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Whitebark Pine ecology and management: synthesizing current understanding

Enzo Paolo

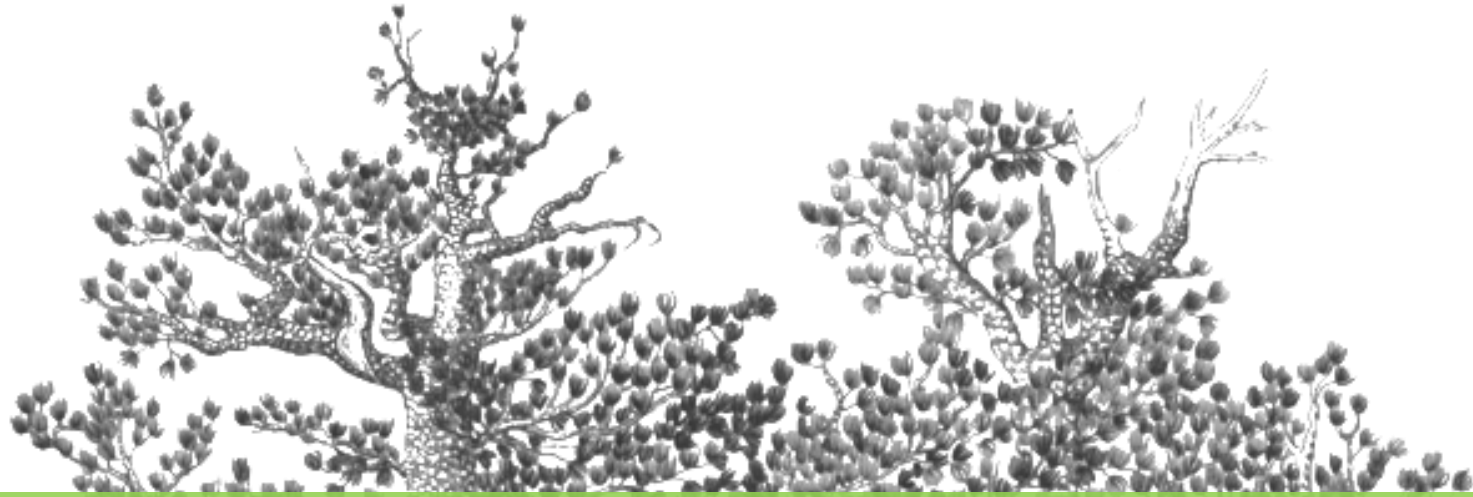
Martelli Moya

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Whitebark Pine Ecology and Management: Synthesizing current understanding



