HEINTZELMAN: It probably would be useful to try to record some sort of age data, at least in a general way. You often hear that the Bald Eagle acquires full adult plumage in four years, but it may well be five years or even six years, so exactness is probably impossible.

The white in the wing lining of the immature Bald Eagle extends out from the body toward the tip of the wing; the immature Golden Eagle is quite different--there are actual patches on the wings.

EVANS: In poor light, one should be careful in distinguishing between immature balds and immature goldens. An immature bald's tail can look exactly like an immature golden's tail, and you should look at the wing linings.

The Harrier

MARSH HAWK
Field-guide summary: Slender, long-winged, long-tailed; wingspan about 3½ feet. Wings more triangular in shape than buteos', but rounded. Tail square-ended when closed, rounded when fanned. Males pale gray above, white below; females and immatures dark brown above, brownish below. Key field marks, in all plumages: white patch at rump from above, habit of soaring and gliding with wings held in a dihedral.

HEINTZELMAN: I can't quite understand why it happens, but many people seem to identify marsh hawks as falcons. Harriers do have long, pointed wings in a way, but I don't know how many times I've seen people on lookouts call marsh hawks as peregrines or some other large falcon.

THOMAS FINUCANE, from the floor: The marsh hawk has a jerky flight. It snaps its wings.

(Frank Haas asked for some comments about plumages and ages of Harriers).

SCHEIDER: In Harriers, there are gray birds, there are brown birds, and there are orange birds.

(Scheider's dry statement of the difficulty of aging and sexing Harriers in flight when they're not positively adult males was not altogether concurred in by the other panelists or speakers from the floor, as the subsequent discussion showed).

FYFE: We tend to find that in the spring it's very obvious that we have separate migrations. We get the bulk of our adult males coming through well in advance of the female marsh hawks.

HAAS: I know at Hawk Mountain, in fall migration, we normally get the brown birds first, and the adult males in the latter part of the migration, predominantly. There are exceptions, of course.

SCHEIDER: Do you look at the orange birds first, followed by the brown birds, followed by the gray birds? (Haas nodded).

The sequence--this is by rough color classes--at Derby Hill in the spring is that the first birds are almost invariably those beautiful dull gray birds, and then you get the brown, streaked birds, and with that group you will get a group of birds who are brown, but they have an awful lot of gray in the back, and I'm just not sure what they represent. You get one real close, and people say, "It's a male," or "It's a female." And you say, "Well, it's a Harrier."

MAURICE BROUN, from the floor: We, long ago, ascertained at Hawk Mountain that the immature marsh hawks (presumably Scheider's orange birds) were the vanguard of the Harrier flight. These birds started to arrive in late August, and they prevailed through September. Now, you may disagree with me, but in my opinion the female marsh hawks (the brown birds) predominate during October, and the males come later in the season, almost exclusively through November. I often marveled about this, and I have often wondered, does this sequence carry on elsewhere, at other hawk lookouts?

PERSHING HOFSLUND, from the floor: It does at Duluth.

(UNIDENTIFIED), from the floor: It does at Hawk Cliff.

The Osprey

OSPREY
Field-guide summary: Large, dark-backed, long-winged, pale underparts, white extending to top of head, with heavy black line through the eye. Wingspan, at least 4½ feet, sometimes as much as 6 feet. Wings narrow, wingtips rounded. Key field marks: crooked wings, seen from below or head-on; white belly lacking belly-band; definite pattern of black in pale wings--black wrist-patches and black base to flight feathers and

black barring of flight feathers and black tips to flight feathers, particularly the primaries.

(The panelists clearly felt that the Osprey presented few problems of identification and did not do more than point out the standard description).

The Falcons

GYRFALCON
Field-guide summary: Largest of the falcons, with a wingspan of about 4 feet. A Variety of color phases, from mostly white through blue-gray to "black," or dark brown. Key field marks: size, slow wing-beats; separated from peregrine, in gray phase, by the lack of strong contrast between back and underparts, and in dark phase by much darker color on breast.

