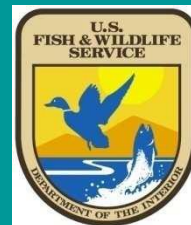


Cannon Netting



Overview

You will be part of an international team studying shorebirds, particularly red knot (*Calidris canutus*).

The major activities include: surveying areas used by shorebirds, capturing birds to take measurements and individually marking them, resighting marked birds, and data entry.

This training module is designed to orient you. It will give you an overview of activities and tasks associated with the capturing, measuring, and marking of birds. You will be given further instruction on tasks that you will be involved in.

Tasks will be assigned on the basis of previous experience and learning opportunities, as well as the Project needs.

Additional training modules on our website cover shorebird identification and resighting.



What to expect in this module

- What is cannon netting?
- Safety issues
- The team and assigned jobs
- Sequence of events during a catch attempt
- What to bring

Cannon Netting

Cannon netting is a technique for catching birds that utilizes a large net. The net is fired over birds, trapping them underneath. Here is a short video of this technique

<https://www.youtube.com/watch?v=HOHqpX6Dnrw>

While there are a number of techniques for capturing birds, cannon netting has proven useful due to its ability to:

- Provide relatively good control of sample size and mix of species.
- Ability to catch a large number of birds at one time.

With these advantages, comes the need for:

- A relatively large team to transport equipment and process birds.
- Expertise and training to ensure safety for people and birds.



Safety to people

Since explosives are being used to fire heavy projectiles from cannons, there is inherent danger involved in cannon netting.

Strict protocols and procedures will be followed *at all times* to ensure the safety of everyone.

Remember to...

- Listen carefully to directions.
- Stay in base camp unless you are directed otherwise.
- One person is in charge overall and will make final decisions.
- A small number of experienced people set up/fire cannon nets.
- If you are unsure about something, please ask.
- If someone appears to be in danger, let someone know.



Safety to birds

Cannon netting is very safe for the birds if done by well trained and experienced operators.

Protocols have been established to help ensure their safety, including:

- The net is only fired if birds are on the ground, in catch area, and out of the safety area.
- The team is well organized and gets to the net quickly in case birds are in water.
- Birds are covered as soon as possible to reduce stress.
- Any birds that seem weak or acting unusual will be identified and processed first or released immediately if appropriate.
- Birds are handled calmly and quietly by the team.
- Time is tracked so that birds are not held for more than 4 hours.

Firing Team

While you will most likely *not* be part of the Firing Team, it is helpful for you to know what this Team does.

The Firing Team will likely go out ahead of the Base Camp members and identify the catch site and location for Base Camp.

They will set the net, stay in position, and fire the net.

They will have radio contact with Base Camp and may ask for support as needed.

You can ask them questions after the catch – try not distract them during the catch itself.



