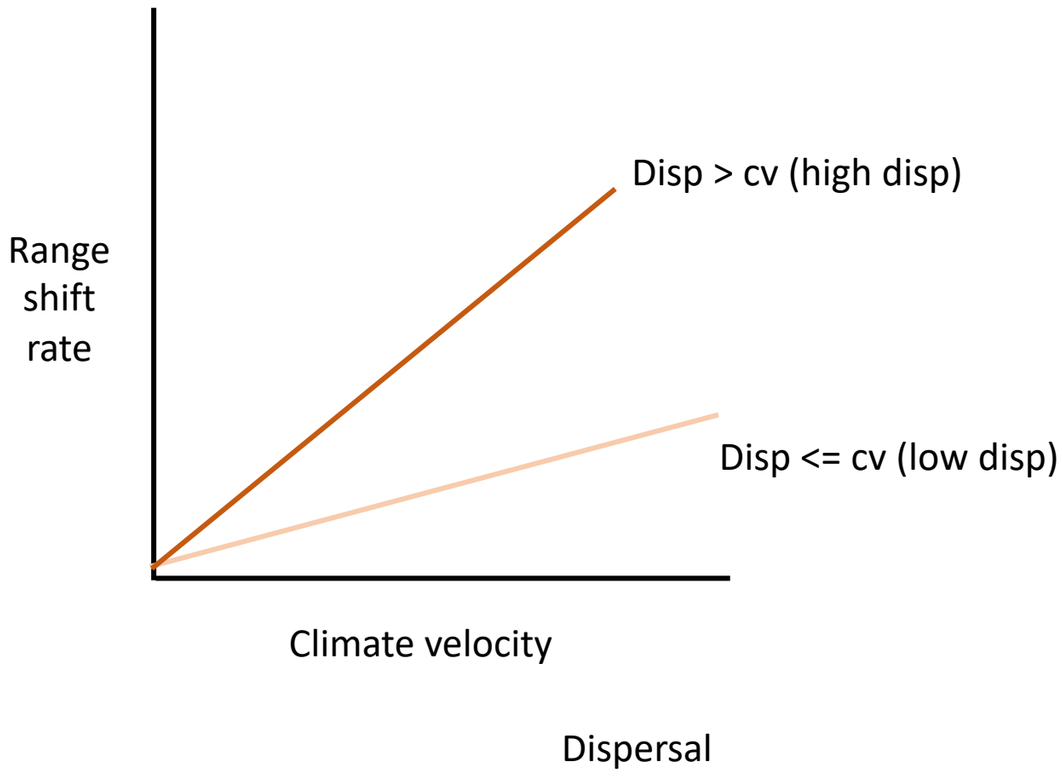
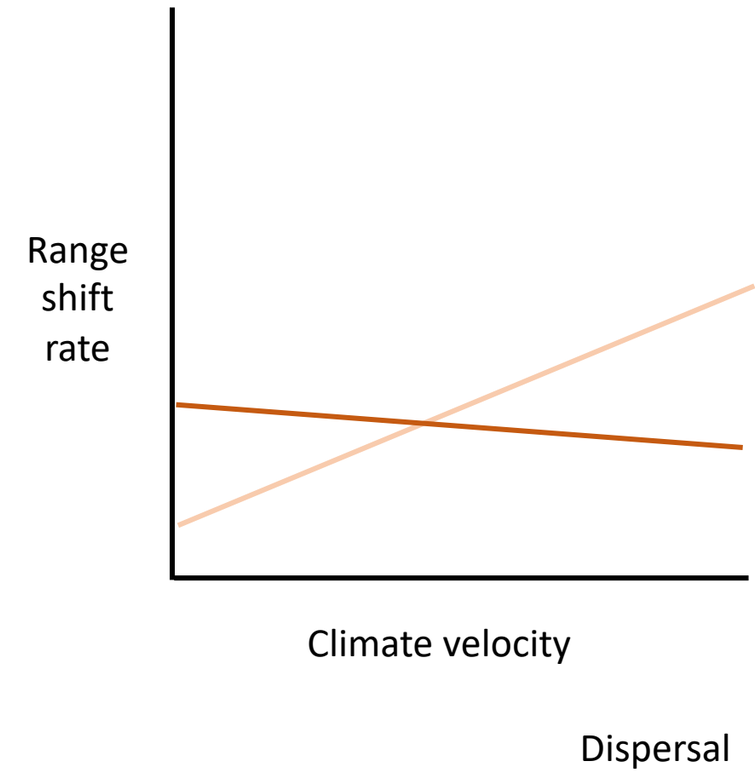
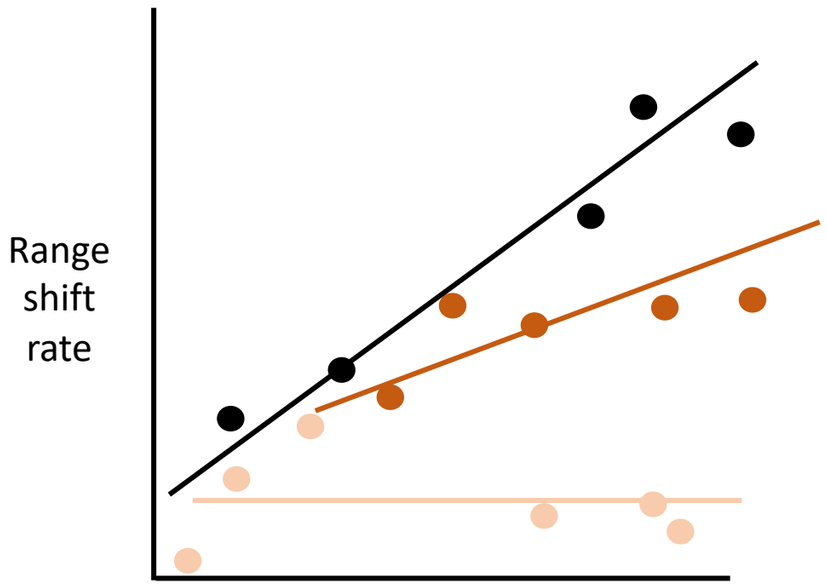
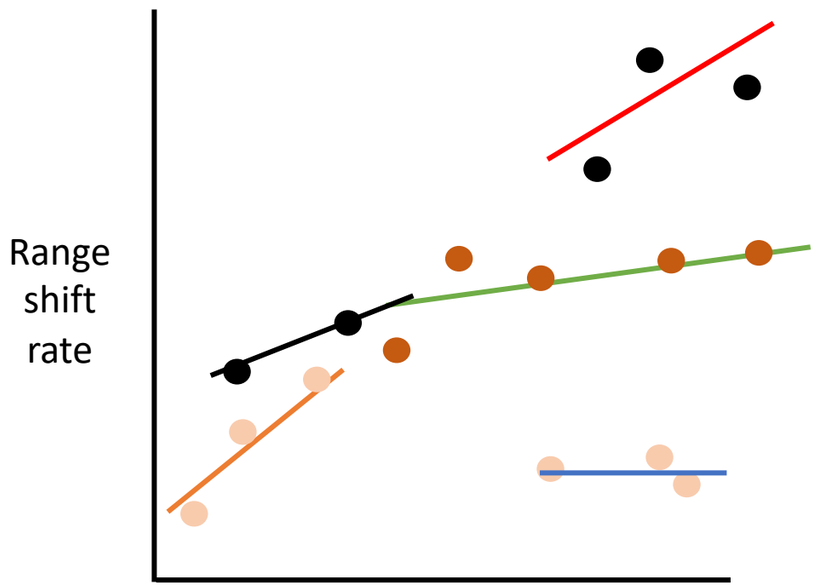

