

# Cruise Angle iCMT

## Help Document

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### Overview

The Cruise Angle iCMT app provides a number of software tools that are handy for foresters out in the field.

The Cruise Angle tool is for selecting sample trees for timber cruising based on the specified BAF for point sampling. It will also calculate the Basal Area per Acre for the occupied point.

The Limiting Distance tool will help you decide if a borderline tree is IN or

OUT.

The Leaning Tree tool will calculate the actual tree height of a tree that is not standing straight.

The Slope correction tool will convert slope distance to horizontal distance and vice versa.

When Wi-Fi and Location Service is available, this app will display a Map, and you can use the Measure Distance function to quickly check out the distance between taps on the screen. Or, you can tap around a region on the Map to get its area.

### **Tool Icons**

**Map View** is the screen that shows the Map and your location when GPS is turned on.

You may zoom into the map by double-tapping, or by pulling two fingers apart on the screen. You could zoom out of the map by tapping two fingers on the screen simultaneously, or by pinching two fingers on the screen.

The map scale is displayed at the lower-right corner of the Map View.

Displayed across the top of the **Map View** are the following tool icons.



**Main Menu** (pull-down list)

Tap the Main Menu icon to display the list of functions on the Main Menu.



**Measure Tools** (pull-down menu)

Tap on the inverted arrowhead to show the tools for distance and area measurements.



## Angle Tools (pull-down menu)

Tap the **pull-down arrow** to reveal the angle gauge and calculation tools. The angle gauge and calculation tools. The icon for the currently active map tool is displayed. For example the **Cruise Gauge** icon is initially displayed by default.



## GPS ON/OFF Toggle



## Zoom-Fit


Tap on the **Zoom Fit** icon on the Toolbar to display all map elements on the same screen.

Additional tool icons may be displayed when you work with a specific function. All of these functions will be covered in this document.

## On-screen Keyboard

An on-screen keyboard will automatically pop up when the focus is on a data entry field. After entering data, tap the **Return** button on the pop-up keyboard. To hide the keyboard, tap the **Hide Keyboard** icon on the keyboard, or tap in an area outside the keyboard.

When the cursor is in a numerical data field, you will notice that there is a

**Separator Key**  showing several symbols on it. Use this key to put in the decimal point when entering a distance value with a fractional part.

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## Setup

**First things first.** Please tell your app what you normally use for the measurement units and BAF, and also calibrate the camera on your device for use as an angle gauge.

## Set up Units and Angle System

Select the **Unit and Angle System** under **Main Menu - Setup** to specify the desired length unit for displaying distances and line segments. The areas will be computed in the metric or English system accordingly. If you select a metric distance unit, you are expected to be using metric BAF values. If you select an English distance unit, you are expected to be using English BAF values.



Available choices for displaying angles are **Azimuth** and **Bearing**. If Azimuth is chosen, also specify the **Angle System**: North or South. Angles will be displayed in Degrees, Minutes and Seconds (DMS).

## Set up the Cruise Gauge

The camera in your mobile device needs to be calibrated to provide an accurate cruise angle gauge.



After selecting **Main Menu - Setup**, select **Cruise Gauge** to call up the **Gauge Setup** screen then tap the **Calibrate Gauge** button.

Hold the camera a known distance from a known horizontal measure (such as a ruler) at a convenient height, and enter the values in accordance with the displayed illustration. For example,  $D = 16$  ft and  $W = 2$  ft. Please note that the distance (D) should be measured from the ruler to the camera aperture at the back of your device.

Drag the two movable guide lines to coincide with the ends of the horizontal ruler then tap on  to confirm the calibration. If you want to cancel the calibration then tap on  instead.

A Field of View (**FOV** angle ) value will be displayed. You may want to

write this value down. Should you lose the calibration setting for some reason, such as a system crash or an iOS update, you could simply enter this FOV value instead of recalibrating your camera. If you know the horizontal FOV angle for your device, you could also enter it directly.

To specify the FOV value directly, tap the **Camera FOV** button on the **Gauge Setup** screen then enter the FOV value into the data field. Tap on  to confirm the entry. If you do not want to use the newly entered value, then tap on  instead.

