

Notes based on Joe Morlan's Ornithology class lecture May 7<sup>th</sup>, 2009.

Joe Morlan is not responsible for these notes, any errors or omissions in them are mine.

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There have been a number of **Red-necked Phalaropes** on shore lately. They are mostly migrating off shore in the springtime, but there have been strong winds blowing them on shore a little bit.

Kevin saw a **Cerulean Warbler** in Connecticut. It has never been a common bird and appears to be declining. It has disappeared from a lot of places where it used to occur. It tends to be a treetop bird and its song does not sound very distinctive. It is not that easy to find even within its normal range. There is speculation that it has problems on the wintering grounds, but we don't really know.

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Many ducks change their look during the year confusingly differently from other birds. There even is a special plumage term used in male ducks: "eclipse plumage". Because of this we discussed molts and plumages at length in class.

The following overview over molt and plumage terminologies was inspired by the discussion in class but goes beyond it.

## Molt and Plumage Terminologies

### **MOLT, A CYCLIC ACTIVITY**

Molt, growing in new feathers which push out the old ones, is a very important part of every bird's life. Feathers need to be replaced because they are subject to wear and a bird's life depends on well functioning feathers.

Molt is a cyclic activity, which means it is regularly repeated in a predictable manner, like breeding or migration. Every bird molts all (or in some cases almost all) of its feathers once in a molt cycle. Many birds have additional molts and replace some (rarely all) of their feathers a second time or sometimes even several times during one molt cycle. A molt cycle takes usually a year, especially for birds living in temperate climates like in North America, but this is not necessarily the case.

Birds can change their appearance by growing in feathers of different coloration during different molts. But feathers can be replaced without a change in the bird's appearance and also appearance can change through other means than molt.

### **DIFFERENT TERMINOLOGY SYSTEMS**

There have been different approaches to naming plumages and molts. These are foremost the Life

Year system and the Humphrey-Parkes system. They are rooted in different concepts and cannot be used interchangeably.

### **THE LIFE YEAR SYSTEM**

Here the names of plumages and molts are linked to different events in a bird's life.

This can for example be the reproductive cycle, contrasting "breeding" or "nuptial" plumage with "non-breeding" or "non-nuptial" plumage.

It can also be the seasons of the year, "summer plumage" vs. "winter plumage".

The first plumage of a bird that consists of true contour feathers (not natal downs) is called the juvenal plumage. It is usually the plumage in which a bird fledges.

Molts are in the life year system often named according to the plumages they replace, like post-juvenal molt or post-breeding molt.

In the Life Year system the term plumage describes the aspect (appearance) of the entire feather coat in a specific season or during a specific state in the reproductive cycle. For example the European Starling white spots in

winter and is glossy dark and unspotted in summer. It does not molt in between, what happens is that the white feather tips wear off. Using the life year system we can talk about two different plumages in this case, the summer or breeding plumage and the winter plumage. Keep this in mind, because in the Humphrey-Parkes system plumage has a different definition and it is important to notice that difference.

There are some problems with this system. For example many birds migrate away from their breeding grounds and may spend time in a region where it is not winter at all wearing their "winter plumage".

There are also advantages with this system. You can use it to describe what you see, you don't have to know if a bird changes its appearance by molt, by wear or by some other process.

### **THE HUMPHREY-PARKES SYSTEM (H-P SYSTEM)**

Philip Humphrey and Kenneth Parkes felt there was a need for a neutral terminology, one that does not link plumages and molts to other events in a bird's life, in order to make it easier to compare molt strategies. In 1959 they proposed a terminology system which is now known as the Humphrey-Parkes (H-P) system and has become the most widely used terminology in North America. It is not used in Europe.

They named the plumage that every adult bird acquires through a complete molt once in every plumage cycle the **basic plumage**. In the H-P system molts are always named according to the plumage which is being acquired. This makes sense biologically since it is the growing of new feathers that requires energy, the shedding of the old feathers is a passive effect of the new feather pushing the old one out. The molt leading to the basic plumage is called the **prebasic molt**.

