

An Annotated List of the Field Identifiable and Non-Field Identifiable Bird Subspecies and Morphs of Pennsylvania

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Introduction

There are many species of birds in Pennsylvania which exhibit extensive intraspecific variation. The most common type of intraspecific variation involves *subspecies*. When geographic variation within a species results in populations with at least one sex or age that is morphologically distinct from other populations, and these populations occupy allopatric (non-overlapping) breeding ranges, such populations are referred to as subspecies. In the vast majority of cases, the differences between subspecies are very slight, and identification of individuals outside the breeding season must be left to museum ornithologists and highly skilled banders. Not surprisingly, given that there are subtle differences between many populations, there is often much disagreement amongst museum ornithologists as to the validity of many subspecies. Thus, although many species of birds are polytypic (comprised of more than one subspecies), most subspecies are sufficiently similar that field identification to the subspecies level is not possible.

Amongst the numerous subspecies of North American birds, there are a small number that are sufficiently distinct to allow for identification in the field. (By definition, the identification of individuals of a particular subspecies is usually straightforward in the breeding season, because the breeding range of most subspecies is fairly well defined. For such individuals, identification is based on geography, not plumage, song, or calls. In this article, our primary concern lies with the identification of migratory subspecies in Pennsylvania.) However, the number of field identifiable subspecies is actually much less than is commonly recognized amongst birders. This is because subspecies are usually defined based on the requirement that more than 75% of

their population is distinct from other similar subspecies. Thus, to some extent, subspecies are defined based on their average characteristics, and even though average individuals from separate subspecies can be quite distinct, there is often enough variation within members of a subspecies such that field identification of any subspecies is not possible. The sources of this variation include age, sex, molt, fading, and wear, in addition to individual variation, clinal variation (a gradual variation in characters over a geographic area) within the breeding range of a subspecies, and intergradation with other subspecies. Another major problem is simply that so much is still unknown about the variability of subspecies.

The Sixth Edition of the AOU Checklist (1983) defines a number of *subspecies groups*, which are a collection of subspecies that share several common characteristics relative to other subspecies within the same species. In most cases, a subspecies group can be regarded as an incipient species, and many subspecies groups were even once treated as separate species, and may be once again. In fact, since the publication of the Sixth Edition of the AOU Checklist, some subspecies groups have since been split and reverted to full species status, e.g., Rufous-sided and Brown Towhees, and Northern Oriole. Most subspecies groups can be identified in the field.

A second form of intraspecific variation involves two or more distinct plumage "types" within a given population. These plumage types, which are referred to as color morphs, or simply *morphs*, usually occur independently of age, sex, or season. Furthermore, in many species, when individuals of different morphs interbreed, their offspring resemble one parent, and do not appear intermediate in plumage, as is the case with most intergrades between subspecies. Thus, many morphs can be

identified in the field. However, for some species, identification of morphs is complicated by the existence of a continuum of plumages. For convenience, we describe such species as including intermediate morphs.

There are many reasons why birders may be interested in field identification of subspecies groups, subspecies, and morphs, when it is indeed possible. For example, the identification of a bird as being a member of a particular subspecies indicates that individual's geographic origin. Such knowledge can give information about migration routes and winter ranges of certain populations. Also, careful monitoring of field identifiable subspecies and morphs can enhance our knowledge about their relative abundance, and over time can yield further information about changes in various populations. In addition, subspecies are interesting as they can raise fascinating questions about evolutionary processes. Furthermore, for those birders that maintain various lists, keeping track of observed subspecies will keep them prepared for future splits of species. Lastly, and perhaps most importantly, it can simply be fun to study, observe, and enjoy the variability within many species of birds.

The primary aim of this article is to provide an annotated list of all the highly variable *forms* (subspecies groups, subspecies, and morphs) which have occurred or may eventually occur in Pennsylvania. Each of these forms is placed into one of two categories: 1) a field identifiable form, or 2) a non-field identifiable form. Furthermore, each of these forms is further classified as to whether they are "regular" or "accidental" in Pennsylvania. The term regular refers to occurrence in Pennsylvania at least once during most years. On the other hand, the term accidental corresponds to very few if any records in Pennsylvania, or even in the northeast US. In the most extreme cases, i. e., those for which there are no records in the northeast

US, inclusion on the annotated list is based on patterns of vagrancy which suggest at least a remote possibility of future occurrence in Pennsylvania.

There are two reasons why I include non-field identifiable forms in the annotated list, both relating to the manner in which subspecies and morphs are treated in most field guides. These are: 1) the field guides do not indicate the extent of variation within each form, and 2) the field guides often illustrate very distinctly different forms without mentioning the existence of other intermediate plumage forms. Although it is certainly very commendable that modern field guides such as that from the National Geographic Society (1987) illustrate multiple subspecies and morphs for so many species, the fact that the above two problems are not stated may give many birders the sense that the identification of subspecies and morphs is much easier than it is in reality. Motivated by this problem, my selection for the list of non-identifiable subspecies and morphs is limited to those species which are often shown in the field guides as exhibiting extensive intraspecific variation.

For some species, it is not possible to state with complete confidence whether a particular form is field identifiable. Thus, given this element of uncertainty, a conservative approach is adopted when designating a particular form as being field identifiable. As a result, only those subspecies groups or subspecies which exhibit *discontinuities* in plumage are considered as field identifiable. Furthermore, intergradation must be confined to a negligible fraction of the total population of all subspecies groups or subspecies considered. Such a restriction excludes those highly variable species which exhibit a continuum of plumages, even if individuals at either end of the continuum are markedly different from each another. Similarly for morphs, only those forms which exhibit *discontinuities* in their plumage are considered as field identifiable. Thus, polymorphic species which show intermediate plumages are not regarded as identifiable in the field. However, it is important to note that even for field identifiable forms, there will be some individuals which still cannot be identified in the field because of individual variation.

Furthermore, it is also necessary to mention that to a certain degree, any classification that distinguishes between field identifiable and non-field identifiable forms is arbitrary. This is because many species could be regarded as being borderline with respect to the above criteria. Thus, I would certainly expect there to be differences between my classification and that by other authors.

