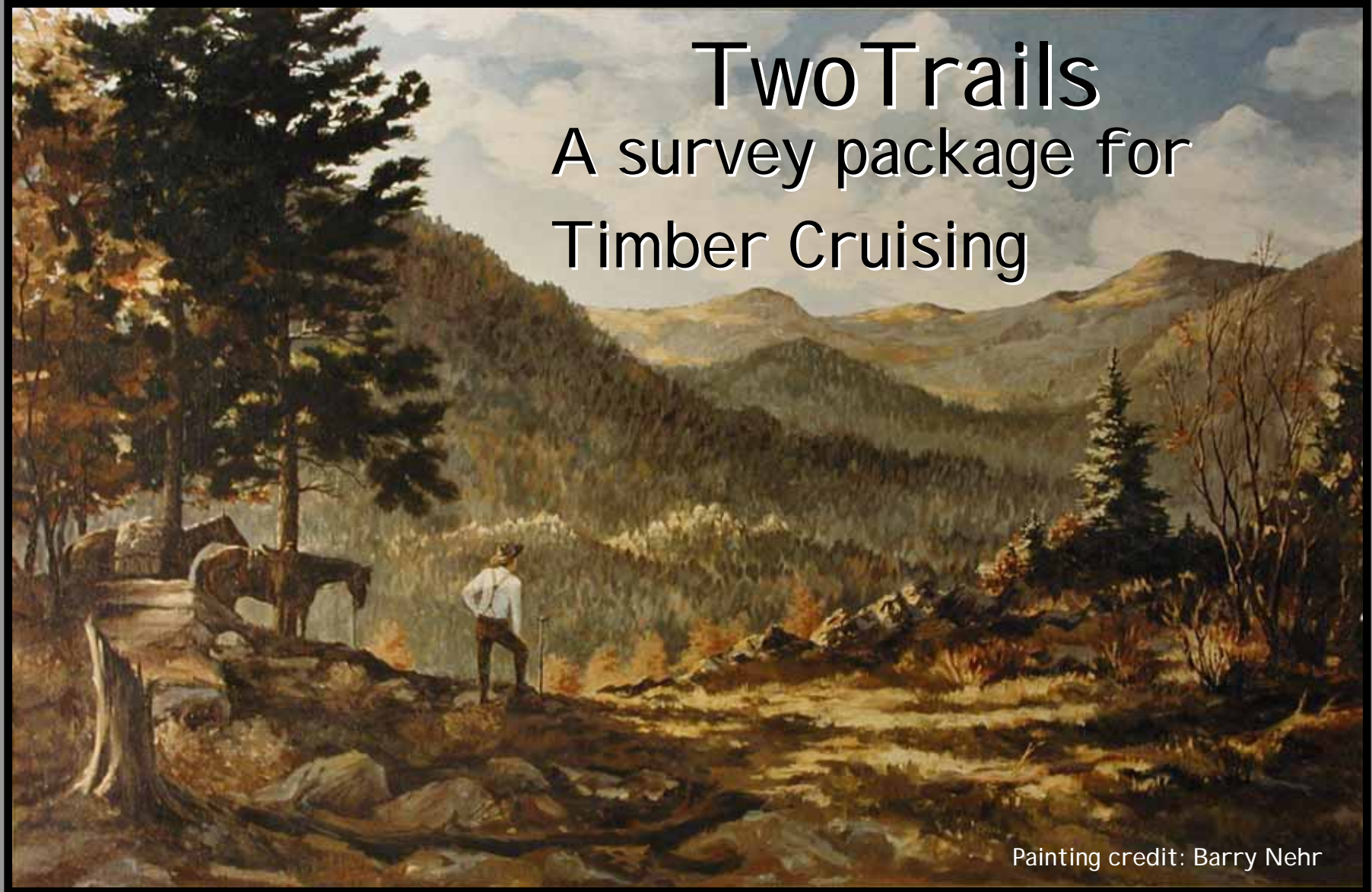


# Two Trails

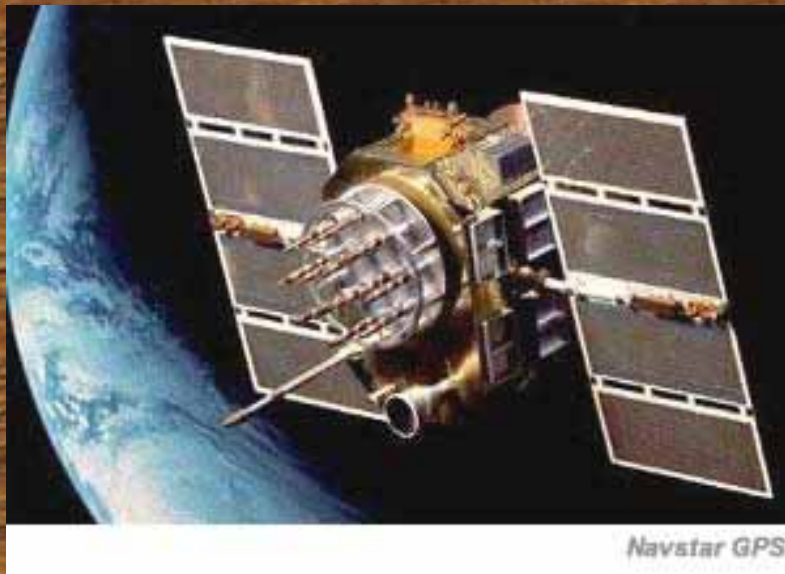
A survey package for  
Timber Cruising



Painting credit: Barry Nehr

Foresters regularly practice surveying

Today's equipment and technology offer new opportunities to do the job better or easier or both.