Many birds have an additional molt during one plumage cycle. In almost all cases this molt is partial, usually the head and body feathers or some of them are replaced while the flight feathers (primaries, secondaries and tail feathers, the most strong and powerful feathers) are retained from basic plumage. The plumage that is acquired by this second molt in the cycle is called the **alternate plumage**, the molt by which it is acquired is the **prealternate molt**.

(A few birds have a second additional molt in their plumage cycle. This is called the

**presupplemental molt**, which produces the **supplemental plumage**.)

The terms alternate and basic are not synonymous with breeding and nonbreeding. They have more to do with whether the molt is complete or partial. It does not matter whether the bird breeds in that plumage or not, it does not matter which season it is. We are talking about a cycle, about the bird having all fresh new feathers ready to start again through a brand new year.

### **AN AID IN LOOKING FOR HOMOLOGIES**

For putting character traits into an evolutionary context the concept of homology is important. It means that a character is shared because it is inherited from a common ancestor. Homology is contrasted with analogy, which means that a character is shared by independent adaptation. An example is the joint between a bird's tibia and tarsus. It is homologous with the human heel (it bends backwards!) but it is analogous with the human knee, allowing the "leg" to be bent in the middle.

An important reason for Humphrey and Parkes to develop their terminology was to make comparisons easier by not obscuring possible homologies or implying false homologies by terms reflecting other things than the molt strategy, like reproductive or seasonal phenomena. Since molt is a process there cannot be a fossil record to confirm how it evolved, but if comparisons reveal patterns this can lead to plausible hypotheses.

One such hypothesis is that the prebasic molt is homologous between species. All birds go through a prebasic molt regularly and all birds need to do so since they are depending on well functioning feathers. So this is probably what the birds' common ancestor did and passed on to all its descendants.

### **THE DEFINITION OF PLUMAGE IN THE H-P SYSTEM**

In the H-P system only molts can produce plumages. A **plumage** is defined as a **single generation of feathers**. After a complete prebasic molt the whole feather coat of the bird consists of one generation of feathers, the basic plumage. If this bird later goes through a partial prealternate molt it has then a feather coat that consists of two generations of feathers. The statement that a bird is in alternate plumage means that it has gone through an alternate molt and is wearing a feather coat that consists of two

plumages, the newly acquired alternate plumage plus the remaining unmolted parts of the basic plumage.

The appearance of the bird is called its **aspect** in H-P terminology. The aspect of a bird can change without a molt, like in the earlier discussed European Starling. Starlings have only one molt per cycle, a prebasic molt in the fall which produces their basic plumage. The fresh feathers have white tips which gives Starlings the spotted winter aspect. As the tips wear off they develop their dark summer aspect. Since there has not been an additional molt they are still in the same basic plumage.

### **THE FIRST PLUMAGE CYCLE**

Humphrey and Parkes developed their terminology with adult birds in mind. Some years ago Steve Howell and coworkers studied molt sequences in young birds extensively and proposed some modifications to the H-P terminology.

### **ORIGINAL TREATMENT OF THE FIRST CYCLE BY H-P**

During the first year in a bird's life the pattern of molt and plumage succession is often different from later in life. A bird starts out with or without a cover of natal down in the nest. Before the bird fledges it acquires a first full set of true contour feathers, the **juvenal plumage**. When Humphrey and Parkes introduced their plumage terminology in 1959 they imported that term from the Life Year system.

Many birds go then through a molt by which they acquire a plumage which they wear during their first winter. This plumage often looks like the basic plumage of later cycles. This was probably the reason Humphrey and Parkes considered it homologous with adult basic plumages and defined it as the first basic plumage. Thus **first basic plumage = first plumage after the juvenal plumage**. The molt by which it is acquired is often partial, so they made an explicit exception from the rule that basic plumages are complete. They choose this plumage as the starting point for the first plumage cycle.

### **MODIFICATION OF FIRST CYCLE TERMINOLOGY**

Steve Howell and coworkers recognized an inconsistency here in the H-P system and proposed a modification to the terminology.