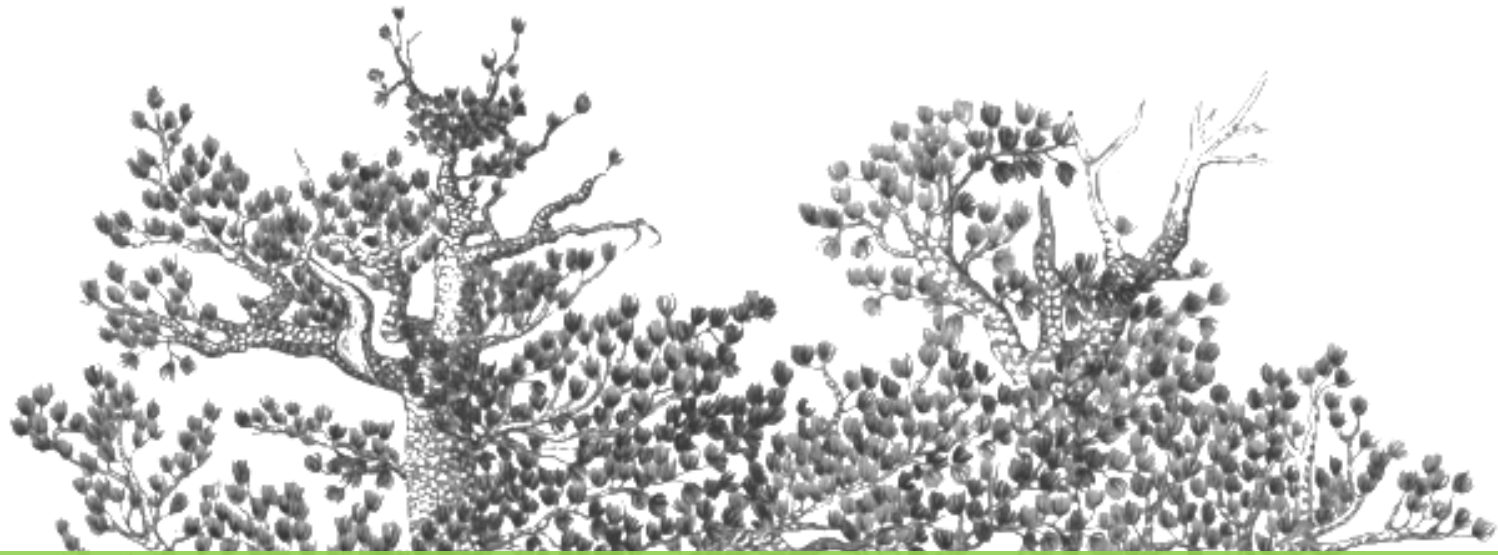






Research Questions

- (1) What is the prevalent study approach for whitebark pine research?
- (2) Does the amount of research conducted vary by study focus?
- (3) To what extent is research being conducted in the main three regions (interior rockies, pacific northwest and pacific southwest) for whitebark pine distribution?



Results



What is the prevalent study approach for whitebark pine research?