# There are places where GPS is not available or it is inaccurate.



El Yunque (Karsky)



Tongass



Rogue - Walt Right, Steve Scoggins



Red Woods (Rasher)



Siuslaw (Barnes, Boyack, Johnston)



Hoosier(Karsky)



Mt. Hood

# Matt Oberle and Gary Boyack mix traversing with GPS using TwoTrails



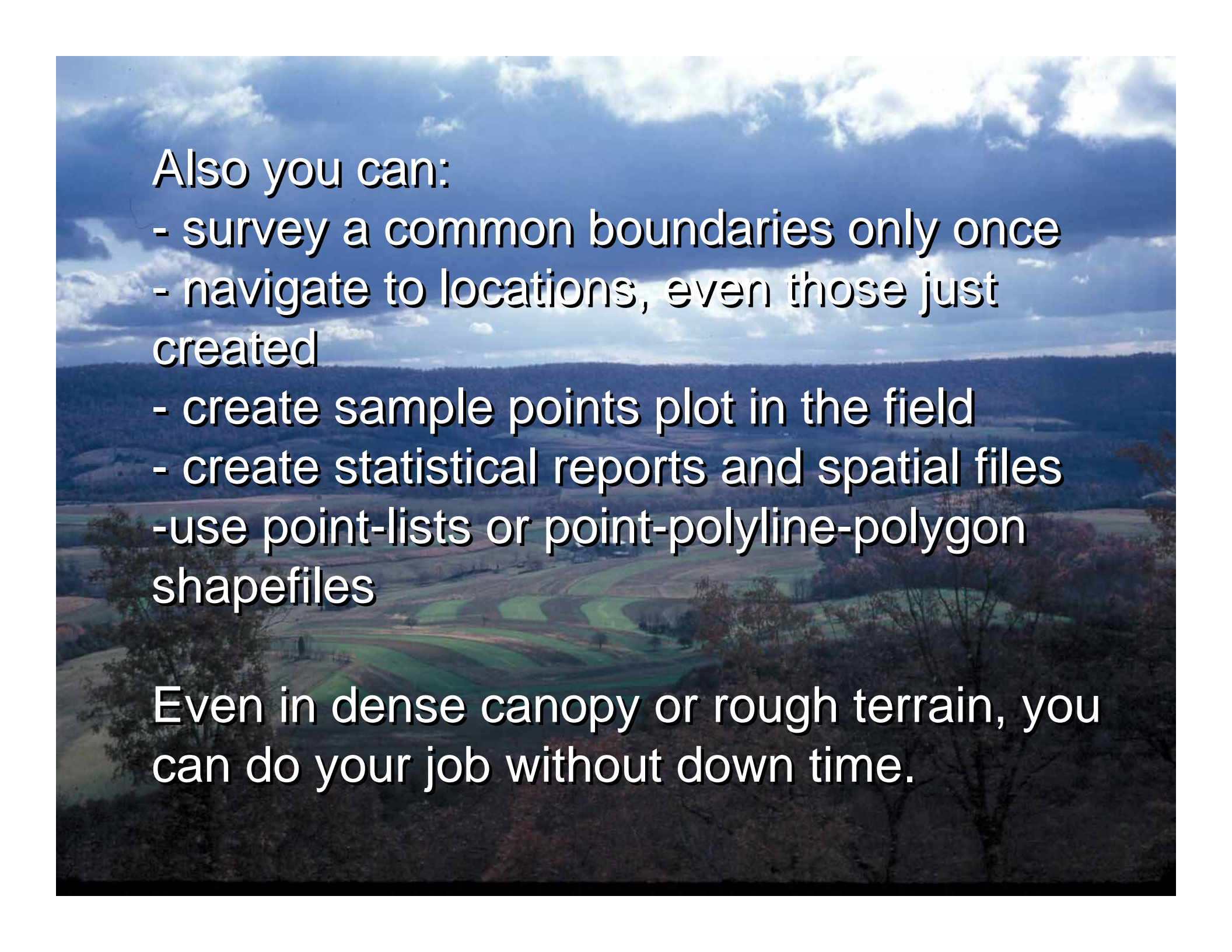
# Timber cruisers requested help in surveying