Since all birds have a juvenal plumage which is acquired by a complete molt and consists of all new feathers, it should be considered the bird's first basic plumage and it is a much more appropriate starting point for the first cycle. Thus **first basic plumage = juvenal plumage** in the modified H-P system.

Howell et al. realized that many birds have a special molt in their first cycle that is not repeated in later cycles. They proposed the name **preformative molt** for it, which produces the **formative plumage**. They think that the similarity in aspect the formative plumage often has with adult basic plumages probably is due to analogy rather than to homology. The formative plumage often equals what used to be called the first winter plumage in the Life Year system. Not all species have a preformative molt. The major achievement in Howell et al.'s work was to realize that what Humphrey and Parkes had called the first basic plumage could be any of three plumages (a formative plumage, the alternate plumage or the, according to this modified terminology, the second basic plumage) and to remove that inconsistency. However, this change leads to confusion. Now it is not possible to be sure if somebody by **first basic plumage** means the juvenal plumage or the plumage after it. Therefore Howell et al. propose to keep calling it the juvenal plumage, but to keep in mind that it really is the bird's first basic plumage.

### **FOUR MOLTING STRATEGIES**

After the revision of the first cycle it became evident that there only exist four major patterns of plumage succession:

#### **SIMPLE BASIC STRATEGY (SBS)**

All cycles: only one molt, the prebasic molt.

#### **COMPLEX BASIC STRATEGY (CBS)**

First cycle: the first prebasic molt and a formative molt.

All following cycles: only one molt, the prebasic molt

#### **SIMPLE ALTERNATE STRATEGY (SAS)**

All cycles: two molts, the prebasic molt and the prealternate molt.

#### **COMPLEX ALTERNATE STRATEGY (CAS)**

First cycle: the first prebasic molt, a formative molt and the first prealternate molt.

All following cycles: two molts, the prebasic molt and the prealternate molt.

### **INDEPENDENCY OF FEATHER GROWTH AND PIGMENTATION**

Even though there are many cases where a molt changes the appearance of a bird by way of the new feathers having a different coloration from the old ones they replace, the growing of new feathers and the deposition of pigments are controlled separately. This can for example be observed in shorebirds. Every so often a shorebird does not have high enough levels of breeding hormones yet during its first spring when going through its first prealternate molt. It acquires its first alternate plumage but since the hormones are not there yet it looks more like it was in basic plumage. Feathers growing in later during a molt can also have a different coloration from feathers that grew earlier if hormone levels change during the course of the molt. This is for example regularly seen in young large gulls where the feathers grown early during their long and protracted molts can look quite differently from feathers grown later during that same molt.

### **DEFINITIVE PLUMAGES AND CYCLES**

Contrary to the terms basic and alternate the term definitive plumage does reflect the coloration of the feathers. A **definitive plumage** is one that looks like it will look in all subsequent years. Before plumages become definitive, as long as they can be distinguished by color or pattern, they are numbered: first basic plumage, second basic plumage etc until the definitive basic plumage is attained, likewise first alternate plumage, second alternate plumage etc until the definitive alternate plumage is attained.

An example for birds that change the coloration of their plumage over several years are many of the gulls.

Birds may breed before they have a definitive plumage or they may not be sexually mature yet but have a definitive plumage. Not all plumages of a given cycle are necessarily definitive, the basic plumage of a cycle may for example be definitive but the alternate plumage of the same cycle not.

The term definitive can also be applied to plumage cycles. The coloration of the plumage may change after the first plumage cycle, but the sequence of plumages does not. This means that all plumage cycles after the first cycle always are **definitive plumage cycles**. In birds that have the

Simple Basic strategy or the Simple Alternate Strategy the first cycle is definitive already.

### **ECLIPSE PLUMAGE AND THE H-P SYSTEM**

So what is the eclipse plumage?

It is not a third special plumage that ducks have.

