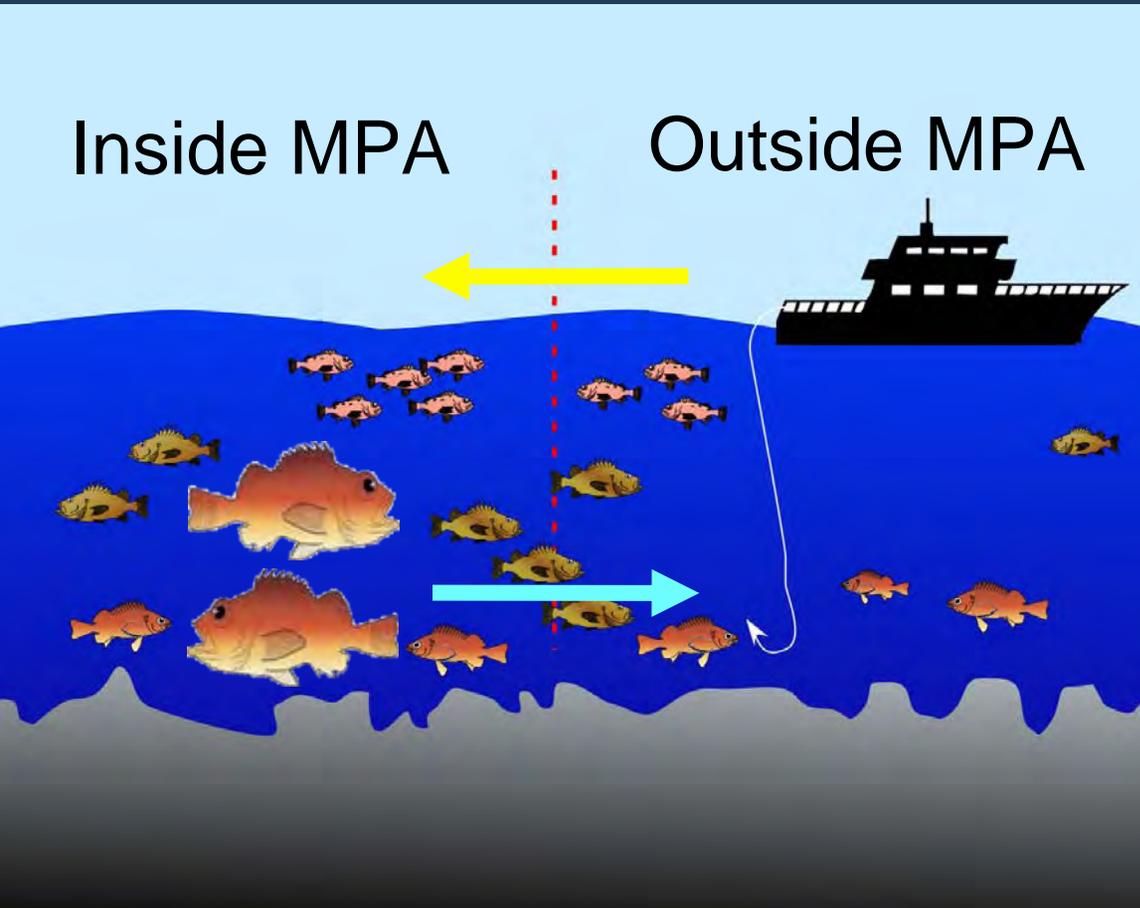


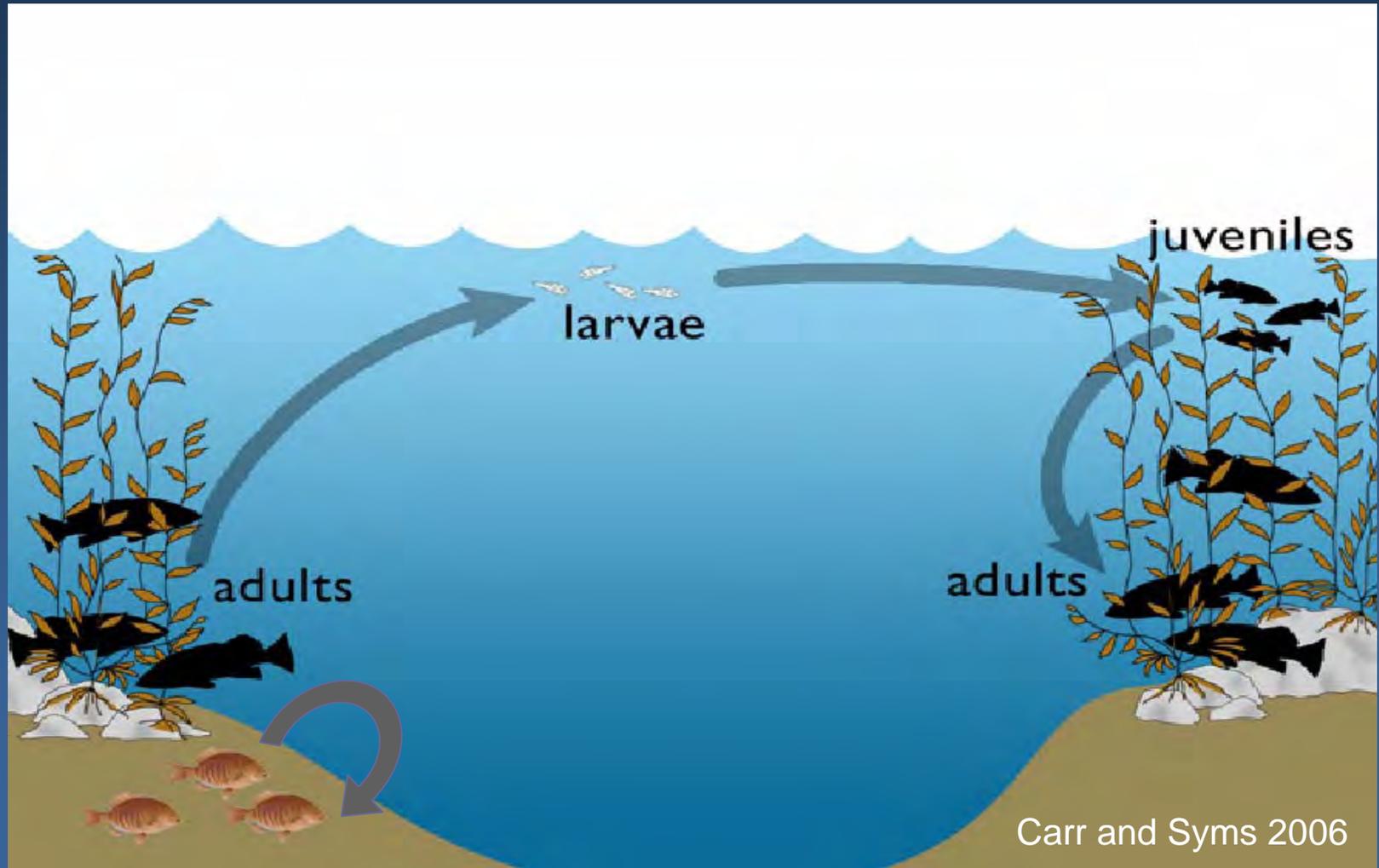
