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Ecological benefits of the temporary nature concept

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What is temporary nature ?

definition

- ▶ Temporary nature means:
 - Nature development in an area not intended for nature conservation
 - Permission is granted to the owner to remove nature at a future time

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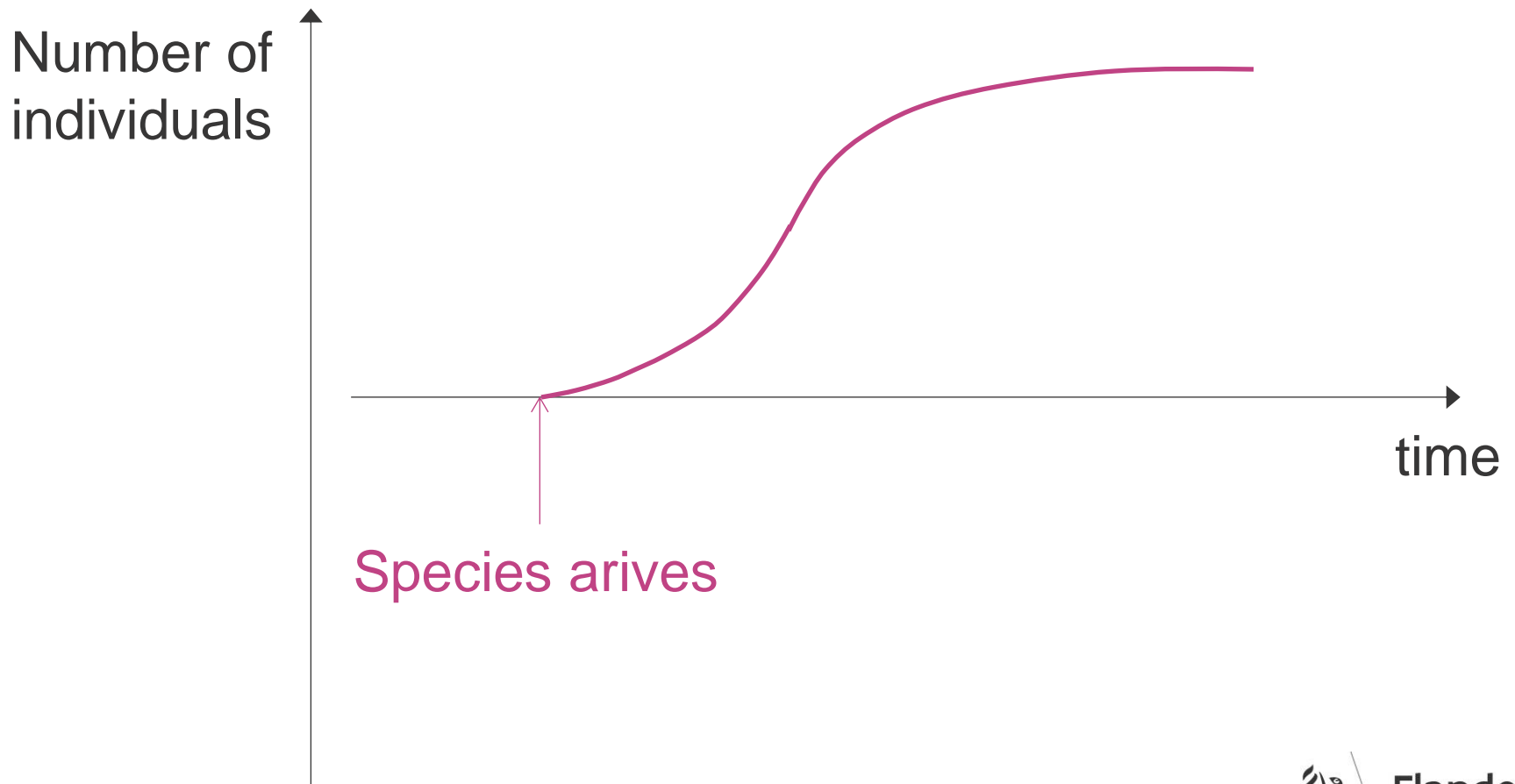


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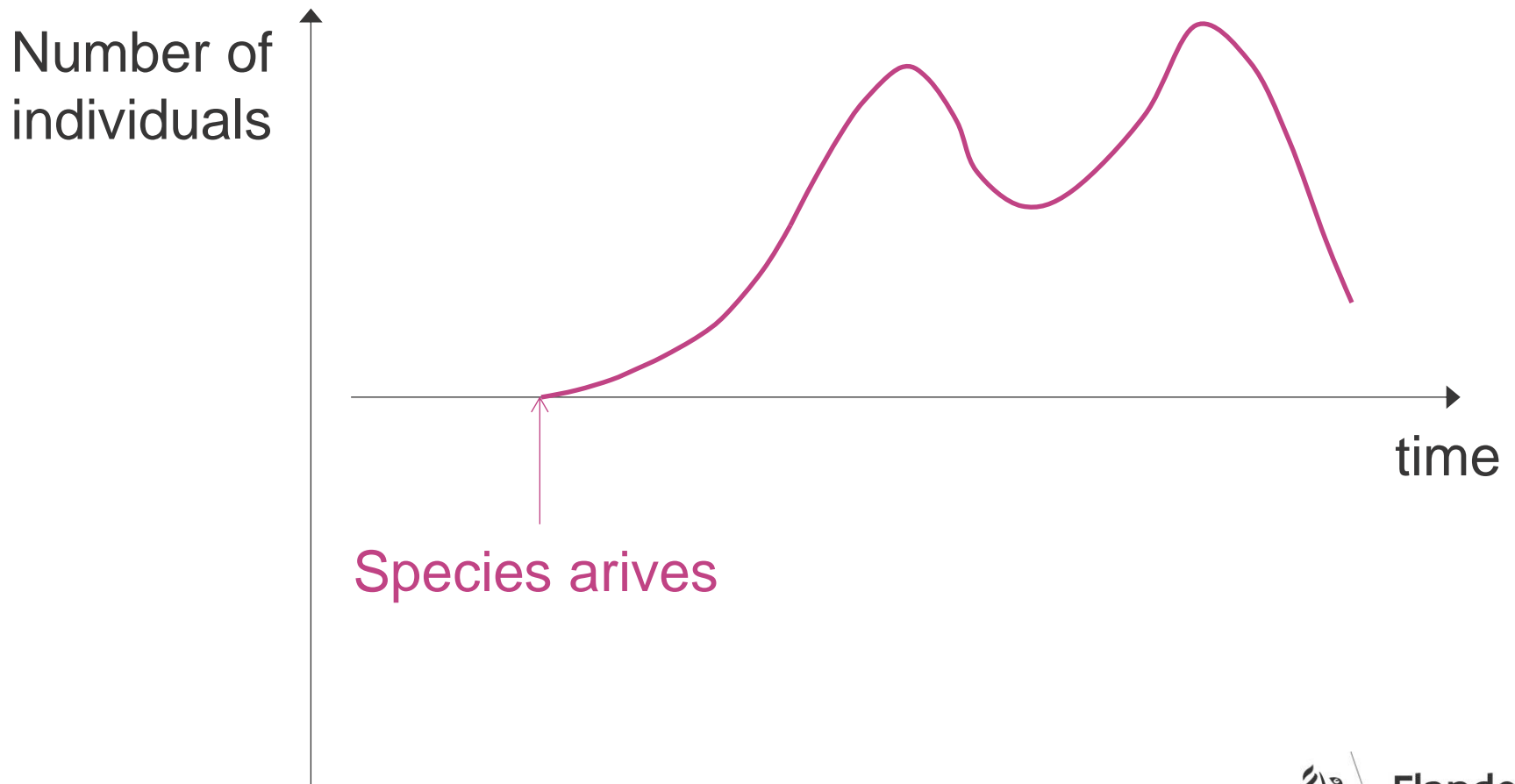
Ecological effects