Range
shift
rate
Disp > cv (high disp)
Disp <= cv (low disp)
Climate velocity
Dispersal

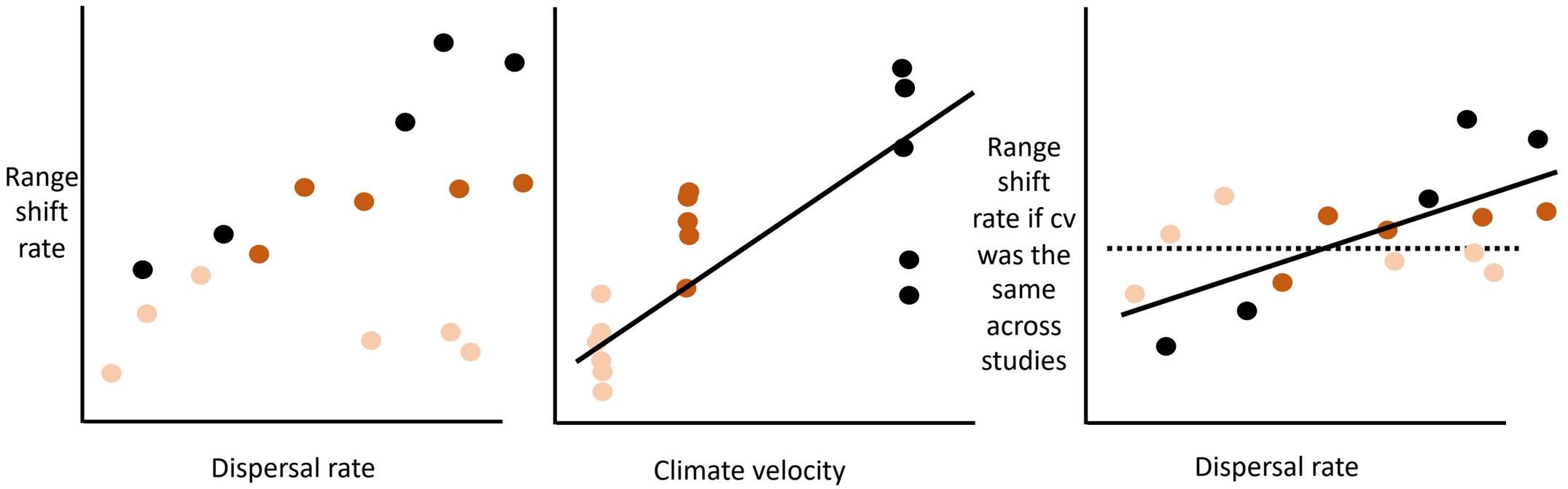

Range
shift
rate
Climate velocity
Dispersal



Interaction between dispersal*clim velo is based on *our* thinking, not what studies do
We expect that relationship with dispersal rate depends on cv… but studies don't test for this since they only have 1 climate velocity



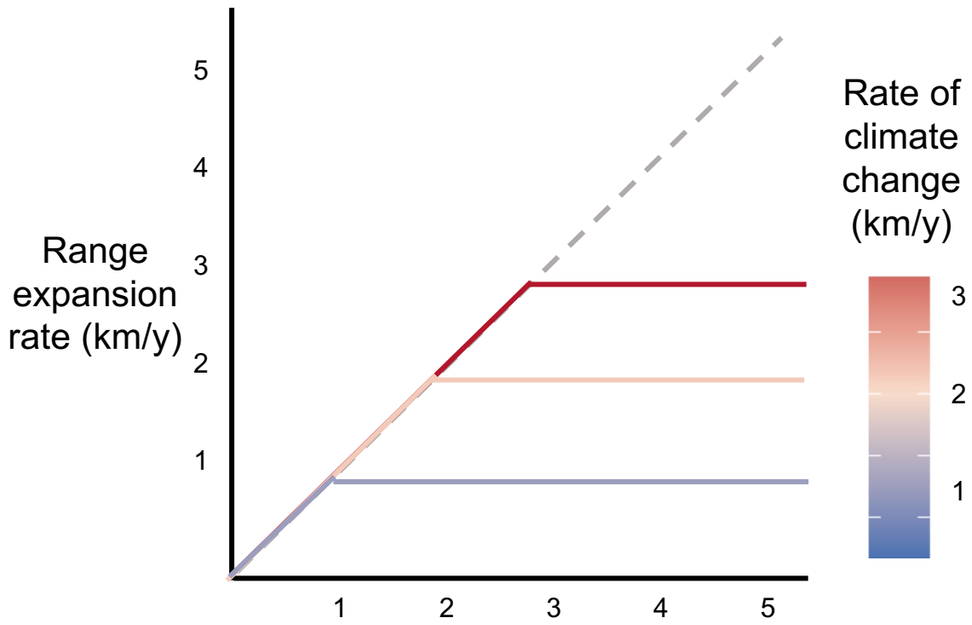
I think they do this – for the sample of dispersal rates within their study, test for correlation
Same climate velocity could give very different relationship depending on dispersal rate sampled
But, overall range shift rate expected to be higher when CV is higher