Adult Movement



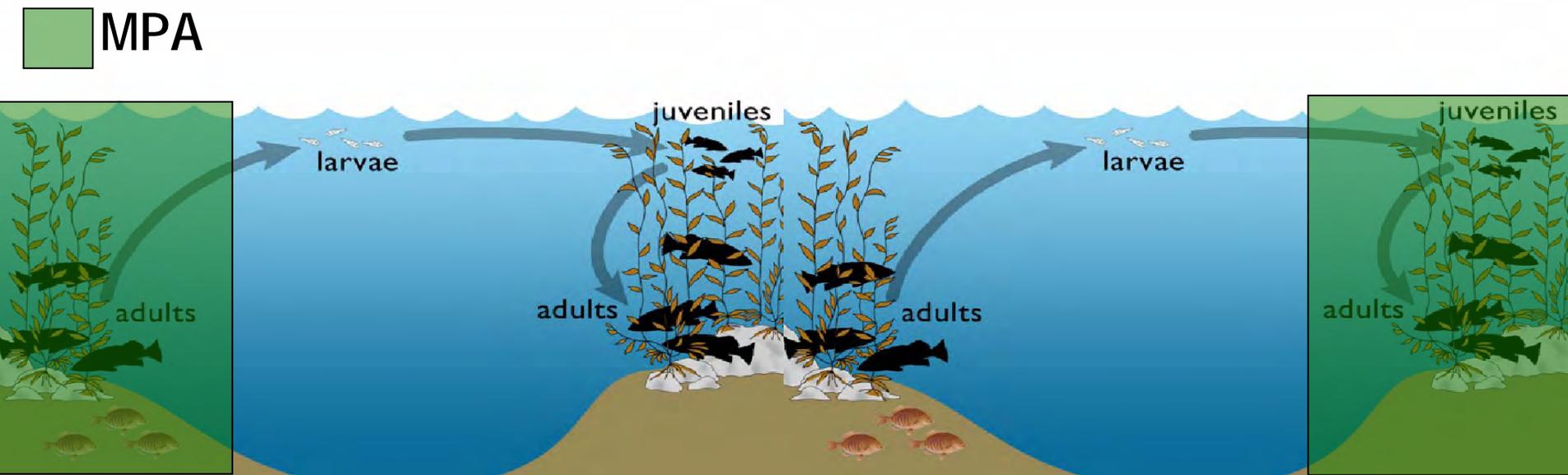
- With multiple MPAs, same answer:

