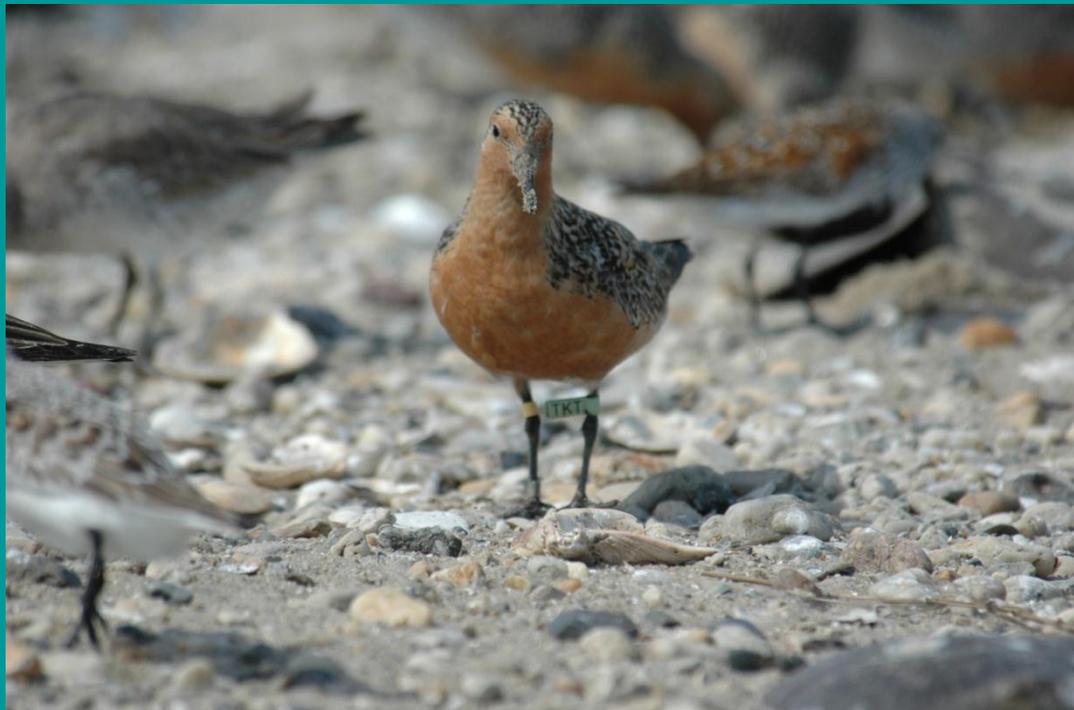


# Resighting Individually Marked Birds...



Your resighting work will be part of an international effort to individually mark Red Knot (*Calidris canutus*) in the Western Hemisphere in order to better understand their ecology, population status, and trends. Ruddy Turnstone (*Arenaria interpres*), Sanderling (*Calidris alba*), and Semipalmated Sandpipers (*Calidris pusilla*) have also been marked. Approximately 10% of the red knot population in the Western Atlantic flyway has been individually marked at this point. The birds are marked with colored flags and bands.



The seasonal goals for the resighting portion of the Delaware Shorebird project are to:

1. Estimate the sizes of flocks of shorebirds and gulls throughout the season at roughly a dozen field sites
2. Obtain the maximum number of resightings of individually marked shorebirds
3. Collect data on the ratio of mark:unmarked individuals to use in estimating population size for red knots, ruddy turnstones, and sanderlings

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

Note that we will also be capturing shorebirds periodically to monitor weight gain and individually mark additional birds, see the Cannon Netting module for more information about that part of the project.

Birds have been marked for resighting in three different ways:

- ❖ Flags with 2 characters plus color band
- ❖ Flags with 3 characters (may have additional color bands)
- ❖ Flags with no characters plus colored bands

\*\* You are only expected to record birds with characters on the flag.



2 characters



3 characters



No characters

## 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 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 there has been difficulty getting reliable observations. *For these reasons you will not be expected to record birds marked in this way.*



## Birds with characters on the flag

Birds marked with flags that have characters are all marked as individuals. With one exception, all can be identified as individuals by the flag code alone.

That exception is US (lime colored) Flags that have only 2 characters (see second photo from left). In this case, duplicate codes were used and the color band (usually there is only one and it is on the opposite leg) must be recorded as well as the flag code.

This bird needs to have the Flag Code AND Band Color recorded



US



US



Chile



Argentina



Argentina



Brazil

# Flag Colors by Country

Each country has been assigned a specific color flag to use. The flag colors you will most likely see are:

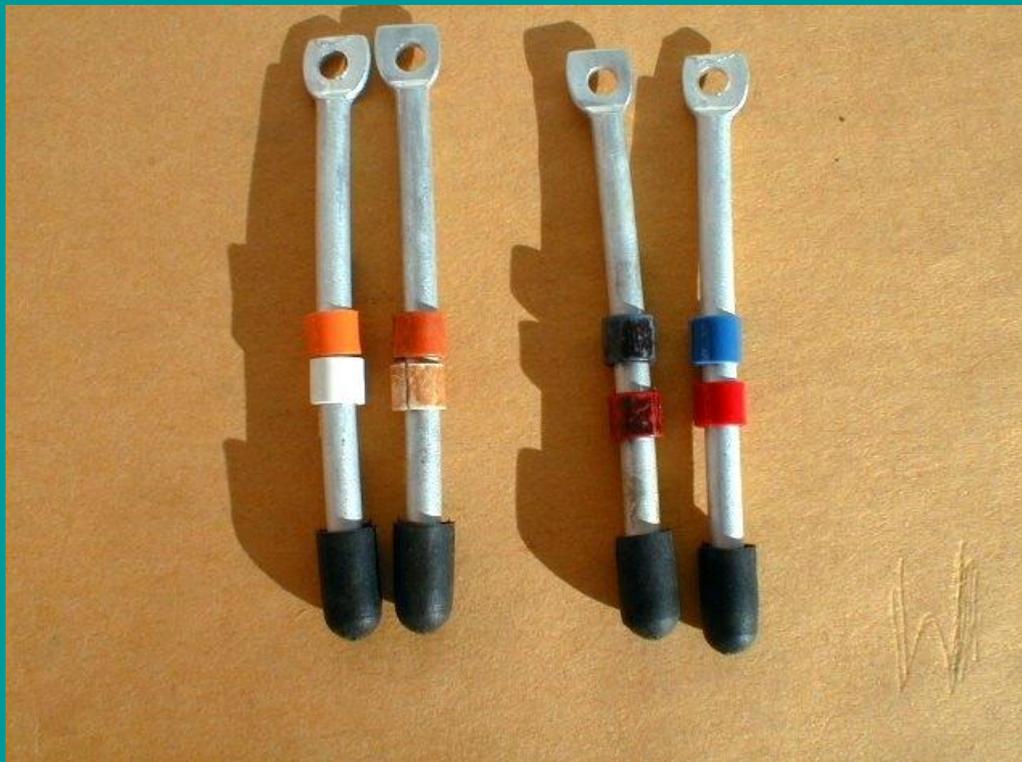
## Flag colors and inscriptions:

Canada					
	Pre-2003	2003	2004	2007	
USA					
USA					
Brazil					
Brazil					
Argentina					
Argentina					
Chile					
Chile					

The convention for recording flags is to write an “F” to designate it is a flag and the first letter of the color for example: Brazil would be FB

## Examples of flags and colored bands with discoloration :

Here are some examples of the plastic material that has faded or , become stained/obscured. 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.



