

Planning and Monitoring Application using Vegetation Survey Data

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April 19, 2005



Objective

- Description of permanent plots system
- Uses of data
- Application to analyze the data

Purposes of Permanent Vegetation Plots

- Provides information for a variety of resource users
- Provides consistent data over time
- Designed to meet present and future needs
- **How? By collecting data to rigorous standards**

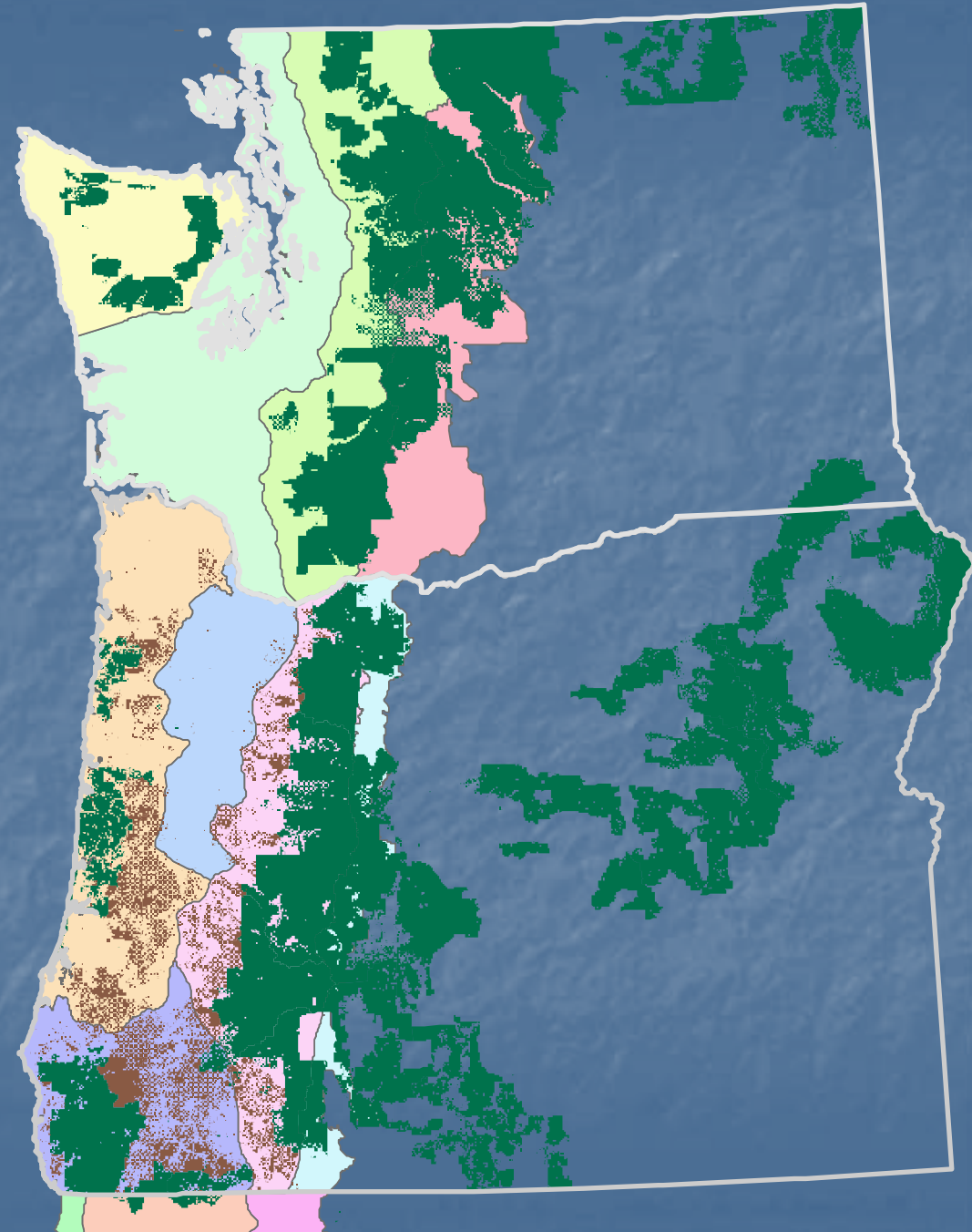


CVS

- BLM 1,376 plots
(2.2 MM acres)
- FS 11,394 plots
(24.7 MM acres)

FIA

plots 4,230



Survey Designs are Peer Reviewed



United States
Department of
Agriculture

Forest Service

Pacific Northwest
Research Station

Research Paper
PNW-RP-493
December 1996

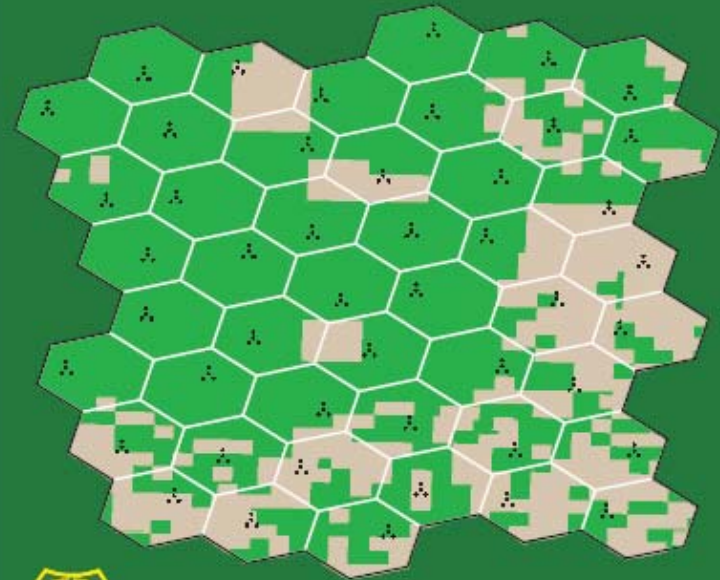
The Pacific Northwest Region Vegetation and Inventory Monitoring System

Timothy A. Max, Hans T. Schreuder, John W. Hazard,
Daniel D. Oswald, John Teply, and Jim Alegria



The Enhanced Forest Inventory and Analysis Program

National Sampling Design and Estimation Procedures



What is being Collected

- Ground cover
- Trees - live and dead
- Ecological indicator species
- Down woody material



How can we use the data ?