Size > Movement

For Larvae, Multiple MPAs Change the Rules

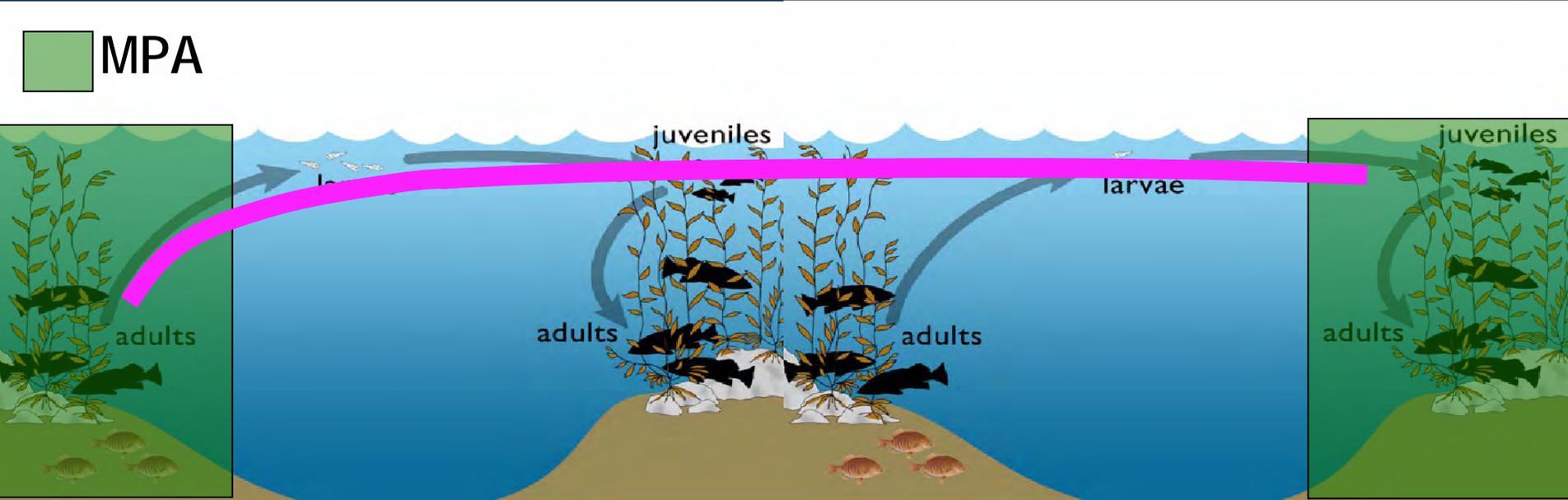


Dispersal Between MPAs is Just as Beneficial as Retention Within MPAs



Key Criterion:

Spacing of MPAs < Larval Dispersal



Dispersal of Young in a Network

Number of species

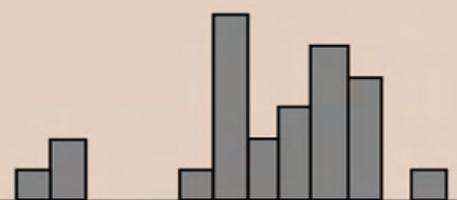
seaweeds



invertebrates



fishes



1 m 10 m 100 m 1 km 10 km 100 km 1000 km

Estimated Dispersal Distance

500 km
Spacing

Number of species

Little Benefit

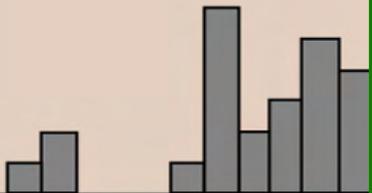
seaweeds



invertebrates

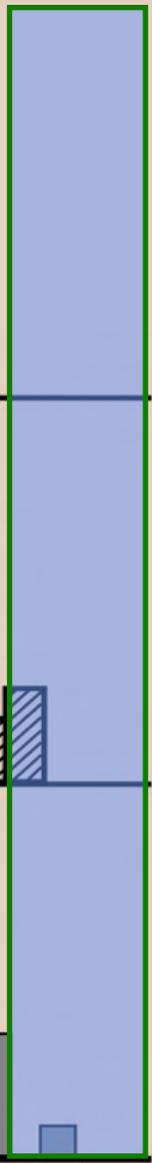


fishes



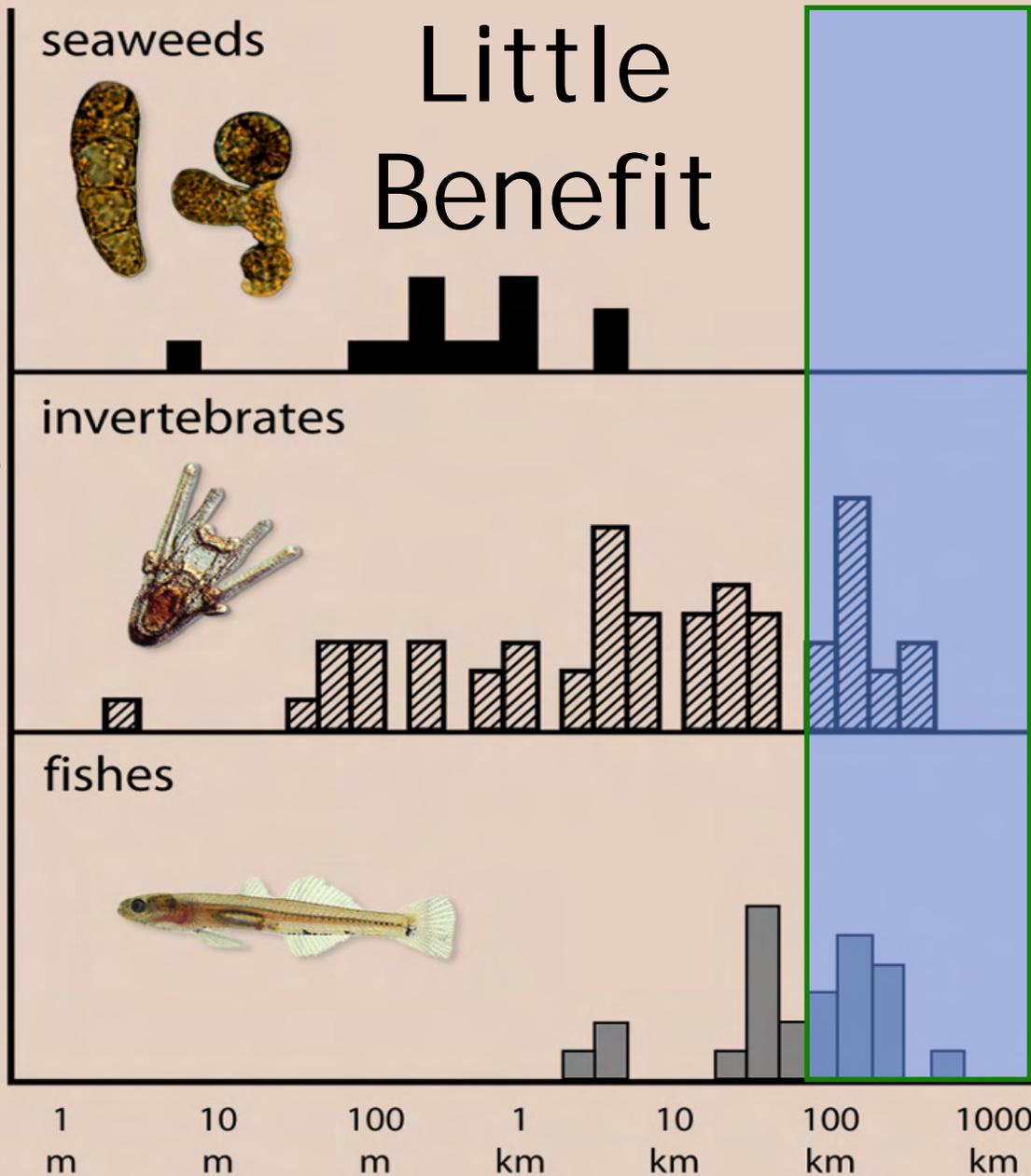
1 m 10 m 100 m 1 km 10 km 100 km 1000 km