FYFE: Everybody tells me that if they see a blue-backed falcon, they think automatically that it's a peregrine. Well, you'd be amazed at the number of blue-backed "peregrines" that were showing up in our Artic winter surveys in the last two years, and these, of course, were all Gyrfalcons. They're the same general pale blue. Some gyrs have a very black head, and so do some peregrines, so they can be confused.

Gyrfalcons tend to have a very heavy wingbeat, much heavier than the peregrine's. Very often, you never see that pointed wing in the gyr, and if you see them soaring, with their wings spread out, the wingtips can be so splayed that they almost look like buteos at times.

PRAIRIE FALCON
Field-guide summary: A shade longer than the peregrine, on the average--about 16 or 17 inches; wingspan about the same--somewhat more than 3 feet. Pale gray-brown, with pale facial markings designed rather like those of a kestrel; immatures more buffy than adults. Key field marks: pointed wings, light coloring, black patches under the wings, where the wings meet the body.

FYFE: My experience with Prairie Falcons is that usually the black area in the axillars goes well out into the wing, that it isn't limited to that little patch at the joint of the wing and body, which is so often shown in the books. At least in the Canadian prairies, the Prairie Falcons usually have almost a triangular-shaped dark patch that goes out into the under-wing coverts and is very distinctive.

SCHEIDER: I expected my first one to look like a fall Black-bellied Plover, and it didn't.

FYFE: As for distinguishing adults from immatures in the Prairie Falcon--Prairie Falcon adults tend to have a slightly rusty-colored tail, as opposed to a sandy-brown barred tail in the immatures.

PEREGRINE FALCON
Field-guide summary: Large, dark-backed, light-bellied falcon. Adult is dark blue-gray on the back, black on top of head, with black looping down past the eye, leaving ear and throat white. Immature rich brown above, pale brown below, with dark streaking lengthwise; head and face markings dark brown, somewhat less distinctive than in adult. Key field marks: Large size, pointed wings, powerful flight, dark cap, face pattern. Darker than Prairie Falcon; much smaller, more contrastingly colored above and below, than Gyrfalcon.

FYFE: With the peregrines and prairies, the confusion seems to be between the immatures. Usually they're easy enough to tell apart if you get a look at that underwing pattern. But also the head patterns are helpful. The peregrine has a darker, heavier head pattern, and this will help separate the immature peregrine and prairie very well. Usually we see peregrines flying at some altitude; very often prairies are low to the ground.

MERLIN (PIGEON HAWK)
Field-guide summary: Small, dark falcon--about a foot long, with a wingspan of 2 feet. In adult male, back dark blue-gray; streaked and not so dark below; face unmarked. Female and immature dark brown above, streaked brown below, with suggestion of brown face pattern in immature. Key field marks: small size--a bit bigger than Blue Jay; pointed wings, uniform dark color (female American Kestrel more reddish than female or immature Merlin), steady flight.

FYFE: With Merlins, I don't know what they do on migration, but where we have them breeding, the Merlins very often are easily identified by a characteristic wingbeat. They tend to fly out from the nesting area with their wings held lower than the body, and they're flying with the tips of the wings, whereas the kestrels tend to have the more typically full-winged falcon beat. Also, if you've ever seen a Merlin soar--I've only seen one, but it was the most impressive thing that I've ever seen: the bird had its wings bowed over in an arc, and its tail fanned out, and it just went right straight up so beautifully it was something to watch. But it still held its wings down, as they tend to do in flight.

EVANS: You can't distinguish between immature and adult female Merlins. All you can distinguish is adult males and "the rest of them."

AMERICAN KESTREL (SPARROW HAWK)
Field-guide summary: Small, buoyant falcon. Male is strikingly and obviously marked, with black and white face pattern, rufous back and tail and blue-gray wings. Female is rufous in back, wings, and tail, with flight feathers somewhat darker; face pattern as obvious as in male. Key field marks: small size, pointed wings, reddish back and tail, face pattern.

HAAS: To me, one of the best identifying features of the different falcons is their shapes. The base of the kestrel's wing is very narrow compared to the wings of both the Merlin and the peregrine, which are broader-based. In between the point where the trailing edge of the kestrel's wing meets the body and where the tail starts, invariably a short section of body shows. But this space is generally lacking in the Merlin and the peregrine. So even when they're at a great height, you can separate out the kestrel quite easily.

