

Changes in the Phase 3 Indicator Field Guide Chapters from version 4.0 (with addendum) to version 5.0

Changes documented in change proposals are indicated in **bold** type. The corresponding proposal name can be seen using the comments feature in the electronic file.

Ozone Bioindicator Plants

- The chapter number was changed from 9 to 20.
- 20.1.7 Communications. Updated ozone advisors' addresses.
- 20.4.3 FIELD ID. Filled in *Values*.
- 20.4.7.OZONE SAMPLE KIND. Descriptive text: from "Record the code that describes the kind of plot being visited. OZONE SAMPLE KIND has a value of 1 when an ozone plot is established in a previously empty polygon. OZONE SAMPLE KIND has a value of 2 when remeasurement occurs at the same location, or when the replacement plot is within 3 miles of the previously established plot. OZONE SAMPLE KIND has a value of 3 when the replacement plot is more than 3 miles away from the previously established plot." to "Record the code that describes the kind of plot being visited."
- 20.4.16 ELEVATION. Filled in *Values*.
- **20.5 GPS Coordinates. First sentence in descriptive text: from "Use a global positioning system (GPS) unit to determine the plot coordinates and elevation of all field visited ozone plot locations." to "Use a global positioning system (GPS) unit to determine the plot coordinates and elevation of all field visited ozone plot locations, even if GPS has been used to locate the plot in the past."**
- **20.5.1 GPS Unit Settings, Datum, and COORDINATE SYATEM. Deleted the second paragraph and added the following to the end of the first paragraph: "Each FIA unit will use the NAD83 Datum to collect coordinates."**
- **20.5.2 Collecting Readings. Added and deleted text.**
- **20.5.5 GPS ENTRY METHOD. Added this variable.**
- 20.5.6 GPS DATUM. Deleted code NAD27 and WGS84 because the GPS change proposal states that each FIA unit will use the NAD83 datum to collect coordinates.
- **20.5.7.1 LATITUDE DEGREES. Tolerance from "No errors" to "When GPS ENTRY METHOD=0, No errors in data entry; When GPS ENTRY METHOD =1, not applicable." MQO from "At least 99% of the time" to "When GPS ENTRY METHOD=0, at least 99% of the time; When GPS ENTRY METHOD =1, not applicable."**
- **20.5.7.2 LATITUDE MINUTES. Tolerance from "No errors" to "When GPS ENTRY METHOD=0, No errors in data entry; When GPS ENTRY METHOD =1, not applicable." MQO from "At least 99% of the time" to "When GPS ENTRY METHOD=0, at least 99% of the time; When GPS ENTRY METHOD =1, not applicable."**
- **20.5.7.3 LATITUDE SECONDS. Tolerance from "No errors" to "When GPS ENTRY METHOD=0, No errors in data entry; When GPS ENTRY METHOD =1, not applicable." MQO**

Comment [blc1]: Proposal ID: 06_23_2006_GPS.doc. Ozone chapter not specifically named in the change proposal, but both P2 and P3 use the same system.

Comment [blc2]: Proposal ID: 06_23_2006_GPS.doc. Ozone chapter not specifically named in the change proposal, but both P2 and P3 use the same system.

Comment [blc3]: Proposal ID: 06_23_2006_GPS.doc. Ozone chapter not specifically named in the change proposal, but both P2 and P3 use the same system.

Comment [blc4]: Proposal ID: 09_01_2008_GPS_electronic_transfer.doc and by the DAB when incorporating the change proposal. Ozone chapter not specifically named in the change proposal, but both P2 and P3 use the same system.

Comment [blc5]: Proposal ID: 06_23_2006_GPS.doc and by the DAB when incorporating the change proposal. Ozone chapter not specifically named in the change proposal, but both P2 and P3 use the same system.

Comment [blc6]: Proposal ID: 06_23_2006_GPS.doc and by the DAB when incorporating the change proposal. Ozone chapter not specifically named in the change proposal, but both P2 and P3 use the same system.

from “At least 99% of the time” to “When GPS ENTRY METHOD=0, at least 99% of the time; When GPS ENTRY METHOD =1, not applicable.”