# Overview

This training module is designed to teach you how to re-sight and record the information you collect. 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. Your team will record three types of information.

1. **General Site Information:** where, when, who was on the team, what the conditions were, and an estimate the number of birds by species in that location. A Site Visit Form is used to record this information.
2. **Individually Marked Birds:** Most of your time will be spent recording information on marked birds. You will “resight” any individually marked birds you see. A Field Resighting Data Sheet can be used to record this information. Accuracy is critical, otherwise the resighting data cannot be used.
3. **Ratio of Marked to Unmarked Birds:** The ratio of marked to unmarked birds gives us an estimate of the populations size. A Ratio Form can be used to record this information.

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.



# 1. Site Visit Form

The Site Visit Form begins with general information that includes: Scan Sheets, Observers, Date and Time, Location, Tides, Weather, and Visibility.

Check if NO flags obs <input checked="" type="checkbox"/>	# REKN Sheets	# RUTU Sheets	# SAND Sheets	# SESA Sheets	# DUNL Sheets	# RATIO Sheets	FOR OFFICE USE Sheet ID: 2013
Delaware Shorebird Project - Visit summary form (aka Cover Sheet) NOT MISPELLION							
Visit details - fill out on every visit (even if no shorebirds present)							
Date (spell month) 13 May		start 09:15	End 10:45 (24hr)	Site South Bowers			
Observers		check if visit scribe	check when flag sheets completed (or x if none)	Species - count & check TC, ES or GU			
G. Breese		<input checked="" type="checkbox"/>	<input type="checkbox"/>	TC = true count			
J. Woods		<input type="checkbox"/>	<input type="checkbox"/>	ES = to nearest 10, 50 etc by extrapolation			
		<input type="checkbox"/>	<input type="checkbox"/>	GU = guesstimate (ballpark)			
		<input type="checkbox"/>	<input type="checkbox"/>	Red Knot			
		<input type="checkbox"/>	<input type="checkbox"/>	TC <input type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/> -0-			
		<input type="checkbox"/>	<input type="checkbox"/>	Ruddy Turnstone			
		<input type="checkbox"/>	<input type="checkbox"/>	TC <input checked="" type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/> 18			
		<input type="checkbox"/>	<input type="checkbox"/>	Sanderling			
		<input type="checkbox"/>	<input type="checkbox"/>	TC <input type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/> -0-			
		<input type="checkbox"/>	<input type="checkbox"/>	Semipalmated Sandpiper			
		<input type="checkbox"/>	<input type="checkbox"/>	TC <input type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/> 40			
		<input type="checkbox"/>	<input type="checkbox"/>	Short-billed Dowitcher			
		<input type="checkbox"/>	<input type="checkbox"/>	TC <input type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/> -0-			
		<input type="checkbox"/>	<input type="checkbox"/>	Dunlin			
		<input type="checkbox"/>	<input type="checkbox"/>	TC <input checked="" type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/> 19			
		<input type="checkbox"/>	<input type="checkbox"/>	Laughing Gull			
		<input type="checkbox"/>	<input type="checkbox"/>	TC <input type="checkbox"/> ES <input checked="" type="checkbox"/> GU <input type="checkbox"/> 250			
		<input type="checkbox"/>	<input type="checkbox"/>	Ring-billed Gull			
		<input type="checkbox"/>	<input type="checkbox"/>	TC <input checked="" type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/> 20			
		<input type="checkbox"/>	<input type="checkbox"/>	Herring Gull			
		<input type="checkbox"/>	<input type="checkbox"/>	TC <input checked="" type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/> 9			
		<input type="checkbox"/>	<input type="checkbox"/>	Great Black-backed Gull			
		<input type="checkbox"/>	<input type="checkbox"/>	TC <input type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/> -0-			
		<input type="checkbox"/>	<input type="checkbox"/>	Spotted Sandpiper			
		<input type="checkbox"/>	<input type="checkbox"/>	TC <input checked="" type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/> 2			
		<input type="checkbox"/>	<input type="checkbox"/>	TC <input type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/>			
		<input type="checkbox"/>	<input type="checkbox"/>	TC <input type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/>			
		<input type="checkbox"/>	<input type="checkbox"/>	TC <input type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/>			
		<input type="checkbox"/>	<input type="checkbox"/>	NO BIRDS PRESENT <input type="checkbox"/>			
		<input type="checkbox"/>	<input type="checkbox"/>	BIRDS NOT COUNTED <input type="checkbox"/>			
		<input type="checkbox"/>	<input type="checkbox"/>	TC <input type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/>			
Sky (% overcast) 80		Wind (Beaufort Scale) - check one		Shorebird activity (check percent roosting)		Disturbances	
		<input type="checkbox"/> 0 - Calm (smoke rises vertically) Sea flat.		<input type="checkbox"/> 0		Source / number of	
		<input type="checkbox"/> 1 - Light Air (smoke drifts) Ripples without crests		<input checked="" type="checkbox"/> 25		Boat	
		<input type="checkbox"/> 2 - Light breeze (feel wind on face) small wavelets, glassy crests		<input type="checkbox"/> 50		Pedestrian 2	
		<input checked="" type="checkbox"/> 3 - Gentle breeze (leaves moving) large wavelets, scattered whitecaps		<input type="checkbox"/> 75		Plane	
		<input type="checkbox"/> 4 - Moderate breeze (raises dust & paper) small waves, breaking crests		<input type="checkbox"/> 100		Vehicle	
		<input type="checkbox"/> 5 - Fresh breeze (trees sway), Moderate waves many whitecaps, spray				Peregrine	
		<input type="checkbox"/> 6 - Strong breeze (large branches move) Long waves, white foam crests				Researcher 4	
						Unknown 1	
						None	
						Other	
		Wind direction - check one		Visiblity		Low <input type="checkbox"/> Moderate <input type="checkbox"/> High <input checked="" type="checkbox"/>	
		<input checked="" type="checkbox"/> Onshore					
		<input type="checkbox"/> Offshore					
		<input type="checkbox"/> Alongshore					
		Tide state (approx) check one					
		<input type="checkbox"/> 1 = HIGH					
		<input type="checkbox"/> 2 = near high/RISING					
		<input checked="" type="checkbox"/> 3 = near high/FALLING					
		<input type="checkbox"/> 4 = half/RISING					
		<input type="checkbox"/> 5 = half/FALLING					
		<input type="checkbox"/> 6 = low/RISING					
		<input type="checkbox"/> 7 = near low/FALLING					
		<input type="checkbox"/> 8 = LOW					
		<input type="checkbox"/> 9 = UNKNOWN					
		Rain - check one					
		<input checked="" type="checkbox"/> None					
		<input type="checkbox"/> Light					
		<input type="checkbox"/> Moderate					
		<input type="checkbox"/> Heavy					
Sturgeon Observation		Approximate Length		Photo Taken? Yes <input type="checkbox"/> No <input type="checkbox"/>			
Location/Condition/Comment							
Entered by		Checked by		Corrected by			