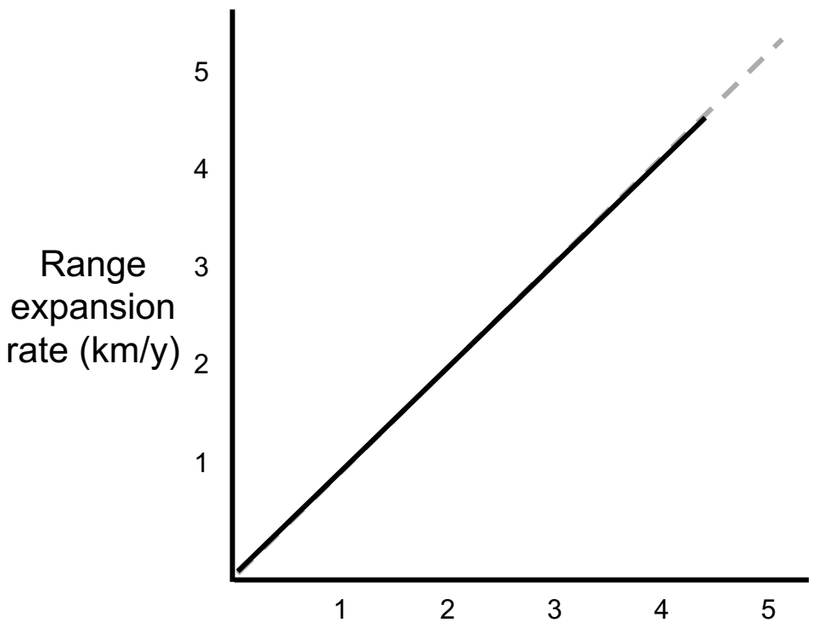


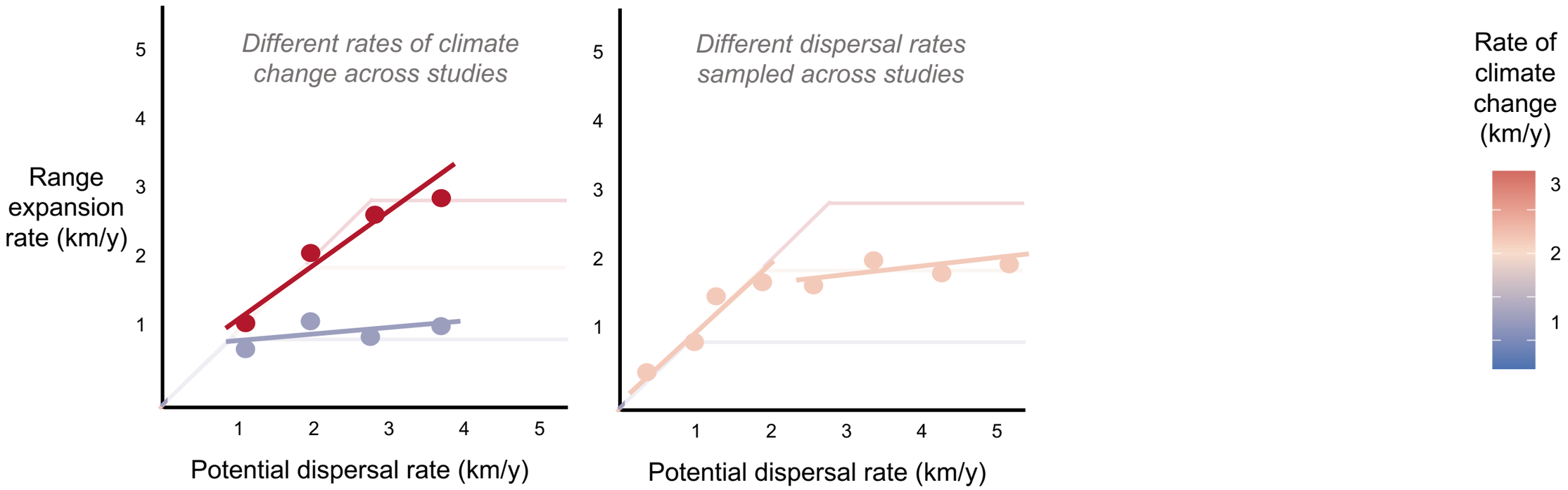
Remove the effect of climate velocity by adding as a fixed effect

shift ~ dispersal + climate velocity