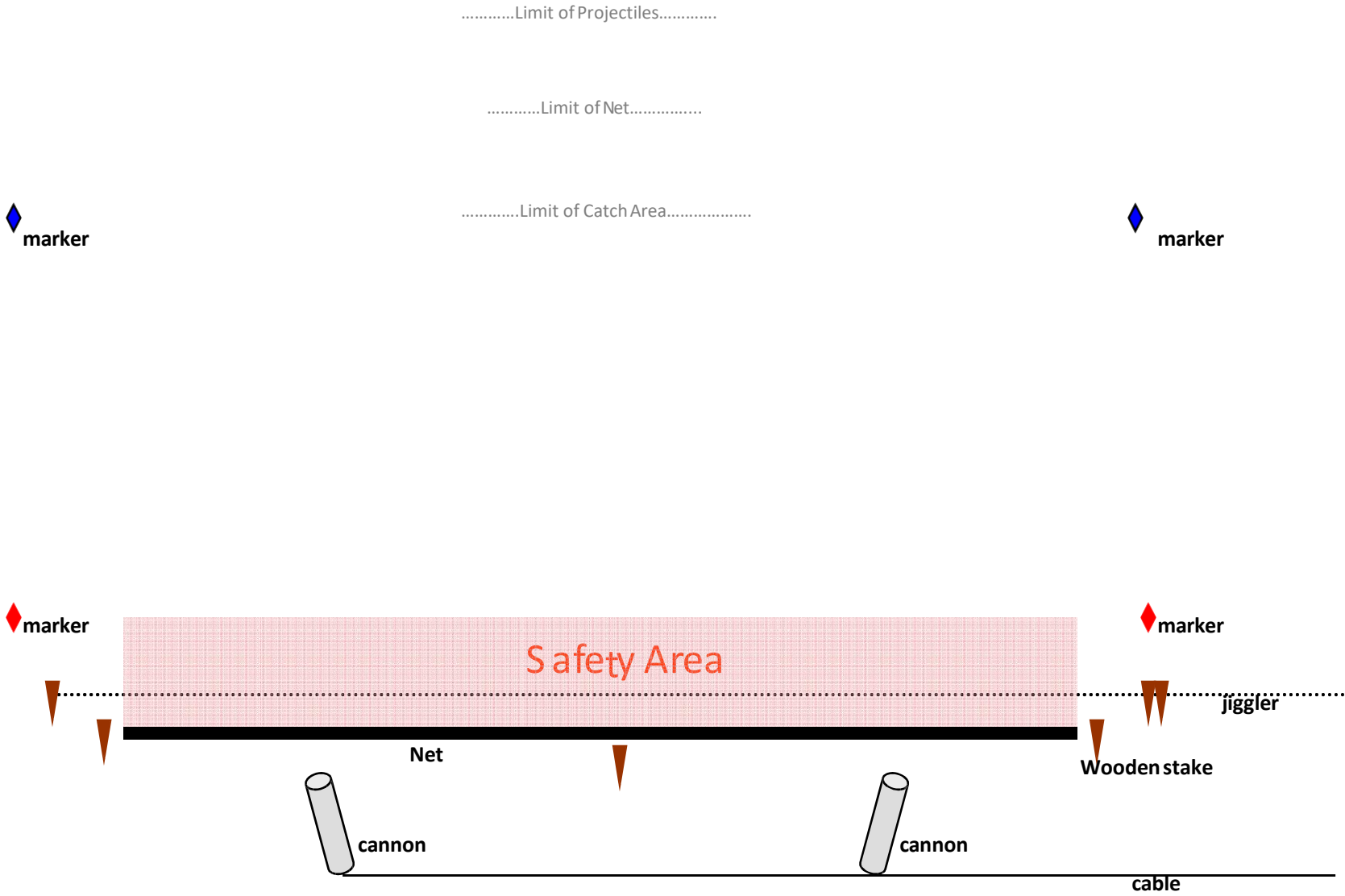
Cannon Net Layout

- The next several slides show how a cannon net is set for firing and how it deploys after firing.
- Familiarize yourself with the relative locations of the cannons, wiring, net, and ropes.
- While you most likely will not be in a position to see the set net, the picture below shows a net ready for firing.

Note that this net is not camouflaged, so is easier to see than normal.



Cannon Net Set for a Catch



If you are in the Cannon Net Area *Before* it has been Fired

- **Do not walk in front** of the net or unfired cannons
- **Avoid tripping** on the wires and ropes.
- If two nets were used but only one was fired, do not go in front of the unfired cannons and net.
- If you are not sure about something, please ask.



Net Firing

- The net is only fired if birds are on the ground, out of the safety area, and in the catch area.
- The firing sequence may be interrupted a number of times due to changing conditions.
- Everyone in base camp must be ready to go instantly when a catch is imminent. The Firing Team will be in communication via radio.



After the Net has been Fired

- **Do not step on or over** the net or covering material as you may step on an unseen bird.
- **Avoid tripping** on wires and ropes.
- If you see birds escaping from under the net alert someone.
- If you see anything of concern, let a team leader know.



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A Note About Cannons

The condition of a cannon is indicated by how the wires are wrapped:



1. Wire wrapped around = Cannon armed and ready.



2. Wire broken off = Cannon has been fired.



3. Wire split and each part wrapped in opposite direction = Cannon armed but did not fire.

Cannons that have not fired but are still armed should be treated the same as one ready to fire. These cannons will be examined later and re-assembled.

