



MAPS Chat

Newsletter of the MAPS Program

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The Institute for Bird Populations

Breaking News in the World of Molt

Danielle Kaschube and Dave DeSante

This issue of MAPS Chat brings news of exciting developments in the world of molt and MAPS protocols. Articles on molt terminology by Peter Pyle (page 2) and revamped protocols for recording molt limits and plumage by Jim Saracco (page 3) will get your brains humming and inspire you for the upcoming MAPS season.

In November, 2003, Steve Howell, Chris Corben, Peter Pyle and Danny Rogers published an article in *The Condor* that defines new ways to think of and describe molt cycles. This ground-breaking work outlines modifications to the Humphrey and Parkes terminology and provides a more robust system for describing molt. How many times have you been frustrated when trying to explain how the first prebasic molt is different from subsequent prebasic molts? In his article, beginning on page 2, Peter Pyle explains how the new language introduced in Howell et al. makes molt and its terminology more universal, understandable, and easy to explain.

The way that MAPS protocol deals with molt and plumage data has also taken on a new face. In his article, beginning on page 3, Jim Saracco explains how and why we have modified the data recording procedures for the "ADULTS ONLY" fields on MAPS banding data sheets. The new protocol has the bander record which feather generations are present, rather than the age class of the bird that those feathers suggest. As Jim titled his article, this is a shift to a "more intuitive and informative approach to ageing birds." The new terminology and protocols were used in training MoSI and MAWS banders (see page 4) in Mexico, Costa Rica, and the southeastern United States this fall and winter. After the workshops and training courses, the trainers enthusiastically confirmed that both the new terminology and the new protocols facilitated a much increased rate at which banders understood the concepts of molt, plumage, and data recording.

Perhaps like many of you, when some of us first heard about the changes in molt terminology proposed by Howell et al. and the changes to our data recording procedures, we put on the mental brakes. The last thing we wanted was to revise how we thought about molt and plumages and to work with a new data system. "How are we going to have to change our thought processes for banding?" and "How are we going to teach banders this new material?" were just some of the first thoughts that ran

through our heads. However, it didn't take us long to see that the benefits of these new systems *far* outweighed the comfort of staying with the previous systems. We hope that the articles by Peter (page 2) and Jim (page 3) will provide a look into some of the newest developments in understanding molt and applying it to the art of ageing birds in the hand, and will foster in you the same excitement that we now feel about these new ideas.

IBP Receives National Award from Partners In Flight

As you may be aware, The Institute for Bird Populations received a PIF award for exceptional contributions to bird conservation in the category of investigations. This award is granted to nominees who have furthered the goal of protecting migratory and resident landbirds and their habitats. We at IBP are thrilled at this achievement, and wish to share the honors with all of you MAPS contributors. After all, you should consider this to be your award too.

We are being recognized for many things, including: the development of conservation strategies based on modeling landbird vital rates, the creation and coordination of the MAPS Program (of course!), promoting scientifically sound and ethical banding practices, facilitating the establishment of the North American Banding Council, and creating and coordinating MoSI (Monitoreo de Sobrevivencia Invernal) for neotropical wintering species and MAWS (Monitoring Avian Winter Survival) for temperate-wintering species. In addition, IBP is recognized for its leadership in establishing avian inventory and monitoring protocols for national parks; its cutting-edge research on the effects of forest-thinning practices and stand-replacing fire on avian community dynamics; its establishment of the Sierra Nevada Important Bird Area; and its publishing of *Bird Populations*, a global journal of avian biogeography and demography.

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New Terminology Will Help You Understand Molt

Peter Pyle

I've often wondered how fully banders understood molt in birds. This is not to be critical of banders; to be frank, it took me something like ten years of thinking about it before I even began to get a grasp. We have a good excuse: the terminology has been inexcusable. On my way to the WBBA meeting in Montana last August, I sat on the plane and listed all the molt terms that I could think of. Are you ready?

Abridged, Adult Nonbreeding, Arrested, Ascendent, Biannual, Centrifugal, Centripetal, Complete, Convergent, Definitive, Descendent, Distal, Divergent, Eccentric, Incomplete, Irregular, First Nonbreeding, First Prebasic, First-summer, First-winter, Limited, Partial, Postjuvenile, Postnuptial, Prealternate, Prebasic, Prebreeding, Prenuptial, Presupplemental, Protracted, Proximal, Seasonally Divided, Serially Descendent, Simultaneous, Suspended, Violent

It reminded me of using a Microsoft Windows Program (e.g. Word) when a simple old DOS version (PC-Write) would be much simpler to use and less dysfunctional. But, rest assured, help is on the way in the form of, if you can believe it, a new molt term. First, though, we need to discuss why the "Humphrey-Parkes" terminology should be used in place of older terminologies.

Traditional molt and plumage terminology was based on life-history events within the annual cycle of northern-hemisphere birds. Thus we had terms such as *post-juvenile*, *post-nuptial*, and *pre-breeding* molts and *immature*, *subadult*, *first-summer*, and *second-winter* plumages. On the surface this was fine, and fairly understandable. But as we learned more about different molt strategies and plumage sequences, serious problems began to arise.

Some of the above terminologies were originally proposed by Jonathon Dwight in the early 1900s based on studies of molt in passerines that occurred in New York. As it turns out, the species covered by Dwight seemed to have pretty conventional molt strategies, at least if you ignored (or in Dwight's case, lacked knowledge about) what happened

on the winter grounds of neotropical migrants. But when ornithologists started investigating the molts and plumages of long-lived non-passerine species, equatorial species, and species that do not necessarily breed only once per year (some doves) or breed every other year (some albatrosses), they began to run into trouble. For example, the "post-breeding molt" of most North American landbirds often involves a complete molt of body feathers during the summer, after breeding. But in some species such as hummingbirds, kingbirds, swallows, and Red-eyed Vireos, adults fly south in worn plumage and the molt occurs in the tropics, sometimes during or spanning the first spring just before they fly north to breed again. Should this molt, then, be termed the "post-breeding" or the "pre-breeding" molt? And what plumages, exactly, are covered by terms such as "immature" and "subadult"? Furthermore, is a June Song Sparrow, hatched 1.3 years earlier in March of the previous year, in its "first-summer" or "second-summer" compared to one hatched nine months earlier in September? In a nutshell, the more we learned, the less tenable the traditional terminology became.