Theoretical framework

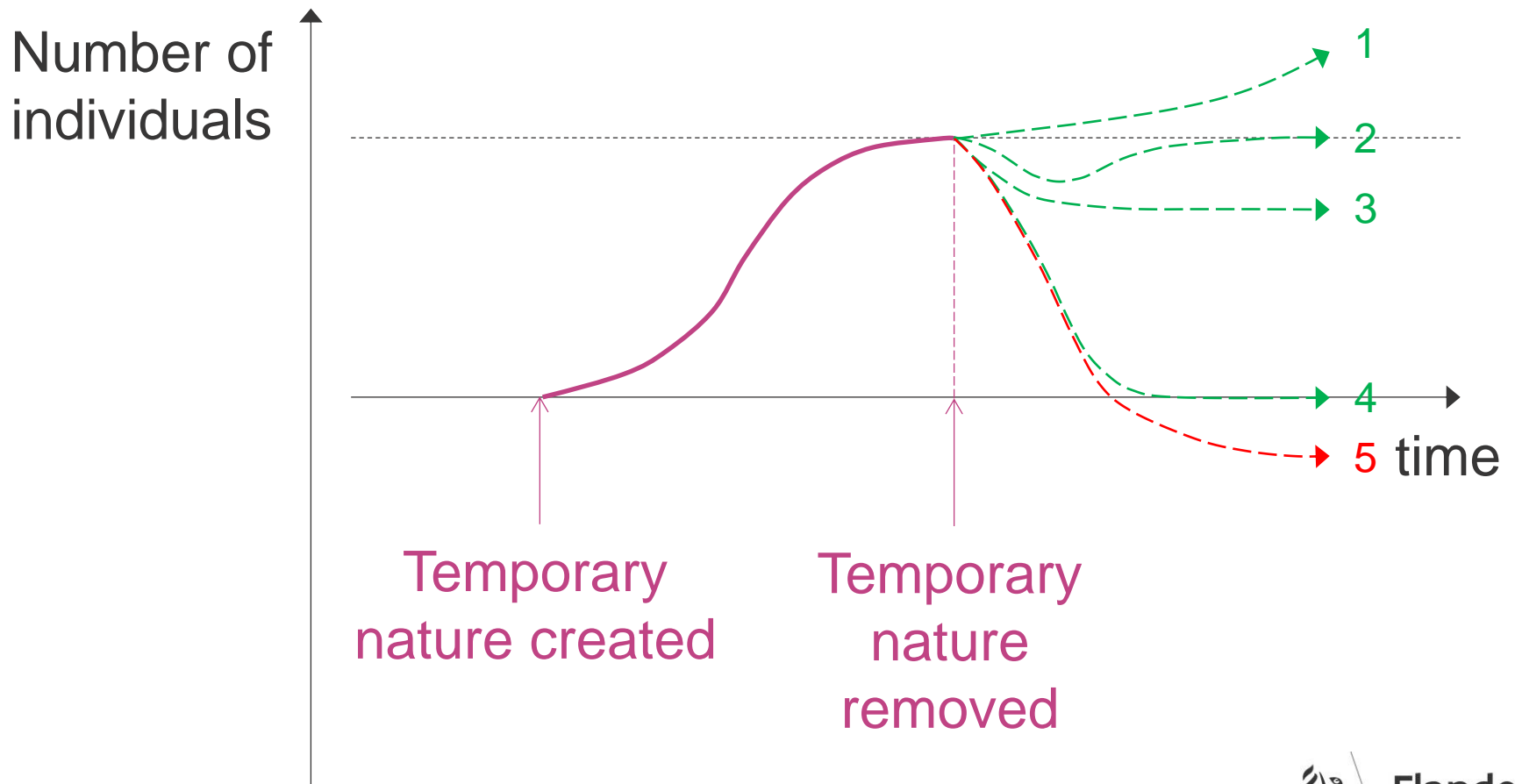
Population growth



Population growth



Potential effects of temporary nature on a population (*Linnartz 2006*)