Although a rather rigid requirement is being used for specifying field identifiable forms, the intent of this article is not to discourage birders from paying close attention to those forms which are considered as non-field identifiable. This is because such forms can be just as interesting as the field identifiable forms, as long as one takes a probabilistic viewpoint, i.e., regard the identify of an observed bird as *most likely*, rather than *definitively*, being a particular subspecies or morph.

Annotated List

All subspecies groups, subspecies, and morphs listed below are designated as belonging to one of four categories. On behalf of the Pennsylvania Ornithological Records Committee (P.O.R.C.), it is requested that documentation be submitted for those birds which come under the designation of Category C or Category D.

Category A: A field identifiable subspecies group, subspecies, or morph that occurs regularly in Pennsylvania. Documentation is not requested.

Category B: A subspecies group, subspecies, or morph that occurs regularly in Pennsylvania, and cannot be identified in the field because of extensive variability. This category is restricted to species with marked geographic variation. Documentation is not requested.

Category C: A field identifiable subspecies group, subspecies, or morph that is either accidental or has never occurred in Pennsylvania. Documentation is requested.

Category D: A subspecies group, subspecies, or morph that is either accidental or has never occurred in Pennsylvania, and cannot be identified

in the field because of extensive variability. This category is restricted to species with marked geographic variation. Documentation is requested, although a formal decision by the committee to the level of subspecies group, subspecies, or morph will not be made. Such records will be archived by P.O.R.C., and may be re-examined in the future if new identification techniques are developed. Thus, P.O.R.C. strongly encourages birders to submit documentation for category D species (records of Category D species, including the names of the observers, will be published in the Annual Report of P.O.R.C. in Pennsylvania Birds). Also, in all cases, if the entire species is sufficiently rare in Pennsylvania, P.O.R.C. will make a decision at the species level (see Pulcinella (1995) for the list of species requiring documentation).

The designated category is listed immediately after each form. Also, those forms which regularly nest in Pennsylvania are denoted by "br." As stated earlier, geographic considerations allow for subspecific identification during the breeding season. Thus, with the exception of an extremely rare summer vagrant, the subspecific identity of any bird that breeds in Pennsylvania is already known.

For each species listed below, there is also a brief discussion about each subspecies or morph, followed by a list of references. The subspecific designation for most species is based on the fifth edition of the AOU Checklist (1957), which describes the breeding ranges of most subspecies. The reference list primarily includes popular books on field identification, and also magazines such as *Birding* and *Pennsylvania Birds*. Thus, the list of references is far from exhaustive. Besides the fifth edition of the AOU Checklist, two other particularly beneficial references for both subspecies and morphs are the National Geographic Society (1987) field guide and the relatively new *Birds of North America* series. As the above three references are highly useful for most species, I do not list these publications with the individual species discussions. Furthermore, for those who are particularly interested in subspecies and morphs of birds, there is an excellent and particularly

fascinating series of publications by Ron Pittaway in Ontario Birds. Each of his articles is referenced below with the relevant species.

Least Bittern (*Ixobrychus exilis*) (light (Abr) and dark (C) morphs): The dark morph (Cory's Least Bittern), which has not been recorded in Pennsylvania, is extremely rare everywhere within the northeastern range of this species. *References* Pittaway (1996).

Great Blue Heron (*Ardea herodias*) (light (C) and dark (Abr) morphs): The white morph of the Florida Keys and West Indies, known as the "Great White Heron", has been recorded in several states in the northeast including Pennsylvania. There is also an intermediate morph, known as Wurdemann's Heron, which hasn't been recorded in the northeast. *References* Palmer (1962).

Tundra Swan (*Cygnus columbianus*) (columbianus (A) and bewickii (C) subspecies groups): The Old World subspecies *bewickii* (Bewick's Swan) is usually quite distinctive from the North American subspecies *columbianus* (Whistling Swan). Although records of *bewickii* from the northeast US are of questionable origin, it seems plausible for a stray individual already in Alaska to migrate with *columbianus* to the northeast US (there is a photograph of a Tundra Swan from Westmoreland Co., Dec. 1982, that resembles the Siberian population, sometimes recognized as a separate subspecies, *jankowskii*, (Parkes, personal communication)). *References* Madge and Burn (1988).

Greater White-fronted Goose (*Anser albifrons*) (frontalis (B), gambelli (D), and flavirostris (D) subspecies): There are three subspecies that could occur in Pennsylvania. These include *frontalis* of Arctic North America and eastern Siberia, *gambelli* of Alaska and northwest Canada, and *flavirostris* of Greenland. There are definitive North American records for the latter subspecies. However, there seems to be too much variation within each subspecies for definitive field identification of any subspecies. *References* Godfrey (1986), Kaufman (1994), Madge and Burn (1988),

Palmer (1976).

Snow Goose (*Chen caerulescens*) (white (B), intermediate (B), and blue (B) morphs): The three morphs of this arctic nesting species represent a continuum of plumages of which all commonly occur in Pennsylvania. *References* Madge and Burn (1988), Pittaway (1992c).

Ross's Goose (*Chen rossii*) (white (C) and blue (C) morphs): The two morphs of this arctic nesting species are distinctive. However, as with Snow Goose, intermediate morphs might exist. *References* Madge and Burn (1988).

Brant (*Branta bernicla*) (bernicla (A) and nigricans (C) subspecies groups): The two North American subspecies groups are quite distinctive, however intergrades do occur and both subspecies groups show considerable individual variation. These two subspecies groups comprise the eastern pale-bellied subspecies *hrota*, of the *bernicla* subspecies group, and the dark-bellied *nigricans* of western North America and eastern Siberia. There are many records for *nigricans* in the northeast US. *References* Madge and Burn (1988), Palmer (1976).

Canada Goose (*Branta canadensis*) (large subspecies (Bbr), parvipes (D), and hutchinsii (D) subspecies!): The abundant large subspecies in Pennsylvania includes both *interior* and intergrades with other large subspecies via introduction programs. The subspecific identify of these large individuals cannot be determined in the field. The only other subspecies that may occur in Pennsylvania are the medium-sized *parvipes* (Lesser Canada Goose) and the smaller *hutchinsii* (Richardson's or Hutchins' Canada Goose), both migrants through the Great Plains. There have been a number of records of smaller forms of Canada Goose in the state. However, there is considerable variation within each subspecies, and *parvipes* overlaps in characteristics with both the larger subspecies and the smaller *hutchinsii*. Furthermore, *parvipes* and *hutchinsii* frequently intergrade. *References* Bellrose (1976), Godfrey (1986), Madge and Burn (1988), Palmer (1976).