In 1959 Phil Humphrey and Ken Parkes proposed to fix things by coming up with an entirely new terminology. Their now-famous "H-P" terminology defines terms simply on the molt patterns of birds, irrespective of seasons, plumage coloration, and other life-history events. It also attempts to align the terminology of molts such that, when we compare molts in different species or different ages within a species, we

know that we are talking about equivalent molts. Their goal was to standardize the terminology in order to study the evolution of molts and plumages in birds. Under the H-P system, all adult birds have a "pre-basic molt" once per "molt cycle" in which most or all feathers are replaced. In most northern-hemisphere passerines this molt occurs in the late summer, just after breeding, and it is complete.

In other groups, this molt may occur once every

nine-months (e.g., Sooty Terns on the equator that breed at nine-month intervals), may occur just prior to breeding (as noted above), or may be suspended or incomplete based on the constraints of a long breeding season or migration (pelicans, raptors, and sapsuckers). But the building block is there, a prebasic molt and molting cycle, on which to base additional terms.

Continued on page 8

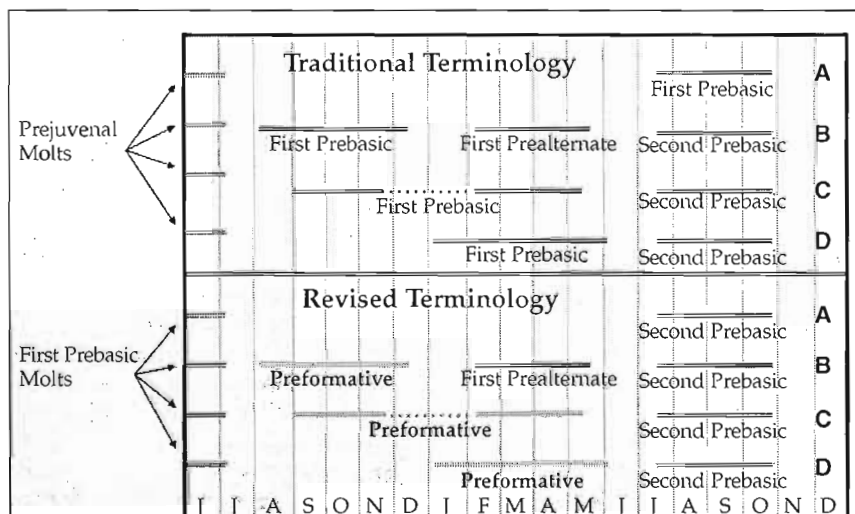


FIGURE 1. Traditional and revised (by Howell et al. 2003) H-P molt terminologies in A) Sooty Shearwater, B) Yellow Warbler, C) Swainson's Thrush, and D) Herring Gull. Note that the prejuvenal molt is now called the first prebasic molt, the variable (sometimes absent) molt within the first cycle is now called the "preformative" molt, and the complete or near-complete molt at about a year of age is now called the second-prebasic molt in all species.

Changes in the Use of the “Adults Only” (Now Called “Molt Limits and Plumage”) Fields: A More Intuitive and Informative Approach to Ageing Birds

James Saracco

The accurate ageing of birds is essential for deriving meaningful indices and estimates of population parameters from MAPS data. With some practice, MAPS banders that carefully consider molt limits and plumage patterns should be able to age many adult birds of most species as SY or ASY. By recording data on the specific feather tracts or non-feathered body parts used in making these age determinations, MAPS banders allow IBP staff to assess the reliability of ageing criteria and the accuracy of banding records. The MOLT LIMITS & PLUMAGE fields¹ of the MAPS banding-data sheets are used for this purpose – at least one of these fields *must* be filled in for all adult birds aged more specifically than AHY (i.e., SY, ASY, TY, or ATY), as well as for any birds (including birds aged AHY or HY) aged by molt limits or plumage (i.e., any time ‘L’ or ‘P’ is used in HOW AGED).

For 2004, IBP staff biologists have developed a new set of molt limit and plumage codes for use in the MAPS program. These are based on codes that have recently been employed in IBP’s new winter banding programs (see article on page 5), MoSI (*Monitoreo de Sobrevivencia Invernal* in Mexico, Central America, and the Caribbean) and MAWS (*Monitoring Avian Winter Survival* in southern United States). The new codes, rather than designating *age-classes*, indicate the *feather generations* present within particular feather tracts (molt terminology follows Howell et al. 2003; see Peter Pyle’s article on pg. 2 for more information). For non-feathered body parts, the new codes indicate whether adult or juvenal characteristics are suggested. Eight codes are possible.

During the MAPS season, the use of the following three codes for feather tracts found on an adult bird prior to its prebasic molt (= “adult prebasic molt” in Pyle 1997) indicates that it is a SY bird; the use of these codes to describe feather tracts on a young bird after its preformative molt (= “first prebasic molt” in Pyle 1997) confirms that it is a HY bird:

J – Juvenal. Feather tract comprised entirely of retained juvenal feathers or non-feathered body parts.

L – Molt limit. Molt limit within the feather tract between juvenal and formative feathers (note that “formative” = “first basic” in Pyle 1997).

F – Formative. Feather tract comprised entirely of formative feathers or a mix of formative and alternate feathers.

In previous years, when we coded an adult bird prior to its prebasic molt, we used a single code, “5” (to indicate SY), for each of the above three situations, although “1” (to indicate AHY) may have been used where we now use “F”. The disadvantage of this former coding strategy is that information is lost as to whether any (or all) feathers within a tract were replaced during the preformative molt.