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Ecological effects

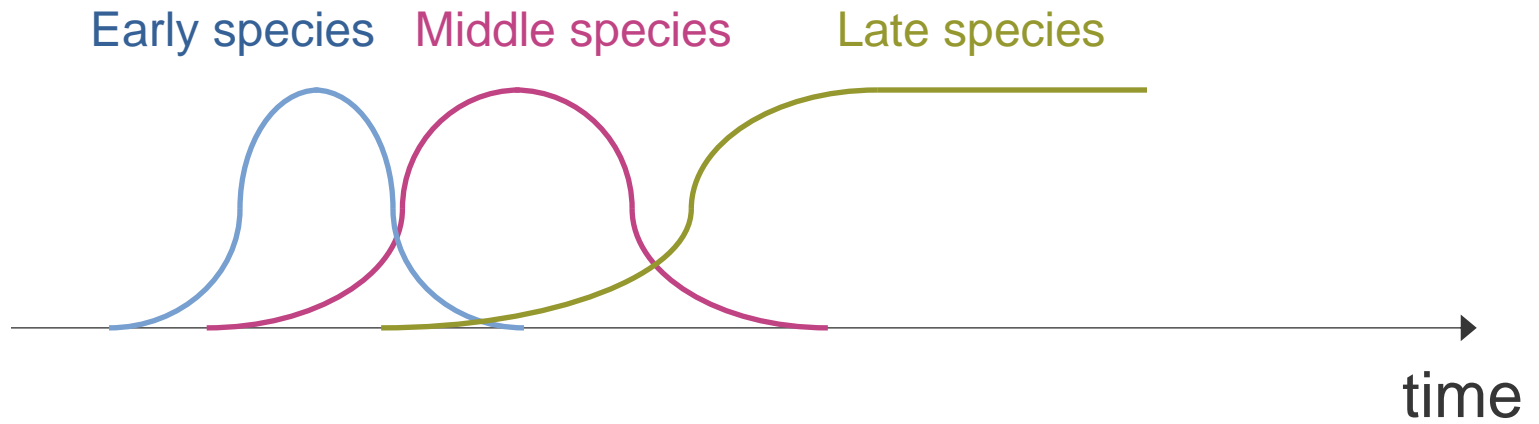
Succession

Succession



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Succession



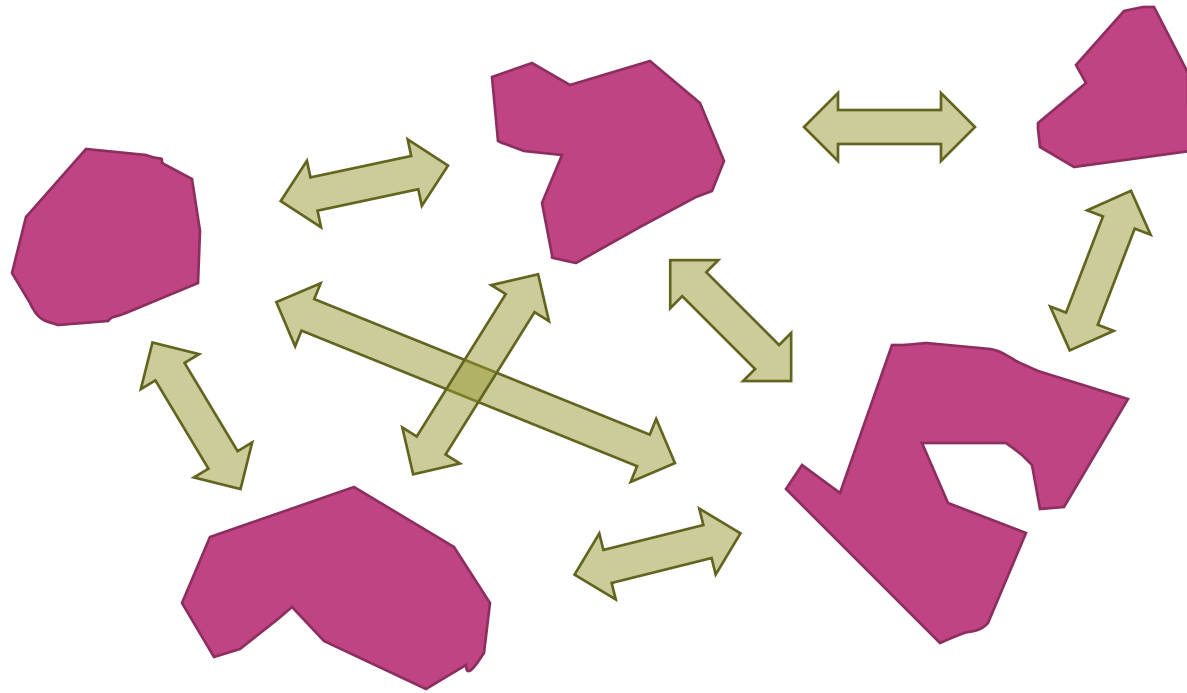


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Ecological effects

Metapopulation theory

Metapopulation theory



- ▶ Dynamic system of extinction and recolonization
- ▶ Empty patches are an essential part of the system, in equilibrium a % of the patches is always empty
- ▶ Colonisation probability is higher if distance is shorter





