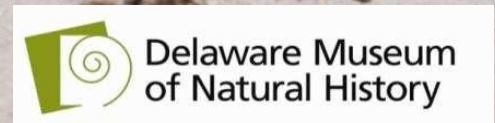
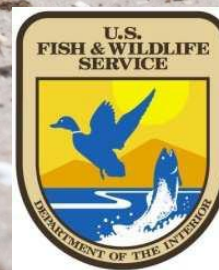


Resighting Individually Marked Birds

Part 1



You will be part of a team of 2 or more people who will be assigned to go to a specific location and record what you see for a period of time.

You will be outside most of the time doing this. It is a good idea to dress for changing conditions, have water and snacks, as well as sunscreen and insect repellent.



Your resighting work will be part of an international effort to individually mark red knot in the Western Hemisphere. Data collected is used to better understand their ecology, population status, and trends.



Approximately 10% of the red knot population in the Western Atlantic flyway has been individually marked with colored flags and bands.

Your team will record three types of information:

1. **Individually Marked Birds:** Most of your time will be spent recording information on marked birds. You will resight as many birds with inscribed flags as you can accurately record.
2. **General Site Information:** where, when, who was on the team, what the conditions were, and an estimate of the number of birds by species in that location.
3. **Ratio of Marked to Unmarked Birds:** The ratio of marked to unmarked birds helps us estimate the population size.



The data gathered in this part of the project is used to determine arrival and departure dates of individuals, calculate stopover duration, assess patterns of site use by individuals, assess survival, provide lifespan estimates, estimate population sizes, and is valuable for other specialized analyses as well such as weight gain.



This training module is designed to guide you through each step of data collection from resighting flags to recording and reporting the information you collect.



Ruddy turnstone, sanderling, and semipalmated sandpipers are other target species that have also been marked.



Semipalmated sandpiper



Sanderling



Ruddy Turnstone

Although not common, we sometimes come upon other species that are marked as well such as dunlin and short-billed dowitchers.

Dunlin



Rob Robinson

Short-billed dowitcher



Ruth Walker

While not a priority, banded gulls may also be seen. If the species can be identified, these resights can be reported to the BBL.



Hannah Tripp

Reading Colored Flags and Bands

+1H
+2H
+3H

+1L
+2L

+3L
+4L
+5L

+6H
+7H
+8H

+6L
+7L
+8L

+9H

+9L

Flag and band colors indicate where a bird was caught and banded. These color codes were standardized by the Pan American Shorebird Program in the mid 1980s.



REGION	FLAG	COUNTRY	BAND		
Canada	White	Canada	-- ¹		
		St-Pierre et Miquelon	--		
United States	Dark Green ² Light Green	United States	-- ¹		
Mexico	Purple Red	Mexico	-- ¹		
Central America	Grey	Belize	Light Green		
		Costa Rica	Black		
		El Salvador	Dark Blue		
		Guatemala	Orange		
		Honduras	Grey		
		Nicaragua	Dark Green		
		Panama	White		
		Caribbean ³	Pink	Bermuda	Dark Blue
				Cuba	Dark Green
Dominican Rep.	White				
Guadeloupe	Light Green				
Haiti	Red				
Jamaica	Black				
Martinique	Orange				
South America	Black			Colombia	Yellow
		French Guiana	Red		
		Guyana	White		
		Suriname	Light Green		
		Venezuela	Black		
		Yellow	Bolivia	Dark Blue	
			Ecuador	Red	
			Peru	Yellow	
		Dark Blue	Brazil	Dark Blue	
			Paraguay	Orange	
		Orange	Argentina	White	
Uruguay	Dark Blue				
Chile	Red	Chile	-- ¹		

Pan American Shorebird (PASP) Flags and Band Colors

Birds have been marked for resighting in three different ways:

- ❖ Flags with no characters plus colored band



Bill Buchanan

- ❖ Flags with 2 characters
(may have additional color bands)



Chris Bennett

- ❖ Flags with 3 characters
(may have additional color bands)



Jean Hall

Birds without characters on the flag

Birds were primarily marked in this way as cohorts prior to 2003. A cohort means a group of birds were marked the same way. The addition of color bands made some of these birds identifiable as individuals.