Three additional codes apply exclusively to older birds (ages indicated below):

B – Basic. Feather tract comprised entirely of basic feathers (or a mix of basic and alternate feathers). This code is also used for non-feathered body parts with characteristics indicative of an adult bird. The use of this code during the MAPS season for feather tracts on an adult bird prior to its prebasic molt would indicate that it is an ASY bird; the use of this code to describe feather tracts on an adult bird after its prebasic molt would

EXAMPLE 1 – SY male Audubon’s Warbler (right wing in Froehlich’s Fig. 12)



Three feather generations are visible in this Audubon’s Warbler wing: juvenal, formative, and alternate. The alternate feathers, however, are not useful for ageing because the prealternate molt is similar in both SY and ASY birds. The molt limit that allows us to confidently age this bird as SY is between the narrow, browner, and more heavily worn juvenal primary coverts (coded “J”) and the outer formative greater coverts (coded “F”), which are fresher with dusker centers. The presence of these two feather generations is the result of a partial preformative molt, which is unique to HY/SY birds. The How Aged code for this bird is “L”, due to the molt limit between feather tracts. Although a bit more difficult to see in this photo, the remiges (primaries and secondaries) are similar in gloss (dull) and color to the primary coverts. Thus, we code these three tracts “J”, as well. Because this particular bird no longer has a body, the remaining fields are left blank.

			MOLT LIMITS & PLUMAGE							
AGE	HOW AGED		PRI. COVS	SEC COVS	PRIMARIES	SECONDS	TERTIALS	RECTRICES	BODY PLUM.	NON-FEATH.
			J	F	J	J	J			
5	L		J	F	J	J	J			

only indicate an AHY bird. This code can be used in combination with "R" or "M" (below) in other tracts for more precisely aged birds.

R – Retained. Both juvenal and basic feathers are present within the tract (e.g., as occurs in many woodpeckers). The use of this code during the MAPS season on an adult bird prior to its prebasic molt would indicate a TY bird; after its prebasic molt, it would indicate a SY bird.

M – Mixed. Multiple generations of basic feathers are present in the tract (again, as might be the case for many non-passerines, such as woodpeckers). The use of this code during the MAPS season prior to the prebasic molt would indicate an ATY bird; after the prebasic molt, it would indicate an ASY bird.

The following code, which can be used during the MAPS season (prior to the prebasic molt) to distinguish

adult (AHY) from young (HY) birds, is generally not useful for ageing adult birds to more specific age classes (i.e., SY, ASY, TY, ATY).

A – Alternate. All feathers in the tract are of alternate plumage; if *any* formative or basic feathers are present in the tract, use "F" or "B", respectively, instead.

Finally, the following code will be used for feather tracts examined, but not meeting any of the above criteria:

U – Unknown. Any feather tract or non-feathered body part that is examined, but that shows ambiguous characteristics or that cannot be coded with confidence.

To complement the new set of MOLT LIMITS & PLUMAGE codes, an additional HOW AGED code will be included in the MAPS protocol in 2004. The new code, "L" (for molt Limit), will be used for birds whose age is based on the *presence* of a molt limit. Birds without molt limits, but with

EXAMPLE 2 – SY male Indigo Bunting (Froehlich's Fig. 17)



		MOLT LIMITS & PLUMAGE								
AGE	HOW AGED	PRI. COVS	SEC. COVS	PRIMARIES	SECONDS	TERTIALS	RECTRICES	BODY PLUM.	NON-FEATH.	
5	L	J	F	L	J	F				

As in Example 1, this Indigo Bunting shows a clear contrast between the juvenal primary coverts and the formative (and alternate) secondary coverts. As such, it can be aged SY by the molt limit (L) between feather tracts. In this bird, however, there are two other molt limits by which it could have been aged. First, due to an incomplete (eccentric) preformative molt there is a molt limit within the primaries. The outer five replaced primaries have dark shafts that clearly contrast with those of the inner retained primaries. Because both the juvenal and formative feather generations are present within the primaries, it is coded "L" to indicate a within-tract molt limit. Finally, there is a molt limit between the retained juvenal secondaries and the replaced formative tertials. Thus, this bird could have been aged by any of these three molt limits. Note that the innermost blue-edged alternate greater coverts are not recorded or used for ageing this bird.

EXAMPLE 3 – TY male Downy Woodpecker (Froehlich's Fig. 26)



			MOLT LIMITS & PLUMAGE							
AGE	HOW AGED		PRI. COVS	SEC. COVS	PRIMARIES	SECONDS	TERTIALS	RECTRICES	BODY PLUM.	NON-FEATH.
7	L		R	B	B					

Here we have another example of a bird with a molt limit within a feather tract. The pattern of primary covert replacement in this Downy Woodpecker is typical of all North American Woodpeckers. The retained juvenal inner primary coverts are easily distinguished from the molted basic outer two primary coverts. The two generations of feathers present in this tract are juvenal and basic (code "R"), not juvenal and formative (which would be code "L"), and indicate that the bird is in its third calendar year (age = 7). The primaries are basic feathers (code "B"), as are the secondary coverts (assuming that all secondary coverts have been replaced, as is typical according to Pyle 1997). As in the previous examples, this bird is aged by "L" due to the presence of a molt limit.

EXAMPLE 4 – ASY male Prothonotary Warbler (Froehlich's Fig. 20)



As a final example, consider this male Prothonotary Warbler. It is an adult that underwent a complete prebasic molt during the previous summer/fall. All feathers visible in this photo are relatively uniform in appearance, with similar gloss and wear, and with little color contrast. In addition, the feathers show typical adult-like characteristics. For example, the primary coverts are broad with distinct broad bluish edging. There are no molt limits evident. Thus the bird can be aged ASY by plumage, "P". All of the fields examined are coded with "B"s to indicate that they all are basic feathers.

		MOLT LIMITS & PLUMAGE							
AGE	HOW AGED	PRI. COVS	SEC. COVS	PRIMARIES	SECONDS	TERTIALS	RECTRICES	BODY PLUM.	NON-FEATH.
6	P	B	B	B	B				

distinct age-specific plumages, will continue to be aged by the code "P" (plumage). Although this new system increases the number of potential codes to be considered by banders, its use should be more intuitive because it is based on familiar plumage cycles, rather than on descriptions in species accounts, which are incomplete (and variable) for some Nearctic-breeding species and non-existent for most Neotropical resident species. On pg. 3 and 4, I present a few example photos reproduced from Froehlich (2003) to illustrate the use of this new system for situations likely to be encountered by MAPS banders. All photos show birds captured in spring or summer prior to their preformative or prebasic molts.