- **20.5.8.1 LONGITUDE DEGREES.** *Tolerance* from “No errors” to “When GPS ENTRY METHOD=0, No errors in data entry; When GPS ENTRY METHOD =1, not applicable.” *MQO* from “At least 99% of the time” to “When GPS ENTRY METHOD=0, at least 99% of the time; When GPS ENTRY METHOD =1, not applicable.”
- **20.5.8.2 LOGITUDE MINUTES.** *Tolerance* from “No errors” to “When GPS ENTRY METHOD=0, No errors in data entry; When GPS ENTRY METHOD =1, not applicable.” *MQO* from “At least 99% of the time” to “When GPS ENTRY METHOD=0, at least 99% of the time; When GPS ENTRY METHOD =1, not applicable.”
- **20.5.8.3 LOGITUDE SECONDS.** *Tolerance* from “No errors” to “When GPS ENTRY METHOD=0, No errors in data entry; When GPS ENTRY METHOD =1, not applicable.” *MQO* from “At least 99% of the time” to “When GPS ENTRY METHOD=0, at least 99% of the time; When GPS ENTRY METHOD =1, not applicable.”
- 20.5.9 GPS ELEVATION. *Tolerance:* No errors

Comment [blc7]: Proposal ID: 06_23_2006_GPS.doc and by the DAB when incorporating the change proposal. Ozone chapter not specifically named in the change proposal, but both P2 and P3 use the same system.

Comment [blc8]: Proposal ID: 06_23_2006_GPS.doc and by the DAB when incorporating the change proposal. Ozone chapter not specifically named in the change proposal, but both P2 and P3 use the same system.

Comment [blc9]: Proposal ID: 06_23_2006_GPS.doc and by the DAB when incorporating the change proposal. Ozone chapter not specifically named in the change proposal, but both P2 and P3 use the same system.

Comment [blc10]: Proposal ID: 06_23_2006_GPS.doc and by the DAB when incorporating the change proposal. Ozone chapter not specifically named in the change proposal, but both P2 and P3 use the same system.

Lichen Communities

- The chapter number was changed from 10 to 21.

Soil Measurements and Sampling

- The chapter number was changed from 11 to 22.

Crowns: Measurements and Sampling

- The chapter number was changed from 12 to 23.
- 23.5 UNCOMPACTED LIVE CROWN RATIO. Several parts of the descriptive text are different. The first paragraph from:
“UNCOMPACTED LIVE CROWN RATIO is a percentage determined by dividing the live crown length by the actual tree length (fig. 23-5). UNCOMPACTED LIVE CROWN RATIO for leaning and down trees must be rated in relation to the actual length of the tree bole (as opposed to height above the ground.) Record the UNCOMPACTED LIVE CROWN RATIO to the nearest 1%.” to:
“UNCOMPACTED LIVE CROWN RATIO is a percentage determined by dividing the live crown length by the ACTUAL LENGTH (fig. 23-5). UNCOMPACTED LIVE CROWN RATIO for leaning and down trees must be rated in relation to the actual length of the tree bole (as opposed to height above the ground.) Record the UNCOMPACTED LIVE CROWN RATIO to the nearest 1%.”

Also added the following text to the first paragraph under the sub-title ‘Trees’: “Note that if a tree with a broken top has new growth that is too small to qualify as a new leader, then the new growth is NOT counted as part of the live crown length or ACTUAL LENGTH and is thus not included in UNCOMPACTED LIVE CROWN RATIO. A live crown top may not extend beyond the upper bound that defines a tree’s ACTUAL LENGTH.”
- 23.12. Contacts. Updated the crown indicator advisor list.

Vegetation Diversity and Structure

- The chapter number was changed from 13 to 24.
- **24.1 Sample Design. Added text to the descriptive text.**

Added the following text to the end of the sixth paragraph: “When a full plot cannot be completed due to time restrictions the vegetation specialist should measure the entire suite of records for individual subplots, completing as many subplots as time allows.”

Added the following paragraph: “Overall data quality objectives include plant identification correspondence between two measurements of at least 70% agreement at the species level and 95% agreement to genus level. The measurement quality objective (MQO) for the total number of species recorded per subplot is a tolerance of +/- 10% agreement 90% of the time. These MQO’s are assessed in training and through quality assessments. After all collected unknown plants are identified, at least 85% of all individual plant records should be to the species level, with no more than 5% of the records submitted to the final database as unknowns.”

The last paragraph: from “Quality assurance measurements should be made within 2 weeks of the original plot visit. At the time of next plot measurement cycle, plots should be revisited within 2 weeks of the calendar date of the previous measurement cycle, if at all possible.” to “Quality assessments (blind checks) should be made within 2 weeks of the original plot visit. At the time of next plot measurement cycle, plots should be revisited within 2 weeks of the calendar date of the previous measurement cycle, if at all possible.”