The FOV setting is independent of the BAF value you select in the next step.

After tapping on the **OK** button, tap on the pull-down arrow for the **BAF** (Basal Area Factor) field, and pick the desired value.

If you wish, you may tap in the BAF value field and manually enter a value.

The **Calibrate Gauge** screen also provides the functions to change the color and transparency of the displayed gauge. Select the color and transparency that provides the best contrast between the gauge and the various colors of the tree stems you are working with.

Tap the **Color** button to display the Color Dialog then select a color.

You may enter a transparency value or change the displayed value by tapping on the left or right arrow heads. The higher the **Transparency** value, the more transparent the gauge will appear to be.

### **Set up Labels**

The options for the font color and size for labeling the measured distances are under **Main Menu - Setup - Label**

**Setup.** You may leave them as they are for now.

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## Map and GPS

Whenever you are connected to the Internet and your location can be determined, the default built-in Map for your device can be displayed.

You may select one of the following view modes after tapping the **Main**

**Menu** icon  then choosing **Map**:

**Show Standard** - Show a map of streets, landmarks, and bus stops.

**Show Satellite** - Show satellite photos.

**Show Hybrid** - Show street names on satellite photos.


To turn off the Map display, tap **Close Map** on the Map menu.

## Where am I?

When you start a new job, the app does not know where you are.

1. With the Map turned on, you can find your continent then zoom in to your country, your city, hence your neighborhood. You may zoom into or zoom out of portions of the graphical view by using your fingers to pull or pinch on the display, respectively.


2. If your device is equipped with GPS or has Location Service, then you can

tap the **GPS** icon  to turn on GPS. When prompted, confirm to allow the app to use Location Service to find your location. This will permit the app to immediately zoom to your location. (Make sure the **Location Service** is turned on for the Cruise Angle iCMT application software under Settings on your device. With iOS6, Location

Service setting is placed under Settings - Privacy.)

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## Using the Angle Gauge

With a BAF selected in the setup step, the corresponding angle gauge will be displayed on the screen when you tap the **Cruise Gauge icon**  at the top of the main Map View screen.

Hold your device over the cruise point (stake) and walk around that point in a small circle to sweep across the trees. Please note that the device (not you) is to be centered on the point.

If a tree's image completely fills the gap of the angle gauge, it's an **IN** tree (a sample tree). If it lies within the gap but does not fill it, then it is not a sample tree.




You may zoom in or out as desired by applying gestures to the screen.


For each **IN** tree at the cruise point, tap once on the **Unlock** button then tap once on the + button to add it to the tally. If you made a mistake and added an extra sample tree, you could tap on **Unlock** then tap the - button to reduce the tally by one. The **Unlock** button will help prevent you from accidentally changing the tally by a


random tap on the screen.


The **Basal Area per Acre** or **Basal Area per Hectare** value will be computed for the currently occupied point. You can record the Point ID, tally and BA/acre values in your notebook for future reference.


For a borderline tree, tap the **Limiting Distance** icon  and let the app help you determine if it should be counted as a sample tree. Please read the section below titled Limiting Distance.

When you go to the next cruise point, tap on **Unlock** then tap the **Reset** button to clear all values and start anew.

From the **Cruise Gauge** screen, you may tap the **Gauge Setup** icon  to access the setup screen for the gauge.

You may use the **Counter** icon  to hide or show the portion of the screen pertaining to the tree tally and basal area information.

You may also tap the **Focus** icon  to adjust the screen exposure. For example, if the area under canopy is too dark, you could tap on a very dark corner to increase the exposure. The exposure position is indicated by a small square frame.




When done tallying trees at a point, you may tap on  to exit to the main Map View.

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## **Limiting Distance**

This function helps you determine whether a borderline tree should be included as a sample tree for point sampling.



You can call up this tool by tapping on the  icon in the Cruise Gauge screen. You could also do it from the main Map View by first tapping on  then selecting Limiting Distance .