These examples represent just a few of the situations that will be encountered by MAPS banders during a typical field season. I recommend coding the remaining photos in Froehlich (2003) to gain further practice using the new system. There are also many photos on the web that can be useful for this purpose (in particular, check out Powdermill Nature

Reserve's website: www.westol.com/~banding/index.htm). With a little practice, the transition to this new system should be relatively painless for most banders. Ultimately, we feel that the new codes will prove relatively simple for most banders to use and should encourage the collection of more consistent molt and plumage data.

LITERATURE CITED

- FROEHLICH, D. 2003. Ageing North American Landbirds by Molt Limits and Plumage Criteria. Slate Creek Press, Bolinas, CA.
 HOWELL, S. N. G., C. CORBEN, P. PYLE, AND D. I. ROGERS. 2003. The first basic problem: a review of molt and plumage homologies. Condor 105:635-653.
 PYLE, P. 1997. Identification Guide to North American Birds, Part I. Slate Creek Press, Bolinas, CA.

¹These fields were previously titled "ADULTS ONLY." On the 2004 MAPS banding-data sheets, the number of fields will be reduced from 10 to 8 (head, upperparts, and underparts will be combined into one field, "Body Plum.").

AGEING NORTH AMERICAN LANDBIRDS BY MOLT LIMITS AND PLUMAGE CRITERIA A Photographic Companion to the Identification Guide to North American Birds, Part I

by Dan Froehlich

Slate Creek Press, POB 219, Bolinas, California 94924.

This companion to the ID Guide contains 32 color photographs of landbird wings illustrating molt limits and ageing techniques. Pointers on each photograph indicate molt limits among and within the primary and secondary coverts, primaries and secondaries. See the IBP website, www.birdpop.org, for information on ordering this very useful photographic companion.

Several of the figures from the photographic companion are used in Jim Saracco's article on page 3, and the correct way of recording MAPS data is presented for each figure. We encourage you, if you have a copy of the photographic companion, to go through the remaining figures and record the data using the new system. It will give you an idea of what to expect in the field this coming summer. We can provide the correct data for all the figures in the photographic companion to anyone who requests them. Just email Danielle Kaschube, MAPS Coordinator, at dkaschube@birdpop.org.

Have You Heard About The North American Banding Council (NABC)?

Banders have come together in this organization to "promote sound and ethical banding principles and techniques." Who doesn't want to encourage that? Please visit the NABC website and find out more about this important organization, <http://www.nabanding.net/nabanding/>

Managing Birds of Conservation Concern on Military Lands Using MAPS Data

Phil Nott

The U.S. Department of Defense manages approximately 10 million hectares of land on 420 military installations throughout the United States. These installations provide important habitats for many songbird species, including many Neotropical migrants, because they often contain portions of important ecosystems, hotspots of biodiversity, critical breeding habitat, or stopover habitat used during migration.

Our close collaborator in avian conservation, the DoD Partners in Flight Program (www.dodpif.org), recognizes 27 DoD installations as globally Important Bird Areas (IBA). Furthermore, the American Bird Conservancy recognizes 15 of the 27 in its list of 500 most important bird areas (www.abcbirds.org), plus a further five installations that are incorporated in some of the more spatially extensive IBAs. Natural resource managers of these and other installations face considerable challenges in balancing the application of federal laws that protect bird populations with the requirements of military mission.

The Institute for Bird Populations plays an important role in helping natural resource managers overcome the challenges of avian conservation on military lands. Since 1994, through funding provided by the DoD Legacy Resources Management Office, IBP operated a network of 78 MAPS stations in groups of six stations on 13 military installations (or groups of nearby installations) across the eastern and central United States. Four of these installations are recognized as important bird areas by both ABC and DoD-PIF, namely Fort Bragg, NC; Big Oaks National Wildlife Refuge (formerly Jefferson Proving Ground), IN; Fort Riley, KS; and Fort Hood, TX.

The primary goals of this ongoing conservation effort are 1) to incorporate management guidelines to reverse population declines of Neotropical migratory birds and other landbird species into current and proposed land management actions on DoD military installations, especially those actions designed to increase military readiness and to sustain military ranges and operating areas for future use; 2) to monitor the effectiveness of the avian management guidelines; and 3) adjust the management guidelines based on the effectiveness of previous management.

Of the 31 landbird species that MAPS effectively monitored across the 13 installations, we identified ten target species that are nationally or regionally listed (as of December, 2002) by the US Fish and Wildlife Service as "Birds of Conservation Concern" (<http://migratorybirds.fws.gov/reports/BCC02/BCC2002.pdf>). For each of these species, we analyzed the banding data to provide estimates of the numbers of adults, the numbers of young, the adult population trend, and the mean annual reproductive success. We combined these parameters with data from the National Land Cover Dataset (NLCD; 1992) and constructed landscape-scale (1000's of hectares) management models for reversing the declines in Neotropical migratory birds and other resident and migratory landbirds.

As a result of this work, IBP is now collaborating with natural resource managers on eight DoD installations, of which three are important bird areas, to manage local populations of Birds of Conservation Concern. The management actions already taken and those yet to be taken will enhance military Readiness and Range Sustainment on those installations, while restoring or creating high quality breeding habitat for landbirds known to be in decline, including Neotropical migrants.

We have provided management guidelines for five species that breed in forested habitats and five species of successional habitats. The table above shows the species of management concern by installation (shaded cells), along with an indication of the direction ("+" increasing, "-" declining) of the adult population trend (using MAPS data pooled across each installation). If the management actions we have formulated successfully reverse declines in local populations, the management models may be applied to many other DoD lands that provide important breeding habitat for birds of conservation concern.

We reported this work to the Department of Defense in a written report and in an oral presentation by Phil Nott to the DoD Conservation Committee in Washington DC back in November, 2003. The executive summary is available for download from our website <http://www.birdpop.org/publications/DoDExec2003.htm>.