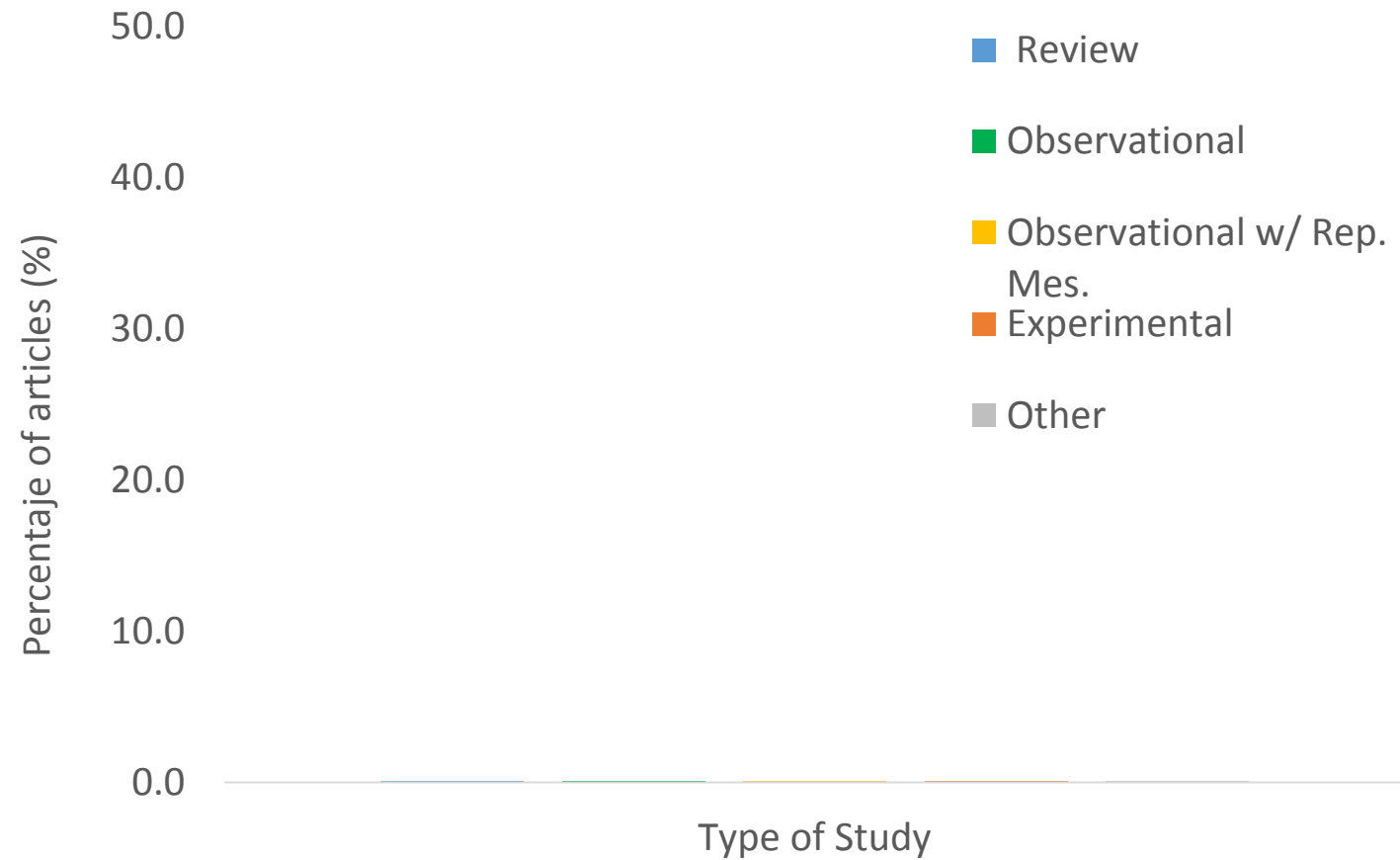


Figure 1. Percentage of study types from the total numbers of articles reviewed.

What is the prevalent study approach for whitebark pine research?