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Ecological effects

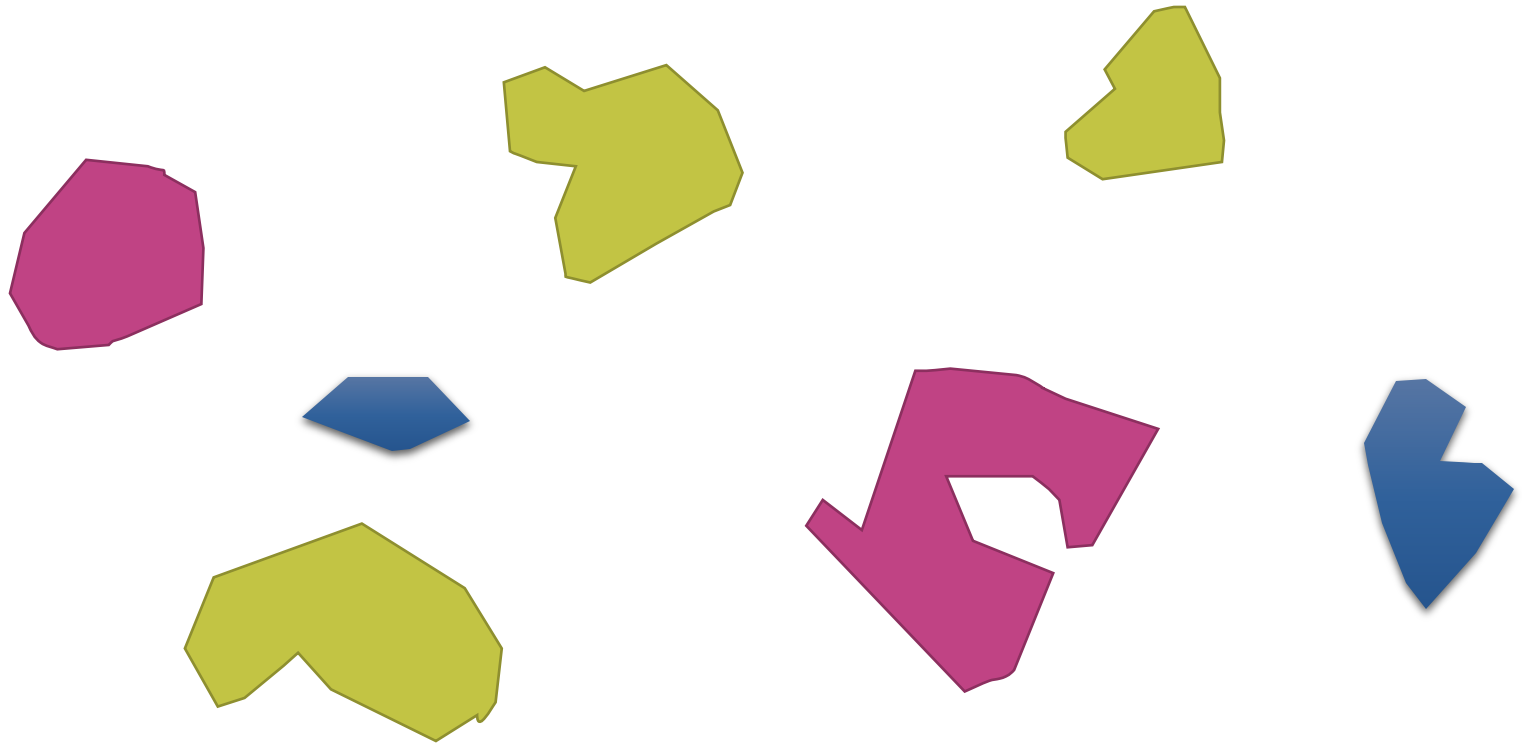
Potential benefits

Temporary nature can enhance populations of early species

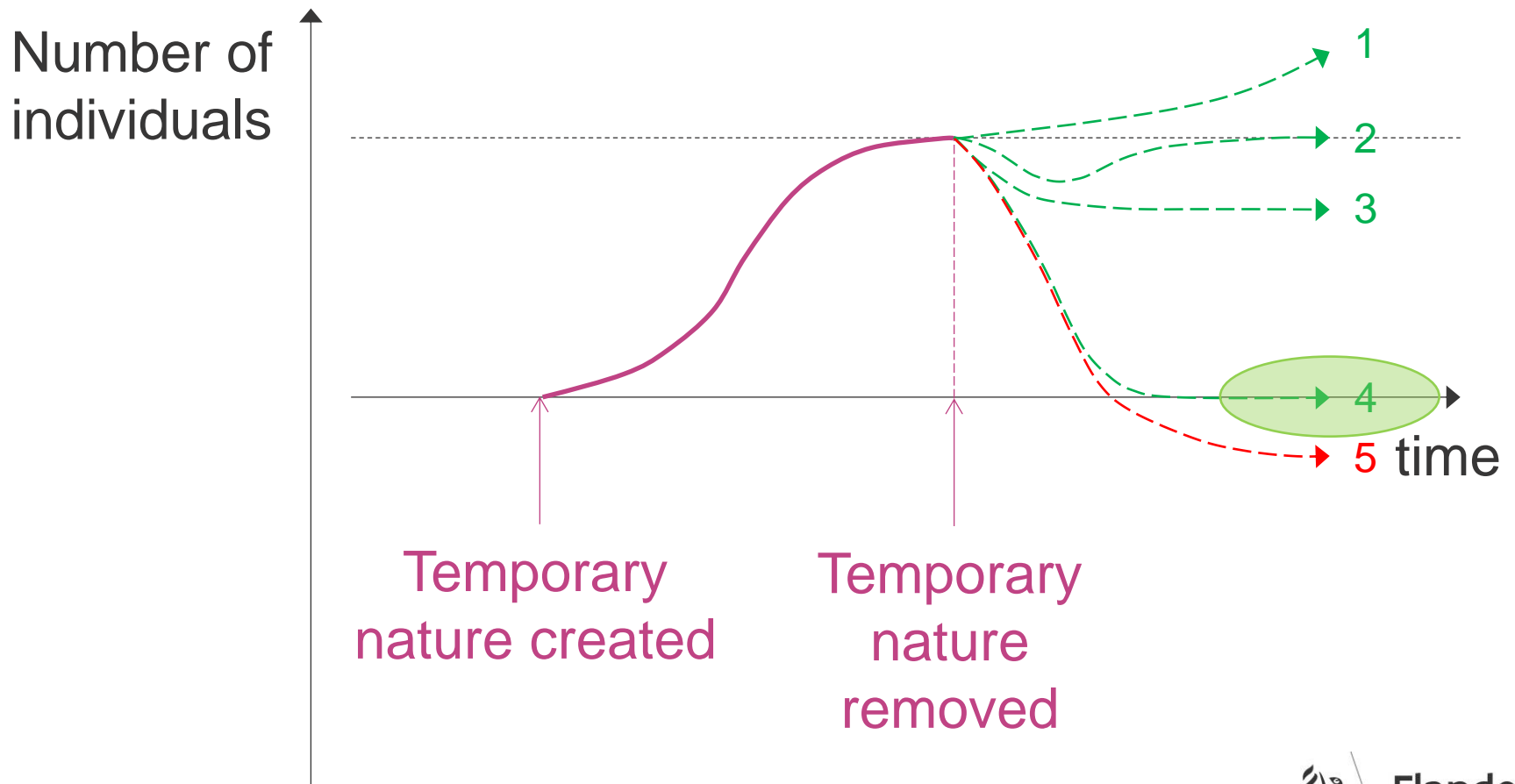
- ▶ Total population size is bigger when more patches are available