Table of military installations and the direction of adult population trends for ten Birds of Conservation Concern monitored by MAPS. Shading denotes the species now being actively managed.

	Fort Bragg NC	Jefferson Proving (Big Oaks NWR) IN	Fort Knox KY	Crane Naval Warfare Center IN	Fort Leonard MO	Camp Swift TX	Fort Hood TX	Camp Bowie TX
FOREST								
Acadian flycatcher		+	+	+	-			
Wood Thrust	-	-	+	+	+			
Warm-eating warbler		-	-	+	-			
Louisiana waterthrush			-	+	-			
Kentucky warbler		-	-	+	-			
SCRUB/SUCCESSIONAL								
Bewick's wren							-	-
Blue-winged warbler		-	-	-	+			
Prairie warbler	-	-	+	-	+			
Field sparrow		-		-	-		-	-
Painted bunting						-	+	+

News from Joe Bird's Wintering Grounds: Two New Programs to Monitor Overwintering Survival

Sara Martin and Nicole Michel

MAPS banders will be pleased to learn that "Jose Ave" (formerly known as "Joe Bird") and his friends are now being monitored during the winter. Banders in the Neotropics, in cooperation with IBP, have developed and established a monitoring program targeting Neotropical migrants on their wintering grounds. The MoSI (Monitoreo de Sobrevivencia Invernal, or Monitoring Overwintering Survival) Program is a cooperative effort among public agencies, private organizations, and independent bird banders in Mexico, Central America, and the Caribbean to better understand habitat-related variation in the overwintering survival and physical condition of migratory landbirds. Goals of the program include providing habitat-, age-, and (when possible) sex-specific overwintering survival rates, linking winter population parameters with breeding season vital rates and population trends, and developing strategies that can be implemented on the wintering grounds for reversing population declines and maintaining stable or increasing populations of Neotropical migratory (and resident) landbirds.

The MoSI Program is currently in the midst of its second full season – and what a season it has turned out to be! At last count, 63 stations are operating: 33 in Mexico, 24 in six countries in Central America, and 6 in the Caribbean. This represents more than a two-fold increase from the first year when 29 stations were operated during the winter of 2002-03. The expansion was due in part to a grant IBP received for the MoSI Program from the Neotropical Migratory Bird Conservation Act, administered by the U.S. Fish and Wildlife Service. This grant has allowed us to provide partial funding to 60 MoSI station operators during the winter of 2003-04 to help them purchase supplies and cover operating costs. For more information on the program, please visit the MoSI page on our website at <http://www.birdpop.org/MoSI/MoSI.htm>.

We are pleased to welcome Dr. James Saracco back to our staff as MoSI Program Coordinator. Jim worked for IBP as a staff biologist during 1993-1995 and recently returned to our staff after completing his Ph.D. at North Carolina State University. Jim is responsible for coordinating the MoSI program, a job which will make use of his multitude of talents. Welcome back Jim!

In related news, IBP has borrowed the MoSI protocol for a four-year study of temperate-wintering species on Department of Defense Installations in the southeastern U.S. The project, entitled MAWS (Monitoring Avian Winter Survival), is targeting several temperate-wintering sparrow species that, according to BBS data, are experiencing significant population declines. Target species include Eastern Towhee, Field Sparrow, Song Sparrow, White-throated Sparrow, and Dark-eyed Junco. Analysis of MAPS data for several of these species suggests that low annual adult survival rates may be contributing to their population declines. For comparison, MAWS is also targeting sparrow species whose populations appear to be stable or increasing, including Chipping Sparrow, Fox Sparrow, and Swamp Sparrow.

Staffed by IBP biologists and interns, six MAWS stations have been established on each of four DoD installations in the Southeastern U.S.: Fort Bragg, NC; Fort Benning, GA; and Fort Chaffee and Camp Joseph Robinson, AR. Banding began in November and is scheduled to continue through most of March. Many thanks to our dedicated interns and biologists for braving a winter of challenges, including freezing weather, station changes, and unexpected large flocks of birds.

If data analysis indicate that the MoSI protocol can successfully be implemented on temperate-wintering sparrows in the southern states through the MAWS Program, we will issue an invitation to banders participate in this exciting new monitoring and research effort. Look for further updates on MoSI and MAWS on the IBP website at <http://www.birdpop.org/MoSI/MoSI.htm> and in future issues of MAPS Chat.

INTERNSHIPS

Do you know of any promising students, volunteers, or other individuals interested in gaining banding training and experience? Tell them about IBP's summer MAPS internships! IBP is looking for current and aspiring banders to work as interns operating our agency-run MAPS stations in locations in the Northwest (OR, WA, MT, and CA), Midwest (MO and TX), and Mideast/East (IN, KY, ME, WV, and NC). From the majestic mountains of Washington to the quiet woods of West Virginia, we have birds in need of banders.

IBP MAPS internships are an especially good opportunity for aspiring banders or individuals interested in expanding their knowledge of the use of plumage characteristics in ageing and sexing. Internships include an intensive two-week training session in mist-netting, banding, and ageing and sexing landbirds and the opportunity to work with IBP's experienced MAPS biologists. Positions begin on April 23 (in the Midwest) and May 1 (all other regions) and run through August 8, 2004. They include a stipend, shared housing, and on-the-job mileage reimbursement.

Beginning in August, we will also be looking for interns for our Monitoring Avian Winter Survival (MAWS) Program. We offered eight MAWS internships for the 2003-04 winter banding season and expect to offer the same internships for 2004-05. Information on 2004 MAPS summer banding internships and 2004-05 MAWS winter banding internships is available on our website www.birdpop.org. For more information or to apply, interested individuals should contact:

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NEW TERMINOLOGY — Continued from page 2

Many species have a second molt within the molting cycle. Under H-P terminology this is called the "prealternate molt". In order to have a prealternate molt, some follicles have to be activated more than once within a cycle. Thus a bird, say a Peregrine Falcon, Common Nighthawk, Eastern Wood-Pewee, or Purple Martin, that begins its prebasic molt on the summer grounds, suspends molting for migration, and completes it on the winter grounds, without having replaced any feather more than once, does not have a prealternate molt. True prealternate molts occur in such species as Black-bellied Plovers, Bay-breasted Warblers, and Scarlet Tanagers (to replace drab camouflaged winter plumage with bright attractive breeding plumage) or in Marsh Wrens, Least Flycatchers, and Savannah Sparrows (to replace feathers that have become frayed or worn by harsh vegetation or intense exposure to the sun). In all of these cases, feathers that were replaced during a prebasic molt are replaced for a second time within the molt cycle, during the prealternate molt.