Estimated Dispersal Distance



100 km
Spacing

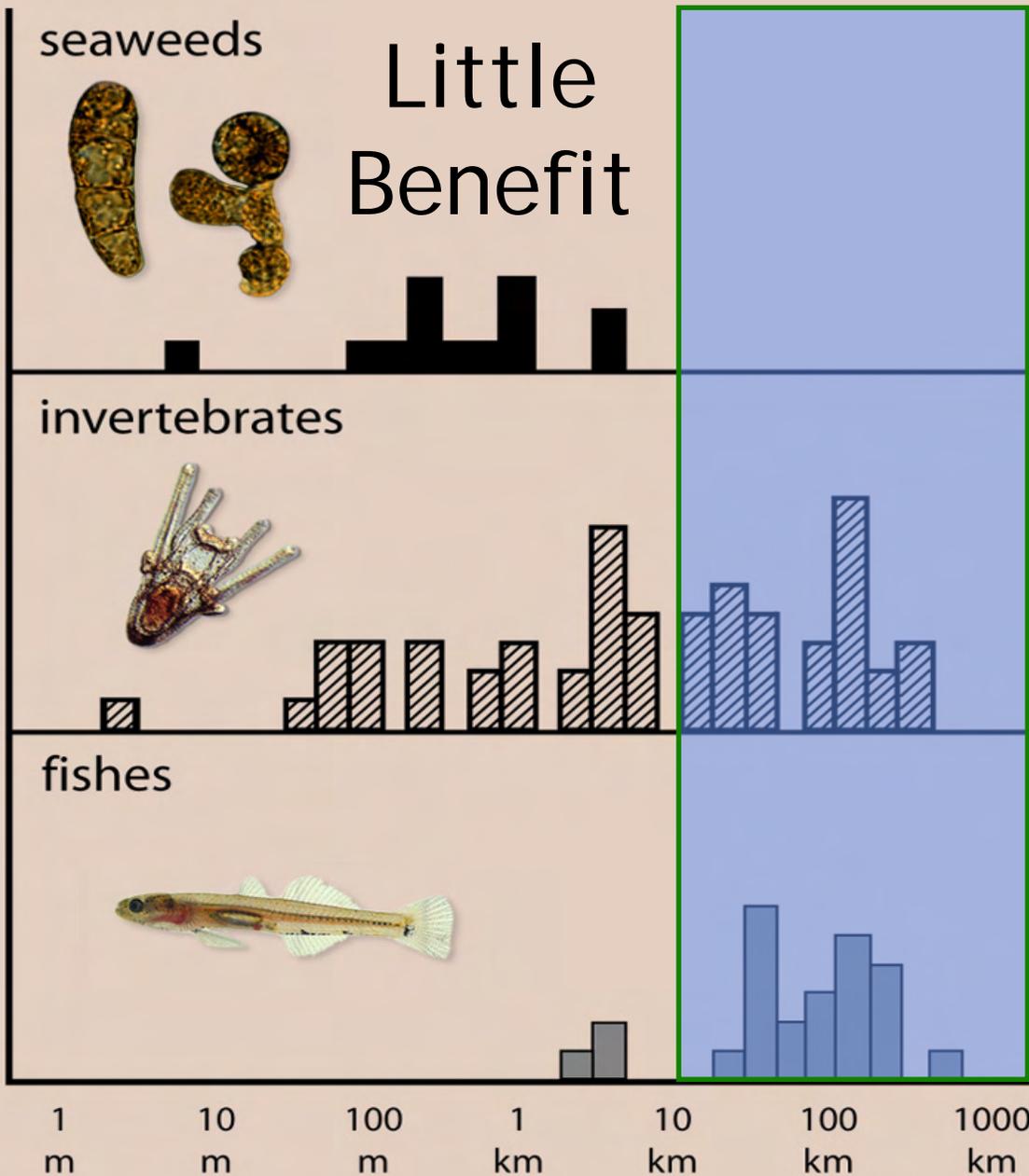
Number of species



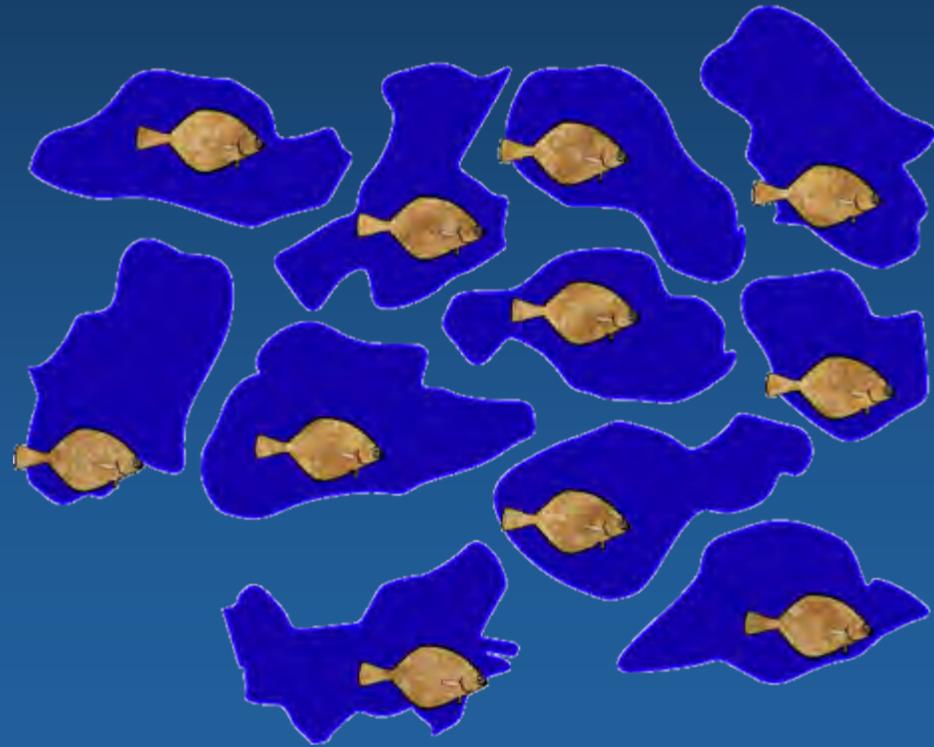