Base Camp Team

- Most of the team and equipment is at Base Camp.
- Base Camp usually arrives and sets up after the net is set.
- Base Camp is usually out of sight of the catch area.
- The Base Camp Leader will assign tasks and be in communication with the Firing Team.
- Let the Base Camp Leader know what your experience and interest is so that you can be assigned to an appropriate job.
- If you are uncomfortable with your assignment, let them know.
- Be prepared to wait a long time!



Base Camp Tasks

- Twinklers to encourage birds to move toward the catch area
- Runners to secure the rear of net
- Runners to the front of the net so birds can get out of the water
- Carry and deploy the covering material
- Carry the carrying boxes and use them to transport birds to the keeping cages
- Carry and set up the keeping cages
- People to provide public relations for curious members of the public
- Other tasks as needed

Twinklers

Sometimes it helps to have someone positioned on the beach away from the net and/or to be walking along the beach.

This can encourage birds to move into the catching area. This job will usually be assigned to more experienced team members and may involve a long walk or possibly driving a short distance away.

Twinklers may also be tasked with contacting the public for safety reasons, or in scouting for and estimating numbers of birds in the general vicinity.

Runners to the Front

One or two people will be assigned to run to the front of the net.

In most catches the front of the net will be in the water and the people at the front will be in water up to their knees. Be prepared with appropriate (boots, old sneakers, sandals, etc) foot wear.

Their job is to position themselves at the front of the net and lift the net (using the “tent” method, see slide on “tenting”) to allow birds to walk toward the center of the net.



Runners to the Front

- **Do not step on or over** the net or covering material.
- **Avoid tripping** on the lead ropes attached to the cannon projectiles.
- If the net is not in the water, their job is to put sand on the front edge to prevent escape.
- If there is time, pick up the cannon projectiles and move them to the beach closer to the net, so the net can be moved more easily.
- If not otherwise occupied, they should help spread the covering material over the net and trapped birds.



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“Tenting” the net so birds can get out of the water



Reach for the center...



...pull up like a tent...



...leaving the front down.



Repeat moving toward rear and...



...drag the front of the net out of the water.

Runners to the Rear

One or two people will be assigned to run to the rear of the net.

Their job is to secure the rear of the net by putting sand on the edge and untying the ropes that hold the rear of the net to the stakes so it can drape properly which will help prevent birds from escaping from underneath. You may need to wait, crouch down, or even move away temporarily to avoid interfering with the people at the front who are trying to move the birds out of the water.

Do not step on or over the net or covering material.

Avoid tripping on the ropes and wires.

If not otherwise occupied, help spread the covering material over the net and trapped birds. You may be directed to do other tasks as well.



Cover Material



This is a common job for beginners. Two or more people will be assigned to carry and deploy the covering material which is used to cover the birds while they are under the net. This reduces stress to the birds by preventing them from seeing escape routes and human activity.

Six or more people will be needed to hold the covering material above the net and lay it down *gently* over the net covering the trapped birds.

Cover Material

- **Do not step on or over the net.**
- Do not let the covering material drag across the net and birds. This could cause stress and injury. Instead keep it above the net and birds until it is in place then lay it down gently.
- **Do not step on or over the covering material once it is in place.**
- You may be directed to do other tasks as well.



Carrying Boxes

This is a common job for beginners.

A number of plastic or wooden boxes will be used to transport the birds that have been extracted from the net to the keeping cages (covered on the next slide).

Several people will be assigned to carry these boxes to the net.

Put a little sand in the boxes before using them. This helps birds maintain their footing.



Carrying Boxes

- **Do not step on or over** the carrying boxes if they are in an upright position.
- **Do not put different species** in the same box unless you are instructed to do so.
- Empty boxes should be put on their sides in order signify that they are empty.
- Always double check that the carrying boxes are empty.