The H-P terminology has lived up to its billing and, despite the arguments of a few traditionalists, most ornithologists now recognize its value and have started to use it. But as it turns out, some tweaking was needed, as recognized by Humphrey and Parkes when they originally requested "that critics provide for us and for other students of plumage succession an improved conceptual and terminological framework within which we may all continue productive research in this promising and important field of ornithology." Well, OK, here goes.

The problem with the H-P system is that they based their entire terminology on the molt cycles of adult birds, where it worked well, but when they tried to apply it to the first molt cycle, it fell short. The issue involves how to treat the limited to partial (sometimes complete) "post-juvenile" molt that occurs in most but not all species and replaces a variable number of juvenile feathers at some time preceding the first complete molt. Because the timing of this molt was often similar to the timing of adult prebasic molts, and often resulted in similarly colored plumages, Humphrey and Parkes called it the "first prebasic molt". This turned out to be a mistake in several respects.

To begin with, the "post-juvenile" molt is so variable (Figure 1) that in most cases it cannot be compared at all with subsequent pre-basic molts of the same species, which usually are complete and occur at regular intervals. Second, some species such as seabirds and raptors lack a "post-juvenile" molt, which means that the first complete molt was termed the first prebasic molt, even though it appears to be homologous with the second prebasic molt of most other species. Third, terming this the "first prebasic molt" implies that the first molt cycle begins with this molt, even though birds molt feathers before this cycle, during the prejuvenal molt or, with some species such as Indigo Bunting, during a limited "presupplemental molt." Finally, in some species, e.g. among cormorants and gulls, the first ("post-juvenile") molt appears to be analogous to the prealternate molts of adult birds rather than to the prebasic molts, and so it should not be called the "first prebasic molt."

Steve Howell and Chris Corben, while trying to figure out molt terminology in gulls, came up with a brilliant solu-

tion. Why not call the complete "prejuvenal" molt, during which a bird acquires its first full feather coat, the "first prebasic" molt. The only difficulties appear to be a need to switch mind sets, which in this age of planned obsolescence we all need to do frequently anyway, and the need for a term for the molts that occur within the first cycle. Howell et al. succinctly summarized the benefits of this new terminology in the Condor (105:635-653, November 2003), and proposed that all molts (usually just one but sometimes two) found within the first cycle but not within subsequent cycles can be termed **Preformative Molts**, producing **Formative Plumages**. As can be seen by looking at Figure 1, an order presents itself that was absent before.

I have taught a lot of banding workshops in the past several years. Before the new terminology, it seemed I was striking out when trying to teach concepts of molt to beginners in my classes. Over and over I would have to explain how, why, and where the "first prebasic molt" differed from

the "second pre-basic molt." The fact that both of these entirely different phenomena were called "prebasic molts" left us all in a daze. But now, when I speak of the **preformative molt**, we are instantly on the same page, and it is remarkable how this one little change has helped foster an easier understanding of molts and plumages in birds. For passerine banders this is important, as all of the molt action resulting in our ability to accurately age birds SY and ASY in spring (see Maps Chat #5, April 2001, and James Saracco's article in this issue), occurs during the first cycle.

But now I'm hearing a new lament: "how can we teach molt to beginners when the Identification Guide uses the old terminology?" I recommend that banders 1) scratch out "first prebasic" and replace it with "preformative", and 2) change the first line under molt from, for example, "PB: HY partial... AHY complete" to "PE: HY partial..., PB: AHY complete." There is no need to change "Juvenal" to "First basic" as, under the new system, these terms are interchangeable, "Juvenal" remaining as previously defined. These steps will greatly help you understand molt and, thus, accurately age your birds.

Join Your Regional Banding Association

Are you familiar with your regional banding associations? The Western, Inland, and Eastern Bird Banding associations welcome you to join them and be part of the banding community in your region. Please visit their websites for more information:

Western Bird Banding Association:
<http://www.westernbirdbanding.org>

Inland Bird Banding Association:
<http://www.aves.net/inlandbba/>

Eastern Bird Banding Association:
<http://www.hancock.net/~bpbird/>

Planting Ornithological Seeds for the Future

Laurie Doss

Science Department Chairperson

Marvelwood School

It was in Nebraska during the summer of 1984, when I was a research assistant for Dr. Charles Brown's study on the Costs and Benefits of Coloniality in Cliff Swallows, that an ornithological seed was planted. After a fulfilling season with the swallows, I ignored Dr. Brown's recommendation to pursue graduate studies in field ornithology and elected to teach high school science instead. I never imagined that I would ever bird band again, especially with teenagers.

Over the course of the next twenty years, my passion to return to the field to study birds grew stronger and stronger. By chance, I met Laurie Fortin (President of the Housatonic Audubon) who was giving a bird banding demonstration during the summer festival at the Audubon Center in Sharon, CT. After this encounter, that seed planted so long ago by Dr. Brown finally germinated, and under a sub-permit with Ms. Fortin, I found myself running a MAPS station with my students from the Marvelwood School, a private coed boarding school in the northwest hills of Connecticut.

Laurie and Scott Heth (Manager of the Audubon Center in Sharon) assisted us in mapping out our first bird banding station, which we called BEAVER or BEAV. This 600 M X 150 M station consists of twelve nets with six nets positioned along the wetland edge of the forest. There are six interior nets in an established upland forest. Due to the high productivity of the area, and fluctuating extraction skills amongst the students, we found that running six nets at a time is best for us. Weather permitting, we try to operate the edge and forest stations on consecutive days. During the course of the 2001 and 2002 seasons we captured 163 and 160 birds respectively, representing 31 different species in the last two years.