# 1. Site Visit Form: Observers, etc

Delaware Shorebird Project - Visit summary form (aka Cover Sheet) NOT MISPELLION  
Visit details - fill out on every visit (even if no shorebirds present)

Date (spell month)	13 May	Start	09:15	End	10:45 (24hr)	Site	South Bowers	
Observers		check if visit scribe		check when flag sheets completed (or x if none)				
G. Breese		<input checked="" type="checkbox"/>		<input type="checkbox"/>		Species - count & check TC, ES or GU TC = true count ES = to nearest 10, 50 etc by extrapolation GU = guesstimate (ballpark)		
J. Woods		<input type="checkbox"/>		<input type="checkbox"/>				
		<input type="checkbox"/>		<input type="checkbox"/>				
		<input type="checkbox"/>		<input type="checkbox"/>				
		<input type="checkbox"/>		<input type="checkbox"/>				

This section is used to record the observers, who visited the site, who was the scribe, the date and time of the visit, and the location visited. Make sure to:

- Use first initial and complete last names to avoid confusion

- Write the month as a word to avoid confusion

- Use 24 hour time and use leading zeros (9am = 09:00)

- Be consistent with location names

# 1. 12 Hour Time vs 24 Hour Time

		8:00 am	=	08:00
morning		10:15 am	=	10:15
noon	→	12:00 pm	=	12:00
		3:20 pm	=	15:20
afternoon		4:00 pm	=	16:00
		6:30 pm	=	18:30
evening		9:57 pm	=	21:57
midnight	→	12:00 am	=	00:00
		2:00 am	=	02:00
		4:00 am	=	04:00

# 1. Site Visit Form: Bird Info

Total numbers of birds are recorded on the Site Visit Form.

Enter a "0" in the block for species not observed rather than just leaving it blank. This will ensure that the person entering the data knows that species were not present rather than not counted.

Indicate whether it is a True Count (TC), Extrapolated Estimate (ES), or a Guesstimate (GE).

True Count: Each bird was counted

Extrapolated Estimate: Numbers were systematically estimated

Guesstimate: A quick estimate was done, basically a first impression

Species - count & check TC, ES or GU	
<i>TC = true count</i>	
<i>ES = to nearest 10, 50 etc by extrapolation</i>	
<i>GU = guesstimate (ballpark)</i>	
Red Knot	
TC <input type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/>	-0-
Ruddy Turnstone	
TC <input checked="" type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/>	18
Sanderling	
TC <input type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/>	-0-
Semipalmated Sandpiper	
TC <input type="checkbox"/> ES <input checked="" type="checkbox"/> GU <input type="checkbox"/>	40
Short-billed Dowitcher	
TC <input type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/>	-0-
Dunlin	
TC <input checked="" type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/>	19
Laughing Gull	
TC <input type="checkbox"/> ES <input checked="" type="checkbox"/> GU <input type="checkbox"/>	250
Ring-billed Gull	
TC <input checked="" type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/>	20
Herring Gull	
TC <input checked="" type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/>	9
Great Black-backed Gull	
TC <input type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/>	-0-
Spotted Sandpiper	
TC <input checked="" type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/>	2
TC <input type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/>	
TC <input type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/>	
TC <input type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/>	
NO BIRDS PRESENT	
<input type="checkbox"/>	
BIRDS NOT COUNTED	
<input type="checkbox"/>	

# 1. Site Visit Form: Weather & Disturbance

Sky (% overcast)	80
------------------	----

<b>Wind (Beaufort Scale) - check one</b>	
<input type="checkbox"/>	0 - Calm (smoke rises vertically) Sea flat.
<input type="checkbox"/>	1 - Light Air (smoke drifts) Ripples without crests
<input type="checkbox"/>	2 - Light breeze; (feel wind on face) small wavelets, glassy crests
<input checked="" type="checkbox"/>	3 - Gentle breeze (leaves moving) large wavelets, scattered whitecaps
<input type="checkbox"/>	4 - Moderate breeze (raises dust & paper) small waves, breaking crests
<input type="checkbox"/>	5 - Fresh breeze (trees sway); Moderate waves many whitecaps, spray
<input type="checkbox"/>	6 - Strong breeze (large branches move) Long waves, white foam crests

<b>Wind direction - check one</b>	
<input checked="" type="checkbox"/>	Onshore
<input type="checkbox"/>	Offshore
<input type="checkbox"/>	Alongshore

<b>Tide state (approx) check one</b>	
<input type="checkbox"/>	1 = HIGH
<input type="checkbox"/>	2 = near high/RISING
<input checked="" type="checkbox"/>	3 = near high/FALLING
<input type="checkbox"/>	4 = half/RISING
<input type="checkbox"/>	5 = half/FALLING
<input type="checkbox"/>	6 = low/RISING
<input type="checkbox"/>	7 = near low/FALLING
<input type="checkbox"/>	8 = LOW
<input type="checkbox"/>	9 = UNKNOWN

<b>Rain - check one</b>	
<input checked="" type="checkbox"/>	None
<input type="checkbox"/>	Light
<input type="checkbox"/>	Moderate
<input type="checkbox"/>	Heavy

<b>Shorebird activity (check percent roosting)</b>	
<input type="checkbox"/>	0
<input checked="" type="checkbox"/>	25
<input type="checkbox"/>	50
<input type="checkbox"/>	75
<input type="checkbox"/>	100

<b>Disturbances</b>	
<i>Source / number of</i>	
Boat	
Pedestrian	2
Plane	
Vehicle	
Peregrine	
Researcher	4
Unknown	1
Other	
Other	

<b>Visibility</b>	Low <input type="checkbox"/>	Moderate <input type="checkbox"/>	High <input checked="" type="checkbox"/>
-------------------	------------------------------	-----------------------------------	--

Weather and tide conditions are recorded. For tides, check the tide schedule for that area to see when high or low was predicted.