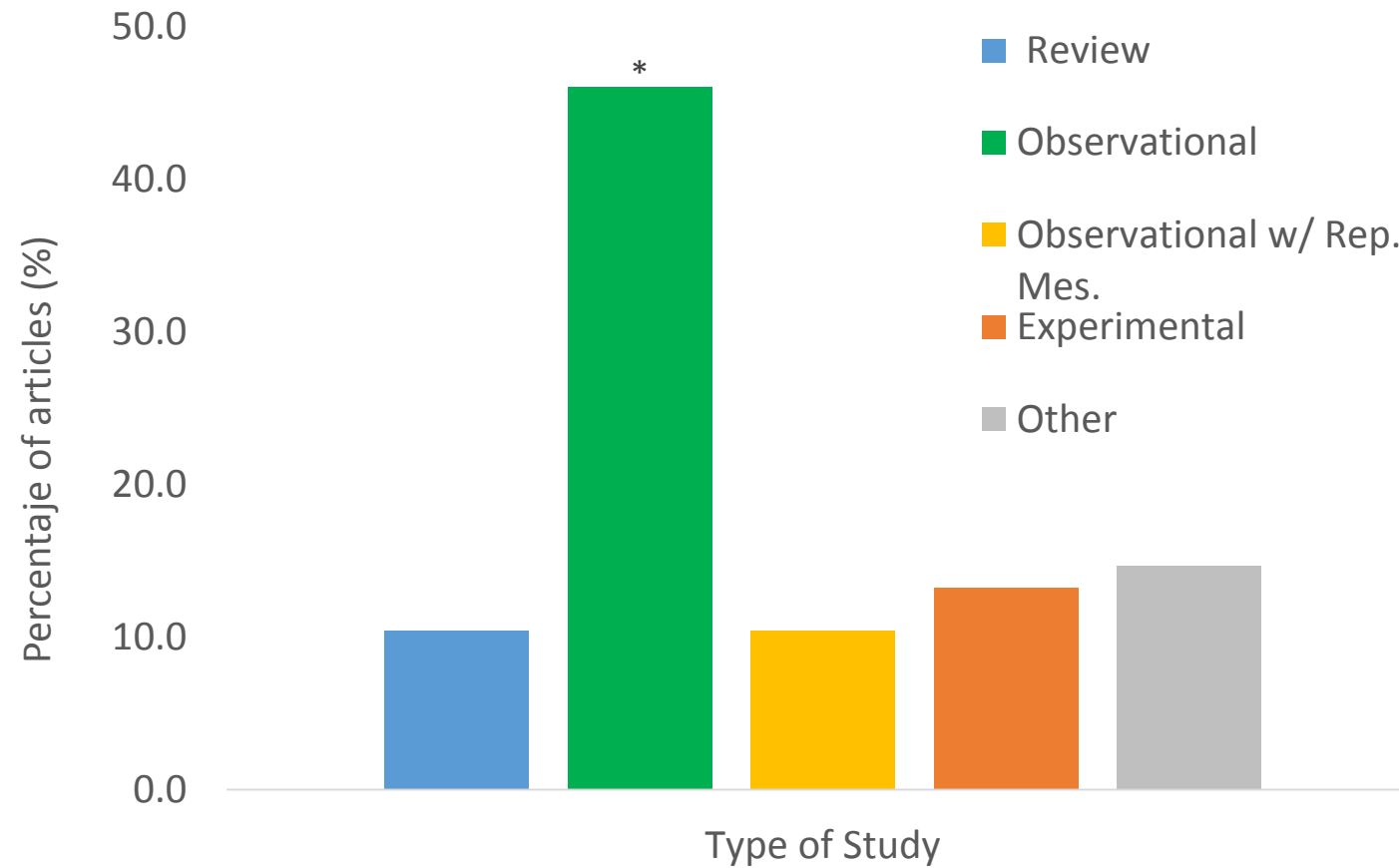


Figure 1. Percentage of study types from the total numbers of articles reviewed.

Does the amount of research conducted vary by study focus?

