INSTRUCTOR GUIDE
LESSON 8: DISTANCE ESTIMATION

V. 2/2018

BowHunter Education 2017 Standards – Section 6
Objective 29 & 30

Instructor Notes 	This lesson introduces the students to the knowledge and skills needed to accurately estimate the distance to a target. This lesson corresponds with Chapter 5 (pgs. 41 & 42) of the Today's Bowhunter student manual. Teach this lesson as part of a Round Robin with a small group (4-8) of students. **Teaching Methods Used In This Lesson** • **Lecture** • **Discussion** • **Student hands-on activity** • **Demonstration**
Time Suggested 	20 Minutes
Materials Required 	• Flagging (at least two pieces) • Laser rangefinder (a 100' measuring tape may be substituted if you don't own a laser range finder) • Orange cones (4) • Pieces of scrap paper (one per student) • Writing utensils (one per student)

Station Set-up

20 minutes

1. Place an orange cone as the meeting spot for the lesson.
2. Place the remaining three orange cones at varying distances over an open area, or through the woods. Do not place them in a straight line.
3. Place flagging on the ground, or on two objects, exactly 10 yards apart.
4. Have the laser rangefinder, writing utensils, and pieces of paper stationed for easy access.

Note: Do not set up the orange cones on an archery range with target butts at varying distances. This makes it too easy for the students to judge distance.

Vocabulary Builder

Note: Do not read the vocabulary to the students. These are terms commonly used during this lesson, and the definitions are for instructor reference only.

Hunter's effective range – The maximum distance a hunter can take a shot at an animal with a high probability of a well-placed lethal shot. Varies per individual.

Laser rangefinder – A tool used to accurately measure the distance to an object by projecting an invisible laser.

Pace – The number of steps it takes an individual to walk a set distance. Varies per individual.

LESSON PLAN

PART A: **Focus Activity**  1 minute	The purpose of the focus activity is to get everyone's attention focused on the lesson. Ask, "why would it be important to be able to accurately estimate the distance to an object." (*to be able to place a lethal shot on an animal*)
PART B: **Objectives**  1 minute	State the learning objective to the students. "At the end of this lesson, you will be able to: • State the importance of knowing how to accurately judge distances and incorporate it into practice; • Define the hunter's effective range."
PART C: **Teaching Method**  4 minutes	1. Discuss why distance estimation is more critical at longer distances for bowhunters: • Since arrows travel slower at longer distances, and gravity has more time to effect the drop of an arrow, the difference in impact points between two shorter distances (e.g. 20yds & 22yds) will be less than the difference in impact points between two longer distances (e.g. 58yds & 60yds) • This could mean the difference between a lethal shot and a missed, or wounded, animal 2. Ask: "what are some methods that a bowhunter can use to accurately estimate the distance to a target?" Discuss: • Familiarizing oneself with how specific distances appear • Practice shooting at unknown distances o Randomly throwing a ball target

	○ Stump-shooting (i.e. roving) • Determining a bowhunter's pace • Using a laser rangefinder
PART D: **Student Exercise**  14 minutes	3. Inform the students that they will now get an opportunity to estimate some distances. Have each student pick up a writing utensil and a piece of paper. 4. Have the students stand next to the orange cone and silently estimate the distances to the three other orange cones. Have each student write down their answers on the piece of paper. 5. Once everyone has written down their distances, ask the students to state what they thought the distance was to the closest cone. 6. Have one of the students use the laser rangefinder to determine the exact distance to the closest orange cone. 7. Use the students previous estimates compared to the actual distance to discuss how easy it is to estimate incorrectly. If a student estimated correctly, or was close, ask them to share with the other students the method(s) they used to estimate the distance correctly. 8. Repeat steps 5, 6, and 7 for the remaining two orange cones. 9. Explain why it is beneficial for a bowhunter to know their pace: • Allows a bowhunter to accurately estimate distance while setting treestands and cutting shooting lanes

- Bowhunters can estimate how many steps it would take to get from object to object and then add the steps to determine distance

10. Have the students determine their pace. Have each student walk at a comfortable gate and count the number of steps they take to walk between the two pieces of flagging. Have each student walk the distance three times. The students can use their pace to extrapolate to other distances.

11. Discuss the importance of a bowhunter knowing their effective range:
    - Estimating distance accurately is only part of the solution
    - Being able to make a well-placed shot on an animal at varying distances is critical.
    - A bowhunter must determine the maximum shooting distance they consistently and comfortably can group arrows, and then stick to that limit
    - Additionally, if a bowhunter's sights are set for 20, 30, and 40 yards, how will they handle taking a 25 or 37 yard shot
    - It is important to practice shooting at varying distances.

Students are not being tested at this stage; they are gaining new knowledge. Let the students learn how easy it is to misjudge distances. Your role as the instructor is that of a facilitator/coach to help the students learn the material and find ways to improve their distance estimation.

PART E: **Student Summary**  2 minutes	Ask students to recall the important topics that were covered in the lesson. It is important for students to be able to verbalize these points. Use questioning strategies to flesh out answers. • "Does a bowhunter's effective range change based on the bowhunting implement (i.e. traditional bow, compound bow, crossbow) they use"? • What two methods or skills bowhunters should develop in order to accurately estimate distance"?(i.e. pacing known distance and size estimation of intended game.) **END OF LESSON**
Addendum A 	**FREQUENTLY ASKED QUESTIONS** 1. Is one laser rangefinder better than another? *This is a personal preference answer. Do not recommend one brand over another. Instead talk about the unique features that different rangefinders will have and the pros and cons of each.* 2. Is it important for a laser rangefinder to have angle compensation technology? *The concept of uphill and downhill shots will be covered in Lesson 7 (Judgment & Shot Placement). A laser rangefinder with this technology just makes it easier for the hunter to ensure they are shooting for the correct distance.*