Estimated Dispersal Distance

10 km Spacing

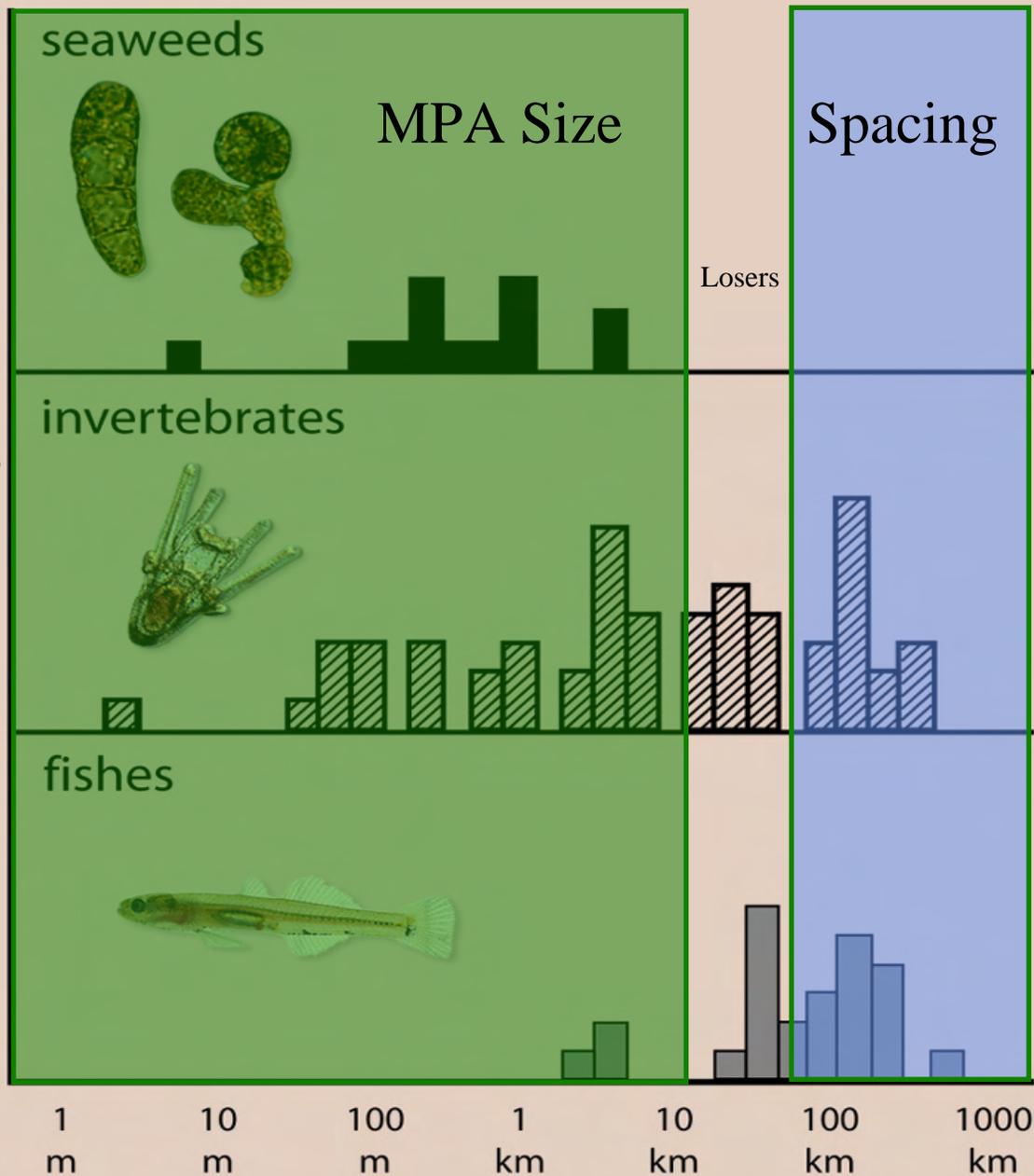
Number of species



Put Movement of Adults and Young Together