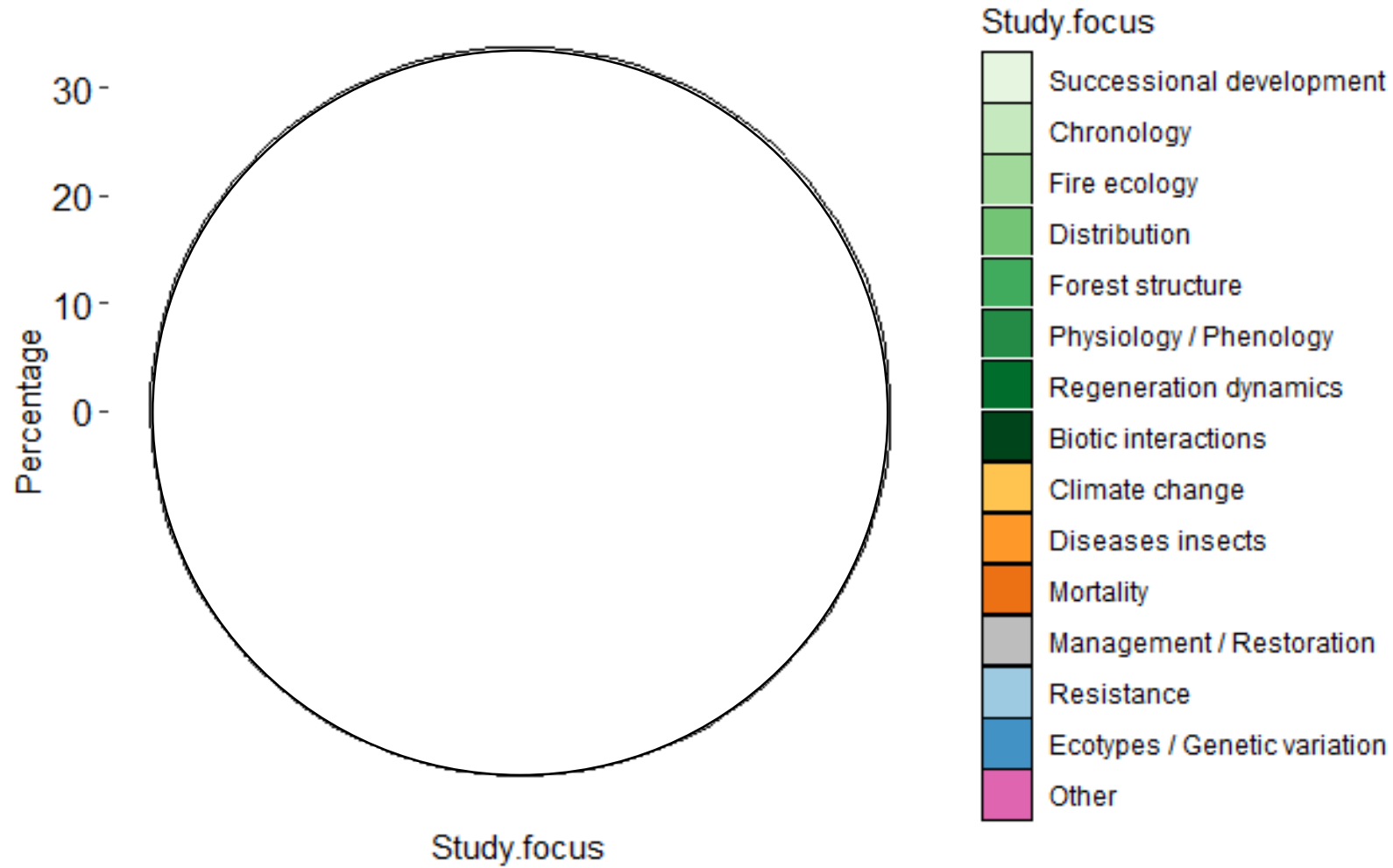


Figure 2. Percentage of study types by study focus from the total numbers of articles reviewed.

Does the amount of research conducted vary by study focus?