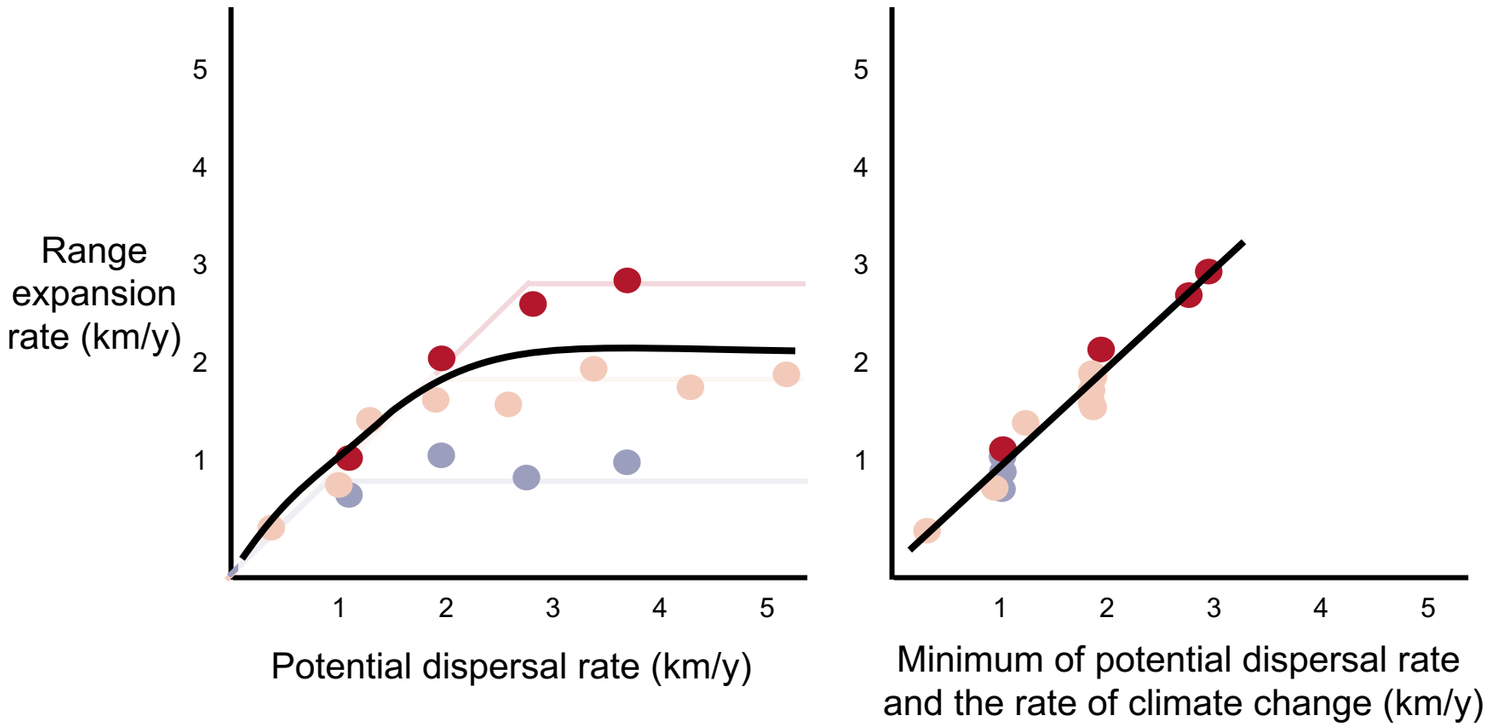
(i.e., after accounting for diffs in climate velocity across studies, is there a positive correlation between dispersal and range shift rate?)