Percent roosting is meant to give an overall impression.

Disturbance includes non human as well as human disturbance. You are not expected to spend a lot of time on this, simply give a reasonable sense for what was occurring. Pay particular attention to boats and peregrine falcons and include them in disturbance events.

Visibility refers to how well you can see flags.

# 1. Site Visit Form: Sturgeon

<b>Sturgeon Observation</b>	Approximate Length _____	Photo Taken? Yes <input type="checkbox"/> No <input type="checkbox"/>
Location/Condition/Comment		

Occasionally Sturgeon are encountered dead on the beach. Sturgeon are ancient fish, dating back at least 70 million years, and can be found along the entire Atlantic coast from Florida to Labrador, Canada. Sturgeon may live up to 70 years old. Since colonial times, sturgeon have supported commercial fisheries and in the late 1800s, they were second only to lobster among important fisheries with landings estimated at seven million pounds per year. Overharvesting of sturgeon for flesh and eggs (known as caviar) continued through the 1990s. Currently rare, sightings provide valuable information for scientists and managers working to conserve them.



# 1. Site Visit Form: Mispillion

Check if NO flags obs	# REKN Sheets	# RUTU Sheets	# SAND Sheets	# SESA Sheets	# DUNL Sheets	# RATIO Sheets	FOR OFFICE USE Sheet ID:
<input type="checkbox"/>	1						2013 _____

**Delaware Shorebird Project - Visit summary form (aka Cover Sheet) MISPELLION**  
 Visit details - fill out on every visit (even if no shorebirds present):

Date (spell month) 13 May Start 13:00 End 14:46 (24hr)

Observers G. Breeze J. Woods

check if visit scribe  check when flag sheets completed (or x if none)

Site **MISPELLION HARBOR** (all beaches counted)

Shorebird activity (check percent roosting)	
<input checked="" type="checkbox"/>	0
<input type="checkbox"/>	25
<input type="checkbox"/>	50
<input type="checkbox"/>	75
<input type="checkbox"/>	100

Sky (% overcast) 75

Wind (Beaufort Scale) - check one

0 - Calm (smoke rises vertically) Sea flat.

1 - Light Air (smoke drifts) Ripples without crests

2 - Light breeze; (feels wind on face) small wavelets, glassy crests

3 - Gentle breeze (leaves moving) large wavelets, scattered whitecaps

4 - Moderate breeze (raises dust & paper) small waves, breaking crests

5 - Fresh breeze (trees sway); Moderate waves many whitecaps, spray

6 - Strong breeze (large branches move) Long waves, white foam crests

Wind direction - check one

Onshore

Offshore

Alongshore

Visibility Low  Moderate  High

Tide state (approx) check one

1 = HIGH

2 = near high/RISING

3 = near high/FALLING

4 = half/RISING

5 = half/FALLING

6 = low/RISING

7 = near low/FALLING

8 = LOW

9 = UNKNOWN

Rain - check one

None

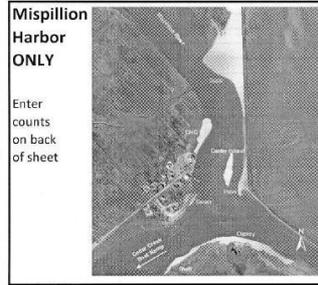
Light

Moderate

Heavy

Sturgeon Observation Location/Condition/Comment \_\_\_\_\_ Approximate Length \_\_\_\_\_ Photo Taken? Yes  No

Entered by \_\_\_\_\_ Checked by \_\_\_\_\_ Corrected by \_\_\_\_\_



Lighthouse Road (incl. boat ramp etc)				
Species	Count	TC	ES	GU
Red Knot		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ruddy Turnstone		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sanderling		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dunlin		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Semipalmated Sandpiper		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Short-billed Dowitcher		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Observer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Observer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
check if NO BIRDS PRESENT		<input type="checkbox"/>		
check if BEACH NOT COUNTED		<input checked="" type="checkbox"/>		

Swain's Beach				
Species	Count	TC	ES	GU
Red Knot	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ruddy Turnstone	60	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sanderling	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dunlin	25	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Semipalmated Sandpiper	6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Short-billed Dowitcher	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Observer	0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Observer	2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
check if NO BIRDS PRESENT		<input type="checkbox"/>		
check if BEACH NOT COUNTED		<input type="checkbox"/>		

Osprey Beach				
Species	Count	TC	ES	GU
Red Knot		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ruddy Turnstone		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sanderling		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dunlin		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Semipalmated Sandpiper		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Short-billed Dowitcher		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laughing Gull		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ring-billed Gull		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Herring Gull		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Great Black-backed Gull		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Observer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Observer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
check if NO BIRDS PRESENT		<input type="checkbox"/>		
check if BEACH NOT COUNTED		<input checked="" type="checkbox"/>		

DuPont Nature Center				
Species	Count	TC	ES	GU
Red Knot		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ruddy Turnstone		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sanderling		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dunlin		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Semipalmated Sandpiper		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Short-billed Dowitcher		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laughing Gull		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ring-billed Gull		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Herring Gull		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Great Black-backed Gull		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Observer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Observer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
check if NO BIRDS PRESENT		<input type="checkbox"/>		
check if BEACH NOT COUNTED		<input checked="" type="checkbox"/>		

Shell Beach				
Species	Count	TC	ES	GU
Red Knot		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ruddy Turnstone		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sanderling		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dunlin		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Semipalmated Sandpiper		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Short-billed Dowitcher		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Observer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Observer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
check if NO BIRDS PRESENT		<input checked="" type="checkbox"/>		
check if BEACH NOT COUNTED		<input type="checkbox"/>		

**Remember**

TC true count

ES extrapolated estimate - counted in 10s, 50s, 100s etc

GU guesstimate - i.e. a ballpark number

Breakwall (incl. outer island)				
Species	Count	TC	ES	GU
Red Knot		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ruddy Turnstone		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sanderling		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dunlin		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Semipalmated Sandpiper		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Short-billed Dowitcher		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Observer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Observer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
check if NO BIRDS PRESENT		<input type="checkbox"/>		
check if BEACH NOT COUNTED		<input checked="" type="checkbox"/>		

Point Beach (& Center island if exposed)				
Species	Count	TC	ES	GU
Red Knot		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ruddy Turnstone	65	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sanderling	600	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Dunlin	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Semipalmated Sandpiper	3,500	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Short-billed Dowitcher	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laughing Gull	250	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ring-billed Gull	40	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Herring Gull	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Great Black-backed Gull	2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Observer	2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Observer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
check if NO BIRDS PRESENT		<input type="checkbox"/>		
check if BEACH NOT COUNTED		<input type="checkbox"/>		

Back Beach				
Species	Count	TC	ES	GU
Red Knot	12	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ruddy Turnstone	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sanderling	50	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Dunlin	1,400	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Semipalmated Sandpiper	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Short-billed Dowitcher	10	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Laughing Gull	800	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ring-billed Gull	0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Herring Gull	200	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Great Black-backed Gull	2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Observer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Observer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
check if NO BIRDS PRESENT		<input type="checkbox"/>		
check if BEACH NOT COUNTED		<input type="checkbox"/>		

For Mispillion Harbor, there is a modified Site Visit form. This includes more detail for bird numbers at specific Locations in Mispillion Harbor. Be sure to fill in both the front and back.

