Notes based on Joe Morlan's Ornithology class lecture September 15th, 2011.
Joe Morlan is not responsible for these notes, any errors or omissions in them are mine.

Red-tailed Hawk

OCCURRENCE
The most common *Buteo*-hawk throughout NA.
Numerous different subspecies. The one that occurs in CA is *calurus*.
Found in a huge variety of habitats.
Nest a large twig platform. In trees, on power poles, cliffs.

Rain keeps hawks down. They need to have sunshine in order to soar on thermals and they mostly forage airily, looking for prey while hang-gliding, often in one spot.
As far as CA is concerned it is the only bird that does what Sibley calls kiting and what most authorities call stilling or still hunting. The birds get their wings in a position into a head wind so that the force of gravity is balanced by the lift. Especially seen along coastal cliffs, where the Red-tailed Hawks are facing into the wind, taking advantage of the lift that is offered by the wind and just hang in one spot effortlessly. None of the other Buteos in CA do that.

They will occasionally hover, but it is not typical for them.
The 3 raptors that typically hover are the Kestrel, the White-tailed Kite and the Rough-legged Hawk.
Any raptor may hover briefly while breaking or changing direction.
Hover: keeping still in one spot flapping the wings for a period of time watching the ground.

Like all of the Buteos they like to get up and soar in the open, often taking advantage of rising columns of warm air called thermals, which is why they often appear to be flying in circles. When they are flying in a circle usually that means that they found a thermal and they are simply gliding on it, it is a matter of energetic efficiency.

A direct correlation between nesting success and distance from the nearest road has been found in a study on Red-tailed Hawks. Birds nesting close to roads have much lower nesting success.

FIELD MARKS
Upper side of tail red in adult. Shines through when they fly overhead giving the underside of the tail a light pinkish wash. Juvenal tail brownish with dark bars.

When seen perched, most have a **pale V on the back**, formed by whitish or cream-colored mottling on the scapulars, one of the better field marks for a perched Red-tailed Hawk. Even from the side the pale scapular region can be helpful in picking them out. The bird is fairly broad across the shoulders and the wing tips are relatively long, almost reaching the tip of the tail.
Adult dark eyes, younger birds yellow eyes.

Pale chest contrasting with a **dark head**.

Easier to identify in flight than when perched.
The leading edge of the wing is held relatively straight and swept forward, a posture quite typical of soaring Red-tailed Hawks. The head appears tucked in between the forward swept wings, gives it a somewhat small headed look.
Wings appear quite broad (unlike the Broad-winged Hawk, in which the wings appear to be quite narrow).
Dark border along the leading edge of the inner wing, the "**patagial bar**". Stops right at the wrist. The **patagium** is the fold of skin extending from the humerus to the carpal joint, making up the leading edge of the wing. The patagial bar is an excellent field mark for Red-tailed Hawk. They all have it in all plumages. Can be difficult to see in the all dark birds. Most of the dark birds that we see are not black, they are warm brown. They have a shadow of the pattern of the light birds which hard to see. (Light chest, dark hood, belly band, patagial bar.)

Most birds have at least a trace of a **belly band**, some very pale individuals may lack it. It is usually more obvious in eastern birds than it is in western birds. The pattern on the underparts of the adults is quite variable.

Big-chested look, a rather powerful looking bird.
Relatively short, broad tail, very rounded wings.
A short, fanned tail is a characteristic of hawks in the genus *Buteo*. Adults have shorter tails and wings than juvenals.

Molt takes place from the late spring through the late summer.

CA subspecies *calurus* highly variable, generally a little darker than most other subspecies. The dark subterminal band on the tail is generally more pronounced on *calurus*, but there is considerable individual variation.
Most birds are light or intermediate morph.
The subspecies *calurus* has the whole throat dark.
Eastern and northern *borealis* have a white throat. Although some western birds may also have a white throat, it is believed that some individuals of *borealis* may migrate through CA. Hard to know which one you're looking at.

Subspecies differ from each other in average differences. It is the population which differs, not the individual bird. You can't always identify a bird to a particular subspecies. Subspecies can be identified by the range in which they are nesting.