Extracting birds

- Only experienced individuals will extract birds.
- Carriers will take carrying boxes to keeping cages and then go back to the extractors for more birds
- **Do not walk on or step over the net**
- **Do not step over Keeping Cages**
- **DOUBLE CHECK NET & COVER MATERIAL FOR BIRDS**



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Keeping Cages

Two or more people will be assigned to carry and deploy the Keeping Cages, which are burlap material sewn to metal frames.

They are used to hold the birds that are waiting for processing. This gives the birds a chance to preen and reduces stress.

Do not step on or over the Keeping Cages once they are set up.

One person (usually the person in charge of Base Camp) will be in charge of apportioning birds into the compartments.

Check with the person in charge of the Keeping Cages before:

- Adding birds to the compartments
- Mixing different species in the same compartment
- Adding birds to a compartment with 15 birds in it already



When the Net is fired

- Firing Team will keep base camp informed.
- Runners/Carriers should be in front ready with equipment.
- DO NOT GO IN FRONT OF ARMED CANNONS.
- First, get birds out of water (*“tent”* method) & control rear of net to prevent them escaping.
- Second, cover trapped birds with covering material.
- DO NOT WALK ON OR STEP OVER NET.

Public Relations & Other Tasks

People frequently see the cannon netting operation and are curious about what is going on. This presents a good opportunity for education and outreach.

One or more people will be tasked to explain what is happening. This may occur while waiting to make a catch or during processing.

Each catch is different. Depending upon the circumstances a number of other jobs may be needed. Each job will be explained and only jobs within your abilities will be assigned to you.

If you are uncomfortable with the tasks assigned to you, let us know.



What to bring

Catching and processing birds may take a long time.

Be prepared to spend an entire day in the field under potentially adverse conditions including rain, wind, heat, humidity and bugs.

To maintain personal comfort please bring the following:

Sunscreen

Hat

Bug repellent

Warm clothing

*Rain gear and appropriate foot
wear for wet conditions*

Snacks and water

Setting up for Processing

- This happens after birds are in Keeping Cages
- Remaining equipment is brought to processing site
- Cannon net gear is collected and removed from beach
- Spread net to dry
- Set up roof (shade or rain) and/or wind break if needed
- Teams will prepare for processing



Color Marking Team

This team is separate from the processing team and usually they handle the birds first.

Typically, this is done by three people and the second two jobs are good ones for beginners.

1. The Flagger puts the flag and any colored bands on. These identify the bird as a unique individual. They take feather samples. They must be on the lookout for poorly formed or inscribed flags and bands (rings).
2. The Gluer simply puts a small amount of glue on the flag or ring. *Note that you will get glue on your hands and clothes.*
3. The third person simply holds the bird.