Green-winged Teal (*Anas crecca*)

(crecca (C) and carolinensis (A) subspecies groups!): The Old World subspecies, *crecca*, is distinctive from the North American *carolinensis* (males only). There are several records of *crecca* for Pennsylvania. Also, there are reports of intergrades from Ontario and an intergrade specimen from Quebec (Pittaway, personal communication). *References* Godfrey (1986), Madge and Burn (1988), Palmer (1976).

Broad-winged Hawk (*Buteo platypterus*) (light (Abr) and dark (C) morphs): The light morph is common in Pennsylvania. The dark morph, which nests in Alberta, is a rare but regular migrant in the eastern Great Plains, and has been reported from Ontario and Quebec (Pittaway, personal communication). *References* Clark and Wheeler (1987), Wheeler and Clark (1995).

Swainson's Hawk (*Buteo swainsoni*) (light (D), rufous (D), and dark (D) morphs): This species occurs in light, rufous, and dark morphs. Most records in the east are light morphs. However, the identify of any particular morph is complicated by the occurrence of intermediate individuals. *References* Clark and Wheeler (1987), Palmer (1988), Wheeler and Clark (1995).

Red-tailed Hawk (*Buteo jamaicensis*) (borealis (Bbr), harlani (D), and kriderii (D), and calurus (light (D), dark (D), and rufous (D) morphs) subspecies): The eastern subspecies *borealis* nests and winters in Pennsylvania. Furthermore, there is evidence that the northern populations of *borealis*, which have more heavily marked underparts, may be better considered as a separate subspecies, *abieticola* (see Dickerman and Parkes, 1987) (there are 7 Pennsylvania specimens of *abieticola* that range from the months of October through April (Parkes, personal communication)). Most or perhaps all individuals of these subspecies are light morphs (see Parkes (1996) for a discussion on possible dark morph *borealis*). The widespread western subspecies *calurus* occurs in light, rufous, and dark morphs. Dark morphs, presumably of the western subspecies *calurus*, have been recorded in Pennsylvania, and rufous morphs have been reported from Ontario. However, some

individuals show characteristics intermediate between the various morphs. There are also records for the highly variable Alaskan subspecies *harlani* in the east, including a specimen from Pennsylvania. Most or perhaps all *harlani* are dark morph individuals. However, the field identification of *harlani* is complicated by the fact that both its variability and that of *calurus* at the western edge of its range are not well known. The highly variable Great Plains subspecies *kriderii*, which seems to intergrade extensively with *borealis*, has also been recorded in the east. It is also questionable as to whether *kriderii* should be classified as a subspecies, rather than a polymorphic population of *borealis*. Both *harlani* and *kriderii* were once regarded as separate species. *References* Clark and Wheeler (1987), DeBenedictis (1984), Dickerman and Parkes (1987), Dunne et al. (1988), Floyd (1992), Mengel (1965), Palmer (1988), Parkes (1996), Pittaway (1993a), Wheeler and Clark (1995), Wiltraut (1991).

Rough-legged Hawk (*Buteo lagopus*) (light (B) and dark (B) morphs): This species commonly includes individuals of both light and dark morphs in Pennsylvania. However, there are many individuals which show intermediate characteristics. *References* Clark and Wheeler (1987), Palmer (1988), Wheeler and Clark (1995).

Merlin (*Falco columbarius*) (*columbarius* (B) and *richardsonii* (D) subspecies): The subspecies of the Canadian Prairies and northern Great Plains, *richardsonii*, which has been reported as a migrant in southern Ontario, has much paler upperparts than the eastern *columbarius*. However, northwestern populations from Alaska east to Manitoba, sometimes regarded as a separate subspecies, *bendirei*, are slightly paler than *columbarius*, and often appear intermediate in plumage between *columbarius* and *richardsonii*. *References* Clark and Wheeler (1987), Godfrey (1986), Palmer (1988), Pittaway (1994a), Wheeler and Clark (1995).

Peregrine Falcon (*Falco peregrinus*) (*tundrius* (B) and *anatum* (B) subspecies): The arctic subspecies

tundrius is an uncommon migrant in Pennsylvania. The subspecies *anatum*, which used to be found throughout North America south of the tundra, has been extirpated in eastern North America. However, identification of all Peregrine Falcons in the field in Pennsylvania is very much complicated by re-introduction programs which include individuals of a number of subspecies, including intergrades. *References* Clark and Wheeler (1987), Dunne et al. (1988), Palmer (1988), Wheeler and Clark (1995).

Gyr Falcon (*Falco rusticolus*) (white (D), gray (D), and dark (D) morphs): All three morphs of this arctic species are very rare in Pennsylvania. This species exhibits a continuum of plumages from the palest to the darkest individuals. *References* Clark and Wheeler (1987), Dunne et al. (1988), Palmer (1988), Wheeler and Clark (1995).

Ruffed Grouse (*Bonasa umbellus*) (red (Abr) and gray (Abr) morphs): Both gray and red morphs commonly occur in Pennsylvania. Furthermore, there are two subspecies in Pennsylvania, *umbellus* in the east and *monticola* in the west. The latter subspecies is much richer in coloration (Parkes, personal communication). Also, it is requested that all records of gray morphs be reported to the appropriate county compiler.

Willet (*Catoptrophorus semipalmatus*) (*semipalmatus* (D) and *inornatus* (D) subspecies): There is enough variability within both the coastal Atlantic subspecies *semipalmatus* and the western subspecies *inornatus* to prevent field identification of either subspecies. *References* Hayman et al. (1986), Paulson (1993).

Whimbrel (*Numenius phaeopus*) (*hudsonicus* (C) and *phaeopus* (C) subspecies groups): In addition to the North American subspecies group *hudsonicus*, which occurs as a rare migrant in Pennsylvania, there are records of the extremely rare Old World white-rumped subspecies group *phaeopus* on the Great Lakes. *References* Hayman et al. (1986), Paulson (1993), Rosair and Cottridge (1995).