Some books create names for essentially every color variant, but it is more of a continuum of variation than discrete morphs that have specific plumages that are digitally separable from others.

Juvenal

The plumage which is held during the entire first year in most Buteos is the **juvenal plumage**. Unnecessarily, the more general term immature is often used in these raptors. It describes all plumages that are not definitive (looking like they will in all subsequent years). These immature Buteos are actually juvenals. There are a few exceptions among the Buteos, birds that take more

than one year to acquire their definive adult plumage. Those include the Swainson's Hawk, which takes two years, and the White-tailed Hawk.

Brownish tail with many narrow bands.
White chest contrasting with a dark bellyband and especially with a dark head.
Juvenals have longer tails and wings than adults.

Juvenals flying overhead typically show pale trapezoid patches on the wings formed by lighter translucent inner primaries which contrast with the outer secondaries. The patches can sometimes be visible on the upper surface also.
Compare to the translucence in the outer wing of the Red-shouldered Hawk. On Red-shouldered it is crescent shaped, on Red-tailed squarish.
page 118 in Sibley illustrates the translucence in molting juvenals that are replacing primaries for the Broad-winged Hawk on page 118. It is true of all Buteos.
Sibley has a web page that deals more with this. Illustrated are juv Red-tailed Hawks.
http://www.sibleyguides.com/2011/08/the-finer-points-of-wing-translucence/

HARLAN'S HAWK
Has formerly been listed as a separate species, now lumped into the Red-tailed Hawk as a subspecies based on some scientific publications.
Its taxonomic position has been disputed for quite a while.
In particular Bill Clark has been writing papers supporting the idea that the Harlan's Hawk should be given species status.
A new paper concluded it was a subspecies based on genetic work.
Brian Wheeler has a lot of detail on Harlan's Hawk breeding in Alaska in his excellent books on hawks of NA. He has mapped breeding sites within the range of other breeding sites of non-Harlan Red-tailed Hawks. If they are subspecies they should not be breeding side by side. That leaves the question what those so called Red-tailed Hawks where. Maybe light morph Harlan's. If Wheelers data is correct and they are nesting sympatrically that means they are biological species. There is no other evidence for that. The places where they breed are very remote, hard to get to, hard to study. The work that has been done is contradictory.
Breeds in northern Alaska and winters primarily in the southern plains.
A rarity in CA with relatively few records.

Almost all dark morph birds.
No red in the tail, tail mostly white. Tail coloration variable, most of them have some dark smudging. Some individuals do have some red in the tail.

KRIDER'S HAWK
Generally considered a subspecies of Red-tailed Hawk, but its status has been debated and remains controversial. Has been though to be the light morph of Harlan's Hawk, that does not seem to be correct.
A rather uncommon bird, rare even within its range.
Breeds in the northern plains and winters in the southern plains.
There do not seem to be verified records west of the Rockies.

There are some claims in CA. People have claimed as many as five in the Owen's Valley on the east side of the Sierra Nevada in the winter. That is a place where Ferruginous Hawk is quite common. Has been claimed at the hawk watch. There are no specimens for CA.

A very pale bird. Pale underparts with at least a faint patagial bar.
Pale head, often with moustatial markings.
Tail often almost all pale, can have some red in it.

Illustrated articles about Harlan's and Krider's Hawks are linked from Joe's class web site.

Swainson's Hawk

OCCURRENCE
A bird of the western plains and basin regions.
Tends to prefer grassland habitats but will occur in other types of open areas.
A very long distance migrant.
Most migrate through Central America, channeling through the isthmus of Panama where their migration often darkens the sky. Winter in grasslands in northern Argentina, southern Brazil, Uruguay, the Pampas regions of parts of South America. We used to think that the entire world population went through the isthmus of Panama and ended up in South America. But there are outlier populations which migrate only short distances or not at all. Wintering populations have been documented on private property on Boudin Island in the Delta Region and in Mexico.
Has suffered severe declines in the early half of the 20th century. Has recovered quite well, in particular in CA it is doing better than ever. It used to be a scarce breeder in the Central Valley where it now is relatively common in areas with tall trees.
Unlike most other raptors it can be found in flocks, particularly in migration. They can sit out in a field in the hundreds. In burned fields they feed on grasshoppers on the ground. They are primarily insect eaters. They even catch insects like dragonflies in the air sometimes. Their decline was probably due to pesticides. They still suffer from pesticide contamination in the agricultural regions of South America.

