

INTRODUCTION

Mexico and Central America have a wide variety of diurnal raptors, due to their connection to both North America and South America and a broad diversity of habitats from temperate to tropical. Many of these species are migrants from North America that pass through or winter in this area. Sixty-nine species plus one subspecies are covered herein.

The aim of this raptor field guide is to present the latest information on tried and proven field marks for the field identification (ID) of diurnal raptors in Mexico and Central America. William S. Clark (WC) has previously written a field guide to the raptors of North America (Clark and Wheeler 2001). WC decided to write this guide after several trips to this area, when he noted that most of the bird field guides he used there did not cover the diurnal raptors well. Especially, they failed to show accurately the shapes of raptors' wings and tails and lacked field marks to distinguish them. Also, he already knew many of these raptors, as many of them were covered in the North American guide and from his travels in Latin America. WC authored a similar raptor field guide for Europe (Clark 1999), which was illustrated by N. John Schmitt (JS).

Our research as we set out to produce this guide was in five main areas. First, we took many photographs of raptors in the field, both perched and flying, as well as in zoos and rehabilitation facilities, and of raptors in hand captured for banding in many locations. WC studied many videos of raptors as well. Next, WC studied specimens of raptors in numerous museums. Third, WC gathered and studied the literature on neotropical raptor ID and related subjects. Further, WC studied carefully the plumages of many raptors that had been captured for banding or in rehabilitation and took measurements of them to get more accurate data on wingspan, length, and weight. Finally, WC spent much time in the field in many locations in Mexico and Central America, field-testing the field marks presented in this guide. Many of these field marks have been published by him and others, but there is much new unpublished information reported herein for the first time.

JS has illustrated birds, especially raptors, in many field guides, including North America, India, and Peru. Further, he has a great deal of experience with raptors through field and museum work.

We also have spent considerable time together observing raptors in museums and in the field.

The field marks presented herein will enable a person who is viewing a raptor anywhere in Mexico and Central America in good light with good to excellent optical equipment to identify all but the most unusual individuals.

COLOR PLATES

All of the 32 color plates were painted by JS expressly for this guide. We aimed for one plate per species where necessary, but in order to illustrate all species on 32 plates, up to three species are illustrated on certain plates. In all cases, the postures and positions of the birds are chosen to facilitate easy comparison across species and to help the eye navigate across possible identification contenders; for example, adult females or juvenile males are shown in the same

posture and position on the layout for each species for direct comparison. Flying figures are shown at least once in a full-soar posture, with the exception of species that do not show this behavior. Other figures showing typical gliding and faster-flying profiles are included where possible. Within large, similar-sized groupings—for example, falcons and hawks—we closely adhered to a consistent scale based on wingspan and body-length measurements. The plates are ordered by species in more or less taxonomic order; however, some species are placed out of order for space or comparison reasons, for example. The last plate consists of three vagrant raptors that barely reach eastern Panama (two) or northern Mexico (one) and one introduced in northwestern Mexico.

The plates were prepared as a joint effort between us. WC provided JS with a list of raptors on each plate by sex, age, color morph, and attitude (perched and shown from front or back or side, soaring, flying below, above, or head-on) for the species to be illustrated and short instructions on which plumages to show. WC also provided JS additional reference material, such as color photographs of raptors flying, perched, in hand, and in cages; and articles on raptors to supplement RD's reference material. JS then scanned a pen-and-ink outline of the plate, showing each figure in its exact size, shape, and position; he occasionally suggested additional figures. WC reviewed each outline for accuracy of wing and tail shapes and proportions among species and sex classes; often a few minor adjustments were made on the initial outline. After agreement on the outline, JS painted in the color figures and sent WC a color copy of the plate. JS added representative habitat backgrounds in pencil or color wash. WC then made comments on the colored figures for minor alterations on some plates.

PLATE CAPTIONS

Each plate has on the opposing page a list of figures by species that describe field marks shown on each figure. Treatment of each species begins with a title (the common and scientific names), a pointer to the species account in the text, and then a general summary of identification points and the list of figures. Species are numbered from top to bottom on the plates, and figures for each species are lettered, beginning with *a*, from left to right and top to bottom. Each is labeled as to age and sex; in some instances, color morphs or subspecies are labeled. Then follow the traits shown in this figure, sometimes with pointers to similar figures of other species and how they differ.

TAXONOMY

The taxonomy and order used was that of the American Ornithologists' Union (AOU) and South American Ornithologists' Union (SAOU), except that many taxonomic changes are made based on recently published papers. We have gone to considerable lengths to cover all the significant geographic variation in the looks of these readily identifiable taxa that are known at this point in time.

COMMON NAMES

The common names used are those of the AOU, with some exceptions. Spanish common names follow the recommendations of Seipke et al. (2007).

SPECIES ACCOUNTS

The main text of this guide consists of the species accounts, one for each species of diurnal raptor that has been recorded in Mexico and Central America. Species accounts are written in the following format.

SPECIES HEADING The heading consists of the English common and scientific names, with pointers listing the color plate number(s) for the species. The Spanish name appears on the following line.