When the residents on Skiff Mountain heard of our association with the MAPS program and the Audubon in Sharon, they asked us to initiate a second station. They wanted data that they might be able to use in Zoning and Wetland meetings to contradict a very cursory environmental inventory contracted by an association seeking to develop near the wetlands. We received permission from Dr. Walter Kane (our physics teacher), his wife Margaret, and their daughter, Katherine Skiff Kane, to band on their property for at least ten years, if not more.

In response to their request, students interviewed lifelong residents of Skiff Mountain about the natural history of the area. They also used GPS units to map out a 300M X 300M banding station and net lanes. Several students, particularly Luke Augusta, Betsy Adams, Amanda Caroselli, Jon Davis, Angela Eastwick, Ryan Knable, Sho Watanabe, Chris Tilberis, and Will Rivkin managed to clear enough Japanese barberry and multi-floral rose in the understory to create six net lanes on Kane property immediately adja-

cent to the proposed housing development. In our first season at our new station we call KANE, we managed to capture 87 birds, representing 26 species in just six nets. More importantly, we confirmed that hooded warblers are indeed breeding on Skiff Mountain, and we captured the Golden-Winged Warbler, a threatened species in Connecticut. Next season we will cut net lanes so that we will have six nets upstream and more in the interior of the woods so that like our original station, we will have an edge vs. forest habitat.

This past summer Mrs. Kane gave us some stuffed birds which she believes her grandmother had initially preserved well over a hundred years ago! While some of the specimens were not in terrific shape, what was exciting for us was that virtually all of the species in the Skiff Mountain collection were birds we have captured in our nets over the past two summers.

This year we are augmenting our banding program to include the banding of bluebirds and tree swallows on our highly productive bluebird trail. We also hope to create a bobolink information pamphlet for the farmers in the area, encouraging them to delay their mowing until after these birds have nested. Our ultimate goal is to start a partnership with a school in Central or South America and to create a banding exchange, by which teachers and students would come to Marvelwood to band birds and we could then go to their country when they are banding birds.

It is not easy waking teenagers up before noon, let alone at 4:00 a.m.! However, once awake (and fed), they are very charming and pleasant creatures to spend time with in the woods. They sacrificed some of their summer vacation to do this project. Numerous faculty children also spent entire days with me in the field, learning about the MAPS program and assisting with the program. An alumni from Venezuela even returned to campus and spent the day because she was interested in learning more about birds. As an educator, I am now getting the opportunity to plant ornithological seeds in my students and other children I associate with. Maybe twenty years down the road these seeds will germinate and new field ornithologists will be there to carry on the MAPS program or work with birds in another capacity. Already, one of my student's experience with the MAPS program was the catalyst for him to decide to continue his educational journey in college, pursuing both ornithology and forestry. However, the real reward for me as a teacher is when the students get excited about a new warbler in the net; a great egret visiting the wetlands for several weeks; the flurry of woodcocks at dawn; the emergence of young toads in June; the discovery of a nest; or a feisty juvenile eastern titmouse in a net being defended by one or both parents.

If, as an educator you have the time, the resources, can commit to a long term project, and want to to bring science to life for your students, then I encourage you to sow a few seeds by initiating a MAPS station. You might be tired, your patience will be tested, but I guarantee you will not be disappointed!

Thank you, Dr. Brown! Your enthusiasm and passion were indeed contagious!

The Yosemite Blues – a MAPS Bander's Lament (in the key of C, with feelin')

*It's a cold Sierra morning
As I take my pen in hand
It's time to open up those misty
Nets & get all set to band.*

*My partner's run out from the woods
A-holler and a-howl
He though it was a ghost in there
But it's a Great Gray Owl.*

*We're down at Hodgdon Meadow
A sweet spot in the sun
We've brung a trove of bird bags
To take on our net run.*

*Net 2's got twenty-one birds
Net 6 has twenty-five
The juvy Orange-crowned warblers are
All kickin' and alive.*

*Some Audubon's, some juvy juncos
Yellow Warblers, too
So far two hundred captures
I tell you that'll do.*

*So if it's birds yer longin' for
You ain't got nothin' to lose
Head up to a YOSE MAPS station
And get them Yosemite Blues.*

*The juvy waves'll run ya
You're gonna pay some dues
Head up to a YOSE MAPS station
And get them Yosemite Blues.*

– Anonymous

An Ode To MAPS!!!!

*Up at 4 - sunrise at 5
Ready to be eaten alive
Bug-jacket, cream and mosie spray
I'm ready for another MAPS day*

*House is quiet - creeping around
Trying not to make a sound
Ready to leave - trip over the dog
Heading down towards Burns Bog!*

*Why I do it - I don't know
Banding in my bloodstream long ago
Friends just laugh and shake their heads
They're all tucked up - in nice warm beds*

*Nets are up and all is set
First net round and nothing yet
Second net round much the same
Still no birds - I'm skunked again!*

*A Black-throated Blue or better yet
What is that hanging in my net?
A better view from underneath
It's just another wind blown leaf*

*Yes, at last a bird I see
A lonely retrap Chickadee
Nothing moving - all is still
This surely ain't no Powdermill*

*11.30 - that's enough
Again, I pack up all my stuff
The days catch counted - total 3
Damn that bloody IBP!*

© 2001, Derek Matthews

Customized Bird Bander Training Classes

How did you learn how to band birds? Were you mentored by a college professor? Were you taken under another bander's wing and learned at a MAPS site? These are common ways for banders in North America to learn their banding skills and many of you have taken up the torch to pass your knowledge on to apprentices. Often, however, there is not time during a regular banding day to pass on theories and techniques as thoroughly as we all hope.

IBP provides another way to explore the intricacies of bird banding through our bander training classes. Whether you know of people who are new to banding and want to learn the basics of bird handling and ageing and sexing, or you are an experienced bander and want

to delve deeper into the mysteries of molts and plumages, we can provide a class tailored to your needs.

Potential class participants arrange session dates for which we then provide a trainer, who works with the class at the location of the organizer's choosing. Your class can include students from a group you assemble or you can open the class and welcome banders from outside your immediate banding circle. Our classes stress bird safety and bander ethics throughout the learning and teaching process. We encourage banders to share their ideas and techniques throughout the classes to further the learning process for everyone.