Bay Area:
SH has never been a common bird along the immediate coast. It occurs much more in the interior and foothill regions. It can be found regularly in eastern Contra Costa and Alameda counties, both during migration when it sometimes becomes common, and as a breeder anywhere where there are really tall trees. Even in residential areas where planted trees are reaching a height that is suitable for nesting of various raptors they are moving in. Also nest marginally in Napa County, possibly has nested in Sonoma County, definitely some in Solano County.
Small wintering population in the delta.
In the immediate Bay Area it is a very rare migrant at the GG Raptor Observatory in the Marin headlands. Most of the records probably in late August, they may continue through mid-September. Usually just one or two a season.

FIELD MARKS

There are light, dark and intermediate birds in all of the plumages. We are looking at a fair amount of variation, not crisply defined morphs.

Face distinctive with a pale forehead and a white throat.
Variable amount of color across the chest.
Pattern **dark head, white throat, dark chest** almost a reverse of the Red-tailed Hawk.

Coloring on the back generally but not always quite a bit plainer than that of the Red-tailed Hawk (not a lot of checkering or mottling).
Nat Geo says that it lacks white spotting. In fact, there may be some spotting, but more on the back than just the scapulars and it does not form a distinct V.

A rather **long, narrow winged** bird, looks a little bit like a harrier in flight.
There is white on the uppertail coverts which can cause confusion with harrier.
Tail just too short for a harrier.
Falconlike shape. Especially the juvenals which often have a dark whiskermark can look deceivingly like falcons.
Wing tips reach the tip of the tail when perched.

In flight the wings are not held flat the way they are on Red-tailed Hawk but tend to be swept up. Not exactly like a Harrier which has crooked wings and a dihedral, but more as if the bird is hanging from thumbtacks that are attached to the sky on each end of the wing, the wings are swept upward without any particular angling.
As they glide along they often have the tip of the wing almost pointed upward
Almost a catenary (the curve that an idealised hanging chain or cable assumes when supported at its ends and acted on only by its own weight).

The wing coverts are quite pale but the **trailing edge of the wing is relatively dark**, including all of the primaries and secondaries. This is kind of the reverse of what you see in most hawks where you have a lot of dark markings in the underwing coverts and paler primaries and secondaries often with just a little bit of dark in the tip.

Leading edge of the wing lacks the dark patagial bar. It is usually bent a little bit more than in most Red-tailed Hawks.
The **wrist mark** is quite **thin, crescent** shaped, stands out quite well.

The wing tips appear narrow with only 3 slotted outer primaries, rather than 4 to 5 as the Red-tailed Hawk and other species. That means the number of "fingers" on the tip of the wing is reduced. Broad-winged Hawk has the same wing formula with only three emarginate or slotted primaries.
Emargination: having a shallow notch at the tip. The outer web is very narrow at the tip of the feather. The inner web, which is supposed to be broad, is cut out and narrower towards the tip. That produces the slots in soaring birds. Birds that fly very slowly often have numerous slotted primaries. It is an aerodynamic feature to prevent stalling when flying at low speed.

Usually the **undertail coverts** are **white** on Swainson's Hawk, even on the dark morph birds which makes them rather unique. Only dark morph hawk with light undertail coverts.

Juvenal
Take three years to become fully adult.

Usually pretty streaked underneath.
Dark patches (streaking coalescing into a large blotch) on the sides of the chest forming a dark pattern.
Limited amounts of pale spotting on the scapulars.

A dark stripe on either side of the throat which can make the face pattern decidedly falcon-like. It is unique to the pattern on the head of the juvenal Swainson's Hawk.
It also has an attenuated rear end that suggests the bird is some kind of falcon. An essentially pale head with a dark moustatial stripe is highly suggestive of juvenal Swainson's Hawk!
Indeed, Swainson's Hawks have been misidentified as Aplomado Falcon along the Mexican border from time to time.