Short-billed Dowitcher

(*Limnodromus griseus*) (*griseus* (A) and *hendersoni* (A) subspecies): Both the eastern subspecies *griseus* and the interior subspecies *hendersoni* migrate regularly through Pennsylvania, *hendersoni* being far more numerous in western Pennsylvania. Only alternate plumaged adults can be identified in the field. *References* Hayman et al. (1986), Kaufman (1990), Pittaway (1992a), Wilds and Newton (1983), Zimmer (1985).

Pomarine Jaeger (*Stercorarius pomarinus*) (light (D), intermediate (D), and dark (D) morphs): This is a polymorphic arctic species exhibiting a continuum of plumages from light through dark. *References* Enticott and Tipling (1997), Harris et al. (1989), Harrison (1983, 1987), Kaufman (1990), Olsen and Larsson (1997), Pittaway and Burke (1995).

Parasitic Jaeger (*Stercorarius parasiticus*) (light (D), intermediate (D), and dark (D) morphs): This is a polymorphic arctic species exhibiting a continuum of plumages from light through dark. *References* Enticott and Tipling (1997), Harris et al. (1989), Harrison (1983, 1987), Kaufman (1990), Olsen and Larsson (1997).

Mew Gull (*Larus canus*) (*canus* (C) and *brachyrhynchus* (C) subspecies): Both the European subspecies *canus* and the western North American subspecies *brachyrhynchus* occur annually in eastern North America. Only *canus* has been recorded in Pennsylvania. *References* Grant (1986), Harrison (1983), Kwater (1992), Tove (1993).

Herring Gull (*Larus argentatus*) (*smithsonianus* (Abr), *vegae* (C), *argenteus* (D), and *argentatus* (D) subspecies): In addition to the widespread North American subspecies *smithsonianus*, the distinctive eastern Siberian subspecies *vegae* is common in western Alaska. As other east Siberian gull species are showing up more frequently in eastern North America, e. g., Slaty-backed Gull and Black-tailed Gull, with closer examination, *vegae* may also be found in the east. The two European subspecies *argenteus* and *argentatus* have recently been reported from Atlantic Canada, but these two subspecies are probably not safely

distinguished from *smithsonianus* in the field. *References* Enticott and Tipling (1997), Grant (1986).

Iceland Gull (*Larus glaucoides*) (*glaucoides* (D) and *kumlieni* (D) subspecies): Because of extreme variation in the adult wingtip pattern of the North American subspecies *kumlieni*, in addition to variation in other minor field marks such as bill size and mantle color, it is not possible to safely identify the Greenland subspecies *glaucoides*. The subspecies *kumlieni* is regular in the northeast US, and there are specimens of the extremely rare *glaucoides* from as close as Ontario. *References* Enticott and Tipling (1997), Godfrey (1986), Grant (1986), Harris et al. (1989), Harrison (1983, 1987), Pittaway (1992b), Zimmer (1991).

Lesser Black-backed Gull (*Larus fuscus*) (*graellsii* (D) and *intermedius* (D) subspecies): Most records of this species in North America are of the west European subspecies *graellsii*. There are also several North American records of the darker mantled southern Scandinavian subspecies *intermedius*. However, extensive intergradation between these two subspecies takes place. *References* Grant (1986), Harrison (1983), Post and Lewis (1995a,b).

Eastern Screech-Owl (*Otus asio*) (red (Bbr), brown (Bbr), and gray (Bbr) morphs): In Pennsylvania, it seems that the brown morph is just slightly browner in color than the grey morph (Parkes, personal communication). However, in other parts of this species' range, there is a continuum of red, through brown (intermediate), to gray morphs. The brown morph is much less common than the other two morphs. *References* Kaufman, (1990), Pittaway (1995b).

Great Horned Owl (*Bubo virginianus*) (*virginianus* (Bbr) and *heterocnemis* (D) subspecies): The subspecies *virginianus* is a common permanent resident in Pennsylvania. The subspecies *heterocnemis* of eastern Canada has been recorded in the northeast US, including Ohio, but not in Pennsylvania (Parkes, personal communication). In general, *heterocnemis* is noticeably darker than *virginianus*, but the *heterocnemis*

population from northern Cape Breton Island is intermediate in plumage between the two subspecies. *References* Godfrey (1986), Peterson (1947), Pittaway (1993b).

Common Nighthawk (*Chordeiles minor*) (*minor* (Bbr), *chapmani* (D), and *sennetti* (D) subspecies): The common nesting subspecies of Pennsylvania is *minor*. The western Great Plains subspecies *sennetti* is grayer and much paler than *minor*. However, field identification of *sennetti* is probably not possible because of the intermediate plumaged subspecies *chapmani* of the eastern Great Plains. Given that *sennetti* has been recorded in Kentucky, it seems plausible for *sennetti* to occur occasionally in Pennsylvania. *References* Godfrey (1986), Mengel (1965).

Northern Flicker (*Colaptes auratus*) (*auratus* (Bbr) and *cafer* (D) subspecies groups): Individuals of the *auratus* subspecies group (Yellow-shafted Flicker) commonly nest in Pennsylvania. Both individuals of the western *cafer* subspecies group (Red-shafted Flicker) and *auratus/cafer* intergrades occur rarely in the northeast US. However, as the intergrade zone is so extensive, with individuals showing a continuum of plumages between *auratus* and *cafer*, it is probably impossible to identify any *cafer* with complete confidence. *References* Short (1982), Winkler et al. (1995).

Horned Lark (*Eremophila alpestris*) (*alpestris* (B), *praticola* (Bbr), and *hoyti* (D) subspecies): The common nesting subspecies in Pennsylvania is *praticola*. This subspecies also winters in Pennsylvania, and is joined by the eastern Canadian subspecies *alpestris*. Both subspecies exhibit extreme variability to the extent that neither subspecies can be identified in the field (see Mengel 1965). Furthermore, the central Canadian subspecies *hoyti*, which is on average intermediate in plumage between *praticola* and *alpestris*, has been recorded in the northeast US. *References* Mengel (1965), Pittaway (1994b). *References* Peterson (1947), Pittaway (1994b).

House Wren (*Troglodytes aedon*) (*aedon* (Bbr) and *parkmanii* (D) subspecies): There is some evidence of

intergradation between the eastern *aedon* and *parkmanii*. The subspecies *parkmanii* nests as far east as Michigan and central Ontario and has been recorded wintering in several states in the southeast US, so it is certainly possible for *parkmanii* to migrate through Pennsylvania. *References* Godfrey (1986), Mengel (1965).