- **24.3.3 PLOT NUMBER. *Field width:*** from “4 digits” to “5 digits” and updated *Values*.
- 24.3.5 CREW NUMBER. *When collected:* from “All plots” to “All plots currently having at least one accessible forest condition”
- 24.3.6 VEG SAMPLE KIND. *When collected:* from “All plots” to “All plots currently having at least one accessible forest condition”
- 24.3.7.1 YEAR. *When collected:* from “All plots” to “All plots currently having at least one accessible forest condition”
- 24.3.7.2 MONTH. *When collected:* from “All plots” to “All plots currently having at least one accessible forest condition”
- 24.3.7.3 DAY. *When collected:* from “All plots” to “All plots currently having at least one accessible forest condition”
- 24.3.8 VEG PLOT NOTES. *When collected:* from “All plots” to “All plots currently having at least one accessible forest condition”. Also, changed *Field width* from “160 alphanumeric characters” to “2000 alphanumeric characters”
- 24.4.4 PERCENT SUBPLOT AREA ACCESSIIBLE FOREST LAND. Deleted “canopy cover” from *Tolerance*.
- **24.4.6 COMMUNITY DESCRIPTION FOR SPECIMEN LABELS (CORE OPTIONAL).** The descriptive text: from “To fully automate Specimen Label, enter a brief description of the community type to aid the taxonomist in the identification of any specimens collected from this subplot. Community descriptions often describe the dominant overstory species (i.e., Open mixed conifer, closed paper birch, pinyon juniper woodland).” to “To fully automate Specimen Label, enter a brief description of the community type to aid the taxonomist in the identification of any specimens collected from this subplot. Community descriptions often describe the dominant overstory species or unique habitat conditions (i.e., Open mixed conifer, closed paper birch, pinyon juniper woodland, coastal beach

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fringe). Do not enter “same as subplot X”; when voucher labels are printed for another subplot; this will be the information sent to the herbarium and will not be helpful.”

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This variable is now CORE rather than CORE OPTIONAL because the current data collection programs require crews to enter a community description if all the edit checks are to be ‘passed’ in the field. Also changed *When collected* from “optional” to SUBPLOT STATUS = 1”

- 24.4.7 VEG SUBPLOT NOTES. Changed *Field width* from “40 alphanumeric characters” to “2000 alphanumeric characters”
- 24.5 Subplot Total Canopy Cover by Layer. Added the following as the last sentence “However, the maximum cover for any layer cannot exceed the percent of forested area (24.4.4 PERCENT SUBPLOT AREA ACCESSIBLE FOREST LAND).”
- 24.6 Subplot Ground Variable Records. The descriptive text: from “Assess the cover of ground variables found on the accessible forest portion of the subplot. In areas with thick vegetation, you may opt to complete this section after you have collected the species data and have a better perspective on the ground cover. These describe things in contact with the ground surface and not occupied by tree boles or other vegetation basal area. Multiple ground variables often occur on a subplot. Items must be visible from above. For example, a large rock completely covered with moss would not be coded, but the moss would be. Estimate the cover of each ground variable. Cover is estimated to the nearest 1% for each ground variable. The sum of all ground variable covers must equal the percentage entered for variable 24.4.4 PERCENT SUBPLOT AREA ACCESSIBLE FOREST LAND, above.” to “Assess the cover of ground variables found on the accessible forest portion of the subplot. In areas with thick vegetation, you may opt to complete this section after you have collected the species data and have a better perspective on the ground cover. These describe the nature of the ground surface. Multiple ground variables often occur on a subplot. Items must be visible from above. For example, a large rock completely covered with moss would not be coded, but the moss would be. Estimate the cover of each ground variable. Cover is estimated to the nearest 1% for each ground variable. The sum of all ground variable covers must equal the percentage entered for variable 24.4.4 PERCENT SUBPLOT AREA ACCESSIBLE FOREST LAND, above.”
- 24.6.8 PERCENT STANDING WATER/FLOODED COVER. The descriptive text: from “Record the PERCENT STANDING WATER/FLOODED COVER in the subplot. Include any ponding or flowing water that is not contained within banks.” to “Record the PERCENT STANDING WATER/FLOODED COVER in the subplot. Include any ponding or flowing water that is not contained within banks, or remaining seasonal snow.”
- 24.6.9 PERCENT STREAM/LAKE COVER. The descriptive text: from “Record the PERCENT STREAM/LAKE COVER in the subplot. Include any body of water contained within banks that is within a forested condition.” to “Record the PERCENT STREAM/LAKE COVER in the subplot. Include any body of water contained within banks that is within a forested condition, or any permanent snow or ice field present.”
- 24.7.4 QUADRAT STATUS. Code 5: from “Quadrat not sampled, other reason – enter in plot notes” to “Quadrat not sampled, other reason – enter in quadrat notes”
- 24.7.6 VEG QUADRAT NOTES. Changed *Field width* from “40 alphanumeric characters” to “2000 alphanumeric characters”