Enter the **DBH** (Diameter at Breast Height) for the tree in question. Also enter the **measured distance** and **percent slope** from the center of the stake to the face of the tree at DBH. The percent slope defaults to 0. Be sure to overwrite it with the actual percent slope value if you are not working on level ground.



Based on the BAF for the stand and the DBH measurement, this function will calculate the limiting horizontal distance and compare it with the horizontal distance obtained from the measured distance and slope. If the measured distance is equal to or less than the limiting distance, the tree is **"IN"**, ie. it is a sample tree.

For example, if the English BAF used is 10, the limiting distance for a tree with 12" DBH is 33 ft. Such a tree will need to be 33 ft from you or closer to be counted as an IN tree.

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## Leaning Tree

If a tree is not standing straight up, there will be an error in the tree height obtained from the difference between height measurements.

From the main Map View, tap on  then select **Leaning Tree**  to compute the true tree height. Enter the measured tree height and the tree's horizontal projection on the ground. The true tree height will be computed and displayed.

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## Slope Correction

The Slope correction tool will convert slope distance to horizontal distance and vice versa.

From the main Map View, tap on



then select **Slope**

**Correction** .



Enter the slope percentage and either the slope distance or the horizontal distance. The remaining field will be calculated.

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## Measure Distance

To measure the distance between two or more map locations, first tap on the

**Measure Distance** icon on the **Utilities** pull-down menu. Then tap on the map locations. The total distance as well as the length and direction of the last segment added will be displayed.






Whenever you need to place a node more precisely, first tap on the **Node**


**tool** . A larger donut with crosshairs at its center will be displayed on the map. Touch on the purple area of this tool and drag the crosshairs to the desired location. Then tap once in the donut hole to drop the node. (You could also keep holding down on the purple donut and use another finger to touch outside of the donut area to drop the node.)







If your device has GPS capability, you could tap the **GPS** icon  to turn on GPS then tap the **Pick GPS** icon  to add a node for the line to be measured.

Tap on the **Add** icon  to toggle it off when you wish to work in the regular touch-screen mode, such as to zoom in or zoom out. Toggle this icon on before dropping additional nodes for the distances to be measured.

To see more of the map for delineating the line to be measured, tap on the **Full-screen View** toggle  to hide the measurement values.


To back-step, tap the **Undo** icon . To delete all the nodes made in this measurement session, tap the **Reset** icon .


Please note that the Measure Distance tool will not retain the **temporary** shape you have delineated for computing the distance.

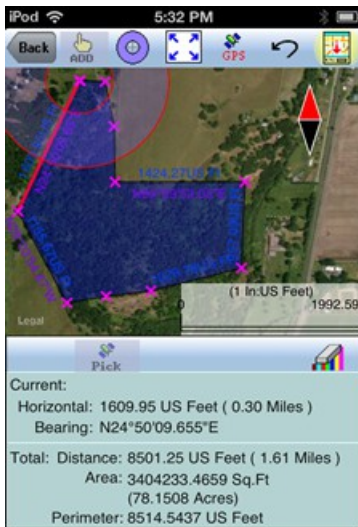
When you no longer need the displayed information, tap the **Back** button to close this screen and discard the temporary shape.



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## Measure Area


The **Measure Area** tool  on the **Utilities** pull-down menu will compute the area enclosed within a boundary that you form by tapping on the map.


Whenever you need to place a node precisely, tap on the **Node tool**  then use the crosshairs to zero-in on the desired location.




If your device has GPS capability, you could tap the **GPS** icon  to turn on GPS then tap the **Pick GPS** icon  to add a node for the area to be measured.

Tap on the **Add** icon  to toggle it off when you wish to work in the regular touch-screen mode, such as to zoom in or zoom out. Toggle this icon on before dropping additional nodes for the area shape to be measured.

To see more of the map for delineating the area shape, tap on the **Full-screen View** toggle  to hide the measurement values.

To back-step, tap the **Undo** icon .

To delete all the nodes made in this measurement session, tap the **Reset** icon .

Please note that the Measure Area tool will not retain the **temporary** shape you have delineated for computing the area.

When you no longer need the displayed information, tap the **Back** button to close this screen and discard the temporary shape.

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