Winter Wren (*Troglodytes troglodytes*) (*hiemalis* (Bbr), *pullus* (D), and *pacificus* (D) subspecies): The subspecies *hiemalis* nests over most of southern Canada and parts of the northeast US, including Pennsylvania. It is not separable in the field from the subspecies *pullus* of the southern Appalachians. The subspecies *pacificus*, which nests from southern Alaska south to Oregon, is darker and less barred than the previous two subspecies. However, *pacificus* is highly variable and may itself be comprised of several subspecies. This subspecies has been recorded on the plains of eastern Colorado, and there is a recent report from the northeast US. *References* Godfrey (1986), Mengel (1965), Phillips (1986).

Northern Wheatear (*Oenanthe oenanthe*) (*leucorhoa* (D) and *oenanthe* (D) subspecies): Most records of this species in the northeast US correspond to the subspecies *leucorhoa* which nests in eastern Arctic Canada, Greenland, and Iceland. However, the subspecies *oenanthe*, which nests in Alaska and much of the Old World, is a very long-distance migrant and has been reported from California, Colorado, and New York. However, the populations of Northern Wheatear seem to be clinal with increasing brightness in adult males from *oenanthe* in the Faroes, to intermediate individuals of the subspecies *leucorhoa* in Iceland, and then to the brightest individuals in Greenland and Canada. Furthermore, these populations of Northern Wheatear show extensive individual variability in their plumage. *References* Phillips (1986).

Veery (*Catharus fuscescens*) (*fuliginosa* (B), *fuscescens* (Bbr), and *salicicola* (B) subspecies): The dark reddish brown subspecies *fuliginosa* which breeds in eastern Canada, the slightly paler and redder *fuscescens*

which nests in the northeast including Pennsylvania, and the darker and duller western subspecies *salicicola*, which breeds as close as northwest Ohio, are all too variable and not identifiable in the field. Also, there is clinal variation in plumage color. *References* Godfrey (1986), Mengel (1965), Phillips (1986), Zimmer (1985).

American Robin (*Turdus migratorius*) (*migratorius* (Bbr) and *nigrideus* (B) subspecies): The subspecies *nigrideus* of Newfoundland and eastern Quebec is on average darker than the subspecies *migratorius* of much of Canada and the eastern US. The winter range of *nigrideus* does include the eastern US (there is a Pennsylvania specimen —Parkes, personal communication), but because of extensive variability within both *nigrideus* and *migratorius*. these two subspecies are not safely separable in the field (see Mengel, 1965). *References* Mengel (1965), Phillips (1991).

Blue-headed Vireo (*Vireo solitarius*) (*solitarius* (Bbr) and *alticola* (D) subspecies): The main differences between the subspecies *solitarius* of the northeastern US and Canada, and *alticola* of the southern Appalachians, is that some adult males of the latter subspecies tend to have a slate gray rather than a green back. However, most *alticola* do show various amounts of green color to their backs, complicating subspecific identification in the field. *References* Heindel (1996), Phillips (1991).

Warbling Vireo (*Vireo gilvus*) (eastern (Bbr) and western (D) subspecies): The subspecies *gilvus* nests in the northeast US and eastern and central Canada. Western populations are comprised of several subspecies. Intergrades seem to occur, and the differences between *gilvus* and the western populations are subtle and sufficiently variable such that there is no single field mark that is completely reliable for identification. However, there are differences in the songs of the two populations. Although there are no records of western individuals in the northeast US, given that western individuals are long distance migrants, it seems plausible that some individuals migrate much farther eastward, but are not observed because of the similarities between eastern and

western populations. *References* Phillips (1991).

Orange-crowned Warbler

(*Vermivora celata*) (*celata* (B), *orestera* (D), and *lutescens* (D) subspecies): The dull subspecies *celata* of central Alaska and much of Canada migrates through Pennsylvania. There are two western subspecies that are long distance migrants, *orestera* which breeds in the western mountains, and *lutescens* of the west coast. *Lutescens* is the brightest subspecies, and *orestera* is slightly brighter than *celata*. There have been reports of bright individuals from Pennsylvania. *References* Curson et al. (1994), Dunn and Garrett (1997), Godfrey (1986), Pyle et al. (1987).

Nashville Warbler (*Vermivora*

ruficapilla) (*ruficapilla* (Bbr) and *ridgwayi* (D) subspecies): Adult males of the subspecies *ridgwayi* of the west coast are much whiter on their underparts and have a brighter rump than those of the eastern subspecies *ruficapilla*. Also, *ridgwayi* has been recorded in Oklahoma and on the eastern plains of Colorado. Given that there are records for various species of western warblers in the east, e.g., Townsend's, Hermit, Black-throated Gray and Virginia's Warblers, it certainly wouldn't be surprising if *ridgwayi* occasionally occurs in the east too. However, the above differences between the two subspecies are somewhat slight. *References* Curson et al. (1994), Dunn and Garrett (1997).

Yellow Warbler (*Dendroica petechia*)

(*aestiva* (Bbr), *amnicola* (B), and *rubiginosa* (D) subspecies): Two subspecies can commonly be found in Pennsylvania, *aestiva* which breeds in Pennsylvania, and *amnicola* which nests throughout much of Canada and migrates throughout Pennsylvania. Also, there are specimen records of the northwest subspecies *rubiginosa* in Pennsylvania (see Parkes, 1968), but there are no specimen records from the western populations of *amnicola*, sometimes referred to as two additional subspecies *banksi* and *parkesi* (Parkes, personal communication). Because of individual variation and clinal variation within *amnicola*, it is probably not possible to identify individuals to subspecies in the field. *References* Parkes (1968),

Curson et al. (1994), Dunn and Garrett (1997), Feldstein (1994), Godfrey (1986).

Black-throated Blue Warbler

(*Dendroica caerulescens*) (*caerulescens* (Bbr) and *cairnsi* (Bbr?) subspecies): Males of the two subspecies, *caerulescens* of eastern Canada and the northeast US, and *cairnsi* of the southern Appalachians, appear quite distinctive. The specimens from southwest Pennsylvania closely resemble *cairnsi*, but since individuals closely matching both subspecies occur at the same locations throughout the state, the subspecific identity of nesting Black-throated Blue Warbler in southwest Pennsylvania remains unresolved (Parkes, personal communication). *References* Curson et al. (1994), Dunn and Garrett (1997), Mengel (1965).