Range expansion rate (km/y)
5
4
3
2
1
1
2
3
4
5
Potential dispersal rate (km/y)
Rate of climate change (km/y)
3
2
1

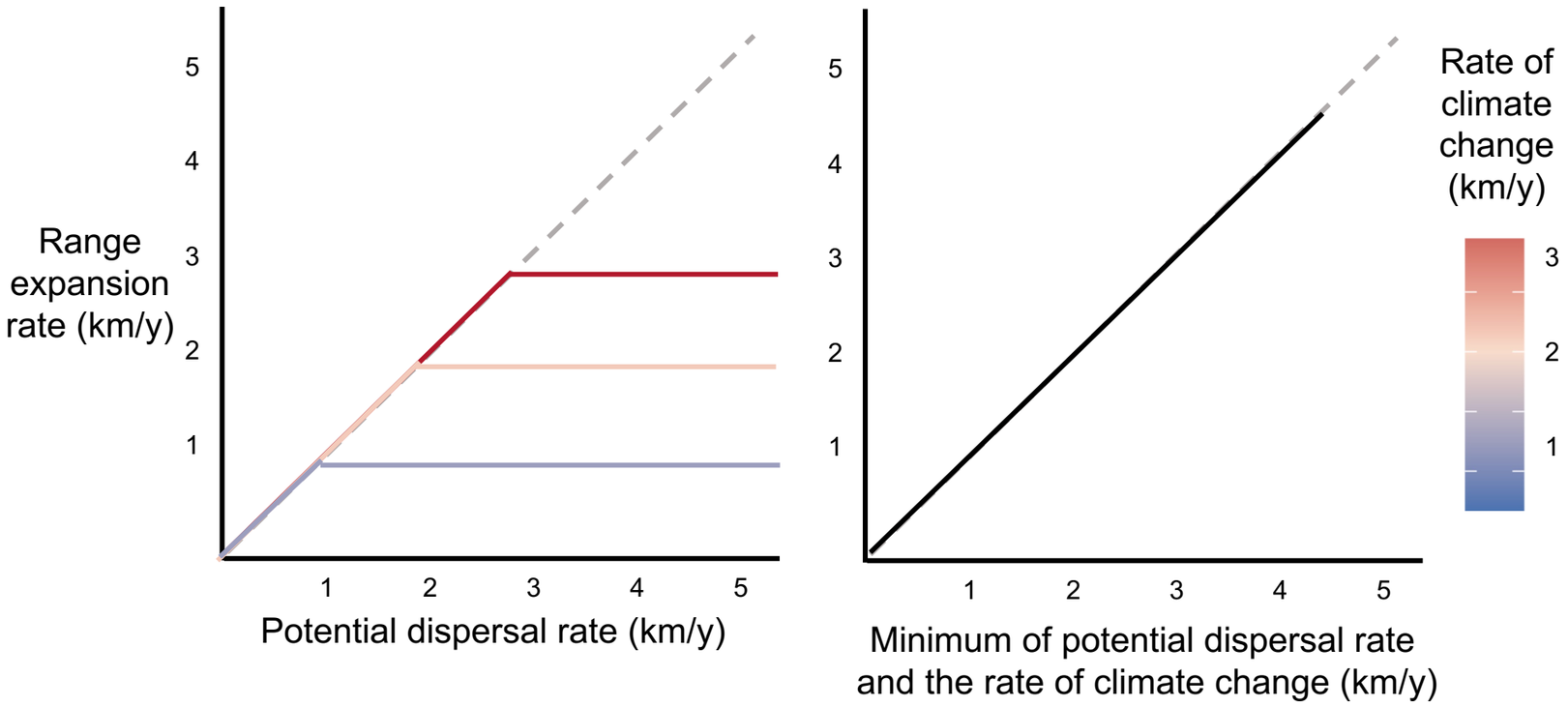

Range expansion rate (km/y)
5
4
3
2
1
1
2
3
4
5
Minimum of potential dispersal rate and the rate of climate change (km/y)