(There was a question from the floor about the similarity of the kestrel and the peregrine shapes).

FYFE: The wing-shape of the kestrel is very definitely similar to the large falcons. All have the longer, slender wings. The wingbeat, however, is very different. The kestrel tends to be a buoyant, lighter-flying bird. The Merlin tends to be a little heavier-bodied and stronger-flying. The peregrines and prairies tend to have a much bigger and deeper and stronger wingbeat--this sort of rowing action that the falconers used to refer to in years past. A little bit of experience and it's very obvious.

We all know how the kestrel hovers. Two years ago, Tom Cade was out with me, and we were looking at some Prairie Falcons. We saw the most beautiful hovering Prairie Falcon I've ever seen. It did it just like a kestrel. Just note that as something to watch for; you may be looking at a "kestrel" sometime and have it turn out to be something different.

SCHEIDER: When kestrels are going by against the sun, if they do a little bit of soaring you can see that red tail. However, if they're coming down a series of dunes, for instance, then they're in a tight, fast flight, particularly in the fall. You may have trouble trying to figure out what color the tail is, and the bird's gone before you've got anything on it.

One of the things that I find helpful is that from below most kestrels --not all, but most kestrels--have a series of translucent dots in the trailing edge of the wing, which I have never seen in a Merlin.

HAAS: I myself have also noticed these spots in the wings, primarily in the males, and they do stand out quite nicely when back-lit.

HAWKING BEHAVIOR OF RED-WINGED BLACKBIRDS, BREWER'S BLACKBIRDS, AND WHITE-CROWNED SPARROWS

by C.P. Stone, W.A. Bowles, M.V. Garrison, and C.P. Breidenstein*

On August 3, 1975, we observed several male and female red-winged blackbirds (Agelaius phoeniceus) and Brewer's blackbirds (Euphagus cyanocephalus) and at least three white-crowned sparrows (Zonotrichia leucophrys) hawking for insects over the Rio Grande River on Wetherill Ranch southeast of Creede, Colorado, (elevation about 2700 m). The usual pattern for all species was to fly erratically from the ground or rocks near the water to about the center of the stream (about 25m wide) unless the insect was captured close to shore, and then to return directly to nearly the same spot from which the foray began. One female redwing repeatedly fed three large young perched on a streamside willow in this manner. Female redwings and Brewer's seemed to fly more frequently and thus capture more insects than males, but no quantitative records were kept. Observations continued from about 11:00 a.m. to 1:00 p.m. under a clear sky. Although some Dobsonflies (Corydalidae) were present, all species seemed to be feeding on a caddisfly (Trichoptera) hatch of the previous day.

Baird and Meyerriecks (1965) observed 13 species of birds, including redwings, common grackles (Quiscalus quiscula), and starlings (Sturnus vulgaris) feeding on a mating swarm of ants (Lasius alienus). They suggested that species that rarely exhibit aerial feeding may be 1) motivated by extraordinary abundance of food, or 2) socially stimulated by other species. They believed that social stimulation (by starlings) was more important than superabundance of food in the instance they observed. Royall and Bray (1975) reported that redwings of both sexes fed on a mating swarm of Lasius in North Dakota. They saw no flycatching by birds other than redwings and suggested that aerial feeding was motivated primarily by abundance of the prey rather than stimulation by other avian species. We noted no "typical" aerial foragers, such as swallows or flycatchers, and starlings were not present during our short observation, but Wilson's warblers (Wilsonia pusilla) were abundant; a warbler was observed hawking over the river on one occasion. Wilson's warblers are known to capture much of their food on the wing (Bent, 1953) and social stimulation by warblers or other species prior to our observation should probably not be precluded as an explanation for "atypical" feeding in this case.

