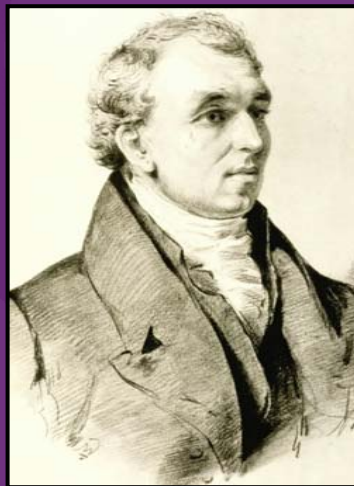


Choice of Douglas Fir seed origin within Great Britain

Alan Fletcher and Sam Samuel
of Forest Research

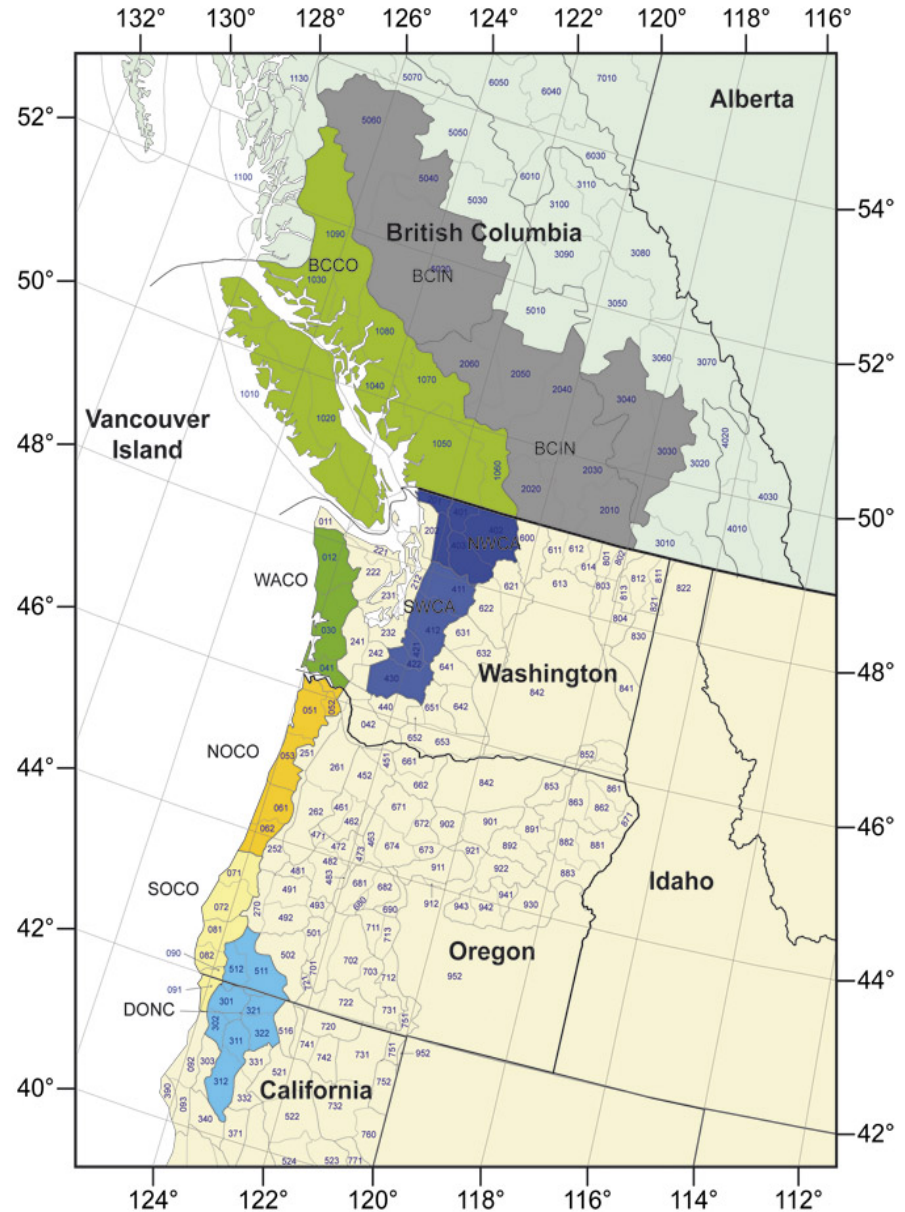
FC Bulletin
129 with a
similar title on
general
release soon
at a bookstall
near you



Parent tree at Scone Palace
from seed sent by Douglas from
Columbia river in 1827

Geoclimatic regions based on the grouping of seed zones in the Pacific North-west

BCIN	Interior British Columbia
BCCO	Coastal British Columbia
WACO	Washington coast
NOCO	North Oregon coast
SOCO	South Oregon Coast
NWCA	North Washington Cascades
SWCA	South Washington Cascades
DONC	Dry Oregon/North California



Constructing seed origin suitability maps

What data do we have?