# 2. Field Resighting Data Sheet

Sheet 1 of 1

**FIELD RESIGHTING DATA SHEET**  
ONLY 1 SPECIES PER SHEET

FOR OFFICE USE

Sheet ID: 2009\_ \_\_\_\_\_

Species: <i>Red Knot</i>	Observer: <i>KKalasz</i>	Date: <i>12 May 2009</i>	Site: <i>North Bowers Beach</i>
	Scribe: <i>GBreese</i>		

Work down the columns. Please write clearly! See additional notes at bottom.

Time <i>1030</i>	<i>FL(NAC)</i>   <i>L</i>	Abdominal Profile:	# of Flag Characters: <i>3</i>
	<i>-</i>   <i>M</i>	Plumage:	RUTU Sex (if known):

Time		Abdominal Profile:	# of Flag Characters:
	—	Plumage:	RUTU Sex (if known):

The task that you will spend most of your time on will be recording individually marked birds using the Field Resighting Data Sheet. Accuracy is critical. The next few slides will describe how birds are marked, what to observe, and how to record the information properly. Until you are experienced, do not fill out the Abdominal Profile, Plumage, or RUTU Sex boxes.

# Recording Information for Individually Marked Birds:



Information to record:      Species                      flag color                      3 character code

In this photo:                Red Knot                      Orange Flag                      CNP

Or to write it more efficiently: REKN FO (CNP)

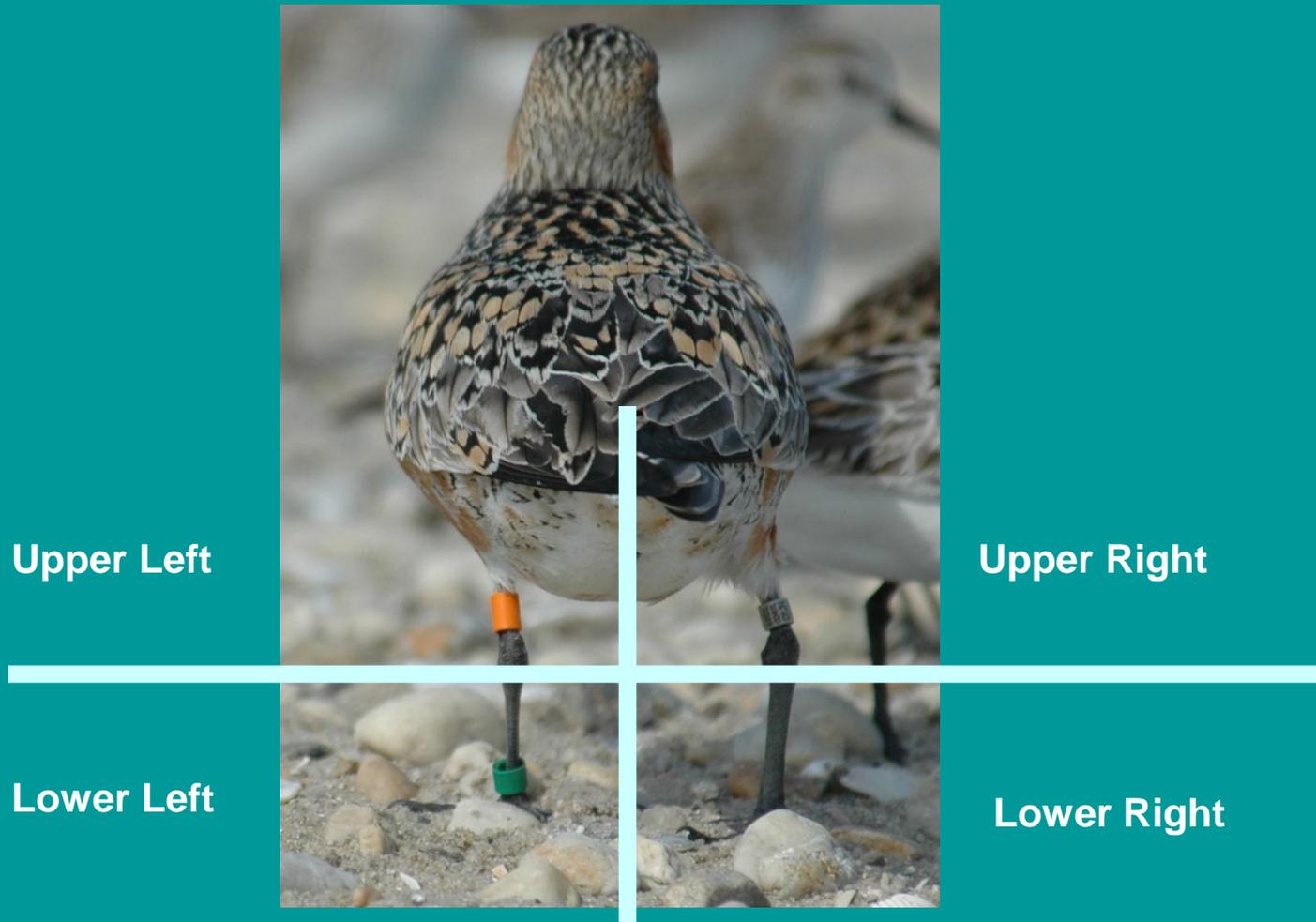
# Species Codes

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

Note: This code (which is widely used for birds) 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.