IDENTIFICATION SUMMARY This is a list of field marks or general characters that apply to all individuals of the species, as well differences in sexes and ages. Next are detailed descriptions of each regularly occurring plumage variation by age, sex, subspecies, and color morph, including eye, cere, and leg or toe colors. These descriptions are for raptors viewed at close hand.

MEASUREMENTS Measurements of wingspan, total length, and weight are given. Data on the first two in many references are incorrect; thus WC undertook to take these measurements from live raptors whenever possible. This was supplemented by data taken from museum specimen tags, as they are for the most part almost the same as data taken by WC on live birds. Total length data given are taken from the top of the head to the tip of the tail, as this is how the raptors are seen when perched. These measurements are a bit smaller than those taken on specimens, which are from the tip of the beak with the head pointed upward to the tip of the tail. Weight information in the literature is usually accurate; nevertheless, we used mostly data taken by us and our colleagues, supplemented by museum tag data, especially for those species that we did not handle as live birds. Ferguson-Lees and Christie (2001) was very helpful.

TAXONOMY AND GEOGRAPHIC VARIATION The subspecies that occur in Mexico and Central America of each polytypic species are given, along with range of each. This section includes comments on recent taxonomic changes, with references.

SIMILAR SPECIES Species that can be confused in the field with the species in each account are listed, along with the plate number or numbers on which each is illustrated, followed by the field marks that separate them. These are given only once; thus, for some accounts, after a short sentence on similarities between two species, readers will find the note “See under that species for distinctions.”

STATUS AND DISTRIBUTION The breeding range or the permanent range and the status within that range are presented, along with information on migration and dispersal. Any population declines are noted, with reasons for these given, if known.

HABITAT All of the habitats in which a species regularly occurs.

BEHAVIOR Any behavior that will aid in field identification is described. Also described are hunting methods and main prey. A brief discussion of nesting substrate and display flights follows. Three methods of flight are described: how the wing beats appear in powered flight and how the wings are held in soaring and gliding flight. If the species hovers, this is also noted. On

some species—for example, the kites—particular flight methods may be distinctive and are described.

MOLT This section is a description of when and how raptors molt their feathers. Some adults complete their molt annually on the breeding grounds before and after breeding (molt is usually suspended while breeding). Others, especially trans-equatorial migrants, molt some feathers on the breeding grounds but suspend molt during the autumn migration and complete their molt on the winter grounds. Some of the larger species do not replace all of their feathers in one year; usually two years or more are required to renew all feathers. Also discussed is the molt of juveniles, as it differs from that of adults in some species. Some begin molt in their first spring, when they are almost a year old, whereas others, particularly trans-equatorial migrants, begin molt earlier on the winter grounds and replace some or most of the body feathers and sometimes also a few tail and flight feathers. Molt is usually suspended during migration.

Age terminology is related to molts. All species are in juvenile plumage when they leave the nest. Many species undergo one annual molt into adult plumage; others, particularly the larger eagles and buzzards, require three or four annual molts to reach adult plumage, with several immature plumages in between. See the Raptor Glossary, below, for the definitions of the immature plumages: second through fourth plumages (Basic II–Basic IV). See Clark and Pyle (2015) for a more detailed description of age and molt terminology of raptors.

Understanding the molt sequences of the flight feathers is important to properly age large raptors in immature plumages. See Edelstam (1984), Miller (1941), and Jollie (1947) for a thorough discussion of molt in raptors. In accipitrid raptors, primary molt begins with number 1 (P1), the innermost feather, and proceeds outward in sequence. In falconids, primary molt begins with number 4 (P4) and proceeds both inward and outward. When all primaries are not replaced in one year, then the sequence continues where it left off when molt is restarted the next spring. However, in accipitrids, molt of primaries occurs again during this molt season, beginning a new wave molt. (See Clark [2004a] for a full discussion of using wave molt in ageing raptors.) The molt of secondaries in accipitrid juveniles begins at three molt centers, S1, S5, and S13–16, depending on size. It proceeds inward from S1 and S5 and outward from S13 to S16 (also inward to replace the tertaries). In species that do not replace all secondaries every year, the pattern of molt is apparently random. In falconids, secondary molt begins with S4 or S5 and proceeds both outward and inward. Other publications that discuss molt are cited in some species accounts.

Molt of the tail feathers is sometimes irregular; however, it usually begins with T1, the central pair. The usual sequence after that is T2, T3, T6, T4, and then T5. However, there is a lot of variation in this order and even some asymmetrical molt, particularly beginning with the second annual molt.

Many species undergo a pre-formative molt of some to many feathers soon after fledging and before the onset or the second pre-basic molt, usually of feathers on the upper back, upper wing coverts, upper breast, and neck. In some species—for example, White-tailed Kite and American Kestrel—this molt is extensive. Juveniles of Mississippi Kites undergo a more or less complete body molt while in South America, whereas juveniles of Swainson's Hawk do not. See Pyle (2005) for a discussion of pre-formative molt in American raptors.