- A large amount of growth data from seed origin/provenance experiments
- Trials extending throughout GB
- Ability to quantify a range of site factors at a refined level

Predictive models

- Establish models which describe growth rate in terms of best-fitting site factors using multiple regression analysis.
- Used 10 year height data from 7 sites in Manning and IUFRO series:
Craigvinean, Glentress, Rheidol, Radnor, Dean, Charmouth and Bodmin
- Found 3 site factors which gave good explanation of growth:
 - Latitude - national grid ***northings***
 - Accumulated temperature in day-degrees above 5^o Celsius (***AT5***)
 - Moisture deficit*** – accumulated monthly excess of evaporation over rainfall (mm) between March and October

Constructing the maps:

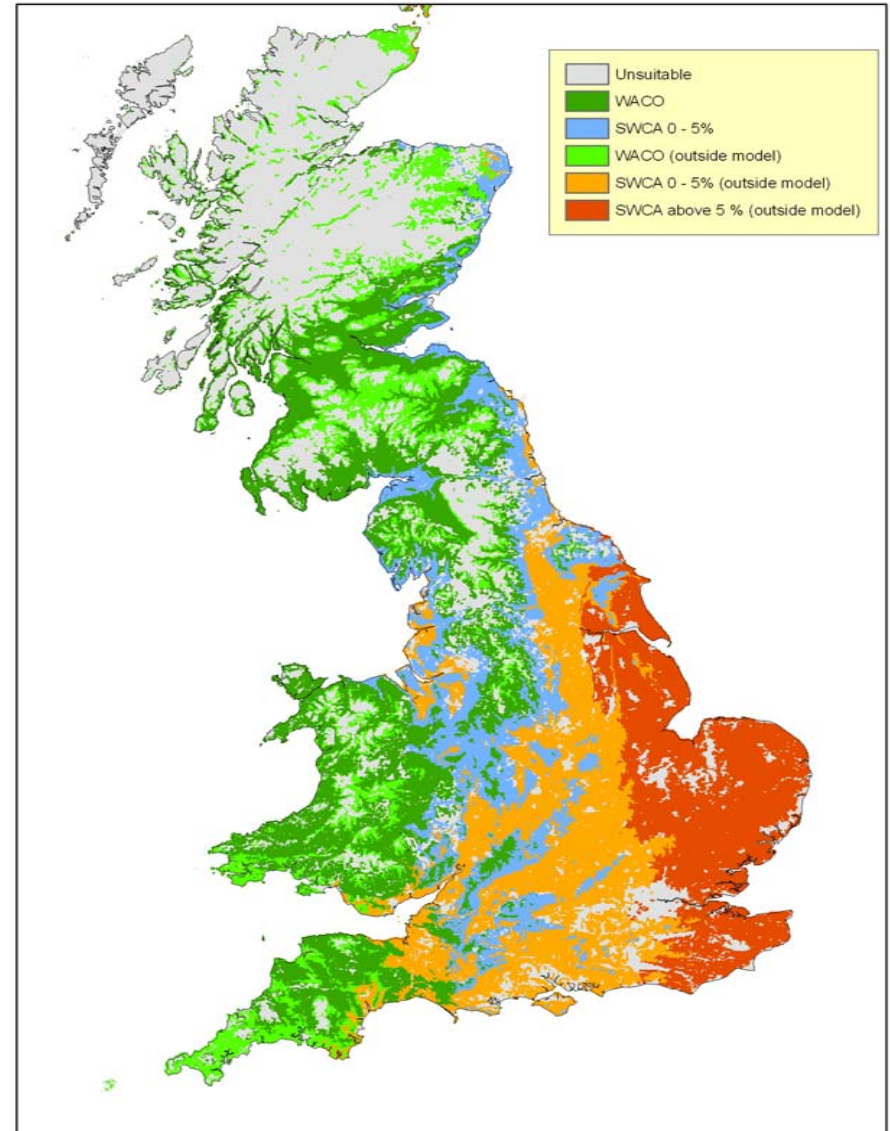
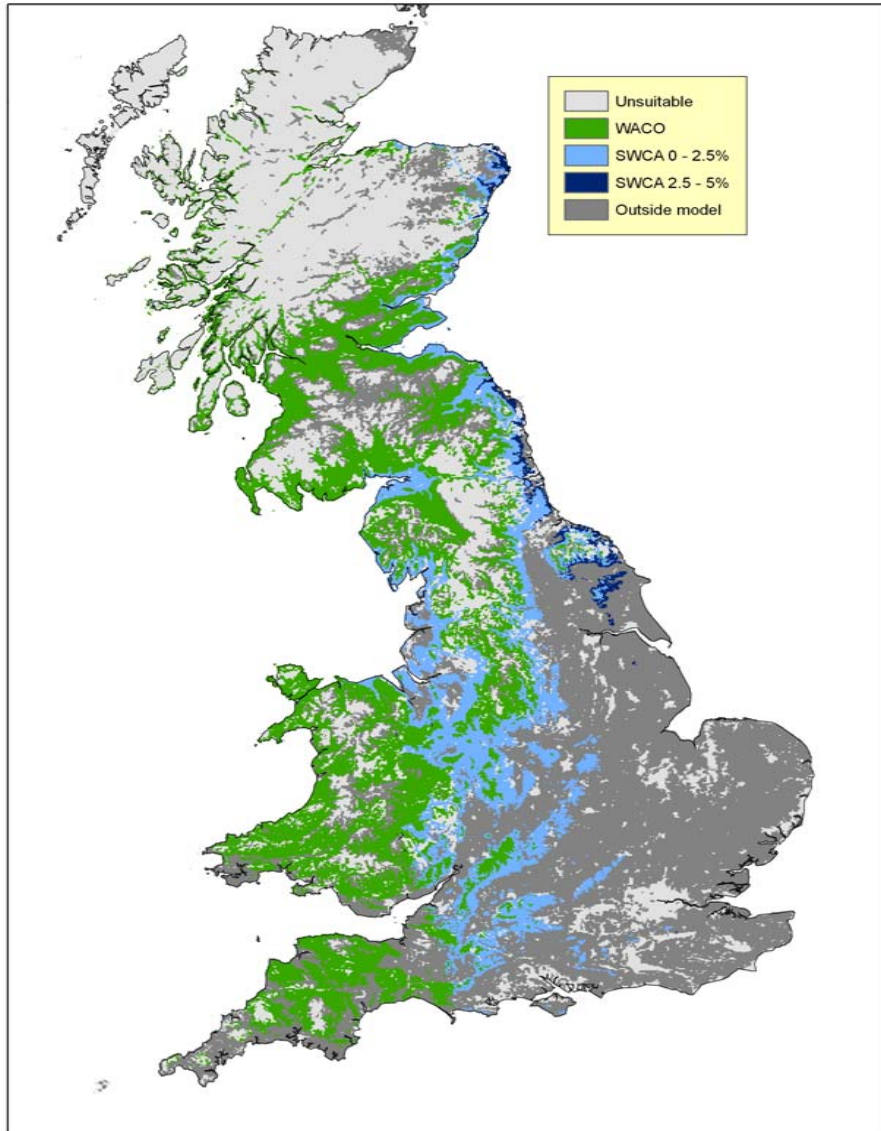
1. Set up regression equations for each major origin grouping of interest