Yellow-rumped Warbler (*Dendroica*

coronata) (*coronata* (Abr) and *auduboni* (C) subspecies groups): The northern and eastern populations make up the *coronata* subspecies group (Myrtle Warbler), and the western populations comprise the *auduboni* subspecies group (Audubon's Warbler). There are many records of *auduboni* from the northeast US, and some from Pennsylvania, but one should also be aware of intergrades, which are rare. An additional complication is that some *coronata* show a few of the field marks of *auduboni*. Nevertheless, brightly plumaged adults of either subspecies group are quite distinctive. *References* Curson et al. (1994), DeBenedictis (1982), Dunn and Garrett (1997), Godfrey (1986), Kaufman (1990), Pyle et al. (1987).

Yellow-throated Warbler (*Dendroica*

dominica) (*dominica* (D) and *albilora* (Bbr) subspecies): The subspecies *albilora* nests in Pennsylvania and *dominica* has been reported from Pennsylvania. Most *dominica* (*albilora*) have yellow (white) lores, but some individuals occur with reversed color lores, i.e., some *dominica* have pale yellow lores that would appear white in the field, and some *albilora* have a yellowish tinge to the lores. *References* Curson et al. (1994), Dunn and Garrett (1997), Mengel (1965).

Palm Warbler (*Dendroica palmarum*)

(*palmarum* (A) and *hvpochrysea* (A)

subspecies): These two subspecies, *hypochrysea*, which nests in eastern Canada and New England, and *palmarum* which nests in central and western Canada, are very distinctive. Both subspecies migrate through Pennsylvania, although the majority of *hypochrysea* are seen in eastern Pennsylvania. There is a narrow intergrade zone in Quebec east of the Ontario/Quebec border. Also, it is requested that all records of *hypochrysea* be reported to the appropriate county compiler. *References* Curson et al. (1994), Dunn and Garrett (1997), Kwater (1995), Pittaway (1995a).

Savannah Sparrow (*Passerculus sandwichensis*) (*princeps* (C) and *sandwichensis* (Abr) subspecies groups): Individuals of the subspecies group *princeps* (Ipswich Sparrow), breed on Sable Island, Nova Scotia, and can be readily distinguished from individuals of the widespread *sandwichensis* group. Within the *sandwichensis* group, the breeding subspecies in Pennsylvania is *mediogriseus*, and there is a specimen of the dark, heavily streaked subspecies *labradorius* which nests in northeastern Canada (Parkes, personal communication). Also, there are specimen records (Parkes, personal communication) from eastern Ohio of another dark subspecies, *oblitus*, which breeds as close to Pennsylvania as Michigan. However, *labradorius* and *oblitus* are sufficiently similar to *mediogriseus* such that identification must be in-hand. There are no records of *princeps* in Pennsylvania, as this subspecies migrates and winters along the Atlantic coast. However, as there are a few records of individuals some distance inland, it is remotely possible that *princeps* could someday be found in extreme eastern Pennsylvania. *References* Byers et al. (1995), Godfrey (1986), Rising (1996).

Nelson's Sharp-tailed Sparrow (*Ammodramus nelsoni*) (*nelsoni* (D), *alterus* (D), and *subvirgatus* (D) subspecies): The subspecies *nelsoni* of west-central Canada and *alterus* of the James Bay area both migrate through Pennsylvania and usually cannot be separated in the field. However, the somewhat distinctive subspecies *subvirgatus* of Maine and Atlantic Canada might occasionally occur in

Pennsylvania. One should be very careful when trying to identify subspecies of Nelson's Sharp-tailed Sparrow, as *alterus* often shows plumage characteristics intermediate between *nelsoni* and *subvirgatus*, and *subvirgatus* sometimes hybridizes with the *caudacutus* subspecies of Saltmarsh Sharp-tailed Sparrow. The *caudacutus* Saltmarsh Sharp-tailed Sparrow has been recorded in Pennsylvania. *References* Byers et al. (1995), Parkes (1992), Rising (1996), Sibley (1996).

Fox Sparrow (*Passerella iliaca*) (*iliaca* (A), *zaboria* (D), and *western* (D) subspecies) (Category D): The northern and reddish subspecies *iliaca* is a regular migrant and winter visitor to Pennsylvania. There are also several specimen records of the darker and grayer subspecies, *zaboria*, which nests in northwestern Canada and Alaska (Parkes, personal communication). However, *zaboria* is not sufficiently distinctive for definitive field identification. There are no records of other subspecies in the state. However, as there is a record of one western subspecies, *altivagans*, in New York State, it is possible that this or other similar subspecies could someday be recorded in Pennsylvania. Also, as there are numerous similar subspecies in western North America, it is questionable as to whether an identification to the subspecies level is possible. *References* Byers et al. (1995), DeBenedictis (1996), Godfrey (1986), Rising (1996).

White-throated Sparrow (*Zonotrichia albicollis*) (white-striped (Bbr) and tan-striped (Bbr) morphs): Both morphs are common in Pennsylvania and also intermediate morphs occur. *References* Byers et al. (1995), Rising (1996).

White-crowned Sparrow (*Zonotrichia leucophrys*) (*leucophrys* (B) and *gambelii* (D) subspecies): The dark-lored subspecies *leucophrys*, which nests in the eastern half of Canada, is a common migrant through Pennsylvania. The pale-lored subspecies *gambelii* nests in western Canada and Alaska and is a rare migrant in Pennsylvania. However, extensive intergradation between these two subspecies occurs and there are also individuals within the

breeding range of *leucophrys* which closely resemble *gambelii*. Thus, it is probably not possible to identify any *gambelii* with complete confidence in the field. *References* Byers et al. (1995), Dunn et al. (1995), Godfrey (1986), Mengel (1965), Rising (1996).