Temporary nature can enhance populations of early species



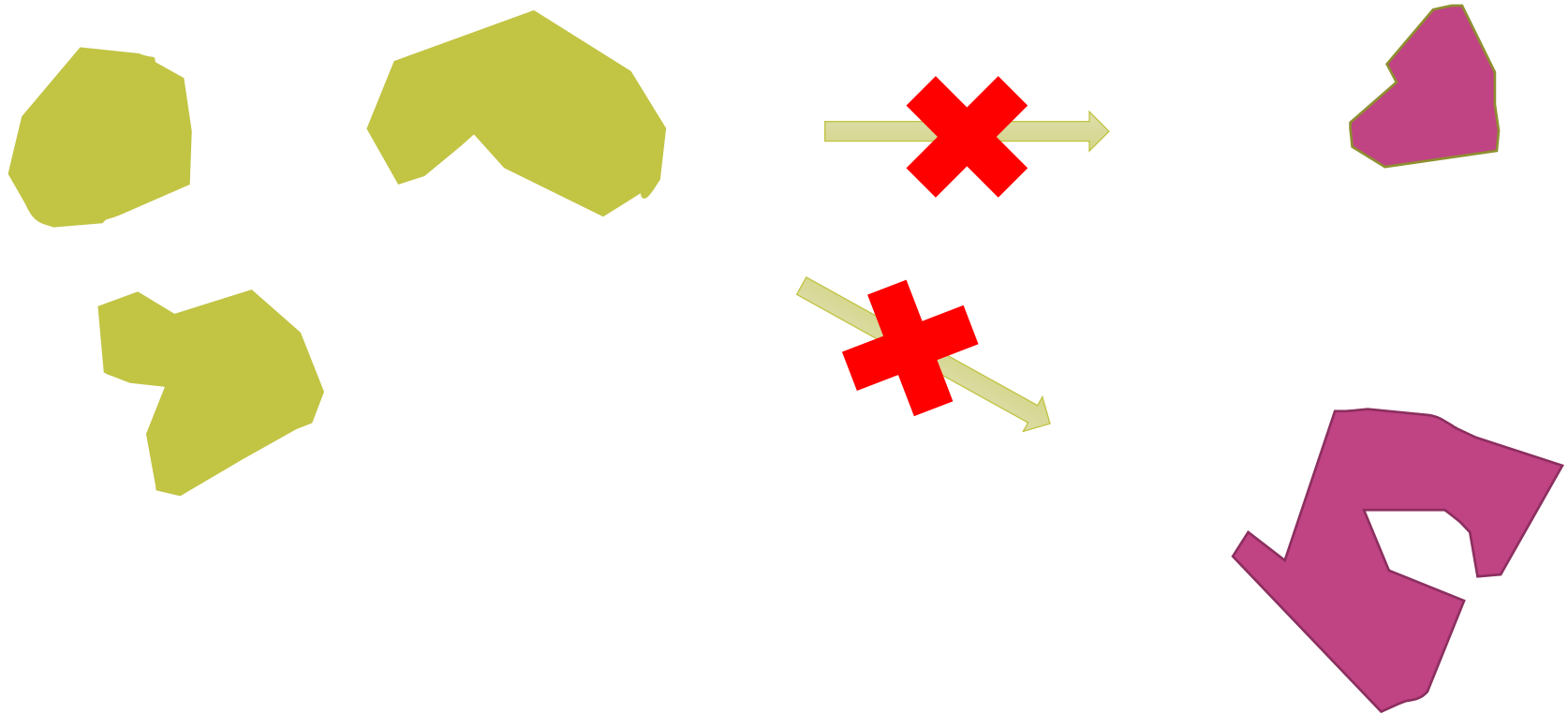
Potential effects of temporary nature on a population (*Linnartz 2006*)



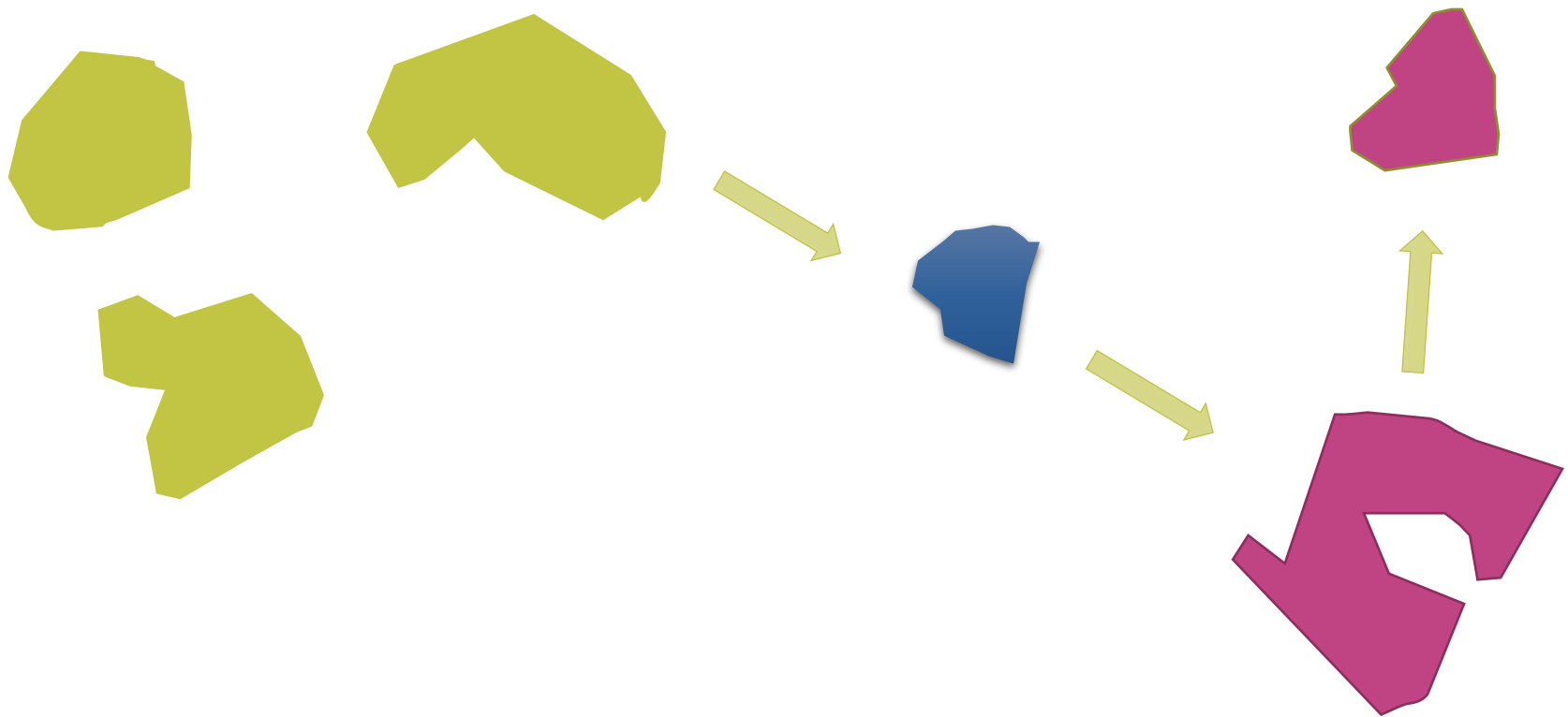
Temporary nature can enhance populations