# Flag/Band Position

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



# Information to record for birds with a 2 character Lime Flag:

Information to record:

Species

flag color

2 character code

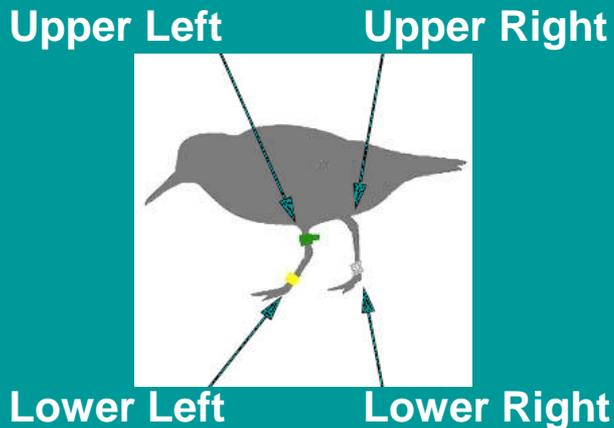
Colored Band(s)

Position on legs



In this photo:

REKN	FL (XL)		O
	--	+	m



Note: Use “—” to indicate that there were no bands at that position on the leg. Use “ ” to indicate that you do not know if there were any bands at that position on the leg. Use “m” to indicate metal band which you may be able to see.

The Field Resighting Data Sheet are designed to follow this method of recording. You do not need to fill out all 4 quadrants if the code does not require it. For instance, in the example below you could have simply entered "FL (NAC)" in the upper left quadrant. As recorded this tells you that the red knot had a lime flag on the upper left leg with the characters "NAC" inscribed on the flag, nothing on the lower left leg, a lime band on the upper right leg, and a metal band on the lower right leg.

Sheet 1 of 1

**FIELD RESIGHTING DATA SHEET**  
ONLY 1 SPECIES PER SHEET

FOR OFFICE USE	
Sheet ID: 2009_ _____	
Species:	Observer: <i>KKalasz</i>
<i>Red Knot</i>	Scribe: <i>GBreese</i>
Date:	Site:
<i>12 May 2009</i>	<i>North Bowers Beach</i>

Work down the columns. Please write clearly! See additional notes at bottom.

Time <i>1030</i>	<i>FL(NAC)</i>	<i>L</i>	Abdominal Profile:	# of Flag Characters: <i>3</i>
	<i>-</i>	<i>M</i>	Plumage:	RUTU Sex (if known):

Time			Abdominal Profile:	# of Flag Characters:
			Plumage:	RUTU Sex (if known):

Remember: Lime colored flags with only 2 characters also need to have the colored bands recorded in the appropriate quadrants. Accuracy is critical. Write clearly. Do not put more than one species per sheet. Indicate how many sheets per species in the upper right corner.

Time should be recorded at the start and then every 30 minutes, on the hour and half hour. Try not to duplicate birds within one time period. Do record the same bird in different time periods. This provides information on turnover rates.

Sheet 1 of 1

**FIELD RESIGHTING DATA SHEET**

ONLY 1 SPECIES PER SHEET

FOR OFFICE USE

Sheet ID: 2009\_ \_\_\_\_\_

Species: <i>Red Knot</i>	Observer: <i>KKalasz</i>	Date: <i>12 May 2009</i>	Site: <i>North Bowers Beach</i>
	Scribe: <i>GBreese</i>		

Work down the columns. Please write clearly! See additional notes at bottom.

Time <i>1030</i>	<i>FL(NAC)</i>   <i>L</i>	Abdominal Profile:	# of Flag Characters: <i>3</i>
	<i>-</i>   <i>M</i>	Plumage:	RUTU Sex (if known):

Time		Abdominal Profile:	# of Flag Characters:
	—	Plumage:	RUTU Sex (if known):

Generally you will not be using the Number, Abdominal Profile, Plumage, or RUTU Sex boxes until you have further training and experience beyond the scope of this module.

# Resighting Transcription Sheet & Ratio Scan Sheet

Sheet \_\_\_\_\_ of \_\_\_\_\_

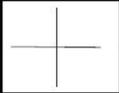
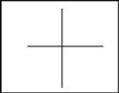
**RESIGHTING TRANSCRIPTION SHEET**  
PLEASE write clearly! Record names as first initial and last name

Species:	Observer:	Date:	<b>FOR OFFICE USE</b> Sheet ID: 2011 _____
Scribe:		Site:	

**Instructions:** ONLY 1 SPECIES PER SHEET. Work down the columns. Indicate each half hour time block (:00, :30). Group by flag color. Draw line down column for repeating entries (i.e. flag color). RECORD extra color on opposite leg for 2-character lime flags.

	Time	Flag Color	Flag Code	Extra Color	Sex (RUTU)	Ab / PI	Time	Flag Color	Flag Code	Extra Color	Sex (RUTU)	Ab / PI
1						/						/
2						/						/
3						/						/
4						/						/
5						/						/
6						/						/
7						/						/
8						/						/
9						/						/
10						/						/
11						/						/
12						/						/
13						/						/
14						/						/
15						/						/
16						/						/
17						/						/
18						/						/
19						/						/
20						/						/
21						/						/
22						/						/
23						/						/
24						/						/
25						/						/

time		Abdominal Profile: # Chars:	time		Abdominal Profile: # Chars:
		Plumage: RUTU Sex:			Plumage: RUTU Sex:

Entered \_\_\_\_\_

Checked \_\_\_\_\_  
Errors\_Y\_N \_\_\_\_\_  
Corrected \_\_\_\_\_

Delaware Resightings Form 2011

When you return to the Shorebird House at the end of the day, you will fill out a transcription sheet for data entry. Note that with experience, some people fill out all their data in field notebooks and then fill out the Site visit, ratio scan, and resighting transcription forms at the house.

# Resighting Transcription Sheet

## RESIGHTING TRANSCRIPTION SHEET (2013)

OFFICE USE

Top sheet ID:2013 \_

Species / sheet # REKN, 1	Observer (first initial and last name) (& scribe if different) G. Breese	Date: 12 May	Site (or subsite) South Bowers
------------------------------	---	-----------------	-----------------------------------

### INSTRUCTIONS

Only **ONE SPECIES** per sheet.

Work down the columns.

Indicate each **half hour time block** (e.g. 1030 for 1030 to 1059, (use 24 hr time and include leading zeros for times before 10:00).

Group by **flag color** within each half-hour time period.

Draw line down column for repeating entries for **time** and **flag color**.

Record extra color on opposite leg for 2-character line flags.