### **HOW MALE DUCKS MOLT AND HOW IT USED TO BE INTERPRETED**

Ducks have two body molts per cycle, one gives males their dull eclipse plumage in early summer, the other one in fall gives them the bright plumage that they have during most of the year. They molt their wing feathers separately between those body molts, not synchronously with one of them. So it is not straight forward to determine which body molt the wing molt belongs to, thus which body molt is to be regarded as part of the complete prebasic molt and which is the partial prealternate molt. Since the brighter colored plumage in most birds is the alternate plumage and since it is usually worn in the breeding season, it used to be assumed that the brightly colored plumage male ducks acquire in the fall and in which they perform courtship is their alternate plumage and that the dull eclipse plumage they have in summer is their basic plumage.

### **PYLE'S STUDY OF DUCK MOLTS**

In 2005 Peter Pyle published the results of a thorough study examining and comparing the molt status of over 2000 specimens of ducks and geese. He concentrated on ducks of the genus *Anas*, scoters and the Ruddy Duck. This is a summary of his findings for the definitive cycles.

### **GEESE**

Geese are closely related to ducks and similarities are assumed to be likely homologies (traits shared through common ancestry). Geese molt only once a year, a prebasic molt, starting with the flight feathers of the wing in late summer directly followed by a body molt in the early fall. The last feathers molted are the greater scapulars and the tail feathers.

### ***Anas*-DUCKS**

In ducks of the genus *Anas* females have a body molt in spring, they breed in the acquired plumage. The corresponding body molt in males is later, in early summer, it is the molt by which they acquire their female-like eclipse plumage. Pyle found that this molt is incomplete and that males are molting an even lesser proportion of

their feathers than females do. Both sexes molt their wings in summer, in July and August. Both sexes go through another, this time complete body molt after the wing molt. This is the molt that gives males their brightly colored plumage in which they perform courtship during the fall and winter. In most species of *Anas* this body molt occurs mostly in September and October. In three species, Cinnamon Teal, Blue-winged Teal and Northern Shoveler, it occurs later, October through January. At the end of this molt the greater scapulars and the tail feathers are molted.

### SCOTERS

Most scoters seem not to have a body molt before the wing molt, in those individuals in which it occurs only a small proportion of the body feathers are molted. Scoters have a wing molt in late August and September and a complete body molt in October and early November.

### RUDDY DUCK

Adult Ruddy Ducks undergo a body molt between mid-February and mid-May. During this molt the males get their brightly colored plumage. It is incomplete, with a greater proportion of feathers molted in males than in females. Most individuals also molt their tail feathers during this molt. Ruddy Ducks molt their wing feathers from late July to early September. After that they have a complete body molt in which they molt all their body feathers from mid-September to the second half of November. During this molt the males get their drab plumage.

### CONCLUSIONS

Due to presumed homology with geese which start their basic molt with a wing molt that is followed by a body molt and due to the fact that the body molt in ducks that precedes the wing molt is incomplete, Pyle concluded the following:

The body molt that precedes the wing molt during which many males acquire their drab "eclipse plumage" is the prealternate molt. Thus the **eclipse plumage is the alternate plumage**. The summer wing molt together with the following body molt is the prebasic molt. Thus **the brightly colored plumage many male ducks wear during most of the year is their basic plumage**.

The plumage sequence is the same in the Ruddy Duck. The difference is that due to time shifts in molting and in pigment deposition male Ruddy Ducks acquire their brightly colored plumage through the prealternate molt before the wing molt in early spring and their drab plumage through the prebasic molt which starts with the wing molt in late summer and continues with the body molt in fall. Their plumage coloration sequence is thus more similar to what we are used to from many other birds.

### CONFUSION IN TERMINOLOGY

Since duck plumages have been interpreted the other way around before Pyle's study, his findings unfortunately lead to a big confusion in terminology. Pyle's results can't be ignored, in plumage studies it has to be acknowledged from now on that the eclipse plumage equals the alternate plumage etc, so it is important to always carefully make clear which plumage is meant when referring to basic and alternate plumages in ducks.