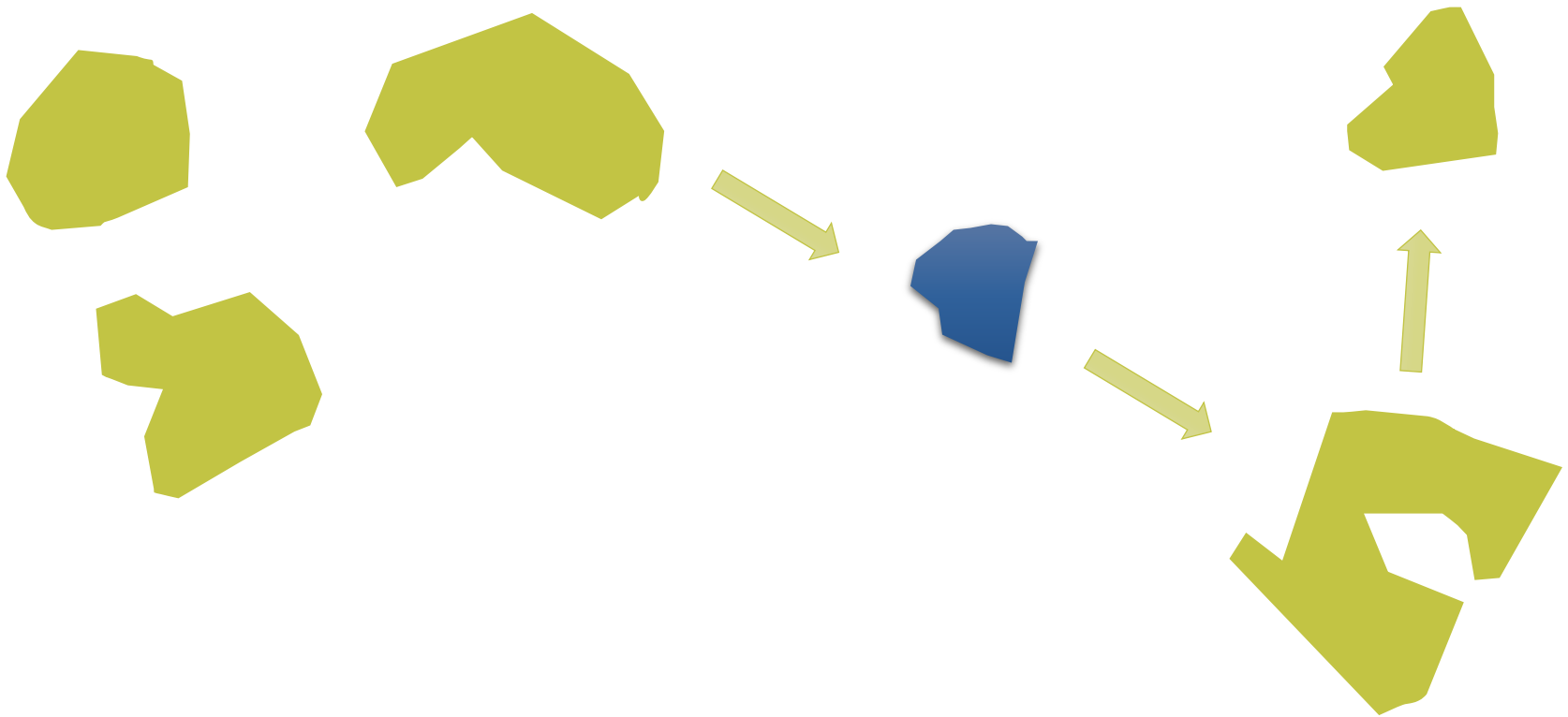
Temporary nature can enhance populations