Number of species



Estimated Dispersal Distance

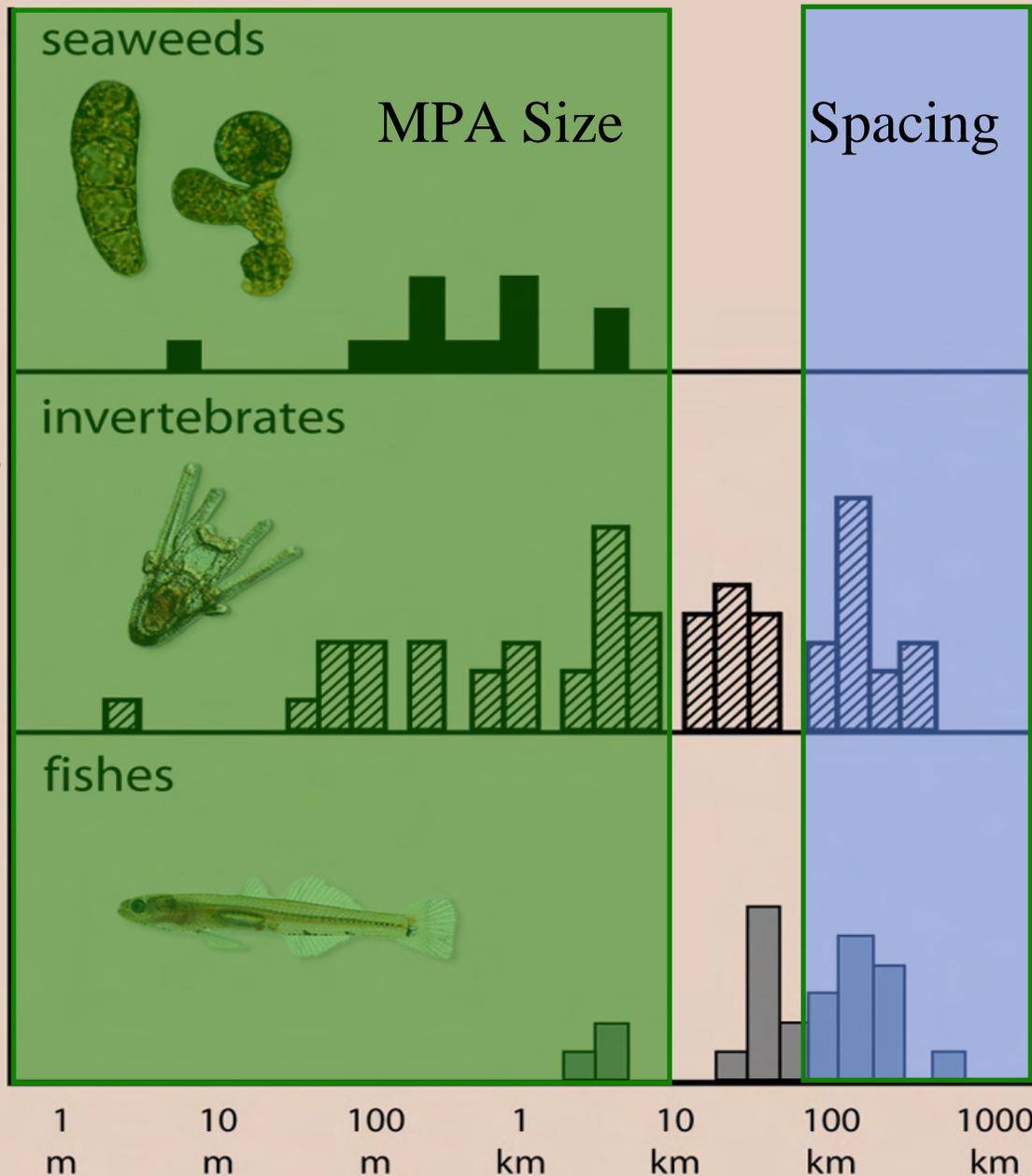
Networks
may
Maximize
the # of
Species
that
Benefit