Different rates of climate change across studies
Different dispersal rates sampled across studies
Range expansion rate (km/y)
Potential dispersal rate (km/y)
Potential dispersal rate (km/y)
Rate of climate change (km/y)
1
2
3
4
5

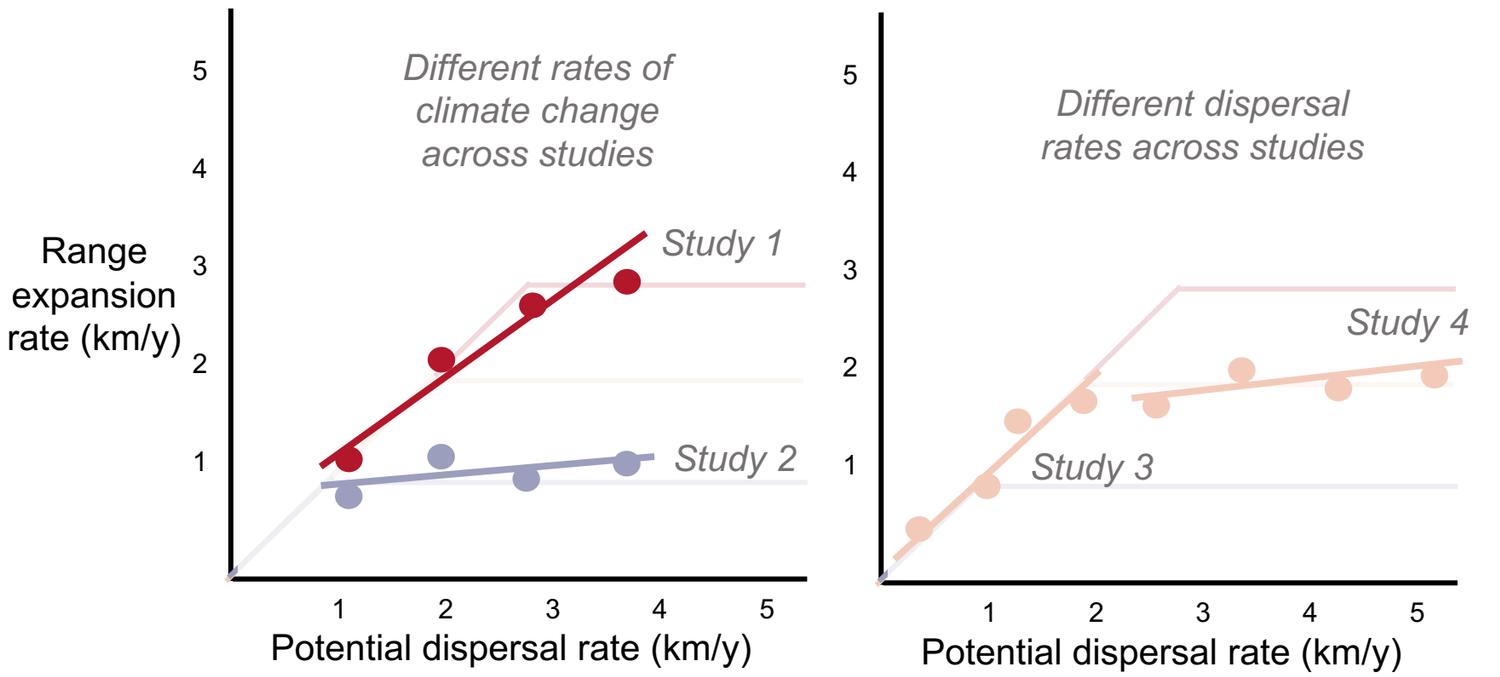
Combining samples across studies



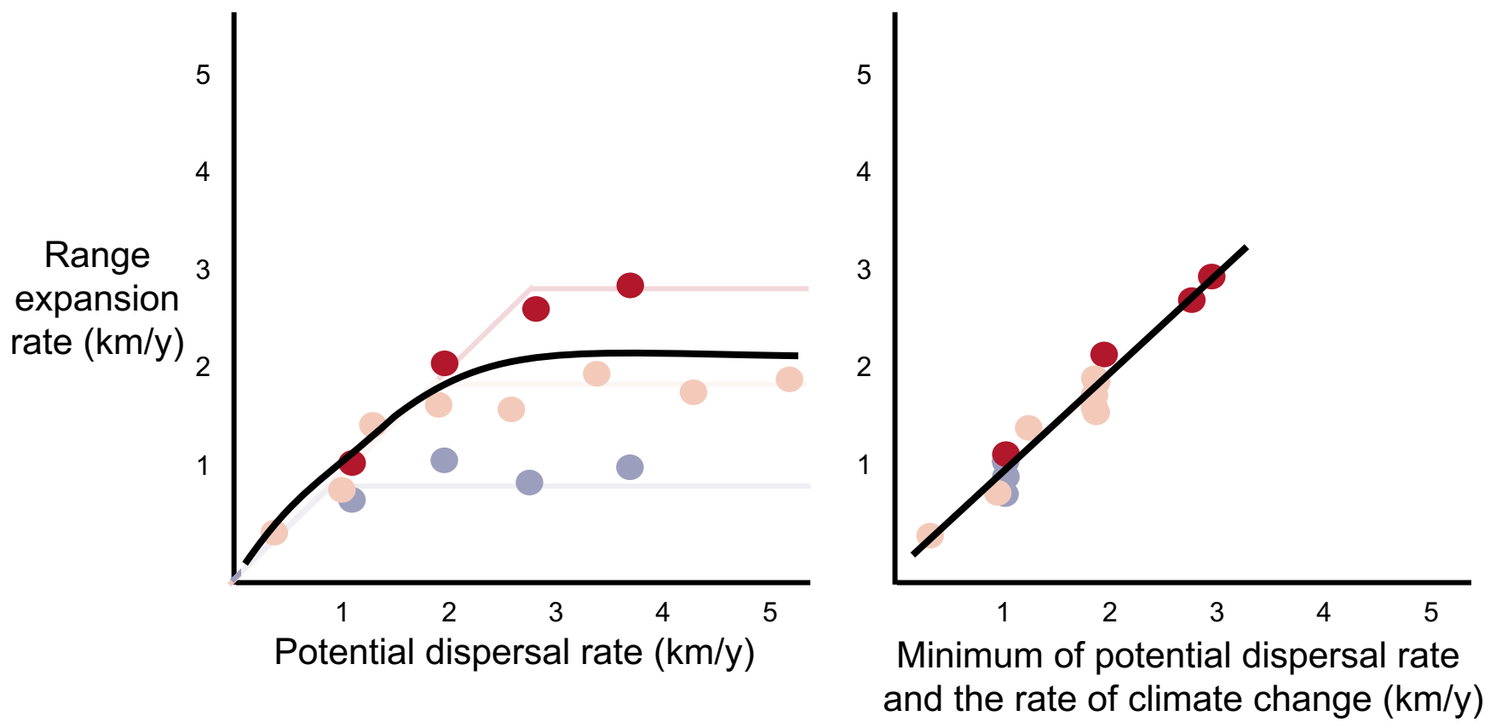
a) Predicted relationships

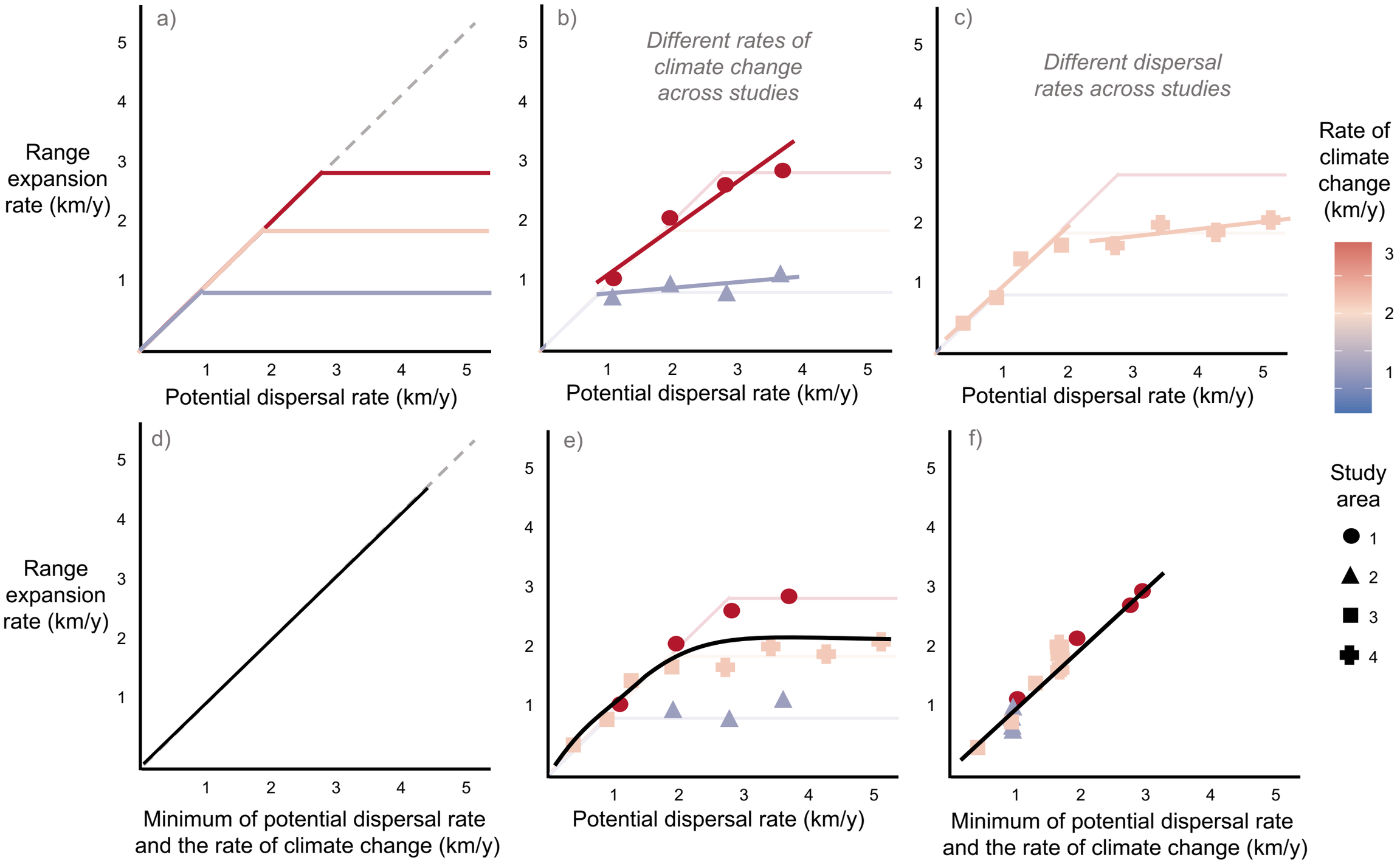