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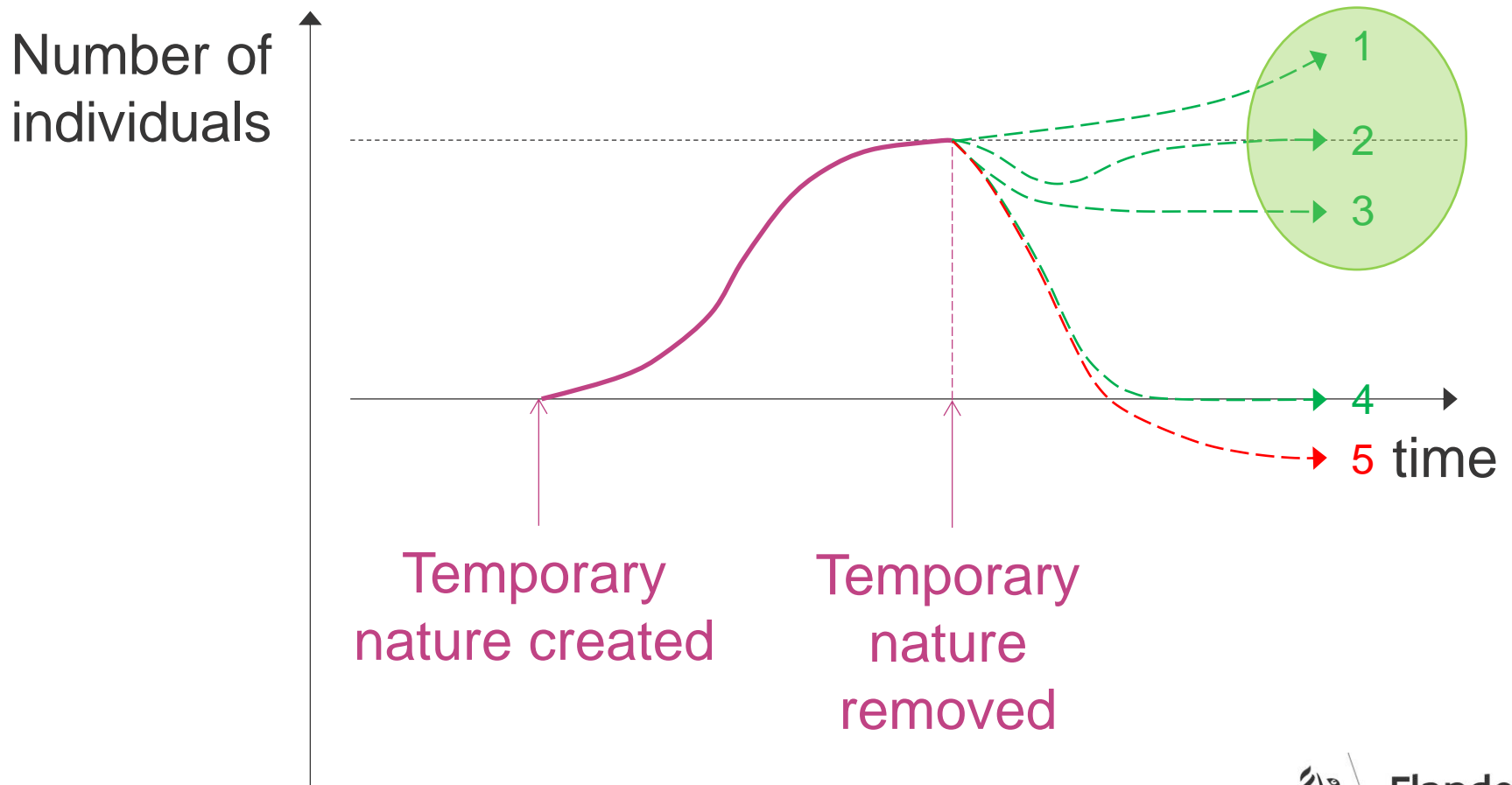


Temporary nature can enhance populations



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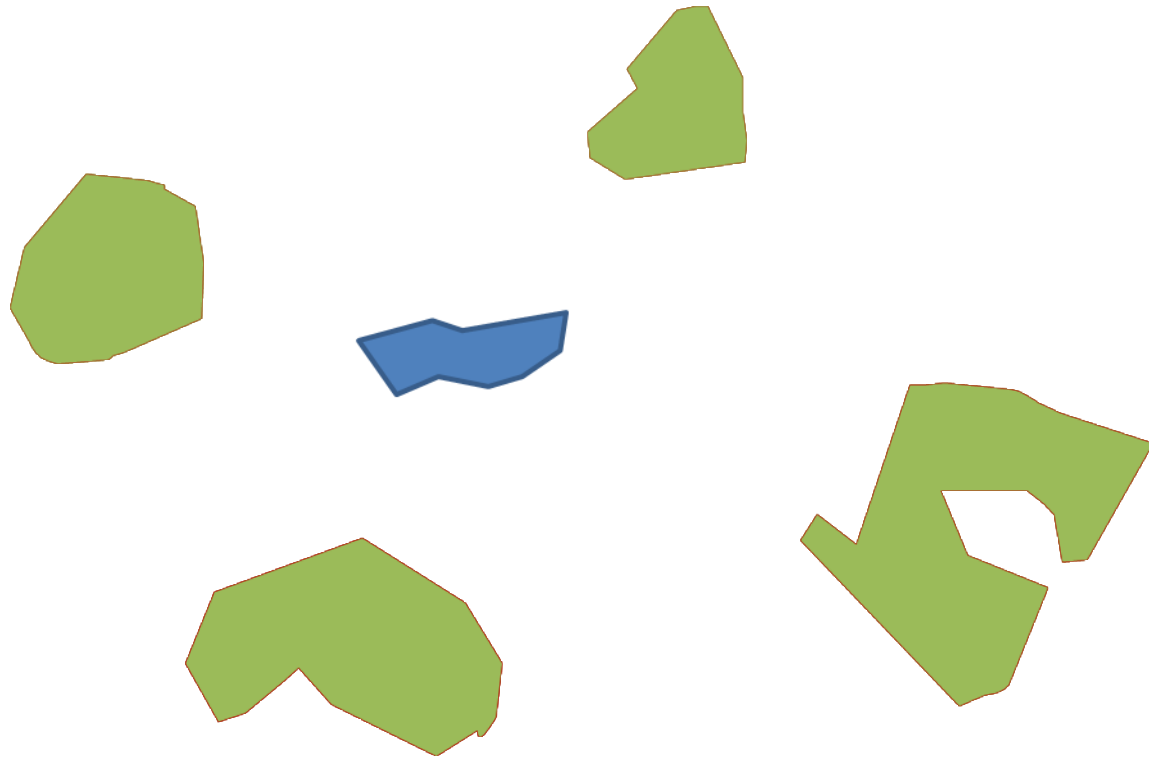
Potential effects of temporary nature on a population (*Linnartz 2006*)



Temporary nature can enhance populations

- ▶ Improving connectivity of the metapopulation network
- ▶ Acting as a stepping stone for colonisation of new remote habitat patches

Temporary nature can save populations



Examples

- ▶ Kentish plover (Strandplevier - Pluvier à collier interrompu)



- ▶ Common Tern (Visdief - Sterne pierregarin)





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Ecological effects

Negative effects

Destruction of the habitat

- ▶ Destruction has an impact on non-mobile species, but the overall population afterwards is not smaller than before temporary nature.
- ▶ Destruction can have a more far-reaching negative impact on species that choose temporary nature for reproduction.
 - Destruction should not be done during the breeding season, or breeding should be actively avoided before destruction.