For field ornithology this is a case where it is better to stick to the traditional life year system. Calling out a duck in alternate plumage in the field will lead to confusion, say eclipse plumage or eclipse aspect and people will understand what you mean.

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Ducks are not the only birds that become flightless during molt. Loons and grebes also have a similar strategy where they become flightless. They are duck-like diving birds, flight is not necessarily that important to them to be able to catch food or to escape from predators. Diving ducks on the other hand do have an eclipse plumage. Why don't loons and grebes?

You will often see female type ducks arriving in the fall. In August and September when teal are migrating like hell you can't tell except by eye color the male Cinnamon Teal from the females. Then when they get to the wintering grounds they conclude their prebasic molt by the body molt and get their cinnamon coloration.

A lot of times people tend to ignore female ducks. The males are generally quite recognizable. The females all tend to look about the same and are generally just plain brown. Although when you look at them more closely they are not just plain brown. They have mixtures of brown and dusky and little loops in the scapulars and dark markings on a tawny colored chest and fine dark markings on a pale head and often some dark in front of and behind the eye. (Mallard) These are very complex patterns. At your peril do you ignore female ducks. The assumption is often that they must be the same species as the males. Especially if you are out there in September and October you don't know that at all. In many cases the rarer species, the vagrants, tend to be young birds and they often have a female-like plumage. You may be overlooking them. For example, a number of the Garganey records for CA are female plumaged birds. The greatest mistake we can make is to ignore birds.

Male and female ducks have different vocalizations.

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### **Surface feeding ducks**

The classic one is the Mallard. Other examples are widgeons, pintails, teal. They dip into the shallows, tend to feed in shallower water. Feed on vegetation, often with their tails up in the air. Because they do not dive they have their feet more centrally located under the body. To start flying from the surface of the water they can just push against the water with their feet directly underneath their center of gravity.

The other group: diving ducks, birds like Canvasbacks, Scaups and Scoters. Their feet are located towards the rear of the bird so they can use their feet to propel themselves underneath the water. Because of that lopsidedness they tend to need to get a running start when they fly from the surface of the water.

All ducks have a "nail" at the tip of the bill, a hard part at the very tip of the mandible, almost a little bit of a hook. intended to strengthen the tip of the bill. Ducks have a very flat rather soft bill and they have little taste buds around the edges of the bill.

### **Speculum**

A flashy bright plumage color on the secondaries of ducks. The pattern is often touted as a field mark.

The lateral back feathers, the scapulars, are very long. The folded wing is completely occluded by flanks and sides from underneath and long overlapping scapulars and especially on some of the males very long tertials. The speculum is not normally visible on a swimming or sleeping bird. Male ducks almost always have very enlarged tertials which cover over much of the folded wing.

## **The Mallard group**

Mallard, Mottled Duck and American Black Duck.

Some people believe that all these three ducks are just one species.

## **Mallard**

### **OCCURRENCE**

Widespread

Also found throughout Eurasia, where it is abundant and partially migratory.

The most widely domesticated species in the world. There are a number of domestic breeds.

Frequently released or escaped.

Does hybridize with some of the other species.

One of the few surface feeding ducks that breed right in the Bay Area.

### **FIELD MARKS**

Speculum blue with white borders. (A Black Duck does not have the white borders to the speculum).

Iridescent, can look black at certain angles. The important thing is the strong border of white across the front of it and at the trailing edge, it is bordered front and back.

White tail helps separate the Mallard from the Black and Mottled Ducks.

Orange colored legs.

### **ADULT MALE BRIGHTLY COLORED**

All yellow bill.

Central tail feathers black, forming curlicues.

Outer tail white.

Tail coverts black.

Head iridescent green, but may appear purple.

Overall gray coloration on the body, a herring bone pattern of very fine vermiculations, (very fine patterns that are in parallel waves).

### **ECLIPSE MALE**

They go through a summer plumage in which they are female-like, called the eclipse plumage. New research has proven this to be the alternate plumage.

You'll see that the prealternate (preeclipse) body molt is not complete. You'll see Mallards in the summertime with some green on the head or some gray on their bodies. They don't necessarily look like they are in a complete female-type plumage, they look like a mess.