Spacing Guidelines

10 km
Reserves

100 km
Apart

Number of species



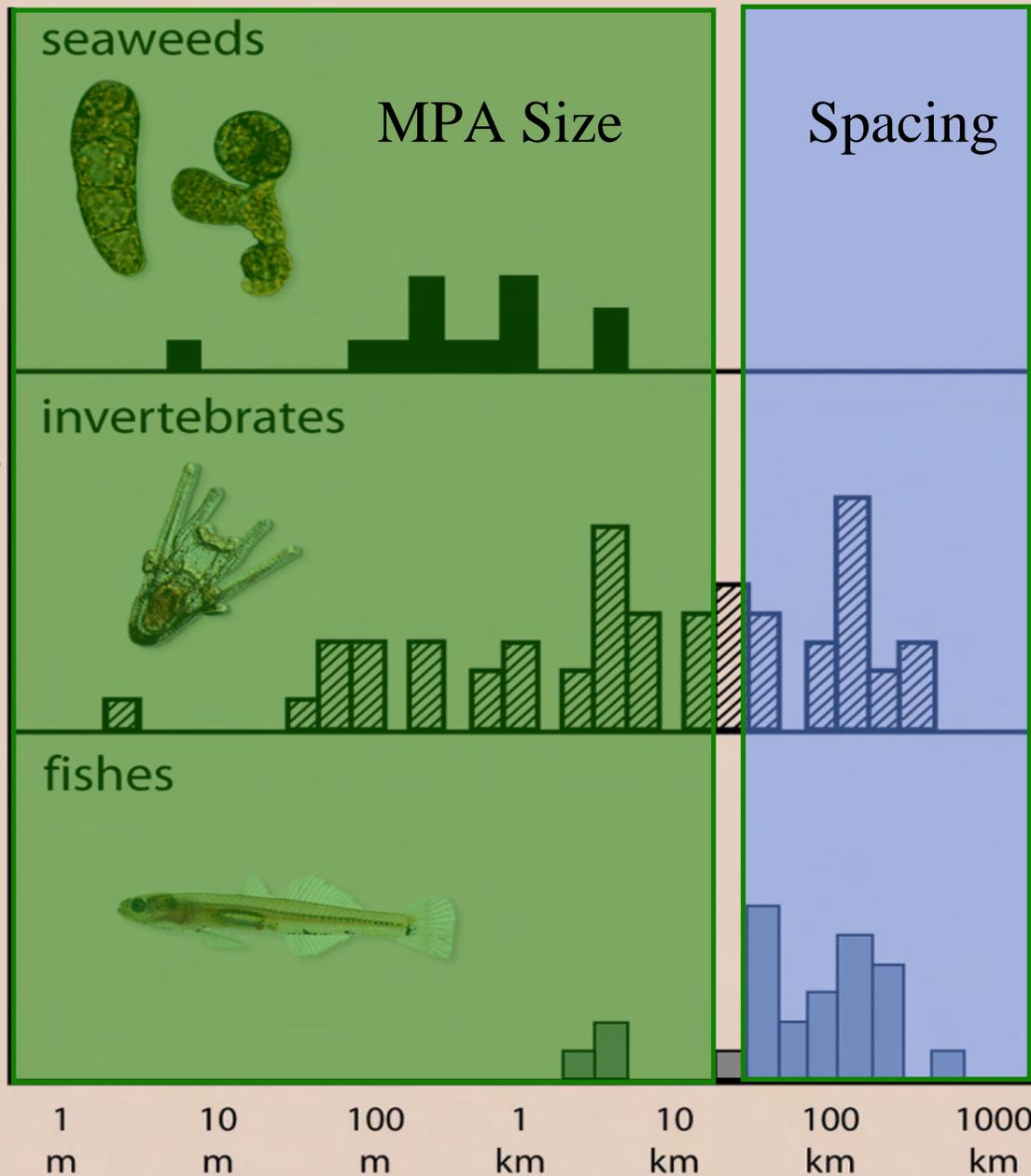
Estimated Dispersal Distance

Spacing Guidelines