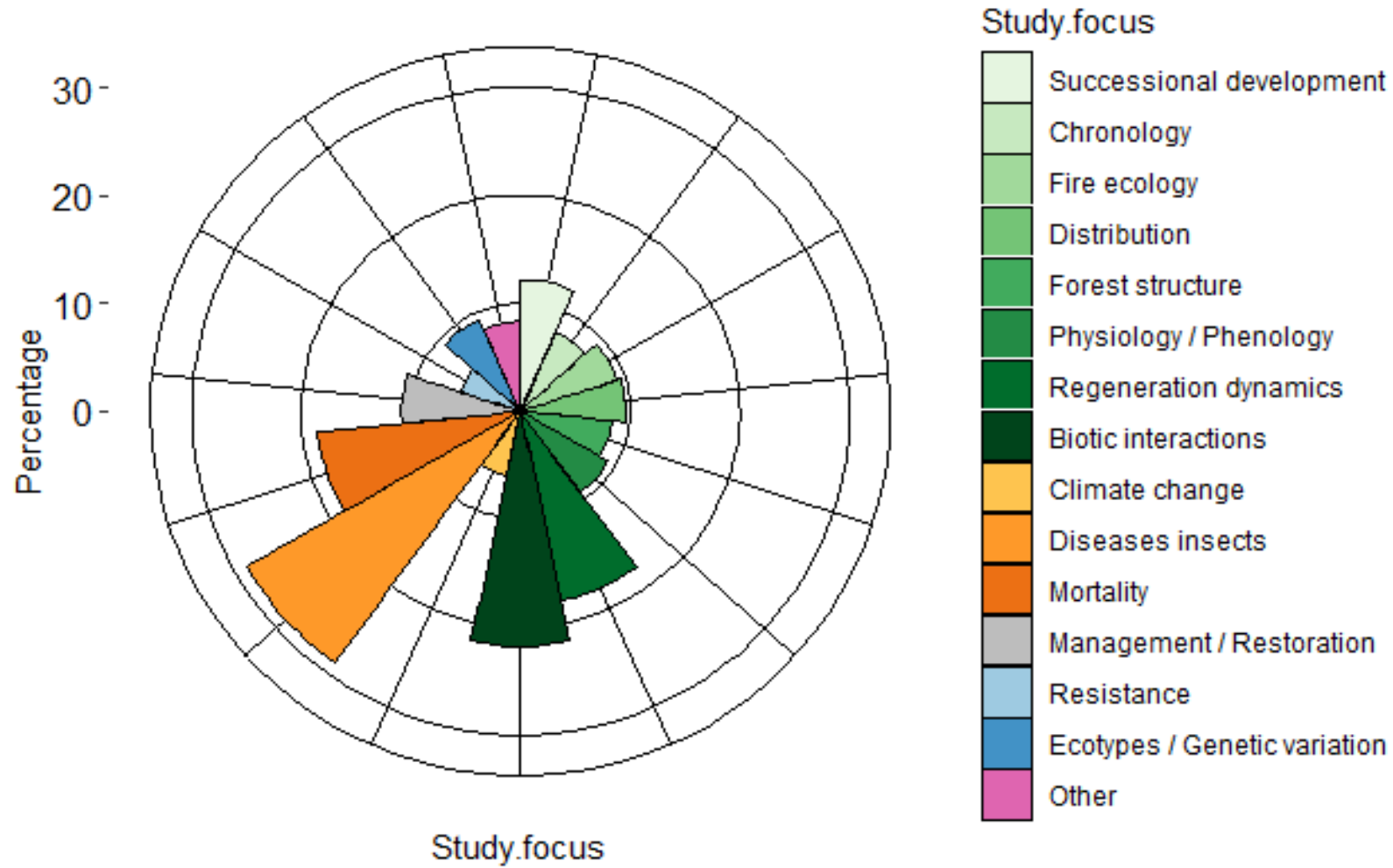


Figure 2. Percentage of study types by study focus from the total numbers of articles reviewed.

To what extent is research being conducted in the main three regions

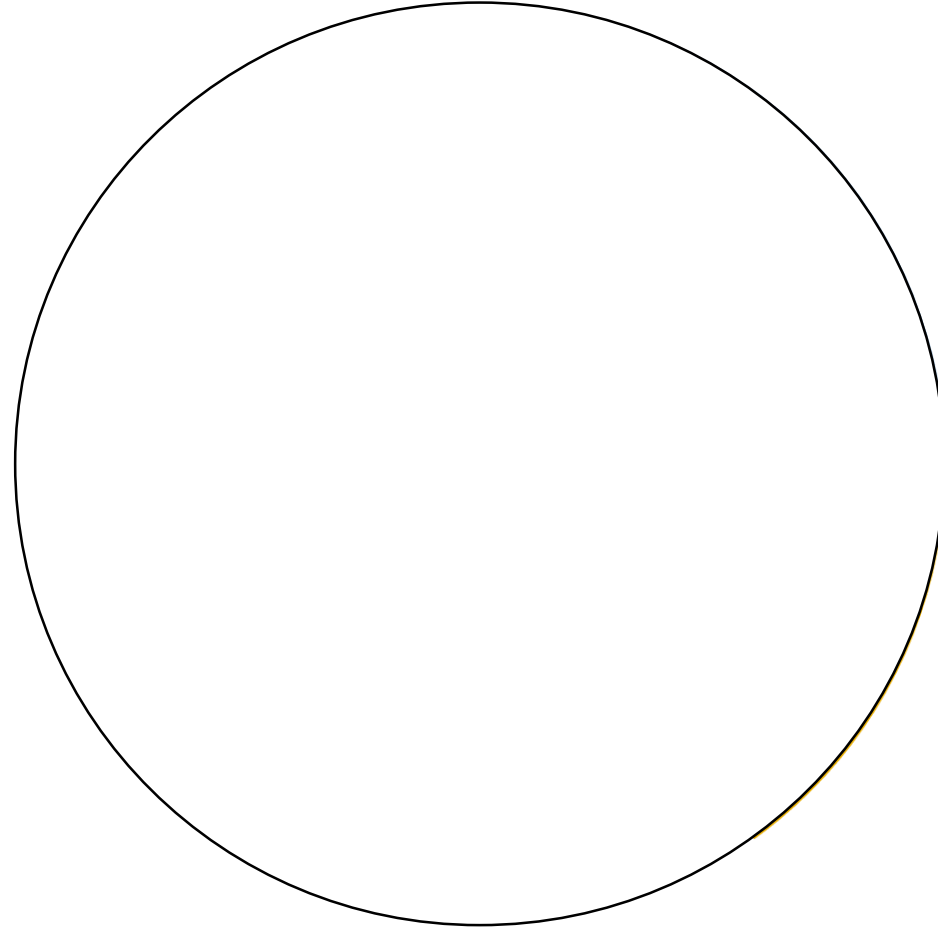


Figure 3. The distribution of study areas in percentage of studies.