Destruction of the habitat

- ▶ Destruction has an impact on non-mobile species, but the overall population afterwards is not smaller than before temporary nature.
- ▶ Destruction can have a more far-reaching negative impact on species that choose temporary nature for reproduction.
 - Destruction / new disturbance of caves should not be done during the hibernation period of bats.

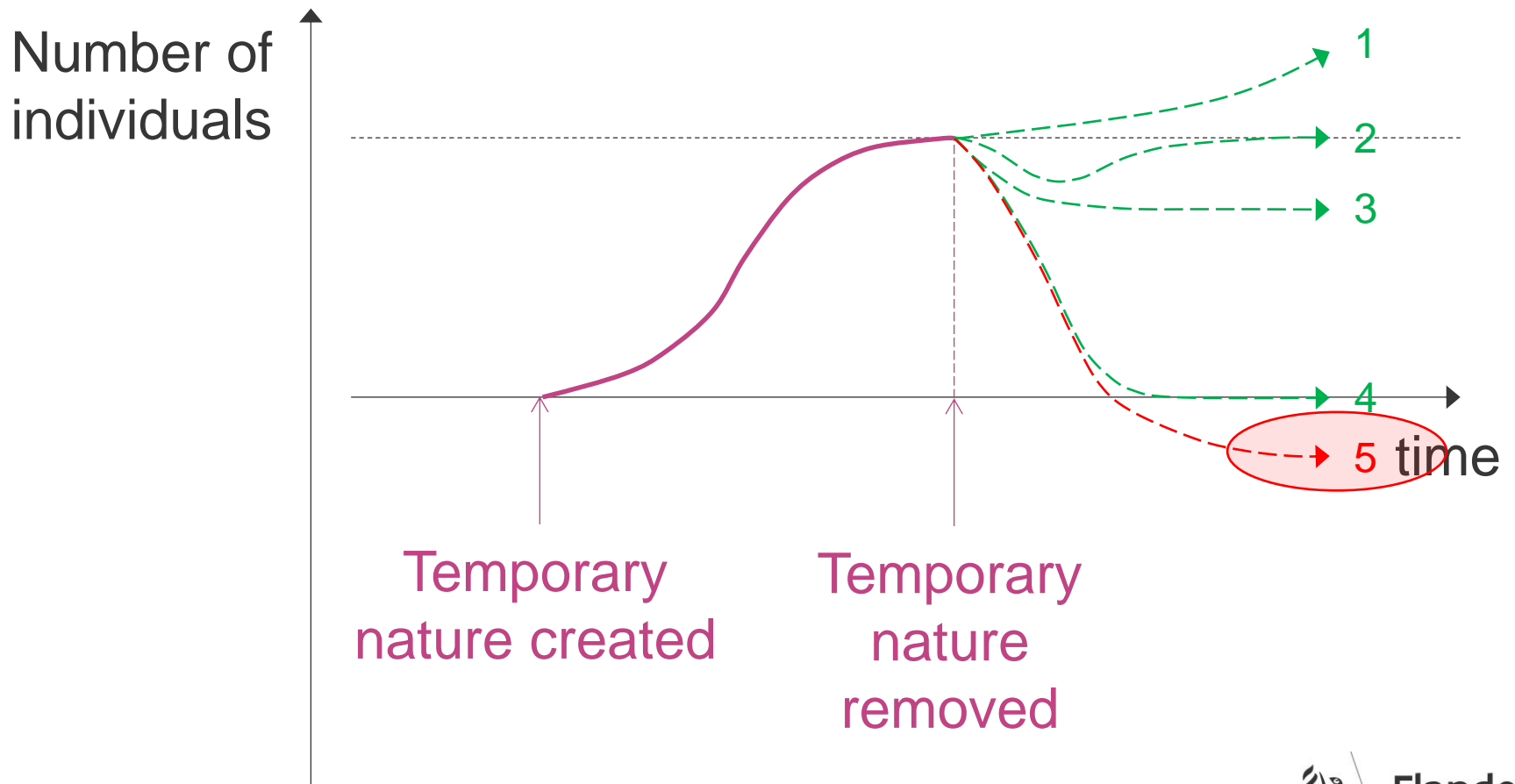


- ▶ Destruction can cause extinction of species that have no other suitable habitat.

Temporary nature can be an ecological trap

- ▶ Temporary nature seems very attractive to some species, but finally does not offer suitable conditions for survival or reproduction.
- ▶ Examples:
 - Birds are attracted to a breeding site with suitable conditions, but predation of chicks is too high for maintaining the population.
 - Animals are attracted to a reproduction site, but local water or soil pollution affect survival of the young.
 - Birds are attracted to a breeding site, but windmills increase mortality

Potential effects of temporary nature on a population (*Linnartz 2006*)



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 - Animals are attracted to a reproduction site, but local water or soil pollution affect survival.
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- ▶ Ecological traps can exist, but are not due to the temporality

conclusions

- ▶ Negative effects are possible, but are not due to temporality.
- ▶ Positive effects can last longer than the lifetime of a temporary nature site
- ▶ Good housekeeping rules are needed:
 - Management of sand stocks
 - Eventual translocation of species before destruction
 - No destruction in the breeding season / hibernation season or actively prepared
 - ...

Thank you for your attention



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