Habitat



Photo by Tom Kogut, Gifford Pinchot NF

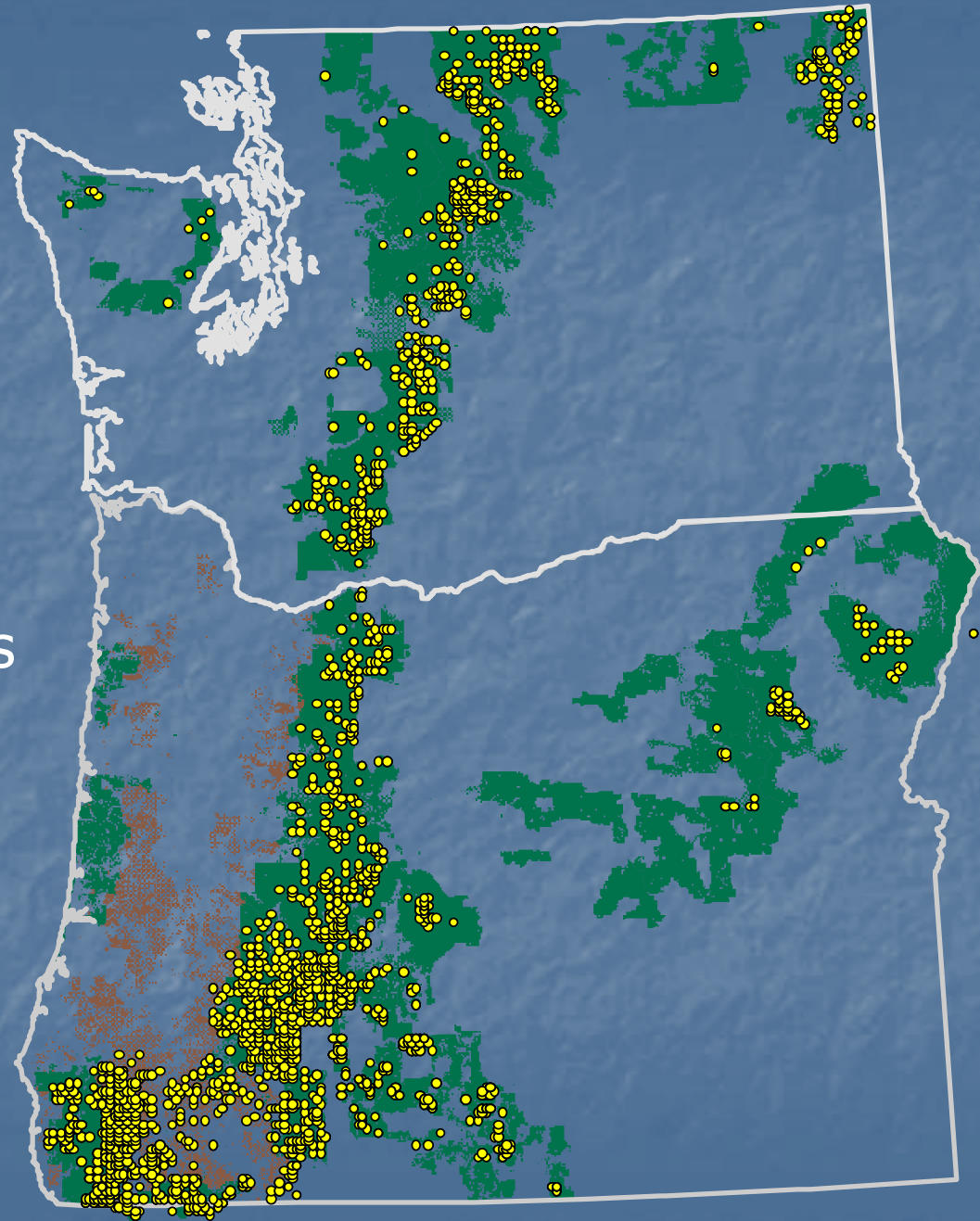


© John Deal



Distribution

Location of 5 needle pines

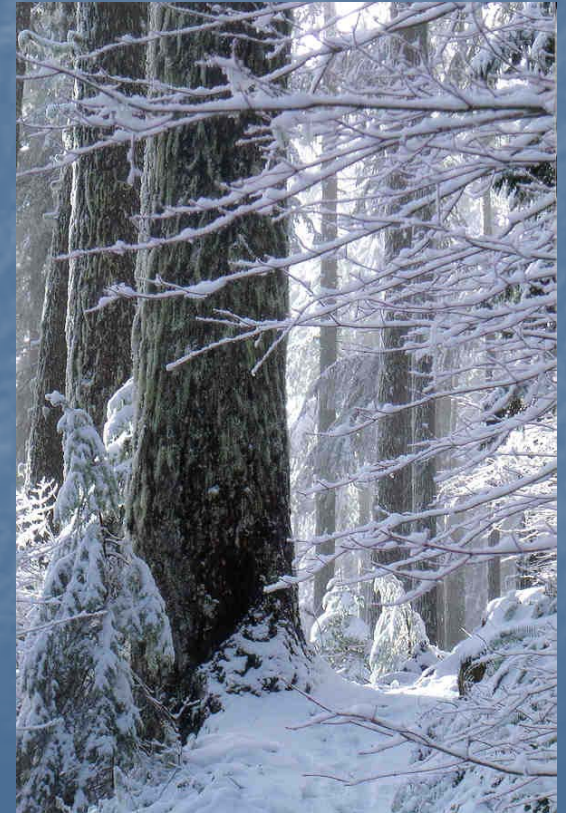


Stand

- Size
- Age



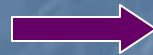
- Species
Composition



Down Woody Material



Vegetation Inventory and Monitoring Tool



VIM Tool Execute Model

StandardAttribute Query for Model Name: and tag block: gnc20 5+ ccs7 70 shute 2+

Description:

Subjects: nesting criteria:
Subjects: not nesting criteria:
Unknown:
Totals:

Model results data type: Download data

Result ID	SubPlot area	Iteration	Observed	E. vegetation	Q. Inventory	LeafNumber	Seedling
1114203	60	0	115	69	20.4	23.6	0
1114204	61	1	67	67	22.5	11.6	0
1114205	63	0	265	125	26.5	1.0	300
1114206	104	4	134	61	20.4	10.2	0
1114207	107	2	228	141	25.5	14.4	100
1114208	106	1	39	62	23.2	16.1	0
1114209	107	2	100	102	20.3	14.1	0
1114210	109	4	76	69	25.7	12.6	0
1114211	112	2	110	51	21.4	15.5	0
1114212	226	1	200	170	20.3	13.5	300
1114213	229	0	70	67	21.0	0.0	0

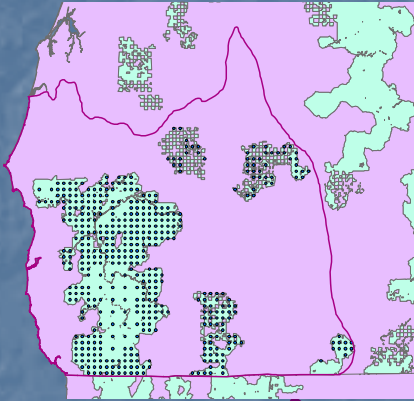
Make list larger Results have been displayed in ArcMap Make list smaller

Help Information: When the feature layer is created in ArcView the coordinate system NAD83 1927 UTM Zone 18N is used. Other feature layers in ArcMap may appear misaligned if they are in a different coordinate system.