Over the years, some birds have lost one or more bands, which can make it uncertain whether it is from a cohort or individually marked. In addition, there is difficulty in determining color due to fading and staining of the plastic.

Finally, due to the number of bands that need to be accurately recorded and their position on the legs, there has been difficulty getting reliable observations.



Greg Breese

For these reasons you will not be expected to record birds marked in this way.

Recording secondary color bands

For flags that are orange, dark blue, yellow, black, dark pink, and 2 character light (lime) green, the additional color band (usually there is only one) must be recorded as well as the flag code.

US: Light Green with 2 Characters



Jean Hall

Carribean: Dark Pink



Jean Woods

Argentina or Uruguay:
Orange with Black Letters



Jean Hall

Peru, Ecuador, or Bolivia: Yellow



Simon Gillings

Brazil or Paraguay: Dark Blue



Greg Breese

Recording the combinations correctly will be covered later.

Recording single flags

For flags that are light (lime) green with 3 characters, dark green, white, red or purple-red, only the flag color and code is needed. If things are moving fast, you can save time by not looking for the other color markers in these cases.

US: Light Green
with 3 Characters



Rob Robinson

US: Dark Green



Jean Hall

Canada: White



Jean Hall

Chile: Red
with Yellow
Characters



Jean Hall



Recording Resights

Resighting Data

- The task that you will spend most of your time on will be recording individually marked birds.
- **Accuracy is critical.** If you are not sure, do not report it.
- Most people record this data in their field note book. Data sheets are available if you prefer. If you are new to this, work in pairs, with one writing and the other observing.
- The next few slides will describe how birds are marked, what to observe, and how to record the information properly.



©photo by Jean Hall

Species Codes

- Red Knot = REKN
- Ruddy Turnstone = RUTU
- Sanderling = SAND
- Semipalmated Sandpiper = SESA

Note: This code, which is widely used for birds, generally uses the first two letters of the first and last word, or, in the case of the bird having only one word for its common name, the first 4 letters.

Pan American Standard Codes to use:

Table 1. Key to codes for recording colour band combinations on shorebirds.

Colour	Code	Description	Code
Black	bk	Separates markers on the same leg segment (comma)	,
White	w	Separates upper vs. lower leg (vertical bar; symbol above \ on keyboard)	
Red	r	Separates left vs. right leg (colon)	:
Orange	o	Separates colours on split bands (forward slash)	/
Yellow	y		
Dark Green	dg	Marker Type (where x = colour)	Code
Light Green	lg	Metal Band	m
Dark Blue	db	Coloured Band	x
Light Blue	lb	Coloured Flag	Fx
Pink	lp	Bi-Coloured Flag	Fx/x
Dark Pink	dp	Tri-Coloured Flag	Fx/x/x
Purple	pu	Engraved Band (where # = alpha or numeric code)	Ex(###)
Brown	bn	Engraved Flag (where # = alpha or numeric code)	FEx(###)
Grey	gy	no bands or flags present (single dash)	-
		Geolocator	GEO
		Satellite	SAT
		unknown character on code	Q
		unknown colour or bands on particular portion or sub-portion of leg	U

Most commonly used codes :

Engraved Flag= FE

Geolocator Present= geo or GEO

No band or Color Marker Present= -

Metal Band= m

Recording Information for Individually Marked Birds:



Greg Breese

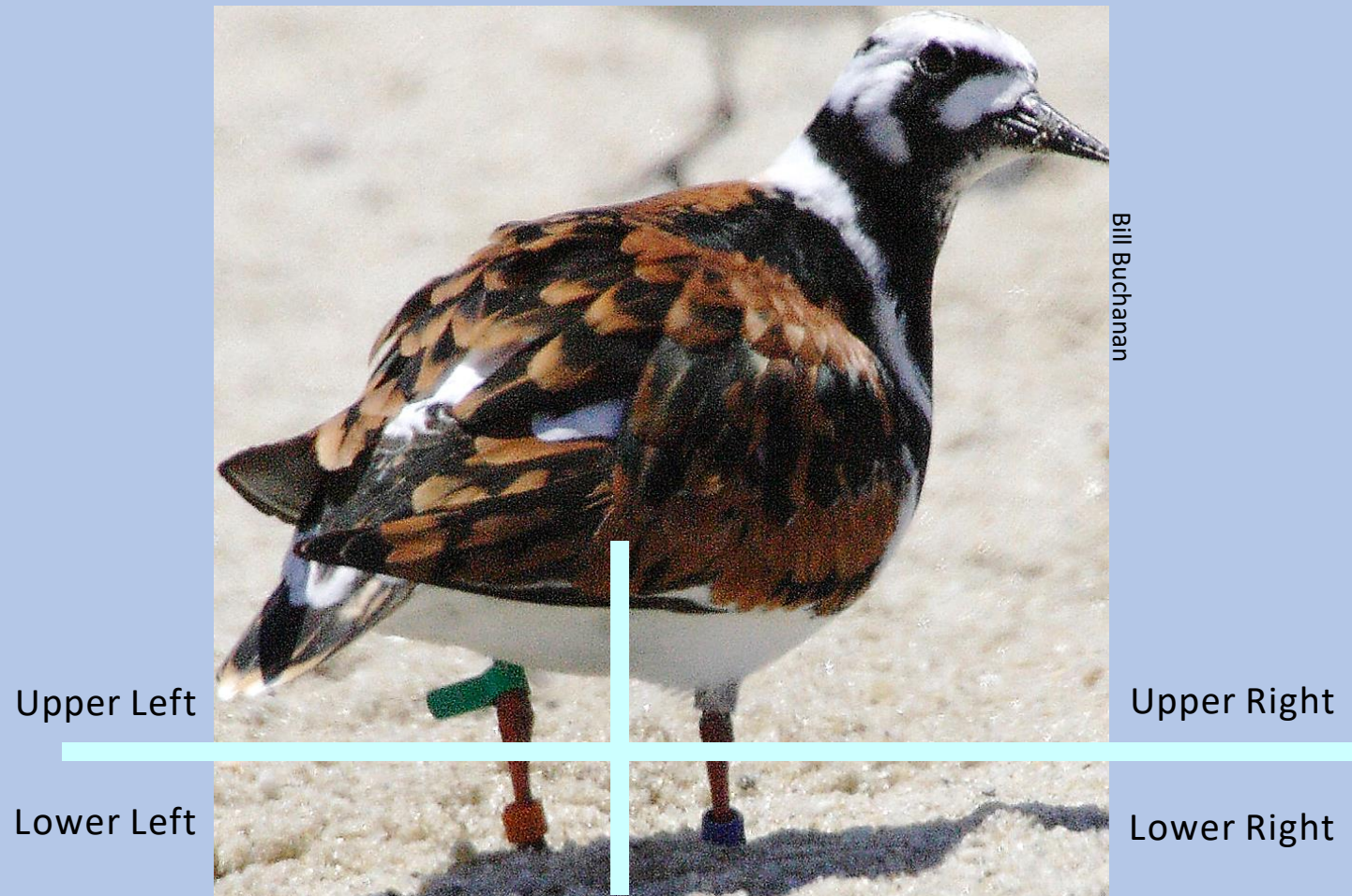
Information to record:	Species	Flag color	3 character code
In this photo:	Red Knot	Light Green Flag	U1Y

Or to write it more efficiently: REKN lg(U1Y)

Note: In some cases any additional color bands or geolocators will be needed to be recorded as well. See later slides.

Flag/Band Position

Historically, the position that a band or flag has on the legs of a bird was significant. The scheme used is as if you are looking at the bird from the rear:



With inscribed flags, this is generally not needed anymore. When you do need to indicate leg position, start with upper left, then lower left, then upper right, then lower right. For this bird one would write: dg | o : m | db

Recording birds with additional color bands

Information to record:

- Species
- Flag color
- Flag code
- Any Colored Band(s), geolocators, metal bands, or nothing (-) if nothing.

In this example,

REKN lg(XL) o

To record this using the standard Pan American Protocol, it would be written as:

FElg(XL) | - : o | m

Note: Without these extra markers, the bird cannot be identified as an individual so the resighting cannot be used.



Greg Breese

Resighting Protocol

Time should be recorded at the start and then every 30 minutes, on the hour and half hour. Try not to duplicate birds within each 30 minute time period.