To what extent is research being conducted in the main three regions

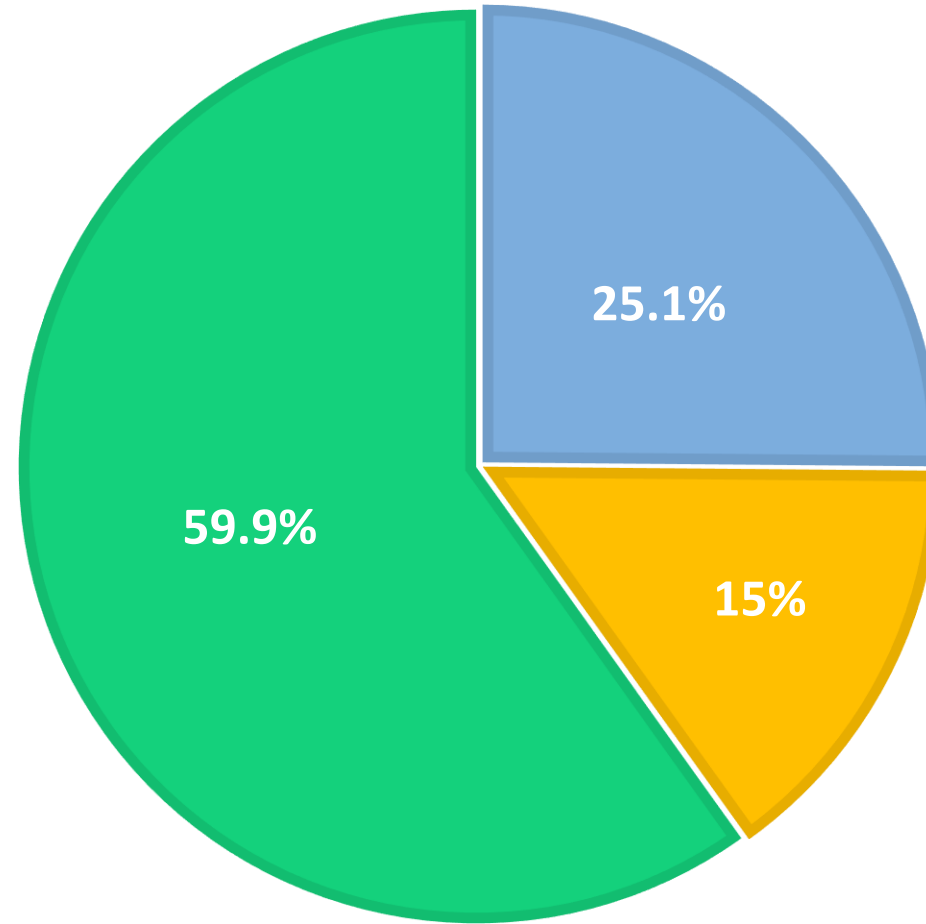
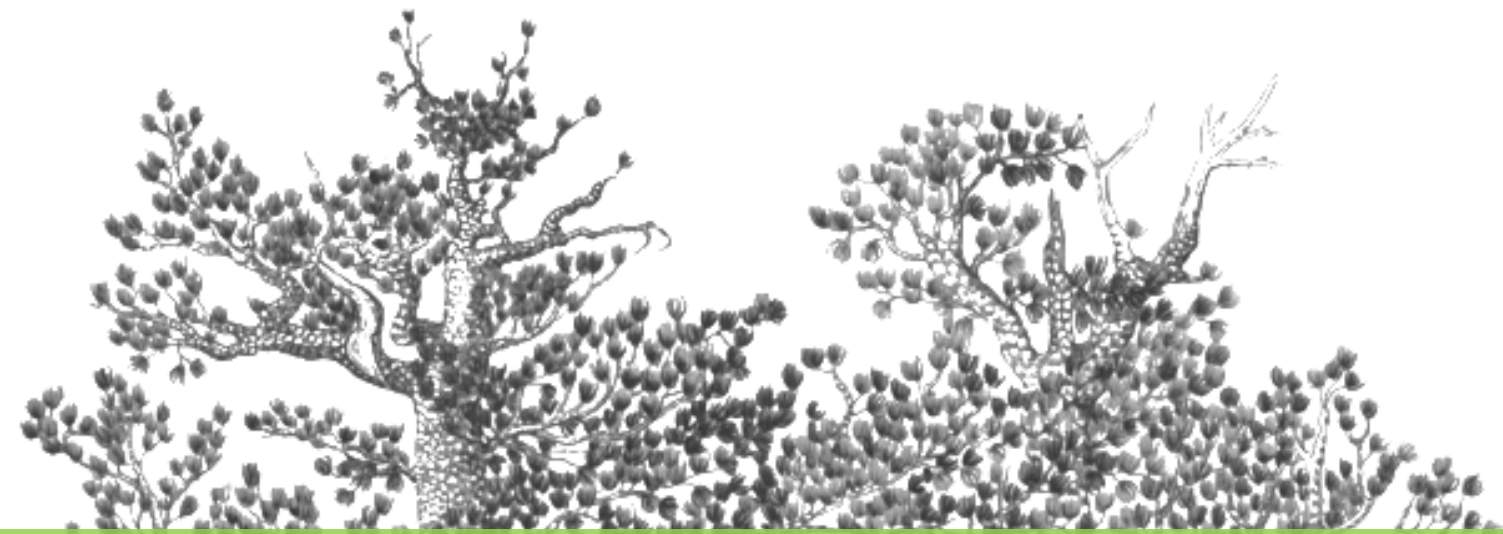