The all yellow or yellowish green bill is retained.

### **ADULT FEMALE**

Orange bill with a variable black or dark gray saddle on top. This dark area is blotchy and irregular. In the summertime there is more dark on the top of the bill with much less orange on it and they are a little bit more difficult to tell.

Much white in outer tail feathers, central tail feathers a little bit darker.

Belly mostly dark (the only one of these brown ducklike species, the other species have a paler belly).

Closest in appearance is the female Gadwall. In the wintertime the Gadwall has orange just down the sides of the bill and a less coarse pattern to the chest in particular. Gadwall do breed locally in the Bay Area, mostly in the Central Valley, but you can get them at Coyote Hills and even down at Palo Alto Baylands in the south bay. They used to be absent as a breeding bird here but they have expanded quite a bit. Gadwall is a more finely patterned bird, particularly on the chest. It is smaller than the Mallard, does not have the white tail.

### **JUVENILE**

Juveniles of both sexes tend to resemble the female,

## VOCALIZATIONS

Male and female night and day difference

Female's typical a hoarse wack, wack, wack, wack

Male's wheeg, wheeg, wheeg wheeg

## EXAMPLES FOR WHAT DOMESTICATED MALLARDS CAN LOOK LIKE

- A Mallard-like bird, substantially larger, unusually low center of gravity. If you encounter one of these it will probably waddle up to you and demand to be fed. It is a domesticated Mallard. One of the things you do when you domesticate animals is that you try to make them big. Some of these are so fat that they cannot fly. These birds can come from a lot of different places. You can buy little ducklings at Easter time, they often get released. Duck hunters are particularly interested in Mallards because they are the largest and most delicious of all of the game ducks. Domesticated Mallards can have all kinds of weird markings or be all white. In general chickens, turkeys and ducks in domestication are bred to be white because the naked skin is more presentable in a grocery store. Wild birds and birds that have dark coloration have stains and pigments in their skin.
- Female type bird. Looks sort of Mallard-like, a little bit bigger. All black bill. Some curlicue in the tail, not particularly prominent. Some white in outer tail feathers. Decidedly bridal headpattern, a little like Spot-billed Duck (a vagrant to Alaska and Kodiak Island, has never been recorded south of Alaska). But a Spot-billed Duck has a yellow tip to the black bill and white tips to the tertials. The bird in this slide has also white tips to the tertials, looks quite good for Spot-billed Duck except it does not have the yellow tip to the bill.

You need to have all of the field marks, not just some of them. Especially when it comes to ducks, and especially ducks that seem to have Mallard in them, because these things hybridize and can look like almost anything. They hybridize with domestic ducks and back cross. You are looking at a situation which is not unlike Rock Pigeon with a huge amount of individual variation. Left over traits persist in a population for decades. Especially in a situation like a park pond where there is abundant food aberrant looking offspring from the past of domestic types of ducks may persist for long periods of time. They used to persist longer than they do nowadays. Nowadays a lot of the ducks are released deliberately in the park knowing that people will feed them and then the people that released them come back and trap them when they are adults. Even the wild ones become docile and feral in a relatively short period of time.

A web page on "manky mallards" with photos of all of the different breeds plus a lot of the hybrid types, a handy reference to all of those weird ducks that show up on the park ponds, is here:

<http://10000birds.com/manky-mallards-domestic-feral-or-just-plain-odd-mallards.htm>  
(domestic, feral or just plain odd)

## **Mottled Duck**

### **OCCURRENCE**

Replaces the Mallard in peninsular Florida and in coastal Texas. Tends to occur more in salt marshes. Does not overlap the Mallard very much during the breeding season. There are few hybrids between Mallard and Mottled Duck.

Mostly a permanent resident, does not migrate too far, Some movement up into east Texas and Oklahoma. Historically the population in Florida was confined to Florida. The species was introduced successful in coastal South Carolina and now ranges from South Carolina to Florida. It is unclear whether the birds in Georgia come from a range expansion from the introduced population in South Carolina or from a natural expansion of birds in Florida. They are very limited in numbers and in their distribution in Georgia, but there is very little habitat in coastal Georgia to support healthy populations.