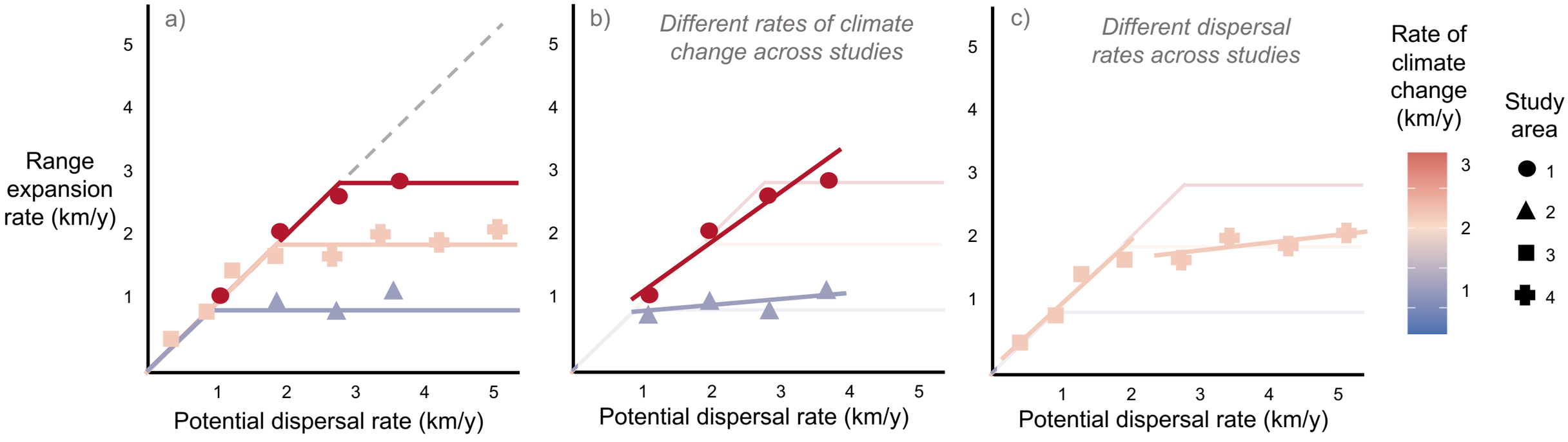
b) Non-linear relationships might result in inconsistent conclusions



c) Pooling data across studies might reveal expected relationships




a)
b)
c)
Different rates of climate change across studies
Different dispersal rates across studies
Range expansion rate (km/y)
Potential dispersal rate (km/y)
Rate of climate change (km/y)
d)
e)
f)
Study area
Minimum of potential dispersal rate and the rate of climate change (km/y)
Potential dispersal rate (km/y)
Minimum of potential dispersal rate and the rate of climate change (km/y)


a)
b)
c)
Different rates of climate change across studies
Different dispersal rates across studies
Range expansion rate (km/y)
Potential dispersal rate (km/y)
Rate of climate change (km/y)
Study area
1
2
3
4