Baird and Meyerriecks (1965) noted that several species, including robins (Turdus migratorius), house sparrows (Passer domesticus), and song sparrows (Melospiza melodia) did not participate in aerial feeding on ants, although they were present in areas where ants were flying. Bartlett (1956) observed that house sparrows fed in the air but that robins and wood thrushes (Hylocichla mustelina) did not. We observed

*U.S. Fish and Wildlife Service, Denver Wildlife Research Center, Federal Center, Bldg. 16, Denver, Colorado 80225.

robins foraging along the side of the stream, but not flycatching. Our observation of hawking by white-crowned sparrows appears to be the initial report for this species, but we agree with Royall and Bray (1975) that aerial feeding by icterids is probably not a rare occurrence.

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GENERAL NOTES

FLAMMULATED OWL - A Nest in Gunnison County

(Editor's Note - This reports on a Flammulated Owl nest three and one-half miles north of Powderhorn, Gunnison County, Colorado).

The Flammulated Owl, Otus flammeolus, was first observed by myself, and Dr. A.M. Mery and his wife, Sophia, on June 22, 1975. Later that evening, the Mery's observed the owl entering a cavity in a 8-10" diameter dead aspen stub to which they had affixed one of their tent ropes. The Mery's also observed this owl on June 23rd.

I visited their campsite on June 24th at which time we observed two adults, presumably a male and female. It appeared to us that the male was actively capturing a variety of moths and feeding the female at the nest site.

On the 26th of June, I took a number of pictures of the female utilizing a telephoto lens and strobe. The female was also photographed by the Mery's son, David, when it appeared at the hole of the nesting cavity on the morning of June 30th. The pair were observed by the Mery's and others daily (or nightly) through early July.

On July 12th, we placed a ladder below the nesting cavity which was located approximately 11 feet from the ground. The entry to the cavity appeared to be a hole made by Flickers at some earlier time and was approximately three inches in diameter. Using a mirror and light we observed a single, white, roundish egg at the bottom of the cavity. The bottom of the cavity was about 14 to 16 inches below the entry hole. There appeared to be very little nesting material.

The nest was checked again on the 19th and again only a single egg was observed. On July 24th the Mery's examined the nest cavity again at which time there was a single owlet covered completely with a white down, the dark eyes were especially noticeable. Both parents were observed bringing moths to the nesting cavity.

On July 27th, only a single adult owl was observed bringing moths to the nest cavity and it was recalled that the hooting call of the presumed male had not been heard for several days.

The Mery's did not see either of the adults on August 2nd, and during the morning of August 3rd. Late on the evening of August 3rd, the Mery's found the owlet cold and bloody but still alive near the entrance of their tent about 15 feet from the nest tree. They immediately set up a lantern, caught moths and hand-fed the owlet until it became quiet. In the following days he was fed moths, flies, bees, liver and steak. By August 12th, the owlet was covered with a gray down, was alert and active, and could make short flights of 1½ to 2 feet. At this time the Mery's were leaving their camp and returning to Oklahoma, and I took the owlet home where my wife and I have cared for it to the present time.

At this time, (September 10), the owl is near its adult size of 6 inches, is well feathered with the exception of its head, is capable of controlled and stable flight, and well coordinated. During the last four days it has exhibited the beginning of a hunting and killing behavior, pouncing on its food rather than waiting to be fed.

We do not know what caused the disappearance of the adults; both the Great Horned Owl and the Long-earred Owl are resident on Lott's Hill, and it is possible that the adults were taken by one of these two species, but this is only a guess since we have found no feathers or evidence of a kill.

- R. E. Marquardt

A "PIT" FOR PREENING

On May 6, 1975, I observed a Green-tailed Towhee in my yard acting strangely under a pinyon pine about two feet from the bird bath which is level with the ground. In observing, I realized that the bird had made a depression in the soil so that the top of its body was almost level with the soil so more or less just the head showed. The bird was preening itself as it sat in this depression. When it would rest for a few seconds between preening different parts of its body, it sank down low so just its head showed. I am assuming that it had had a bath but I didn't discover it until I saw it busily preening in this spot. I am assuming that it did this so as to have as low a profile as possible for protection.

-Mildred O. Snyder-

COLORADO FIELD ORNITHOLOGISTS
c/o Robbie Elliott
220 -- 21st Street
Boulder, Colorado 80303