No Mottled Duck has ever been claimed in CA

### **FIELD MARKS**

Very similar to Mallard.

Males and females look much alike.

Male bright yellow bill, female drabber.

Plumage of male almost identical to female, a little bit darker, some subtle differences.

Pale head and neck, they lack the fine streaking, the vermiculations, that mark the head and neck of a typical Mallard. The body itself is quite a bit darker than that of the female Mallard. The tail is also dark.

The subspecies that they mention in the Nat Geo are very poorly defined, there is not much difference.

## **American Black Duck**

### **OCCURRENCE**

Ranges in the northeastern part of NA

A migratory species that is severely declining. It is declining because of hybridization with Mallards. Male Mallards are very aggressive when they are trying to find a mate. Mallards have been expanding their breeding range southward, partly because of domestic birds or possibly birds just not migrating as much. The Black Duck historically occurred in wooded areas and streams in the eastern US and in coastal marshes. The Mallard has always been a bird more of freshwater marshes and meadows and large lakes. The Mallard is probably better suited to human habitation and as settlements and towns and villages were built up in the middle of the Black Duck's range Mallards may have moved into that area and caused some decline in pure Black Ducks because you end up with a lot of these hybrid types. The Black Duck has retrenched to coastal marshes that Mallards don't like, they don't like saltwater. If you go to places like the outer North Carolina marshes you'll find tons of Black Ducks out there. Also some of those wilderness areas like northern Quebec and Labrador are all pretty much Black Duck strongholds, although the map does seem to show Mallards penetrating up there and even into Greenland. Historically the Mallard has not occurred that far north. It may just have been expanding its range due to its predisposition to be able to survive in disturbed places with a lot of human settlements and disturbed habitats. You can't have really healthy populations of both Black Ducks and Mallards together, it looks like one or the other is going to be the dominating species and the

Mallard seems to be a little bit more aggressive and a little bit more adaptable. We'd also have to look back to the last glaciers to see what the deal really was. The Black Duck is probably just a geographic isolate from the Mallard.

So we have the Black Duck and the Mottled Duck, which are like Mallards but which have a female like plumage year round, and there are a number of other species around the world that are related to the Mallard and have that same kind of thing. Joe often thinks of a brightly colored Mallard as an example of sexual selection, the male is showing off, as being a derived character and it seems like that in this particular case it probably is. The Mallard is probably kind of a novelty, the others are more ancestral.

Mallards and Black Ducks are bred in captivity and released for hunting. As are all kinds of other birds. Black Ducks were introduced for hunting purposes in the North Pacific, that leaves California's Black Duck records open to some doubt. There are only one or two records in CA, and there are big problems with Black Duck claims for CA. First you have to make sure the bird is a Black Duck. Then there is the issue of natural occurrence.

One was shot by a hunter in Korea, it had been banded in Nova Scotia as a wild bird.

There can be hybrids. And that does not always show in the phenotype.

Hybrids that are not recognizable in the phenotype occur in other birds than ducks, too. There was case of a perfectly normal looking Common Murre that had Thick-billed Murre genes.

#### **FIELD MARKS**

Streaks on head and darker crown than Mottled Duck

Even darker on the body.

Again males and females look alike except for the bill color.

Males greenish-yellow bill, females olive.

Speculum dark purple color, tends to lack any white borders.

## **Spot-billed Duck**

#### **OCCURRENCE**

Ranges from India up to Siberia. Occurs as a very rare vagrant in Alaska.

#### **FIELD MARKS**

Black bill with yellow tip

A lot more white on the tertials than Mallard.

A little pink spot at the base of the bill gives it its name, it is found in Indian and South East Asian populations only, not in Siberian populations and not in the populations that might result in vagrants to NA. If you see a Spot-billed Duck with this spot chances are that you are dealing with another one of these exotic escaped game birds that somebody has released.