WACO, NOCO, NWCA, SWCA

2. Predict performance of each origin grouping at 250 m square level throughout GB
3. Compare the performance of each group with WACO – only SWCA grouping exceeded WACO
4. Allocate a different colour to thresholds above which SWCA exceeds WACO
5. Coalesce to predominant colour at 1km square level for mapping

Caveats

1. Non-significant regression models, although good % variation accounted for
2. Limited longitudinal spread of site
3. Limited range of AT5 and particularly MD values encountered in data



Do not consider the following for use in GB:

- BCIN and DONC origins not adapted to maritime climate and should not be planted
- SOCO origins grow fast but have poor stem straightness and branching
- BCCO origins do not grow as fast as those from Washington and Oregon. Planting these will give good survival and quality but growth rate will be sacrificed.

Concentrate on these 4 main groupings of sources in this order:

- 1. WACO Washington coast***
- 2. SWCA South Washington Cascades***
- 3. NOCO North Oregon coast or NWCA North Washington Cascades***

Other considerations:

- WACO sources are superior for survival and frost hardiness
- Therefore, in some parts of S. and E. England, together with parts of E. Scotland, SWCA sources could out-yield WACO but *beware of the likelihood of frost.*
- The effects of climate change could increase the area over which SWCA would be the most suitable origin