When you have completed ALL your resighting sheets, put a check against your name on the front / visit sheet to indicate you have completed your flag re-sighting sheets

Last person to fill in flag re-sighting sheets - Number sheets (top right) across a

	Time (24 hr)	Flag Color	Flag Code	Extra Color	Sex (rutu)	Ab / Pl
1	10:30	L	AAB			/
2			POE			/
3			L9T			/
4			H5T			/
5		O	ATM			/
6		I	XZ			/
7		R	UW			/
8	11:00	L	JL8			/
9			POE			/
10			PPC			/
11			UC	O		/
12						/

### Notes:

Only one species per sheet

Indicate half our time segments

Vertical line indicates repeated data

Please group your observations by time and flag color to make data entry easier

Do not repeat birds within the ½ hr

Do repeat birds across ½ hr segments, for example flag code “POE” is in both 10:30 and 11:00 half hour segments

# Site Visit Form: After You have Finished Resighting

Check if <b>NO</b> flags obs <input checked="" type="checkbox"/>	# REKN Sheets	# RUTU Sheets	# SAND Sheets	# SESA Sheets	# DUNL Sheets	# RATIO Sheets 1	FOR OFFICE USE Sheet ID: 2013 _ _ _
Delaware Shorebird Project - Visit summary form (aka Cover Sheet) NOT MISPILLION							
Visit details - fill out on <u>every</u> visit (even if no shorebirds present)							
Date (spell month)	13 May	Start	09:15	End	10:45 (24hr)	Site South Bowers	
Observers		check if visit scribe		check when flag sheets completed (or x if none)		Species - count & check TC, ES or GU	
G. Breese		<input checked="" type="checkbox"/>		<input type="checkbox"/>		TC = true count	
J. Woods		<input type="checkbox"/>		<input type="checkbox"/>		ES = to nearest 10, 50 etc by extrapolation	
		<input type="checkbox"/>		<input type="checkbox"/>		GU = guesstimate (ballpark)	
		<input type="checkbox"/>		<input type="checkbox"/>		Red Knot	
		<input type="checkbox"/>		<input type="checkbox"/>		TC <input type="checkbox"/> ES <input type="checkbox"/> GU <input type="checkbox"/> -0-	

After you have finished transcribing your resighting observations onto Resighting Transcription Sheets, locate the Site Visit form (cover sheet) and check off that you have completed your “flag sheets” beside your name. If you are the last (or only) observer to complete your flag sheets fill out the header on the Site Visit Form indicating how many Resighting and Ratio Transcription Sheets go with that Site Visit Form. Assemble the data sheets in the following order: Site Visit Form, Ratio Transcription Forms, and Resighting Transcription Sheets (group by species then by bserver). Staple and place them with the other datasheets waiting to be entered into the database. Note, the Ratio Scanning is discussed later in this training module.

# Site Visit Form: After You have Finished Resighting

Please double check and make sure you have filled out all parts of each form.

This helps the people doing data entry and data error checking (quality control). If data is missing, there may be no way to get it later, potentially rendering the associated data useless.

Be sure to complete this when you get back to the house and definitely before you leave the house for the day. Data on “orphaned” forms may have to be discarded or the data entered out of the normal sequence for error checking, increasing the chance of making mistakes.

# To Help you gain expertise in resighting and recording these observations, here are some examples

- Note what is being recorded and how it is written down
- Remember that it is written as if you are seeing the bird from the rear.

To refresh your memory, there are four species of birds that may be flagged, can you identify them?



Note: The Shorebird Identification Module should be taken if you are not confident with shorebird identification.

To refresh your memory, there are four species of birds that may be flagged, can you identify them?



**red knot - REKN**



**ruddy turnstone - RUTU**

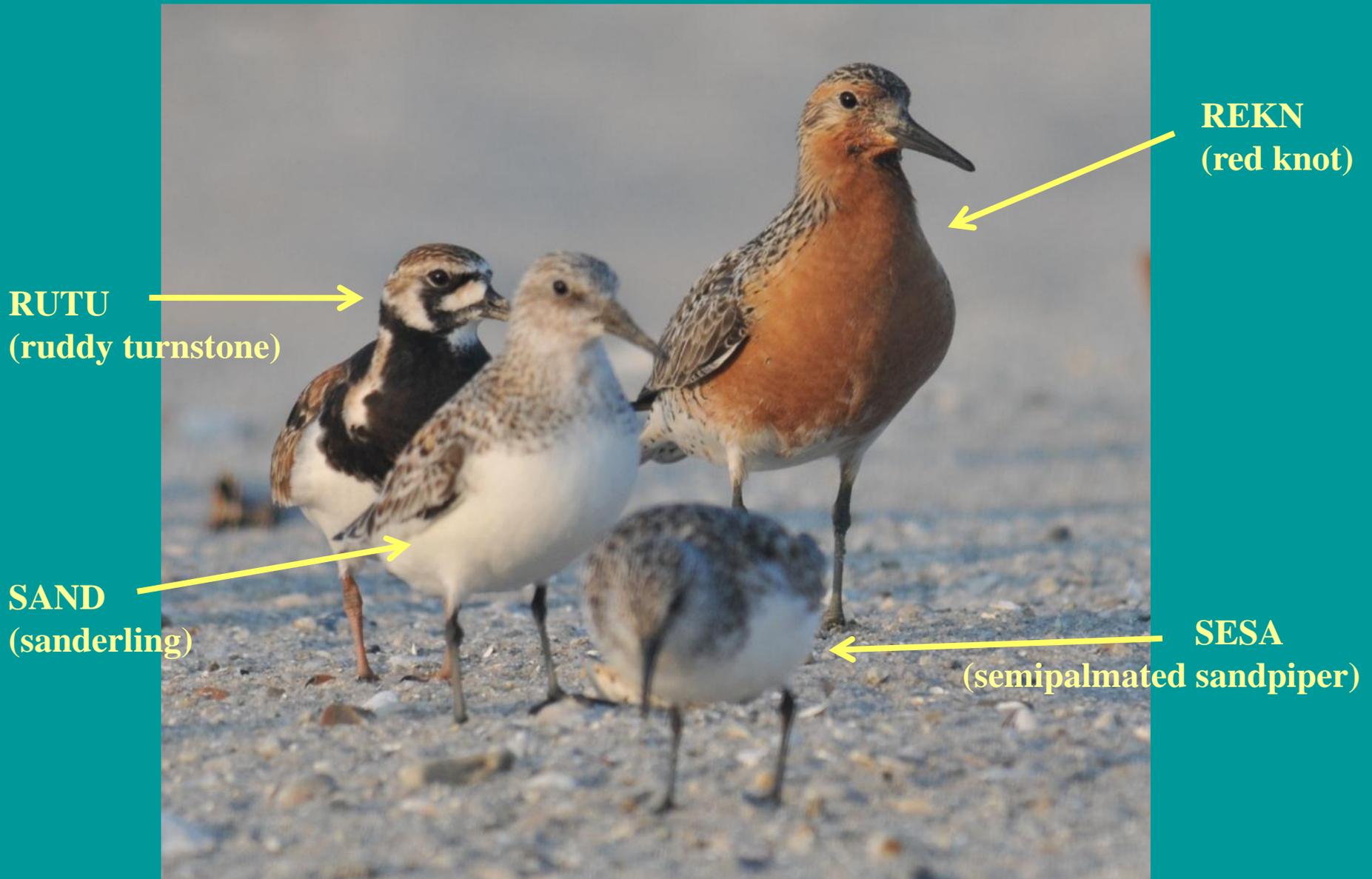


**Sanderling - SAND**



**semipalmated sandpiper - SESA**

Relative sizes and colors:



# Example 1



# Example 1



Since this is a 3 character flag this is all the information needed.