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- **24.8 Species Records.** The descriptive text: from “Species data are collected at both the subplot level and the quadrat level for each subplot. A single species list is maintained for the entire plot and updated for specific attributes at each level (quadrat and subplot). Species codes are recorded as each species is discovered for the first time on a given plot. Data are added to the original species’ record when the species is encountered on subsequent within the plot. This section describes the data required to uniquely identify each recorded species. *Note: It is typically easier to collect quadrat data and quadrat species first, and then return to subplot species. WARNING: changing or deleting a species code will change it or delete it for the entire plot.*” to “Species data are collected at both the subplot level and the quadrat level for each subplot. A single species list is maintained for the entire plot and updated for specific attributes at each level (quadrat and subplot). Species codes are recorded as each species is discovered for the first time on a given plot. Data are added to the original species’ record when the species is encountered on subsequent subplots or quadrats within the plot. This section describes the data required to uniquely identify each recorded species. *Note: It is typically easier to collect quadrat data and quadrat species first, and then return to subplot species. WARNING: changing or deleting a species code will change it or delete it for the entire plot.*”
- 24.8.1.4 SPECIMEN LABEL NUMBER. Descriptive text: from “Record the label number for the collected specimen. Pre-numbered labels are provided to each vegetation specialist by the regional coordinator.” to from “Record the label number for the collected specimen. Pre-numbered labels are provided to each vegetation specialist by the regional coordinator or auto-generated with the data collection software.”

Also added” or auto-generated in PDR” to the end of *Values*.
- 24.8.1.5 SPECIMEN NOT COLLECTED REASON CODE. Code 5 was dropped so that the field guide would match the data collection program.
- 24.8.1.6 PLOT SPECIES NOTES. Changed *Field width* from “Unlimited alphanumeric character” to “2000 alphanumeric characters”
- 24.8.3.1 SUBPLOT SPECIES TOTAL PERCENT CANOPY COVER. Made the documentation consistent with how the crews are being trained. The crews are trained to use ‘t’ when the cover is less than 0.5% and then the ‘t’ values are converted to 0.01 in the database. In the second paragraph, the text was “For species of moderate cover, it may be easiest to divide the subplots into quarters, estimate canopy cover of each quarter separately, and then add them together. Record a trace (less than 1%) of canopy cover as ‘t’”. The following area-cover sizes may be useful in developing estimates for an entirely forested subplot.” and is now “For species of moderate cover, it may be easiest to divide the subplots into quarters, estimate canopy cover of each quarter separately, and then add them together. Record a trace (less than 0.5%) of canopy cover as ‘t’”. The following area-cover sizes may be useful in developing estimates for an entirely forested subplot.”
- 24.9 Unknown Species and Voucher Specimen Collection. Added text to # 3.
- 24.9.1 Field Specimen Label. Descriptive text: from “Each vegetation specialist will be issued a set of printed, pre-numbered labels to track unknown specimens (fig. 24-2). Information to be completed by hand in the field is optional, but may include date, unknown code, unique species number and crew number.” to “Each vegetation specialist may be issued a set of printed, pre-numbered labels to track unknown specimens (fig. 24-2). Information to be completed by hand in the field is optional, but may include date, unknown code, unique species number and crew number. Revised data collection software auto-generates a label number when a specimen is

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October, 2010**

collected, so the vegetation specialist only has to write out the generated LABEL NUMBER on a small piece of paper and include it in the bag with the specimen.”

24.9.3 Unknown Reports. Descriptive text from: “For any unknown plant species encountered, the species is recorded in an Unknown Report (replacing the separately maintained Unknown Spreadsheet). The Unknown Report is generated from downloaded plot data. Each Region must train the vegetation specialists if they opt for maintaining unknown spreadsheets as Excel files. The Unknown Spreadsheet contains the fields for variables listed in Table 24.1:” to “For any unknown plant species encountered, the species is recorded in an Unknown Report. The Unknown Report is generated from downloaded plot data. The Unknown Spreadsheet contains the fields for variables listed in Table 24.1:”

Also in Table 24.1, added “or auto-generated” to the first entry in the **Source** column.

Down Woody Materials

- The chapter number was changed from 14 to 25.