Dark-eyed Junco (*Junco hyemalis*) (*hyemalis* (Abr), *oreganus* (C), *aikeni* (C), *caniceps* (C) subspecies groups, and *mearnsi* (D) subspecies): The subspecies groups *hyemalis*, *oreganus*, *aikeni*, and *caniceps* are each distinctive, although intergrades do exist. The *hyemalis* group, also known as Slate-colored Junco, breeds across Canada into Alaska and south through the Appalachian Mountains. The subspecies groups *oreganus* (Oregon Junco) and *caniceps* (Gray-headed Junco) breed in the west. There are many records, including specimens, of *oreganus* in the northeast. The subspecies group *caniceps* has also been recorded in Ontario. The subspecies group *aikeni*, which nests in the Black Hills of South Dakota has been reported in the east. However, most or perhaps all eastern reports of *aikeni* pertain to *hyemalis*, as the latter subspecies can sometimes have white wingbars, as do typical *aikeni*. Better field marks for *aikeni* include its larger size, paler gray plumage, and more extensively white outer rectrices. There are also records of the seemingly distinctive subspecies *mearnsi* (Pink-sided Junco) in the east (this subspecies is part of the *oreganus* subspecies group), but these could also be intergrades, pale *oreganus*, or *cismontanus* (see below). One particular subspecies within the *hyemalis* group, *cismontanus*, which is a common migrant in Pennsylvania (Parkes, personal communication) appears intermediate in plumage between the *hyemalis* and *oreganus* groups. Because of the resemblance between *cismontanus* and female/immature individuals of the *oreganus* group, only adult males of the *oreganus* group can be identified with confidence in the field. *References* Byers et al. (1995), Godfrey (1986), Mengel (1965), Pittaway (1993c), Rising (1996).

Common Grackle (*Quiscalus quiscula*) (*versicolor* (Bbr) and *stonei* (Bbr) subspecies): The subspecies *versicolor* (Bronzed Grackle) is common

in western Pennsylvania and the subspecies *stonei* (Purple Grackle) is common in eastern Pennsylvania. In migration, both subspecies and intergrades can be found throughout Pennsylvania. *References* Peterson (1947).

Common Redpoll (*Carduelis flammea*) (*flammea* (B) and *rostrata* (D) subspecies): The widespread subspecies *flammea* is a regular winter visitor to Pennsylvania. The larger and darker subspecies *rostrata*, which nests in northeast Canada and Greenland, has been recorded in the northeast US. There is sufficiently large variation in both subspecies such that identification to the subspecies level is probably not possible. *References* Clement et al. (1993), Czaplak (1995), Harris et al. (1989), Pittaway (1992d).

Hoary Redpoll (*Carduelis hornemanni*) (*hornemanni* (D) and *exilipes* (D) subspecies): The subspecies *hornemanni* which nests in northeast Canada and Greenland, and the more widespread subspecies *exilipes*, occur extremely rarely in Pennsylvania. There is tremendous variation in these subspecies to the extent that it is probably impossible to separate these subspecies with complete confidence in the field, although the palest individuals are probably adult male *hornemanni*. *References* Clement et al. (1993), Czaplak (1995), Pittaway (1992c), Shirihai et al. (1996).

References

American Ornithologists' Union, 1957: *Check-list of North American Birds*, Fifth Edition. AOU, 691 pp.
 American Ornithologists' Union, 1983: *Check-list of North American Birds*, Sixth Edition. AOU, 877 pp.
 Bellrose, F. C., 1976: *Ducks, Geese, and Swans of North America*. Stackpole Books, 2nd ea., 543 PP.
 Byers, C., J. Curson, and U. Olsson, 1995: *Sparrows and Buntings: A Guide to the Sparrows and Buntings of North America and the World*. Houghton Mifflin, 334 pp.
 Clark, W. S., and B. K. Wheeler, 1987: *A Field Guide to Hawks of North America*. Houghton Mifflin, 198 pp.
 Clement, P. A. Harris, and J. Davis, 1993: *Finches and Sparrows: An Identification Guide*. Christopher Helm, 500 pp.
 Curson, J., D. Quinn, and D. Beadle, 1994: *Warblers of the Americas: An*

Identification Guide. Houghton Mifflin, 252 pp.
 Czaplak, D., 1995: Identifying Common and Hoary Redpolls in winter. *Birding*, 27, 447457.
 DeBenedictis, P. A., 1982: Gleanings from the technical literature: Yellow-rumped Warbler. *Birding*, 14, 148-150.
 —, 1984: Gleanings from the technical literature: Harlan's Hawk. *Birding*, 16, 115-116. *Birding*, 28, 327-330.
 —, 1996: Gleanings from the technical literature: Fox Sparrow follies.
 Dickerman, R. W., and K. C. Parkes, 1987: Subspecies of the Red-tailed Hawk in the Northeast. *Kingbird*, 37, 57-64.
 Dunn, J. L., K. L. Garrett, and J. K. Alderfer, 1995: White-crowned Sparrow subspecies; identification and distribution. *Birding*, 27, 182-200.
 —, and —, 1997: *A Field Guide to Warblers of North America*. Houghton Mifflin, 656 pp.
 Dunne, P., D. Sibley, and C. Sutton, 1988: *Hawks in Flight*. Houghton Mifflin, 254 pp.
 Enticott, J., and D. Tipling, 1997: *The Complete Reference: Seabirds of the World*. Stackpole, 234 pp.
 Feldstein, S., 1994: A late Yellow Warbler. *Pennsylvania Birds*, 8, 218-219.
 Floyd, T., 1992: Dark morph "western" Red-tailed Hawk. *Pennsylvania Birds*, 6, 6-6.
 Godfrey, W. E., 1986: *The Birds of Canada*. National Museum of Canada, 595 pp.
 Grant, P., 1986: *Gulls: A Guide to Identification*. Buteo Books, 2nd ea., 352 pp.
 Harris, A., L. Tucker, and K. Vinicombe, 1989: *The MacMillan Field Guide to Bird Identification*. MacMillan Press, 224 pp.
 Harrison, P., 1983: *Seabirds: An Identification Guide*. Houghton Mifflin, 448 pp.
 —, 1987: *Seabird of the World: A Photographic Guide*. Christopher Helm, 317 pp.
 Hayman, P., J. Marchant, and T. Prater, 1986: *Shorebirds: An Identification Guide to the Waders of the World*. Christopher Helm, 412 pp.
 Heindel, M. T., 1996: Field identification of the Solitary Vireo complex. *Birding*, 28, 459471.
 Kaufman, K., 1990: *A Field Guide to Advanced Birding*. Houghton Mifflin, 299 pp.
 —, 1994: Point/Counterpoint: Greenland White-fronted Geese; over-reported? *Birding*, 26, 380-382.
 Kwater, E., 1992: Pennsylvania's first Mew Gull with notes on its racial identification. *Pennsylvania Birds*, 6, 8-9.
 —, 1995: Eastern race of Palm Warbler in Erie County. *Pennsylvania Birds*, 9, 66