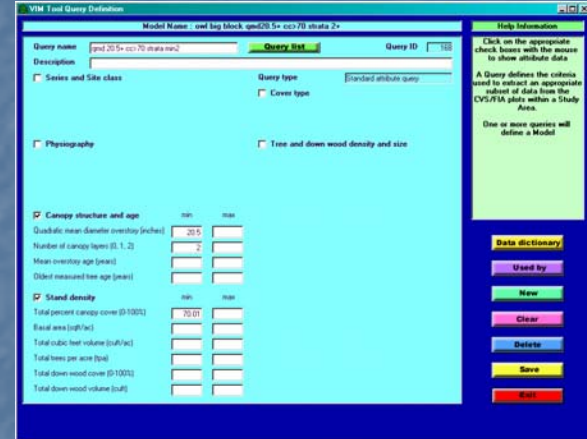
- Model list
- Previous results
- Data dictionary
- Model definition
- Execute model
- Statistics
- ArcMap
- Graphs
- Export
- Quit

VIM

Study Area

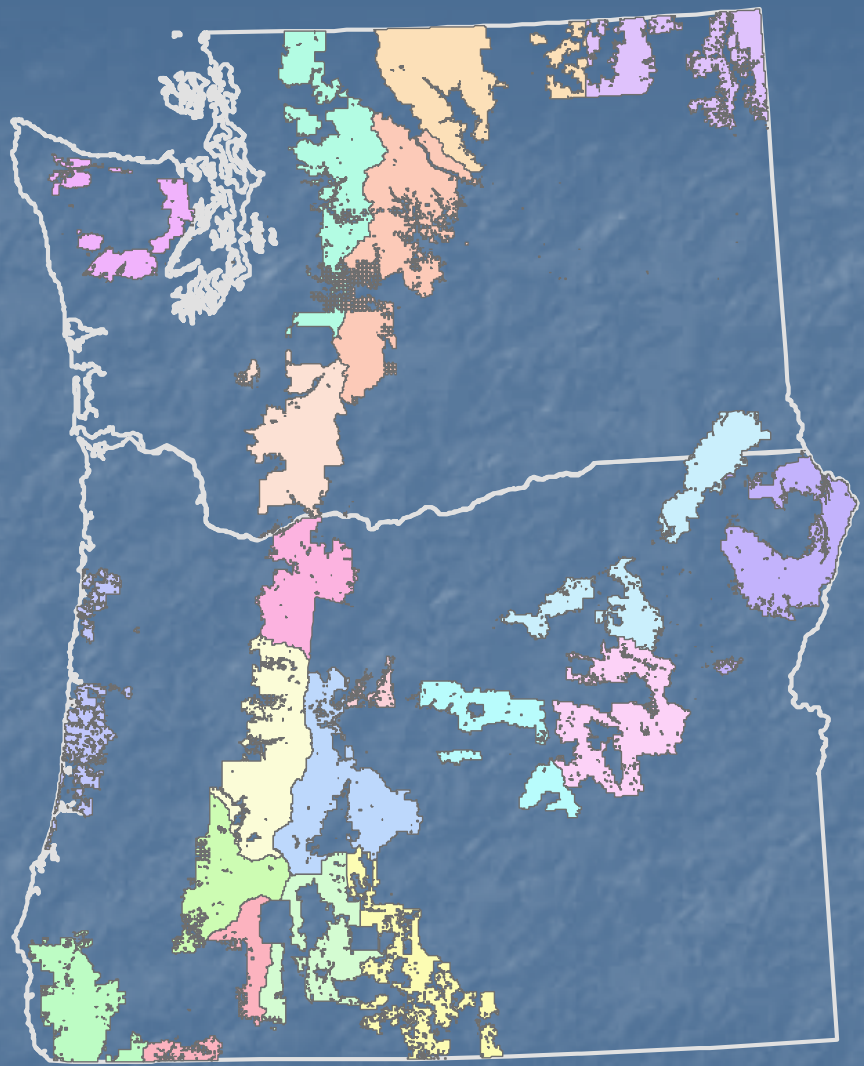
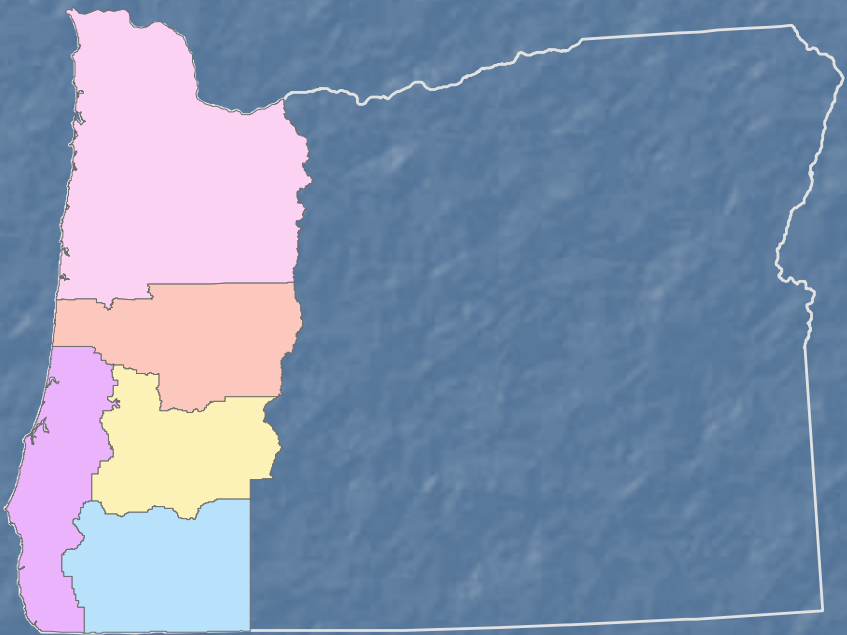