Do not record the same bird in different time periods. This provides information on turnover rates.

Double check what you have written in your field notebook to make sure you have written clearly and will be sure what the information says. You will be transcribing this data to the Resighting Transcription Sheet when you get back to the field house.



©photo by Jean Hall

Letters that often are hard to read

Ron Robinson

U vs V 5 vs S

C vs G 2 vs Z

0 vs D 7 vs 1

8 vs B or 3

4 vs Y or H



Use caution when reading these letters in the field as they can be difficult to tell apart. Please write these letters clearly and distinctly in your field notebook and on the transcription sheet so that they are entered into the database correctly. Use \$ for S and cross Z's, 7's and 0's to make these unambiguous. Make V's, 5's, and 4's, very square/pointy. G's, B's and D's should be well formed and round.

Confusing Flag Colors

As flags weather, the colors can fade and, depending upon the lighting, can be confused with other colors. The most commonly confused colors are orange and red. The new orange flags are relatively dark and can be confused with a faded red flag under some lighting conditions, so pay attention. Orange flags always have black letters and red always has yellow letters.



Greg Breese

Orange has
Black Letters



Hannah Tripp

Orange has
Black Letters



Greg Breese

Red has Yellow
Letters

Flag with faded ink



Rob Robinson

Here is an example of a flag with faded ink. The flag can also become broken, the glue may fail allowing the flag to open up, etc. This can make the characters on the flags difficult or impossible to read.

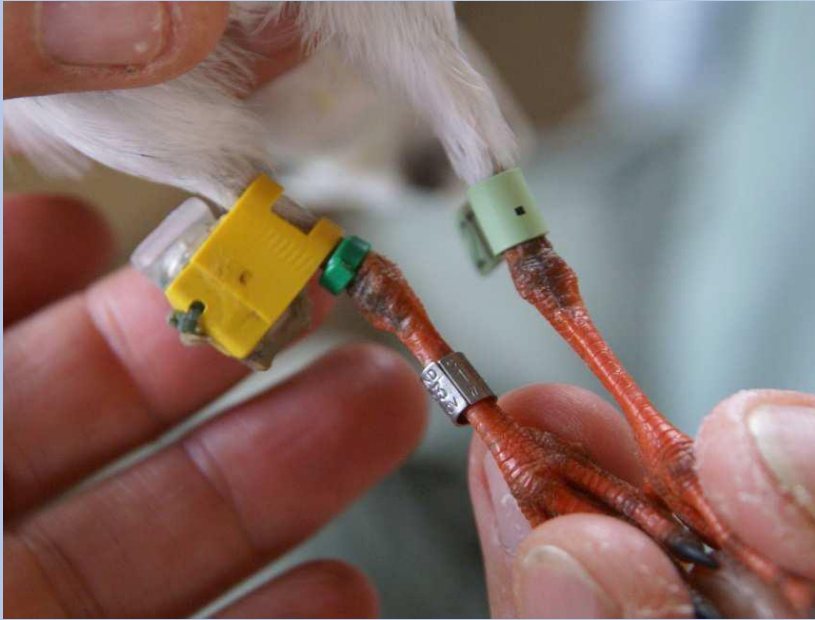
In addition, different lighting conditions can make the colors difficult to determine. Taking your time to be certain of the observations and noting these conditions can be helpful in difficult cases. However, sometimes you will not be certain, in which case the observation cannot be used and should not be reported.

Stained flags



This is a light green (lime) flag that is stained. This should be noted on the resight transcription sheet as FS (flag stained)

Geolocators



Leslie Howes



Kevin Kalasz



Copyright: 2009 Jan van de Kam, NL jkam@worldonline.nl

Some birds are outfitted with geolocators. These electronic devices keep time and measure light. If recaptured, the data can be downloaded to get an approximate position of the bird, using day length and sunrise. Report using “geo” as you would for a color marker.

To Help you gain expertise in resighting and recording these observations, go to the next module “Resight Training Module Part 2” for examples

Credits

Prepared by: Delaware Division of Fish & Wildlife
Gregory Breese, US Fish & Wildlife Service
Jean Woods, Delaware Museum of Natural History

Technical Consultant: Simon Gillings, British Trust for Ornithology

Photos credits given by photos

Updated April 2020