Figure 3. The distribution of study areas in percentage of studies.



A streetcar named opportunity



Experimental design and study approaches

- Necessity for immediate availability on the species basic biology and ecological dynamics
- Growing concern over the lack of power on observational inference at capturing real cause-effect relationship
- Highlights the difficulties for conducting question-based or long-term studies



Trend in Whitebark pine research focus

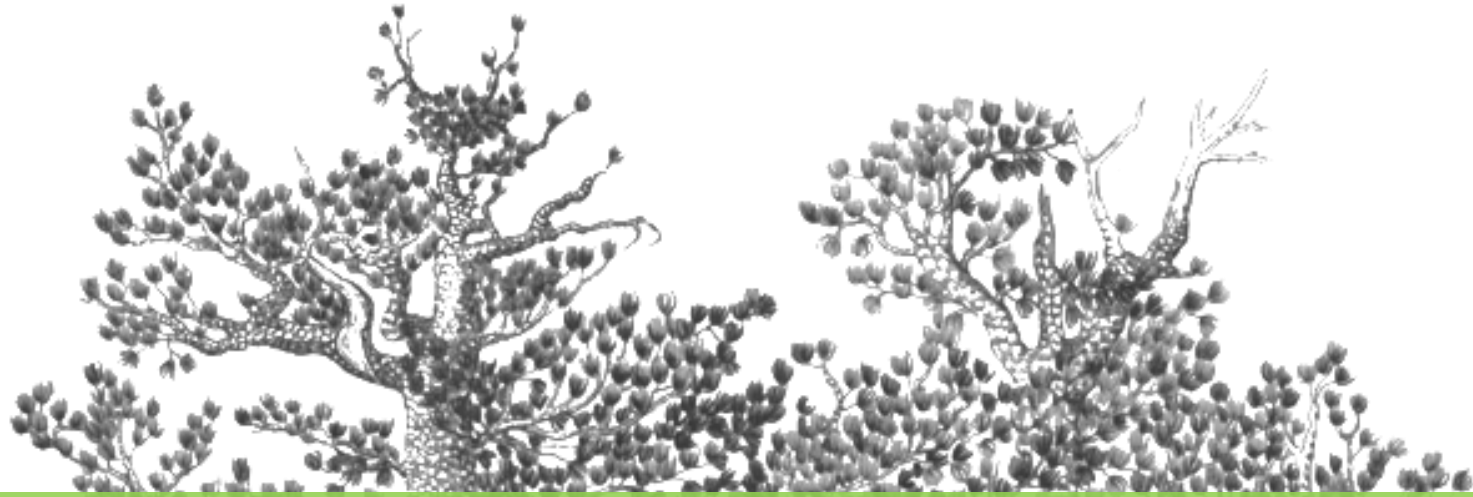
- Mainly oriented towards the species:
 - > Regeneration dynamics
 - > Drivers of population decline
- Still lack of reports on management success and failures of silvicultural treatments and prescribed fire for restoration



Research distribution and regional bias

- A potential regional research bias:
 - > larger protected areas with undisturbed communities
- Growing concern on the applicability of regional biased research
 - > impact on range-wide conservation strategies





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