Criteria

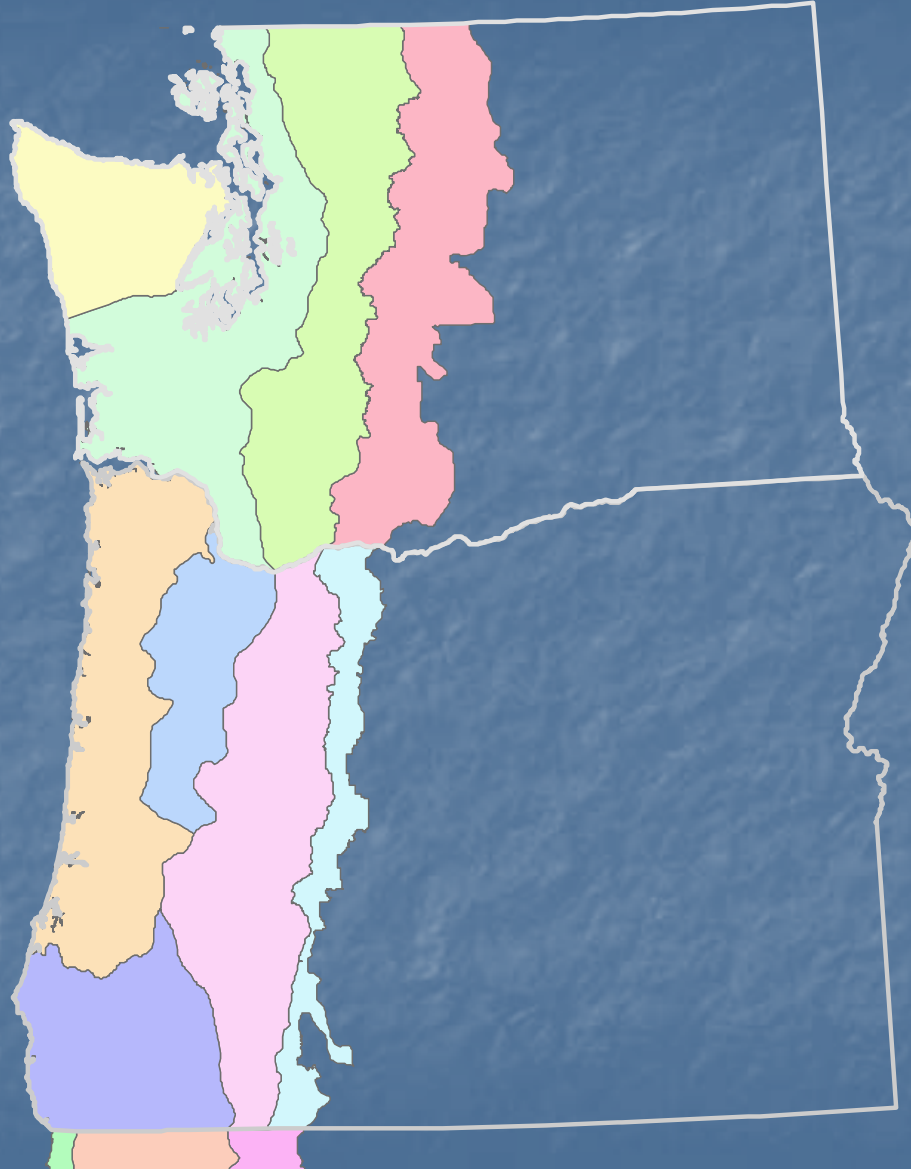


Model

Administrative Units



Province



User defined GIS layer



Criteria

- PNV series and site class
- Physiography
- Canopy structure and age
- Conifer or hardwood cover
- Tree and down wood density and size

Tree and down wood density and size

Live trees per acre with dbh

	min	max	
tpa	<input type="text"/>	<input type="text"/>	trees/ac
dbh	<input type="text"/>	<input type="text"/>	inches

Snags per acre with dbh and height

tpa	<input type="text"/>	<input type="text"/>	trees/ac
dbh	<input type="text"/>	<input type="text"/>	inches
height	<input type="text"/>	<input type="text"/>	feet

Logs (pieces per acre) with diameter and length

ppa	<input type="text"/>	<input type="text"/>	pieces/ac
large end diameter	<input type="text"/>	<input type="text"/>	inches
length	<input type="text"/>	<input type="text"/>	feet

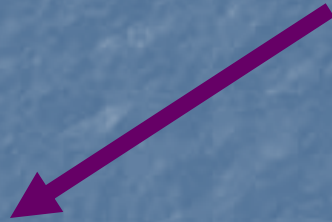
Criteria Based on FIA Condition Class:

- Accessible Forest Land
 - Stand size class
 - Forest type
 - Owner groups
- NonForest Land
 - Nonforested uses

Model



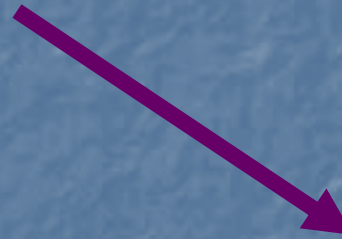
Results



Statistics



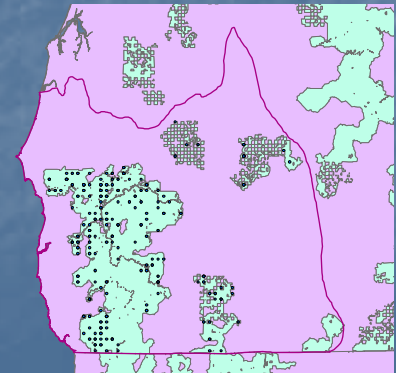
Export



GIS



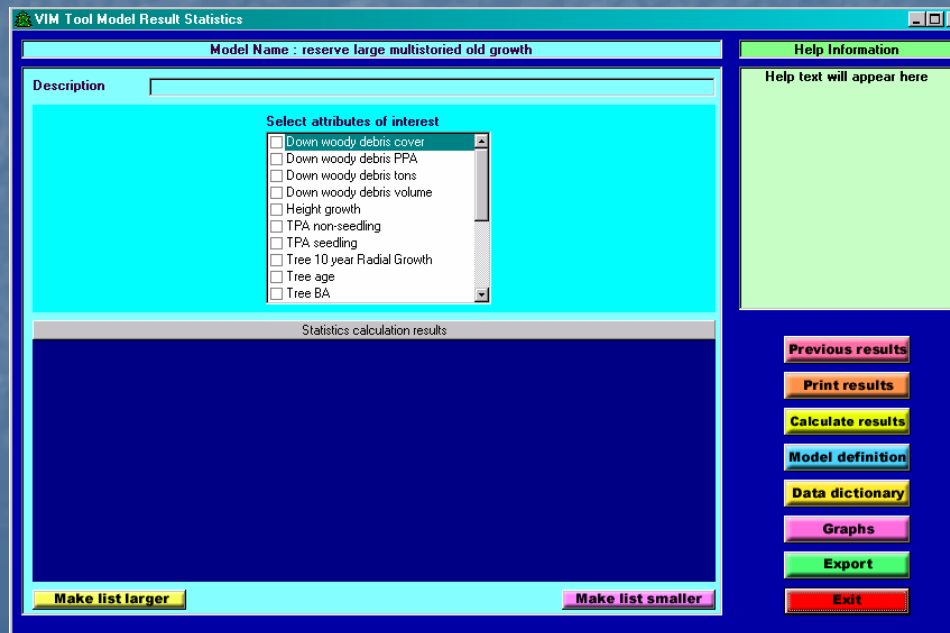
- Excel
- Access
- Text



Statistics

Acres & Host of Attributes

- Bootstrap confidence intervals
- FIA Estimation Procedures



Example 1

How many acres of older forest are in reserves?



Define Study Area

Land Use Allocations: Administratively Withdrawn
Congressionally Reserved
Late Successional Reserve

VIM Study Area Definition

Model :

Study area name: law cr lsr **Area list** Study area ID: 87

Description:

State
 OR CA WA

General
 NWFP only Non-wilderness

Ownership
 USFS BLM Other

Land use allocations
Administratively Withdrawn
Congressionally Reserved
Late Successional Reserve

NWFP Physiographic provinces

Administrative areas

Select LUA
 Adaptive Management Area
 Administratively Withdrawn
 Congressionally Reserved
 Late Successional Reserve
 Matrix and Riparian Reserves
 Not designated

Select physiographic provinces
 CA Cascades
 CA Coast Range
 CA Klamath Mountains
 OR Coast Range
 OR East Cascades
 OR Klamath
 OR West Cascades

Select administrative areas
 BLM Alturas
 BLM Arcata
 BLM Coos Bay
 BLM Eugene
 BLM Lakeview
 BLM Medford
 BLM Redding

Help Information
A Study Area defines the geographic extent for the search of CVS/FIA plots
Study Areas can be linked to Queries as part of a Model from the Model Definition screen. This feature is accessed from the opening screen Models button.