DESCRIPTION After a summary paragraph, there follows a detailed discussion of each age class, including sex differences and color morphs.

FINE POINTS More detailed information on field identification is presented.

UNUSUAL PLUMAGES Any of a variety of abnormal plumages that have occurred in the species are included in this section. Abnormal plumage types are: albinism, partial albinism, amelanism, partial amelanism, melanism, and partial melanism. Albinism is the complete absence of any pigmentation in the plumage, soft parts, and eyes and is extremely rare in raptors. Partial albinism is when several to most or even all feathers lack pigmentation and are white, but the eyes and some soft parts are a normal color. Amelanism is a condition in which the amount of melanin in many or all feathers is reduced such that normally brown feathers appear as a café-au-lait hue (also called *dilute plumage*, *leucism*, and *schizochroism*). With partial amelanism only some feathers are affected or the amount of pigment reduction is not uniform. Melanism results from an excess of dark pigment such that the raptor is completely dark brown on the body and coverts (but, interestingly enough, not always on the flight and tail feathers). But note that the term *melanism* applies only to abnormal plumages; it is called a “dark color morph” when it occurs regularly. In partial melanism only parts of the raptor have excess pigmentation.

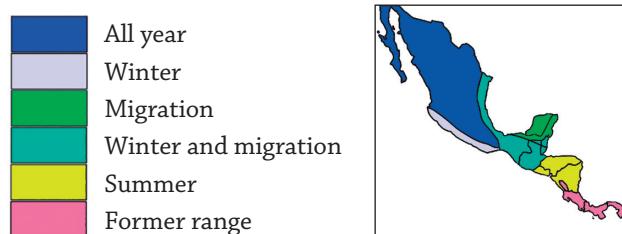
HYBRIDS Any known hybrids are listed.

ETYMOLOGY The origins of the common and scientific names are given except for the obvious ones. In some cases, alternate explanations are given.

REFERENCES The citations in the section are summarized in alphabetical order. A list of references is included as an appendix.

RANGE MAPS

Range maps are provided to give the reader a general idea of the distribution of each species. Finer details are available in the bird field guides for each country. Range maps are not provided for vagrant and introduced raptors. The colors on the maps are shown in the sample below and indicate a species’ presence as follows:



ISLAND SPECIES AND SUBSPECIES

We did not include species and subspecies on islands off the mainland, as that would have increased the number covered with little benefit to the raptor watcher on the mainland.

GLOSSARY

A glossary is included after the introduction that explains the terms used in the guide.

HOW TO USE THIS GUIDE

As a field guide, this book is to be carried in the field during bird-watching, especially raptor-watching. However, it is also to be used as a reference book, to be read and studied at home in preparation for field work.

When a raptor is seen well and its field marks noted, even a beginner can use this guide to identify it correctly. Taking photographs for later study using this guide will also lead to correct IDs.

Please consider submitting your observations of raptors in Mexico and Central America to eBird (www.ebird.org/content/ebird).

HELPFUL FACTS FOR RAPTOR FIELD IDENTIFICATION

1. Juveniles in fresh plumage usually show clean, unflawed uniform plumage and pale tips on flight and tail feathers and greater wing coverts; the latter form narrow pale lines on the wings. These tips usually wear off in winter.
2. Non-juvenile raptors in summer and early autumn often show signs of molt (gaps, notches, etc.) in wings and tail, including uneven trailing edges of wings and tip of tail, and show a mix of new fresh and old faded feathers.
3. Many raptors have different lengths of secondaries in juvenile and older plumages. Some have longer secondaries as juveniles (the wings appear wider); others have shorter ones (the wings appear narrower). Most raptors have a longer tail in juvenile plumage.
4. The flight feathers of juvenile raptors, especially secondaries, often show very pointed tips, whereas adult flight feathers have square or rounded tips. This results in a noticeably serrated trailing edge to the wings and sometimes the tail of juvenile birds.
5. Flight and tail feathers are darker on the uppersides as compared to the undersides, and darker on the outer webs compared to the inner webs. Hence, flight and tail feathers appear darker on the uppersides.
6. Some raptors show pale areas on back-lighted underwings (windows or panels).
7. Rufous underparts in fresh plumage of juvenile raptors—for example, Red-tailed Hawks and Ferruginous Hawks—usually fade due to sunshine and weather to buffy, creamy, or even whitish a few months after fledging.
8. Raptors that show rounded wingtips when soaring often show somewhat pointed wingtips when gliding.
9. There are two somewhat separate problems in raptor identification: perched and flying. The field marks used for each may be different. For example, wing shapes and underwing patterns of soaring raptors are not visible on the same raptors perched, when the relative position of wingtip and tail tip can be field marks.
10. When raptors are seen at close range, many details and shadings of color are noticeable; the same raptor seen at a distance appears to show only light and dark areas, with loss of definition and color.
11. Raptors, and other birds as well, often appear to have different colors under differing lighting conditions. All flying raptors appear darker against whitish skies, for example.