We have received high praise from banders that have taken our classes and we want to welcome you to experience a new level of banding. For more information about our classes please visit our webpage, www.birdpop.org, or contact Danielle Kaschube at 619-448-3460 for more information.

New MAPS Operators 2002-2004

We want to welcome the following operators who joined the MAPS flock between 2002 and the present. Some started new stations and others took over stations from previous operators. Thank you for adding your efforts to the program and we look forward to working with you for many seasons to come!

Gene Albanese, Northfield MA; Nancy Andrew, Blythe CA; Jonathan Atwood, Keene NH; Marian Bailey, Olympia WA; Richard Baisa, University Park IL; Gwen Baluss, Juneau AK; Jenna Begier, New Bern NC; Denny Brooks, Midland MI; Richard L. Bunn, Fort Carson CO; Kenneth Burton, Inverness CA; Martha Caskey, Dunrobin ON; Felipe Chavez-Ramirez, Wood River NE; Bill and Beth Clark, Gardnerville NV; Steven Cox, Albuquerque NM; Bill Deppe, Apple Valley CA; Marilyn England, Oyster Bay NY; Jeffrey Esely, Charlotte NC; Roli Espinosa, Roseburg OR; Sue Finnegan, Brewster MA; Carol and Mike Fugagli, Silver City NM; Dawn Garcia, Bainbridge Island WA; Betty Grenon, Bellevue NE; Vincent Guyer, Salmon ID; Shelley Harms, Norfolk CT; Osvel Hinojosa-Huerta, Tuscon AZ; Ben Hoteling, Summerside PE; Julie Hovis, Shaw AFB SC; Rick Huffines, Benton KY; Bill Johnson, Canyon TX; Linda Johnson, Eau Claire WI; Joe Kahl, Boulder City NV; Greg Kaltenecker, Boise ID; Erin Karnatz, Batavia NY; Gregg A. Kelly, Garrettsville OH; Drew Lanham, Clemson SC; David Larson, Tulelake CA; Richard LeClerc, Ft. Drum NY; Wade Leitner, Tuscon AZ; Eric Lind, Cold Spring NY; Pat Lubbers and Leon Nowajick, Lovettsville VA; Rick Ludkin, York ON; Shannon Ludwig, Alturas CA; Alison Lyon, Laramie WY; Cynthia Marino, Rochester NY; Derek Matthews, North Vancouver BC; William Michalek, North Java NY; David Miller, Wolf Lake IN; Donald Mitchell, Hudson WI; Emily Miwa-Vogan, Stevensville MT; Kent Montgomery, Brainerd MN; Tom Mowbray, Winston-Salem NC; Larry Norris, Tucson AZ; Steve Plunkett, Dugway UT; Catherine Rideout, Little Rock AR; David Rintoul, Manhattan KS; Becky Rogers, Big Bar CA; Ron Salmon, Winchester VA; Brad Silfies, Danielsville PA; Richard Smallwood-Roberts, Janesville WI; Cyndi Smith, Waterton Park AB; Robert Smith, Scranton PA; Zachary Smith, Truckee CA; Roger Stone, Cambridge MD; Ken Symington, Canmore AB; Wayne Syron, Lake Arthur LA; Rusty Trump, Suwanee GA; Scott Weidensaul, Schuylkill Haven PA; Mike Wichrowski, Brooksville FL; Judith Williamson, Austin TX; Darlene Woodbury, Fort Hunter Liggett CA; Michael van Hattem, Livermoore CA.

I Am the Very Model of a Master-Bander, Personal

*I am the very model of a Master-Bander, Personal
I capture migrant passerines, with which I'm very versatile
I know their very Latin names though short or long
or whimsical*

*From Actitis to Zenaida in genus categorical
I'm very well acquainted too with matters mathematical
I measure bills from lores to tip with zeal that seems fanatical
Or primaries or retrices of which I cannot often choose
But cheerfully I measure them and then I measure tarsus too*

*I'm very good at using traps and also of erecting nets
I'm faster than all others (but on that I am not taking bets)
When capturing the adult birds and even with the juveniles
I am the very model of a Master-Bander, Personal*

*I know avian history from the dinosaurs to Sparrow, Fox
From lizards to our feathered friends I find it quite a paradox
To think a Black-Capped Chickadee descends from*

Archaeopteryx

*Bewilders me and leaves me with a painful
headache in the mix*

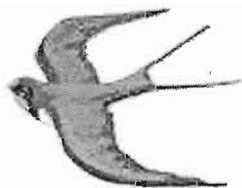
*I can tell the sex of birds whether in hand or in the trees
Of course, I know there's some quite hard so I should say
"well usually"
In fact I'll say that for some species it can be a dulling chore
But in all cases, circumspect, I'd rather do that than be bored*

*Then I take the data and I put it all in written form
Recording details, some minute, from age and sex to
the wing chord*

*In short no matter what it is from adult birds to juveniles
I am the very model of a Master-Bander, Personal*

*In fact I know just what is meant by "nape" and "supercilium"
And I can tell apart Flycatchers, Alder and Acadian
When dealing with such species the I.D. I am more wary at
But I can say precisely I can age a Yellow-breasted Chat
When I have learned near everything in modern Ornithology
When I know more of plumage than a novice at the IBP*

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MAPS Feeder

- IBP wins 2003 Partners In Flight Award for outstanding contributions to bird conservation in the field of Investigations.
- Visit our website (www.birdpop.org) and login to the NBII (National Biological Information Infrastructure) Query Interface. This electronic information network makes available online the tables of results contained in the annual reports of the MAPS Program, previously available only in IBP's peer-reviewed publication Bird Populations.
- IBP officially bids a warm welcome to Denise Jones, who joined us last March.
- Peter Pyle has eight new scientific papers in various stages of publication, all concerning molt (the majority on loons, ducks, herons and raptors) and derived from research done for the eagerly-awaited Identification Guide to North American Birds, Part II.
- Have a wonderful banding season folks!

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