Data dictionary
Used by
New
Clear
Delete
Save
ArcMap
Exit

Define Criteria

Large multistoried

Over-story DBH $\geq 30''$

Canopy layers ≥ 2

Canopy cover $> 10\%$

The screenshot shows the 'VIM Tool Query Definition' window. The 'Query name' is 'large multistoried old growth' and the 'Query ID' is 171. The 'Query type' is 'Standard attribute query'. The 'Description' field is empty. The 'Series and Site class' checkbox is unchecked. The 'Physiography' checkbox is unchecked. The 'Canopy structure and age' checkbox is checked, with the following criteria:

	min	max
Quadratic mean diameter overstory (inches)	30	
Number of canopy layers (0, 1, 2)	2	
Mean overstory age (years)		
Oldest measured tree age (years)		

The 'Stand density' checkbox is checked, with the following criteria:

	min	max
Total percent canopy cover (0-100%)	10.01	
Basal area (sqft/ac)		
Total cubic feet volume (cuft/ac)		
Total trees per acre (tpa)		
Total down wood cover (0-100%)		
Total down wood volume (cult)		

The 'Cover type' and 'Tree and down wood density and size' checkboxes are unchecked. On the right side, there is a 'Help Information' section with the following text:

Click on the appropriate check boxes with the mouse to show attribute data

A Query defines the criteria used to extract an appropriate subset of data from the CVS/FIA plots within a Study Area.

One or more queries will define a Model

At the bottom right, there are several buttons: 'Data dictionary', 'Used by', 'New', 'Clear', 'Delete', 'Save', and 'Exit'.

- Quantitative Results

- Plots sent to GIS

VIM Tool Execute Model

StandardAttribute Query for Model Name: **Save large multistoried old growth**

Description:

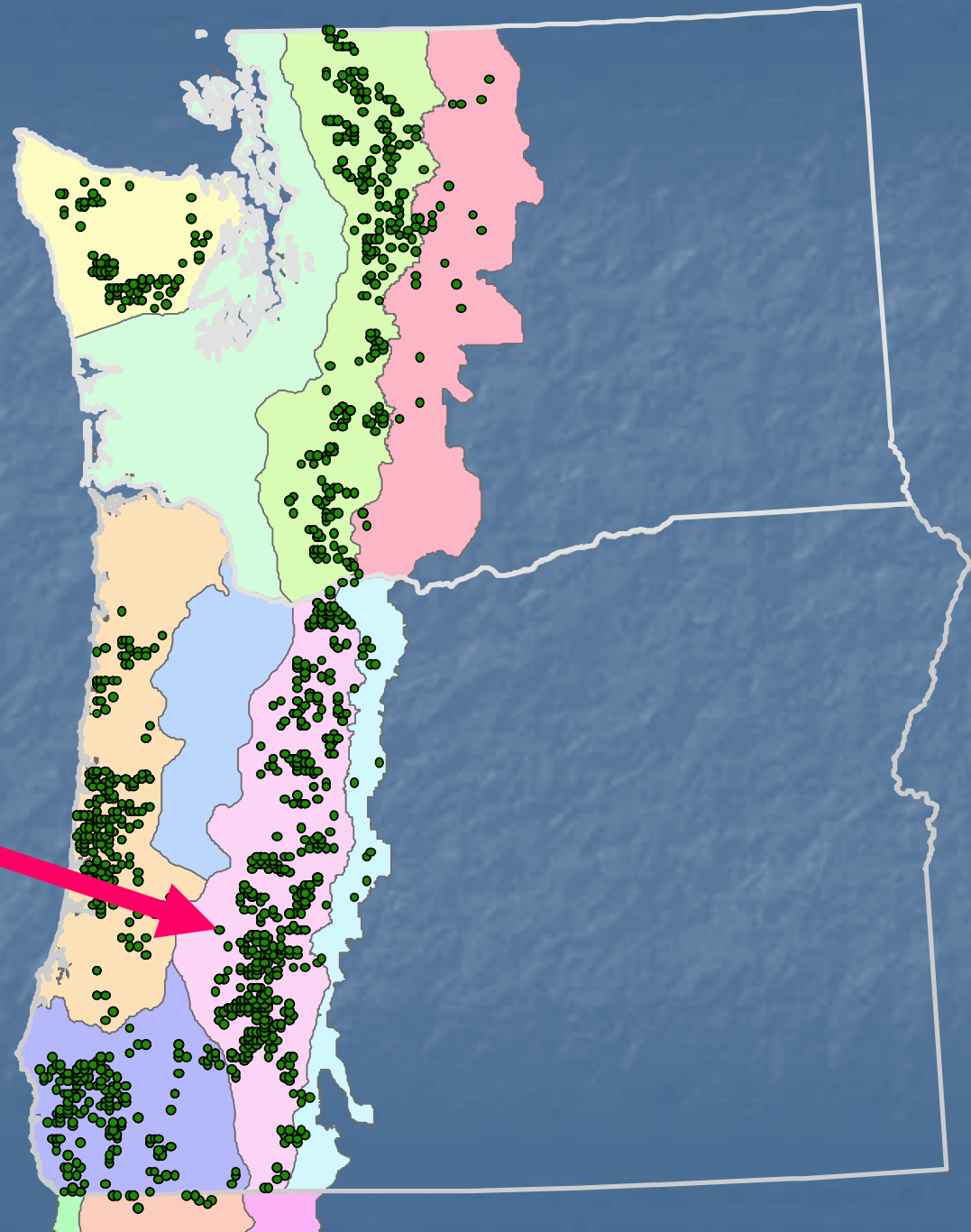
Subplots meeting criteria:
Subplots not meeting criteria:
Unknown:
Totals:

Model results data: SubPlot Data Tree data

Result ID	DataStakesID	StakePos	OldestTree	E_topstory	D_topstory	nrSeeding	Seedings
1140911	7	2	314	305	34.4	14.6	200
1140912	8	3	574	416	37	20.7	300
1140913	9	4	626	361	33.2	11.1	0
1140914	10	5	308	294	30.1	15.8	400
1140915	49	4	138	109	30	6.3	1800
1140916	54	4	114	69	34	22.9	0
1140917	59	4	169	71	39.2	39.2	0
1140918	60	5	113	60	35.4	23.6	0
1140919	62	2	253	224	37.2	27.3	0
1140920	63	3	170	170	40.6	40.6	0
1140921	65	5	294	49.8	49.8	0	0

Model Results List has 2297 rows

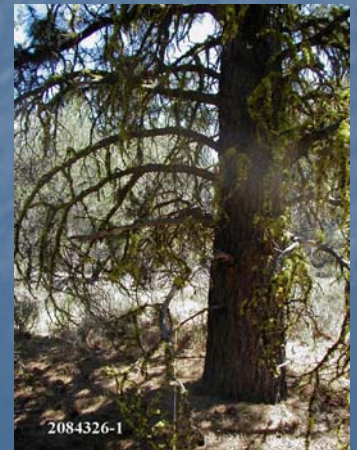
Buttons:



Comparison

Keep same study area

Use different older forest definition



Criteria

Medium & Large

Over-story DBH $\geq 20''$

Canopy cover $> 10\%$

VIM Tool Query Definition

Model Name : reserve medium_large oldgrowth

Query name: medium & large oldgrowth Query list Query ID: 172

Description:

Series and Site class Query type: Standard attribute query

Cover type

Physiography Tree and down wood density and size

Canopy structure and age

	min	max
Quadratic mean diameter overstory (inches)	20	
Number of canopy layers (0, 1, 2)		
Mean overstory age (years)		
Oldest measured tree age (years)		

Stand density

	min	max
Total percent canopy cover (0-100%)	10.01	
Basal area (sqft/ac)		
Total cubic feet volume (cuft/ac)		
Total trees per acre (tpa)		
Total down wood cover (0-100%)		
Total down wood volume (cuft)		

Help Information

Click on the appropriate check boxes with the mouse to show attribute data

A Query defines the criteria used to extract an appropriate subset of data from the CVS/FIA plots within a Study Area.