## Example 2



# Example 2

RUTU FL (HYC)



Note this is a ruddy turnstone. Since this is a 3 character Lime colored flag this is all the information needed.

## Example 3



# Example 3



Since this is a 2 character flag you need to record where colored bands are. Note that if you cannot see part of the leg, you should leave that quadrant blank (“ ”) as opposed to a “—” for no bands or flags on that part of the leg.

You do not need to record everything, but must record any color bands in addition to the flag. It would also be acceptable to record this as:



# The next 20 slides will give you practice

- Pretend you are in the field
- Decide whether to record the information or not
- Write down flag codes and other information
- After every 5 slides you will see what should have been recorded.
- Accuracy is more important than speed
- If you cannot make out the characters, note what you saw and were able to observe, along with notes on the staining or other conditions that made it difficult or impossible to determine the code.

## Example 4



## Example 5



## Example 6



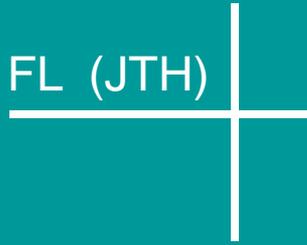
# Example 7



# Example 8

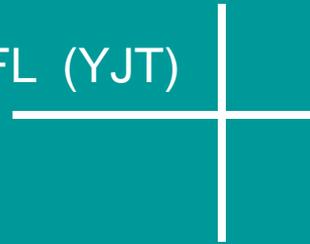


Example 4: REKN FL (JTH)



Example 5: nothing to record for this sanderling (SAND)

Example 6: REKN FL (YJT)



Example 7: REKN FL (UUP)



Example 8: REKN FL (UKV)



# Example 9



# Example 10



# Example 11



# Example 12



# Example 13



Example 9: nothing to record (REKN)

Example 10: SAND FL (VKX)

Example 11: REKN FL (KM3)

Example 12: RUTU FL (XMC)

Example 13: REKN FL (KEJ)

# Example 14



# Example 15



# Example 16



# Example 17



# Example 18



14: RUTU FL (KPN) |  
-- | m

15: REKN FO (NJ) | m      or      FO (NJ) |  
G |      G |

16: nothing to record on this REKN

17: REKN Flag obscured DO NOT Report this bird

18: REKN FR (EN) |

# Example 19



# Example 20



# Example 21



# Example 22



# Example 23



19: REKN FO (CNP) |

20: REKN FL (HM7) |

21: REKN | FL (N7K)

22: REKN FL (X4) | G

23: RUTU FL (AJK) |

Lower legs were obscured

# Example 24



# Example 25



# Example 26



# Example 27



# Example 28



# Example 29



24: REKN FL (EHC) |

25: REKN FL (T6M) |

26: REKN FB (AB) |  
Y

27: REKN FL (87) | O

28: RUTU FL (LNA) |

29: REKN FO (K4S) |

### 3. Ratio of Marked:Unmarked

After you have gained experience and knowledge resighting, you may be asked to collect Ratio Scan data as well. The purpose of this data is to provide estimates of population size.

The protocol for collecting this data has been carefully worked out to meet statistical needs.

Further, it is not easy to do this as birds run back and forth across the beach.

It is important to get enough experience that you are comfortable and confident in your resighting data, before you begin collecting ratio scan data.

### 3. Ratio of Marked:Unmarked

- Do Ratio Scans for REKN, RUTU, and SAND. Be sure to record the species scanned for each scan ratio recorded. Do one species at a time.
- Choose a representative portion of the flock and count in one direction to minimize double counting.
- Scan a total of 50 birds, if you can. Do not record data if you scan less than 20 birds.
- Record the total number of birds scanned. You must be able to determine that a bird either has or does not have an inscribed flag to include it. Do not include birds with a leg tucked up against their body, or that have a leg blocked from your view.
- Record the number of birds that had an inscribed flag.
- Repeat this count every 30 min if you are there long enough
- Do not count birds unless you are sure they have or do not have inscribed flags. This means that you will not be able to include every bird you see in this ratio scan, and in practice you will need more than 50 birds in a flock to get a 50 bird ratio scan. That is fine, what is needed is an accurate ratio.

### 3. Ratio of Marked:Unmarked, con't.

Remember any bird **without an inscribed flag is an unmarked** bird and any **inscribed flag of any color is a marked** bird, for this purpose.

People typically record ratio scans in their notebook. Make sure you record:

Species

Number with inscribed flags

Total number of birds scanned.

For example:

REKN 4 Flagged, total scanned 37

# 3. Ratio Transcription Sheet

Back at the shorebird house, be sure to fill out the ratio transcription sheet.

Sheet 1 of 1

<b>FLAGGED RATIO TRANSCRIPTION SHEET</b>			ONLY 1 SPECIES PER SHEET		FOR OFFICE USE		
PLEASE write clearly! Record names as first initial and last name.					Sheet ID:2013 ____		
Species:	Date:	Site: At Mispillion record sub-beach					
REKN	17 May	Misp - Back Beach					

Conduct ratio scans for REKN, RUTU, and SAND. Begin scanning across a flock counting each bird you see and total number with inscribed flags (any color)(use tally counter). Target sample for each scan is 50; if birds fly before 50 are counted record counts to that point. Attach this data sheet to your cover sheet.

	Time	Total # Scanned	# with flags	# w/o flags	Observer	Scribe
1	15:30	48	5	43	G. Breese	G. Breese
2	16:00	50	6	44		
3	16:30	30	3	27		
4						
5						

All observers can put their data on one sheet. For example, if three observers did ratio scans for REKN, then all three can put their data on one sheet. But do not mix species on the same sheet.

# Tagged Horseshoe Crabs



# If you find a tagged Horseshoe Crab Record that too.

Two different tags have been used, each has a different phone number, but tag numbers could be the same. Record the information on the Data Sheet:

Tag #

Telephone Number on the Tag

Date

Location

Alive or Dead

Tag removed or not

Observer

Notes



## Horseshoe Crab Resightings Data Sheet

Year: \_\_\_\_\_

Tag #	Telephone Number (1-888-LIMULUS or 877-TAG-CRAB)	Date	Location	Animal alive or dead?	Tag Removed?	Observer(s)	Notes
1							
2							
3							

# Further Information

You will be provided additional information in the form of verbal instruction, written instructions, and practical experience with more advanced team members.

Please ask questions when you are uncertain.

Remember, it is better to have only a few resightings that you are sure about, than a lot of uncertain resightings. Take time to be certain.

# Credits

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March 2013