Madge, S., and H. Burn, 1988: *Waterfowl: An Identification Guide to the Ducks, Geese and Swans of the World*. Christopher Helm, 298 pp.
 Mengel, R. M., 1965: *The Birds of Kentucky*. AOU Monograph No. 3, 581 pp.
 National Geographic Society, 1987: *Field Guide to the Birds of North America*. 2nd ed, 464 pp.
 Olsen, K. M., and H. Larsson, 1997: *Skuas and Jaegers: A guide to the Skuas and Jaegers of the World*. Yale Univ. Press, 190 pp.
 Palmer, R. H., 1962: *Handbook of North American Birds*. Yale Univ. Press, vol. 1, 567 PP.
 —, 1976: *Handbook of North American Birds*. Yale Univ. Press, vol. 2, 521 PP.
 —, 1988: *Handbook of North American Birds*. Yale Univ. Press, vol. 5, 465 PP
 Parkes, K. C., 1968: Some bird records from western Pennsylvania. *Wilson Bulletin*, 80, 100102.
 —, 1992: The subspecies of the Sharp-tailed Sparrow and the re-identification of a western Pennsylvania specimen. *Pennsylvania Birds*, 6, 13-14.
 —, 1996: Subspecies and intergrade Red-tailed Hawks in western Pennsylvania. *Pennsylvania Birds*, 10, 203-205.
 Paulson, D., 1993: *Shorebirds of the Pacific Northwest*. Univ. Wash Press, 406 pp.
 Peterson, R. T., 1947: *A Field Guide to the Birds*. Houghton Mifflin, 2nd ea., 230 pp.
 Phillips, A., 1986: *The Known Birds of North and Middle America, Part 1: Hirundinidae to Mimidae; Certhiidae*. 259 pp.
 —, 1991: *The Known Birds of North and Middle America, Part 2: Bombycillidae; Sylviidae to Sturnidae; Vireonidae*. 249 pp.
 Pittaway, R., 1992a: Point/Counterpoint: Short-billed Dowitcher subspecies. *Birding*, 24, 309-311.
 —, 1992b: Recognizable Forms: Subspecies of Iceland Gull. *Ontario Birds*, 10, 24-26
 —, 1992c: Recognizable Forms: Subspecies and morphs of the Snow Goose. *Ontario Birds*, 10, 72-76.
 —, 1992d: Recognizable Forms: Redpolls. *Ontario Birds*, 10, 108-114.
 —, 1993a: Recognizable Forms: Subspecies and morphs of the Red-tailed Hawk. *Ontario Birds*, 11, 23-29.
 —, 1993b: Recognizable Forms: Subspecies of the Great Horned Owl. *Ontario Birds*, 11, 64-69.
 —, 1993c: Recognizable Forms: Subspecies of the Dark-eyed Junco. *Ontario Birds*, 11, 101-105.
 —, 1994a: Recognizable Forms: Merlin. *Ontario Birds*, 12, 74-80.

- , 1994b: Recognizable Forms: Subspecies of Horned Lark. *Ontario Birds*, 12, 109-115.
- , 1995a: Recognizable Forms: Subspecies of Palm Warbler. *Ontario Birds*, 13, 23-27.
- , 1995b: Recognizable Forms: Morphs of Eastern Screech-Owl. *Ontario Birds*, 13, 66-71.
- , 1996: Morphs of Least Bittern. *Ontario Birds*, 14, 26-40.
- , and P. Burke, 1995: Recognizable Forms: Morphs of the Parasitic Jaeger. *Ontario Birds*, 13, 123-130.
- Post, P. W., and R. H. Lewis, 1995a: Lesser Black-backed Gull in the Americas. Occurrence and subspecific identity: Part I. *Birding*, 27, 283-290.
- , and —, 1995b: Lesser Black-backed Gull in the Americas. Occurrence and subspecific identity: Part II. *Birding*, 27, 371-381.
- Pulcinella, N., 1995: Official list of the birds of Pennsylvania. *Pennsylvania Birds*, 9, 118-123.
- Pyle, P., S. N. G. Howell, R. P. Yunick, and D. F. DeSante, 1987: *Identification Guide to North American Passerines*. Slate Creek Press, 278 pp.
- Rising, J. D., and D. D. Beadle, 1996: *A Guide to the Identification and Natural History of the Sparrows of the United States and Canada*. Academic Press, 365 pp.
- Rosair, D., and D. Cottridge, 1995: *Photographic guide to the shorebirds of the world*. Facts on File, 175 pp.
- Shirihai, H., D. A. Christie, and A. Harris, 1996: *The MacMillan Birder's Guide to European and Middle Eastern Birds*. MacMillan Press, 248 pp.
- Short, L. L., 1982: *Woodpeckers of the World*. Delaware Museum of Natural History Monograph 4, 676 pp.
- Sibley, D., 1996: Field identification of the Sharp-tailed Sparrow complex. *Birding*, 28, 197-208.
- Tove, M. H., 1993: Field separation of Ring-billed, Mew, Common, and Kamchatka Gulls. *Birding*, 25, 386-406.
- Turner, A., and C. Rose, 1989: *Swallows and Martins: An Identification Guide and Handbook*. Houghton Mifflin, 258 pp.
- Wheeler, B. K., and W. S. Clark, 1995: *A Photographic Guide to North American Raptors*. Academic Press, 198 pp.
- Wilds, C., and M. Newton, 1983: The identification of dowitchers. *Birding*, 14, 151-166.
- Wiltraut, R., 1991: Dark morph Red-tailed Hawk. *Pennsylvania Birds*, 5, 22-22.
- Winkler, H., D. A. Christie, and D. Nurney, 1995: *Woodpeckers: A Guide to the Woodpeckers of the World*. Houghton Mifflin, 406 pp.
- Zimmer, K. J., 1985: *The Western Bird Watcher: An Introduction to Birding in the American West*. Prentice-Hall,

278 pp.

- , 1991: Plumage variation in "Kumlien's" Iceland Gull. *Birding*, 23, 254-269

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