One or more queries will define a Model

Data dictionary

Used by

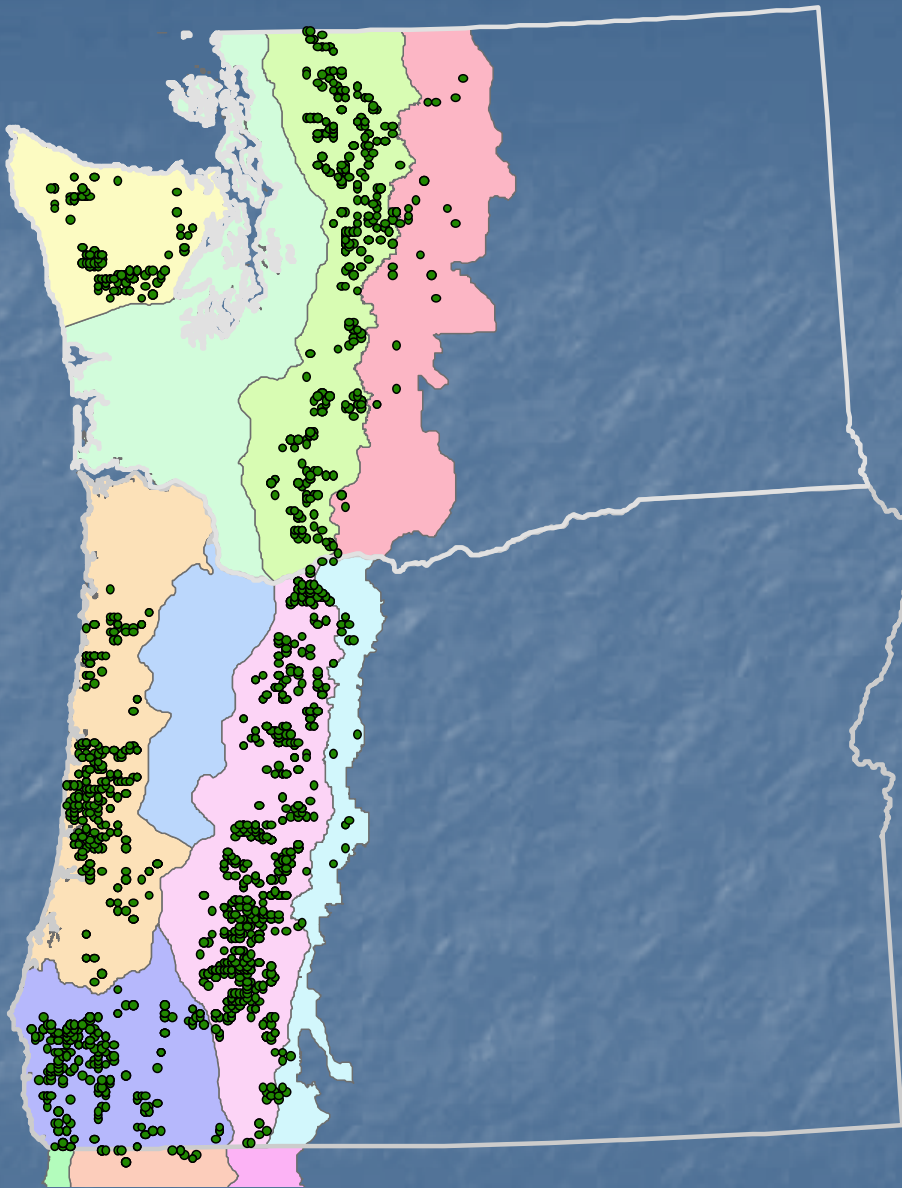
New

Clear

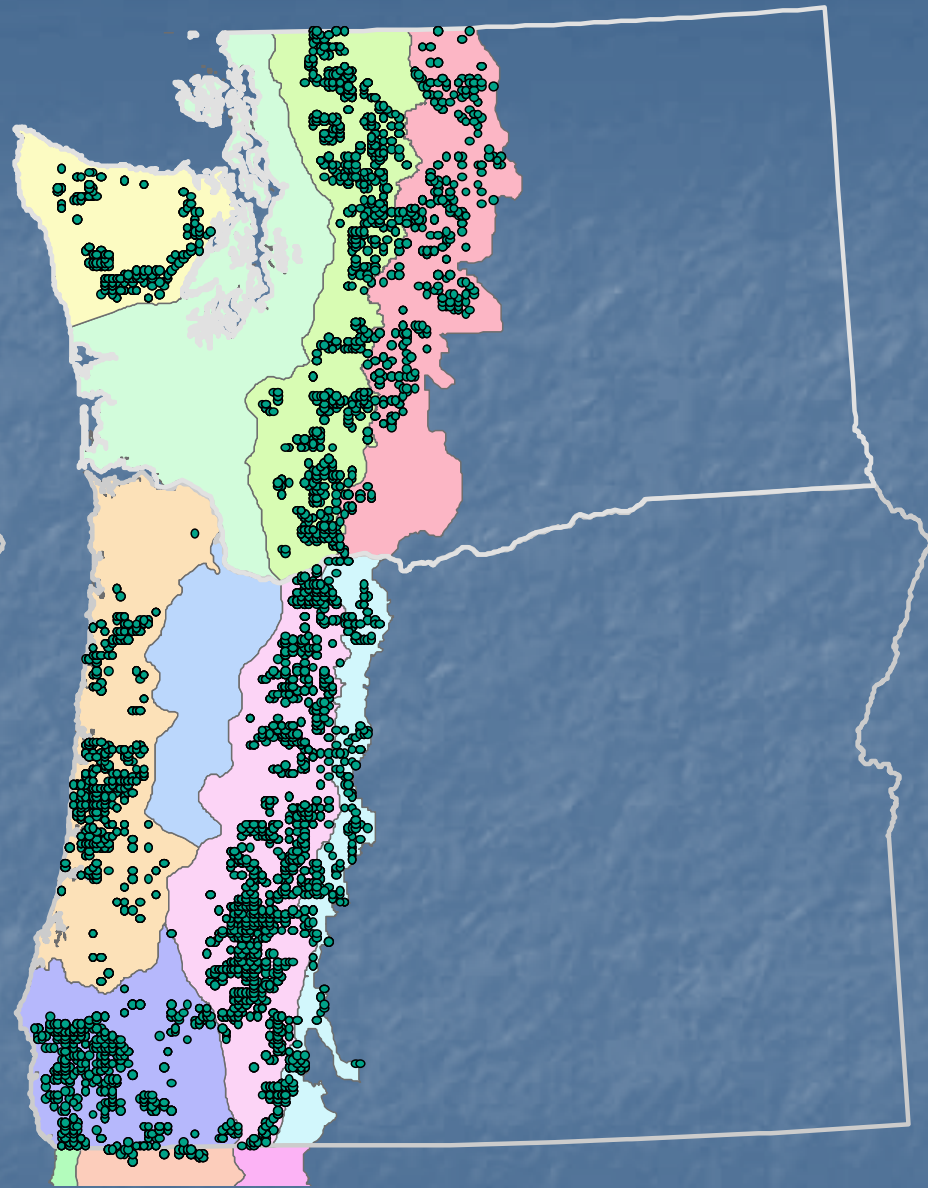
Delete

Save

Exit



Large multistoried



Medium & Large

Example 2

How many acres available of high quality owl habitat in large reserves ?