Processing Team

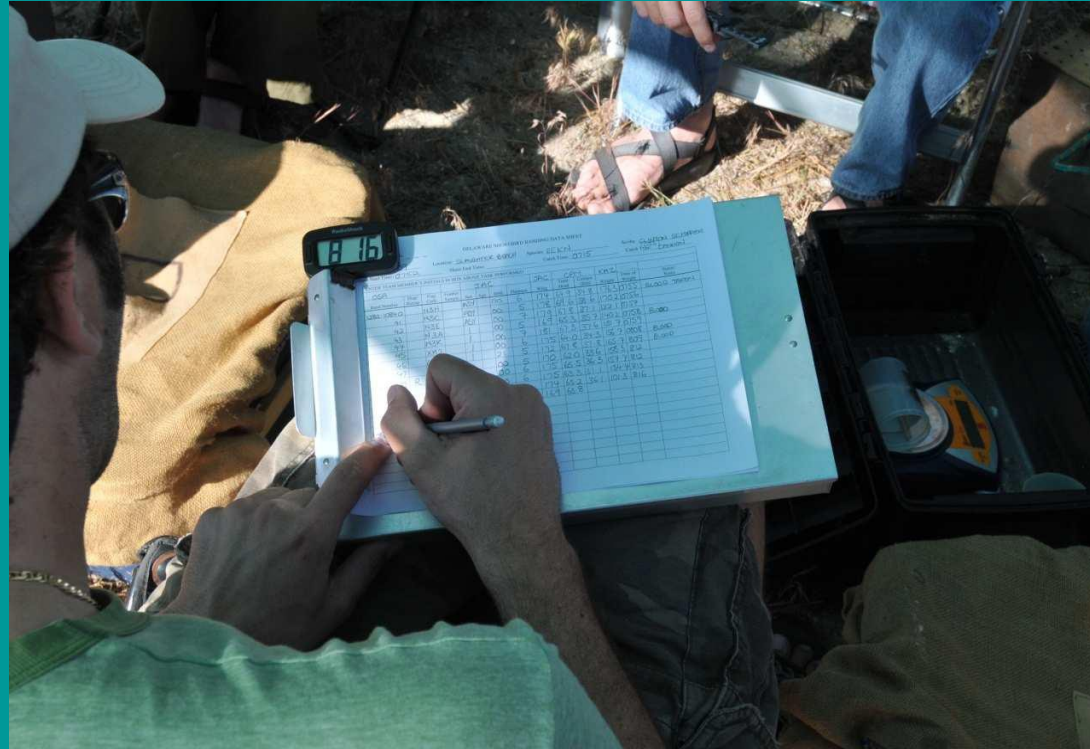
Each team is made up of

- Scribe (leader)
- Bander
(sometimes called the ringer)
- Age, Body Mass Index (BMI), Plumage, Wing Length
- Head and Bill Length
- Weight



The next few slides will give a sense for what is done by each team member. Technique is critical. You will receive hands on training and will be checked to make sure you are capable of doing these tasks accurately before actually doing this.

Scribe



- Lead the team in processing
- Scribe records the data collected.
- Controls workflow of processing and stops the team at times if necessary.
- They **must write clearly**.
- Records the time of weighing to later account for weight loss while birds are held.

Bander (ringer)



- Puts the metal band (ring) on or tells the scribe what the band and color combination of a recaptured bird is. This identifies the bird as an individual.
- Must be on the lookout for poorly stamped bands or band-related injuries.
- Needs to be able to read small numbers.

Age, BMI, Plumage, Wing



- Determines age class
- Determines body molt index (BMI)
- Determines stage of breeding plumage
- Measures wing chord
- Requires previous experience

Head and Bill



- Measures length of the bill
- Measures the total length of the head and bill
- A good job for beginners

Weight



- Measures body weight
- This gives an idea of how well the food supply (horseshoe crab eggs) is meeting the needs of shorebirds
- A good job for beginners

A Note About Handling Birds

Shorebirds are easy to handle. They generally do not bite or claw. While they do not struggle a great deal, if the opportunity presents they will be gone in an instant. Be gentle when handling but maintain contact and control of the wings. The basic grip is the bander's grip ----->

This allows good control and access.

Note that the head is between the bander's middle and index finger, while the thumb and remaining fingers surround the wings.



If you work **calmly and quietly**, the birds will remain calmer too.

Additional Notes

- One person is in charge of the catch and needs to be free to move around and solve problems that arise
- Birds will need to be brought to the flagging and processing teams
- Birds will need to be released after processing
- Public relations is an important task if there are curious visitors
- Handle birds calmly and quietly
- Report any birds that seem stressed or are acting unusually including:
 - Birds that are just sitting in keeping cages
 - Birds that cannot stand on their own
 - Lethargic birds

Summary

- Safety of people and birds is the highest priority.
- Do not walk in front of armed cannons.
- Avoid tripping on ropes and wires.
- Do not step over or on the net, covering material, carrying boxes, or keeping cages.
- You will have a chance to familiarize yourself with the equipment.
- You will receive training as needed.
- Let your team leader know of your experience, interest in learning new tasks, and ask questions if you are not sure.

Final Words

Cannon netting is complicated and at times things move fast. Do not be overwhelmed by this.

As a beginner, you will be trained and given tasks within your abilities.

You will be working with experienced and helpful people who can answer questions, so ask if you are not sure and use slow periods to learn more.

You will be part of an international effort to learn and monitor one of the World's most interesting and amazing events!

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