- when GPS is not available
- when we are in thick trees
- when we are on north slopes, in canyons, or similar terrain
- when the PDOP is bad and we have to wait or quit



In one trip around the unit with  
TwoTrails, you can:

- perform GPS surveying
- do traditional surveying
- determine the boundary alongside  
your navigation track
- locate miscellaneous information



Also you can:

- survey a common boundaries only once
- navigate to locations, even those just created
- create sample points plot in the field
- create statistical reports and spatial files
- use point-lists or point-polyline-polygon shapefiles

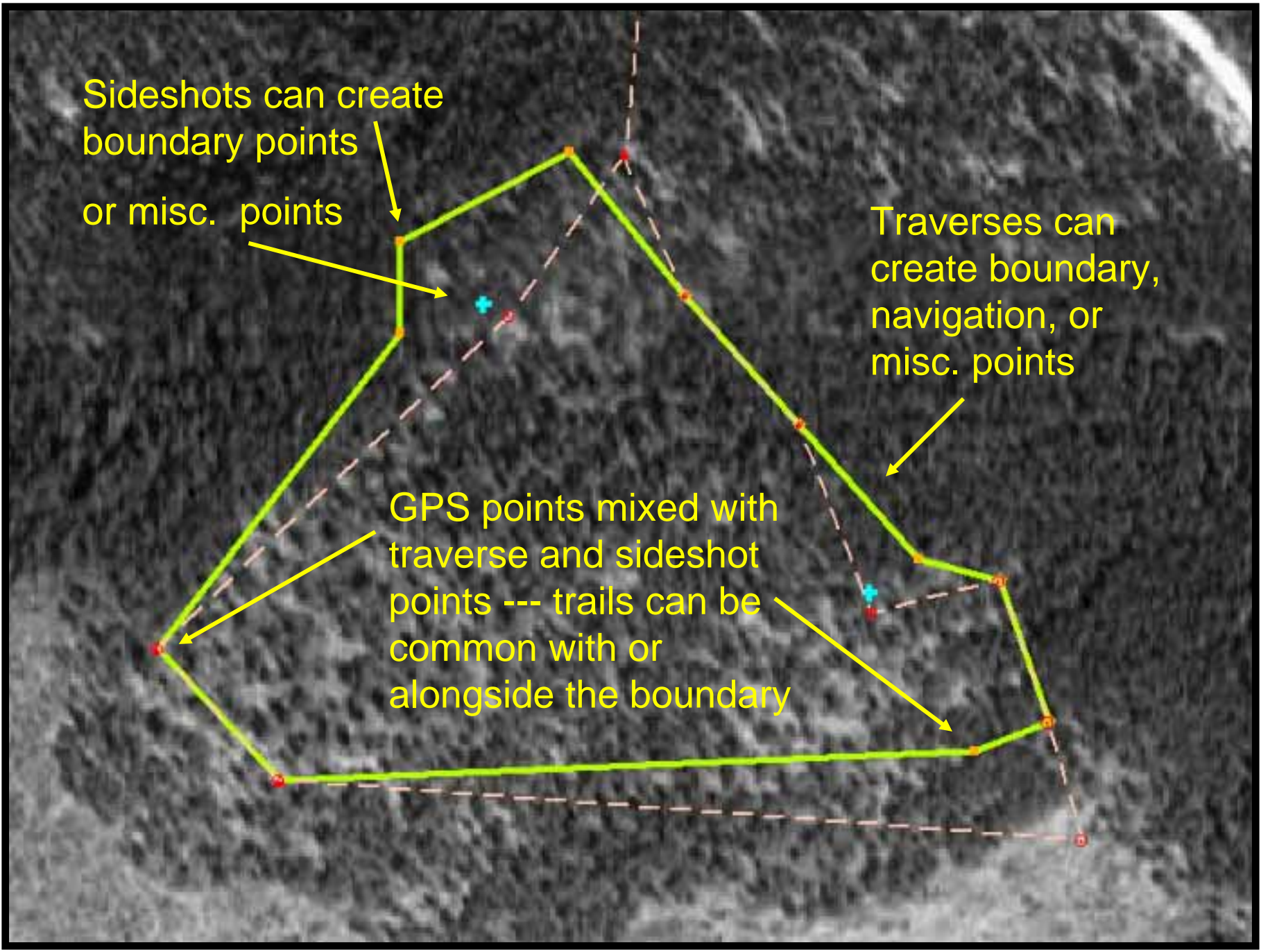
Even in dense canopy or rough terrain, you can do your job without down time.