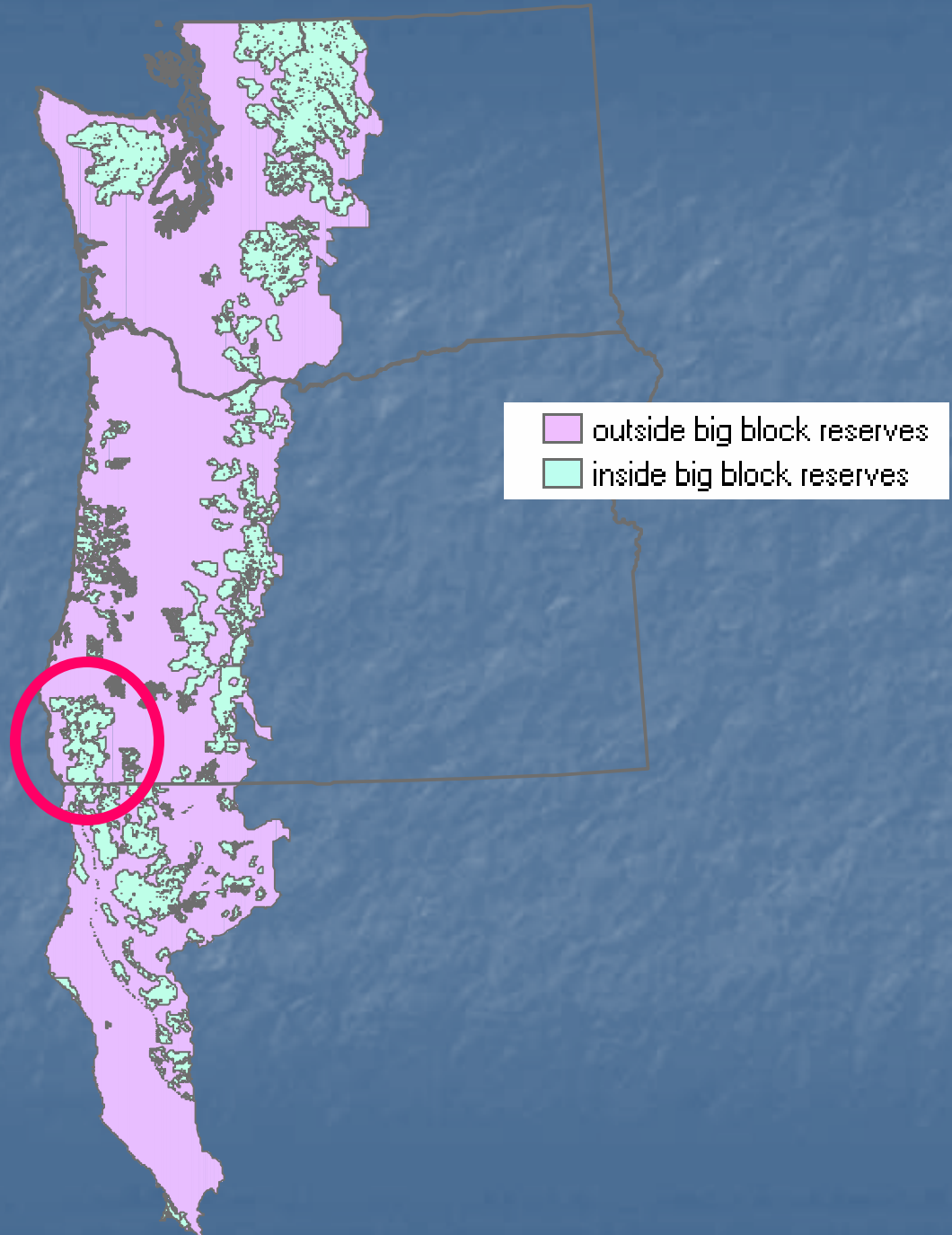


Photo by Tom Kogut, Gifford Pinchot NF

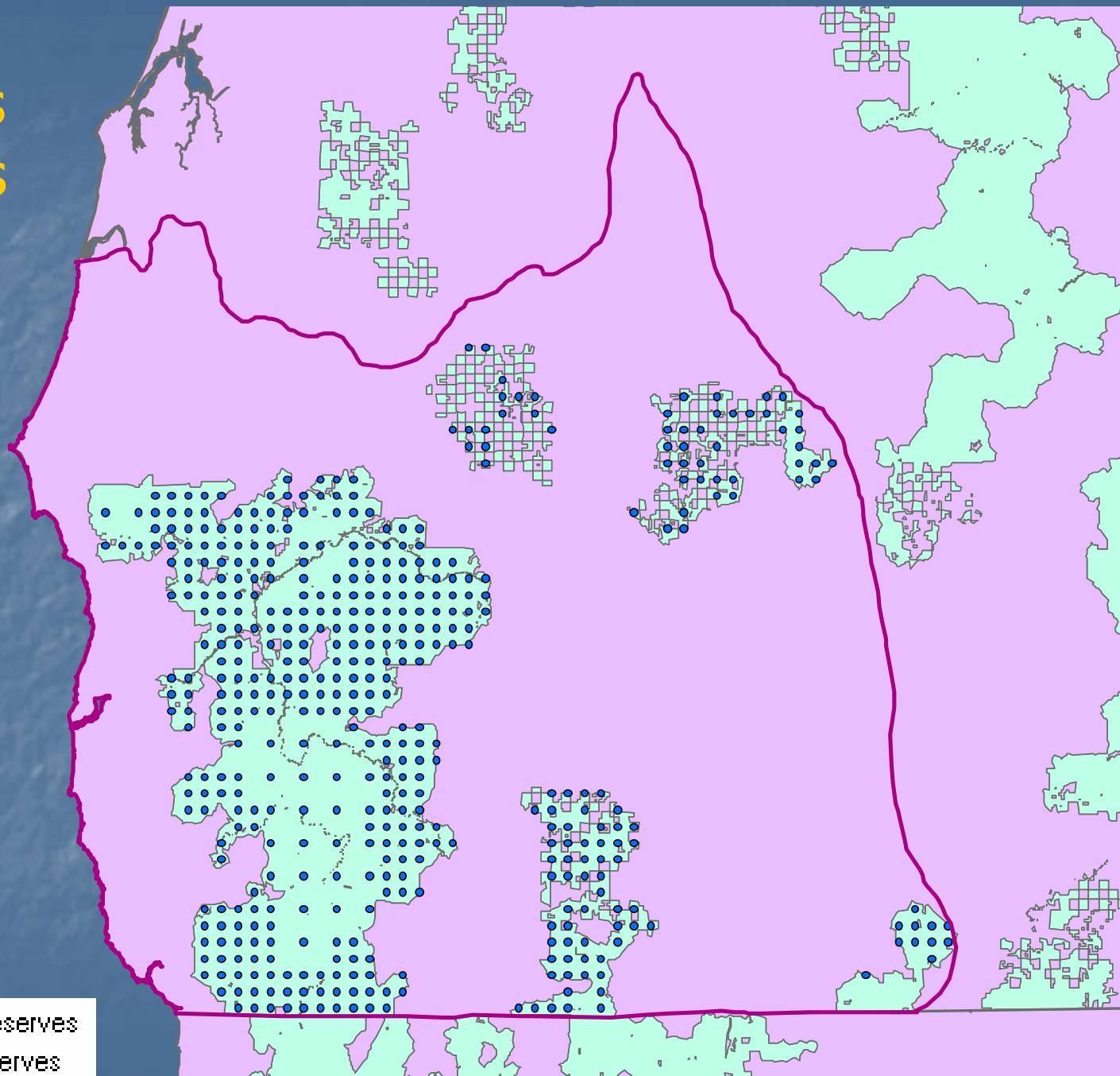
Northern Spotted Owl Block reserves



Photo by Tom Kogut, Gifford Pinchot NF



GIS defines study areas



Define Criteria

- Over-story DBH $\geq 20.5''$
- Crown closure $> 70\%$
- Canopy layers ≥ 2

VIM Tool Query Definition

Model Name : owl big block qmd20.5+ cc>70 strata 2+

Query name: qmd 20.5+ cc>70 strata min2 **Query list** Query ID: 168

Description: _____

Series and Site class Query type: Standard attribute query

Cover type

Physiography Tree and down wood density and size

Canopy structure and age

	min	max
Quadratic mean diameter overstory (inches)	20.5	
Number of canopy layers (0, 1, 2)	2	
Mean overstory age (years)		
Oldest measured tree age (years)		

Stand density

	min	max
Total percent canopy cover (0-100%)	70.01	
Basal area (sqft/ac)		
Total cubic feet volume (cuft/ac)		
Total trees per acre (tpa)		
Total down wood cover (0-100%)		
Total down wood volume (cuft)		

Help Information

Click on the appropriate check boxes with the mouse to show attribute data

A Query defines the criteria used to extract an appropriate subset of data from the CVS/FIA plots within a Study Area.

One or more queries will define a Model

Data dictionary

Used by

New

Clear

Delete

Save

Exit

- Quantitative Results

- Plots sent to GIS

VIM Tool Execute Model

StandardAttribute Query for Model Name: owl big black qmd20.5+ c0>70 strata 2+

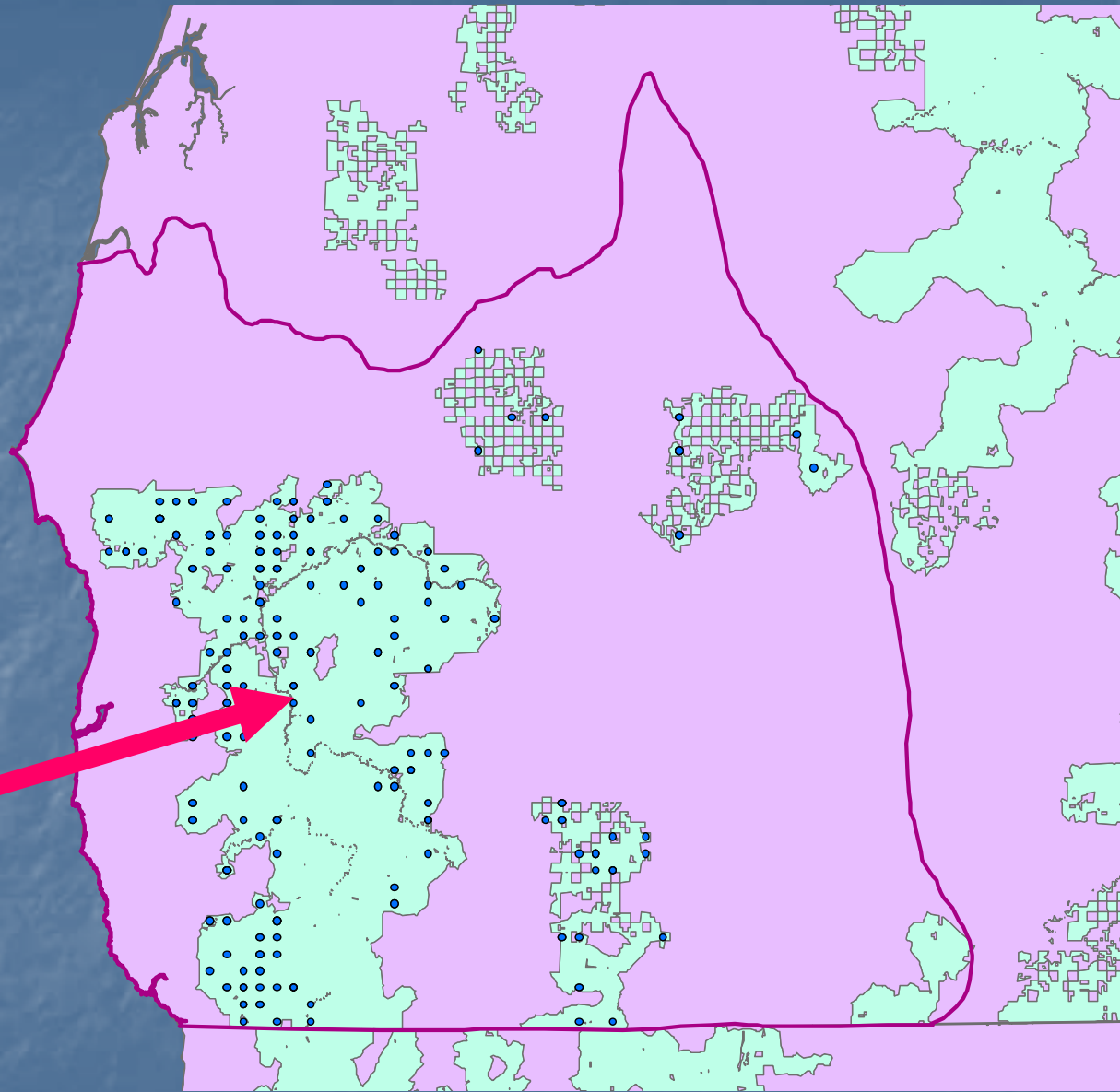
Description

Subplots meeting criteria: 151133
Subplots not meeting criteria: 887808
Unknown: 1472
Totals: 1040413

Model results type
 SubPlot Data Tree data Down wood data

Result ID	DataStakesID	StakePos	OldestTree	E_topstory	D_topstory	prSeeding	Seedings
1114283	60	5	113	60	35.4	23.6	0
1114284	61	1	67	67	22.5	11.6	0
1114285	69	4	386	135	26.3	10	300
1114286	104	4	134	61	28.4	10.2	0
1114287	107	2	296	142	25.5	14.4	0
1114288	186	1	99	82	23.2	16.1	0
1114289	187	2	108	102	29.3	14.1	0
1114290	189	4	75	69	25.7	12.6	0
1114291	192	2	110	51	23.4	15.5	0
1114292	226	1	288	170	28.3	13.5	300
1114293	229	4	75	67	21.8	8.9	0

Model list
Previous results
Data dictionary
Model definition
Create model
Statistics
ArcMap
Graphs
Export
Exit



Status of VIM

- To be released this summer
 - CVS FS OR/WA & BLM w OR
- Next winter:
 - Will incorporate NF California
 - FIA data

Questions