Sideshots can create boundary points

or misc. points

Traverses can create boundary, navigation, or misc. points

GPS points mixed with traverse and sideshot points --- trails can be common with or alongside the boundary



# Text reports are made on both the PC and Mobile Units

**Polygon Summary**

Project Summary

Project File: D:\482G\DeadMan\DeadmanFieldCourse\dmfc3\_b.TT  
Project Title: Deadman  
Region: R2, Forest: Arapaho, District: FMSC

Polygon summary information for 4 polygon(s) in this project:

PolygonID: 0 -- waypts  
The area for this polygon is 0.00 Ha, with a perimeter of 0.0 M

PolygonID: 1 -- SW Sparce Unit  
The area for this polygon is 2.74 Ha, with a perimeter of 717.1 M  
The polygon area error is 0.45, or 16 percent.

Recorded GPS accuracy for point 1010 is 1.0 (map units).  
Recorded GPS accuracy for point 1020 is 1.0 (map units).  
Recorded GPS accuracy for point 1030 is 7.0 (map units).  
Recorded GPS accuracy for point 1050 is 5.0 (map units).  
Recorded GPS accuracy for point 1090 is 5.0 (map units).  
Recorded GPS accuracy for point 1100 is 5.0 (map units).  
Recorded GPS accuracy for point 1110 is 5.0 (map units).  
Recorded GPS accuracy for point 1160 is 6.0 (map units).  
Traverse closure on point 1160 is 1 part in 175, with a closing distance 2.2 in 380.2 Feet.Tenths.  
Traverse closure on point 1230 is 1 part in 21, with a closing distance 24.5 in 509.6 Feet.Tenths.

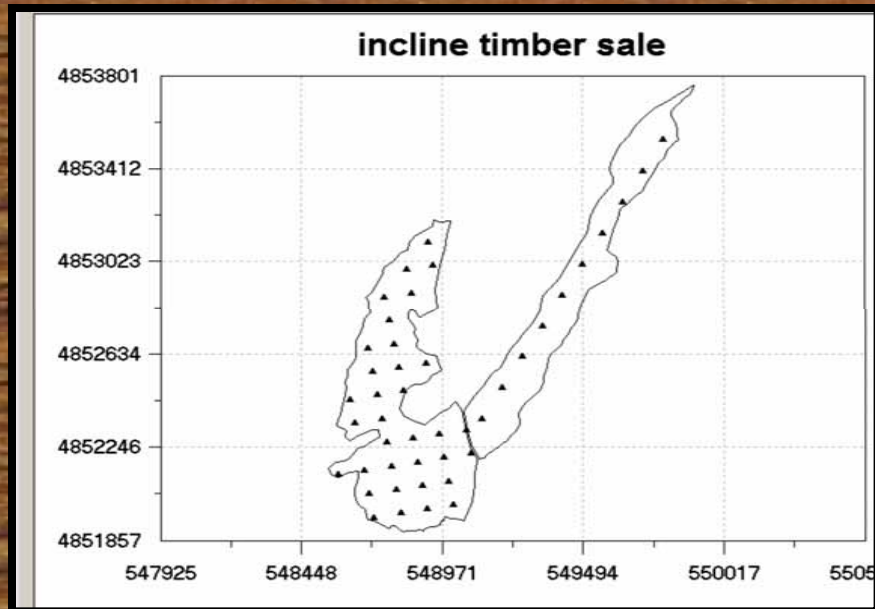
OK

Field display of:

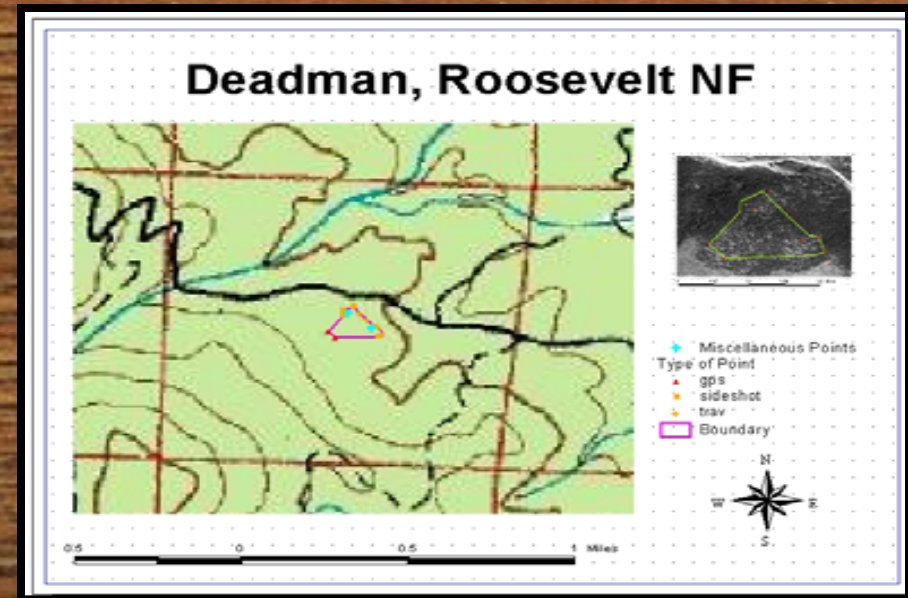
- unit's area (later versions includes acres and feet also)
- area error
- GPS accuracies
- and traverse closures between control



Along with many text files for your reports,  
spatial data are standard output



Sample plot  
centers generated  
in the field or office,  
for each unit



Mapping data are  
ready for GIS

# Many different types of equipment can be used



products shown do not constitute an endorsement by the Forest Service

# TwoTrails



**Allows mixed operations of  
GPS and traditional  
traverse surveys**

**Complements and  
enhances GPS receiver's  
capabilities-**

**Creates useful and  
meaningful cruising  
information for the field  
and office**

TwoTrails beta version is stable and being used in production on some forests.

However, consult with your regional measurement specialist before using this program in production.

The handbook is being updated to support newer operations, which will support the techniques offered in this program.

TwoTrails© is Freeware maintained by FMSC [www.fs.fed.us/fmsc/](http://www.fs.fed.us/fmsc/)

beta software site: [www.fs.fed.us/fmsc/measure/cruising/twotrails/beta/](http://www.fs.fed.us/fmsc/measure/cruising/twotrails/beta/)



Dave Cawrse  
Director



FMSC



Andrea Steiner, Main Prog.  
Gary Boyack, Project Lead

- Two Trails has companion versions for the PC and mobile-CE device which load easily without administrative privileges

- Specialized files are generated on the PC for cruise analysis and GIS portrayal

- Files and drawings are generated on the mobile-CE appropriate for gathering and editing data collection

- Delimited ASCII files are created allowing easy analysis and use with other applications

- Spatial files are geo-referenced and ready for input to ArcView or ArcMap
- A GPX file is created
- Metadata is created and properly associated
- The spatial databases are attributed with calculated areas, perimeters and more
- When needed, cruisers now have a tool to mix survey methods

# Timber cruisers requested help

**Since Selective Availability is dropped,  
can we use different settings;  
are there inexpensive ways to do real-time surveying**

**Can a program be made to focus on timber cruising needs  
without the unnecessary baggage usually associated  
with other extensive surveying/engineering packages;**

**To help with these needs, TwoTrails© is a possible answer**