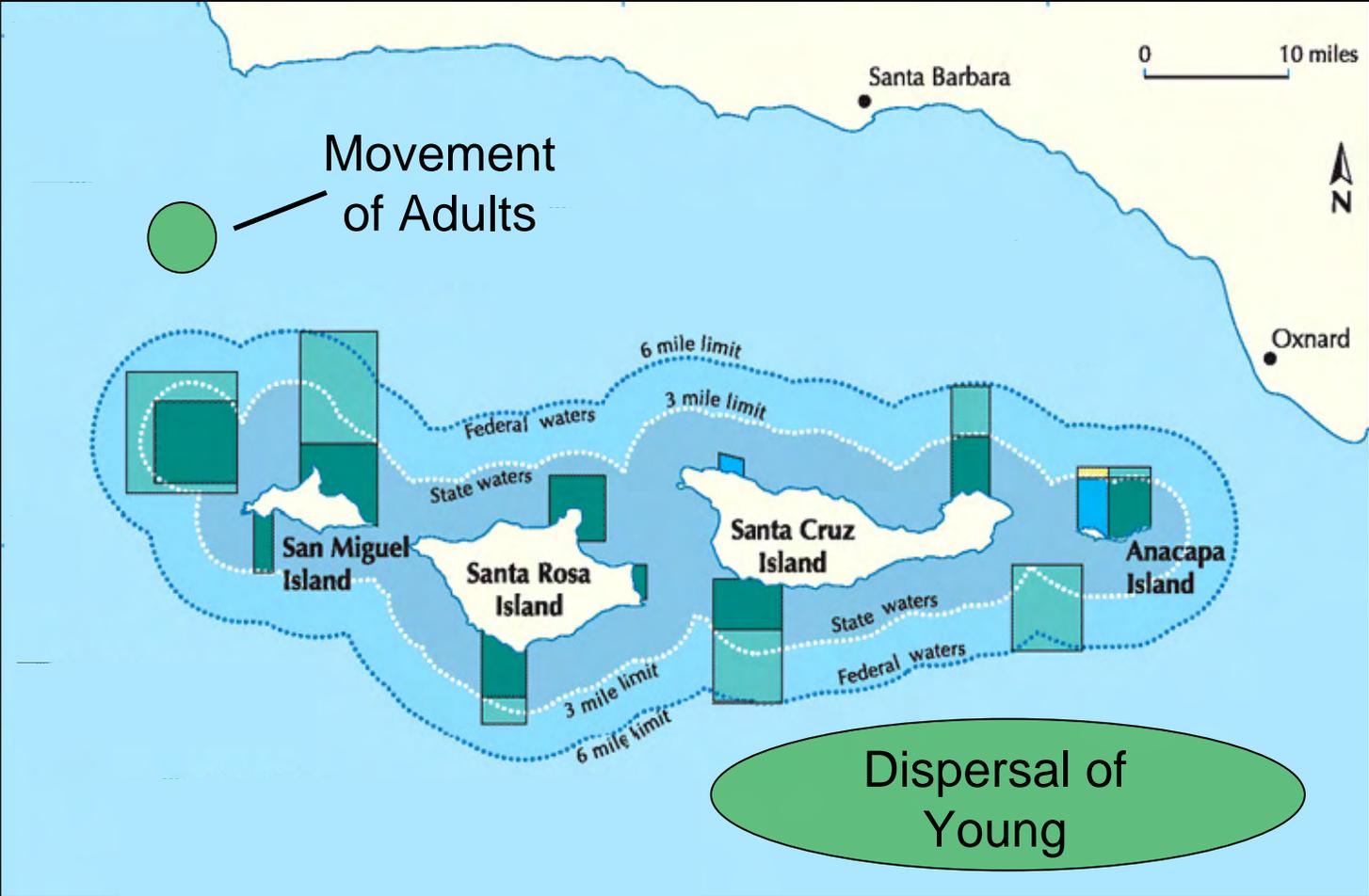
20 km
Reserves

50 km
Apart

Number of species



Estimated Dispersal Distance

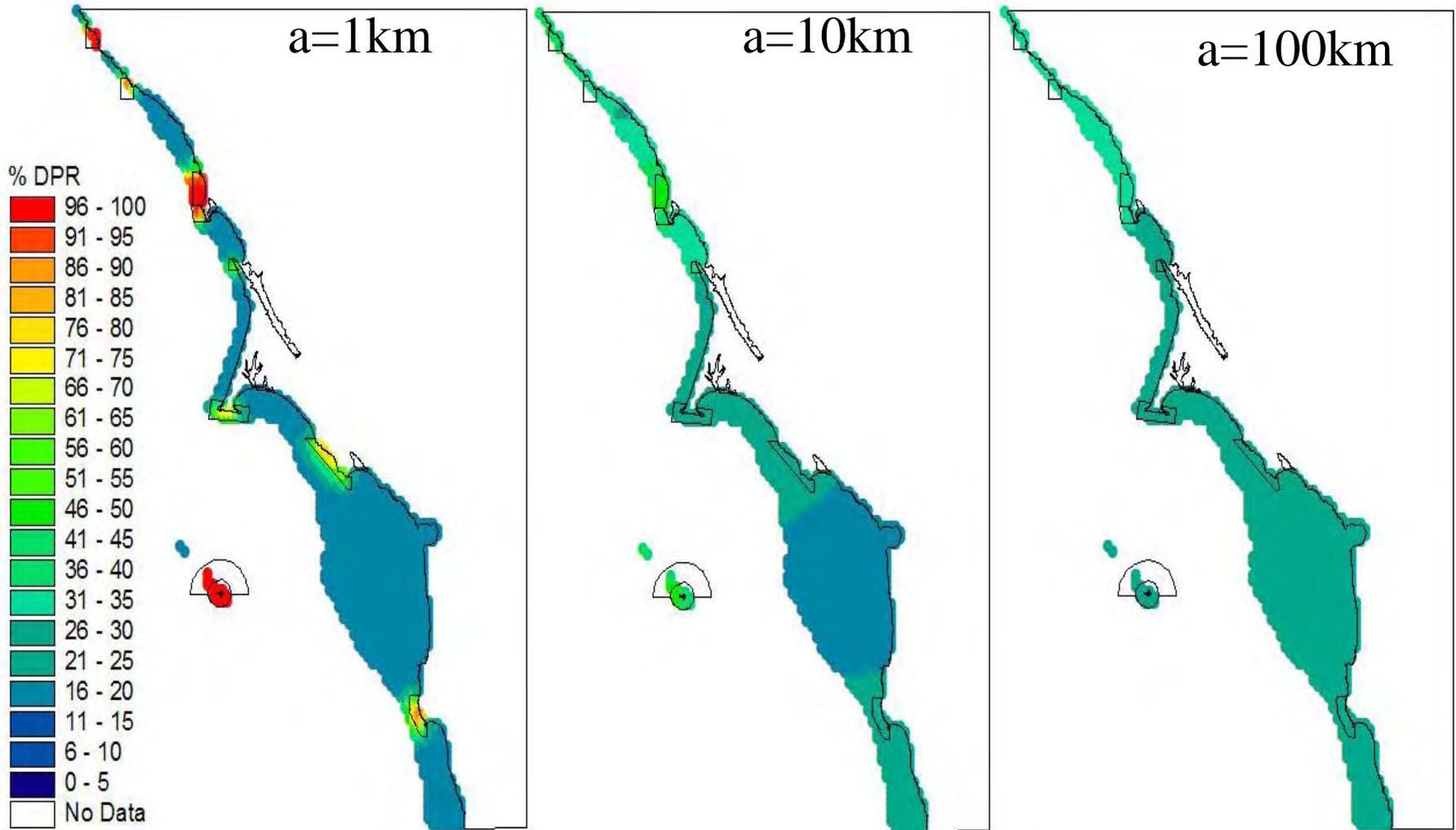




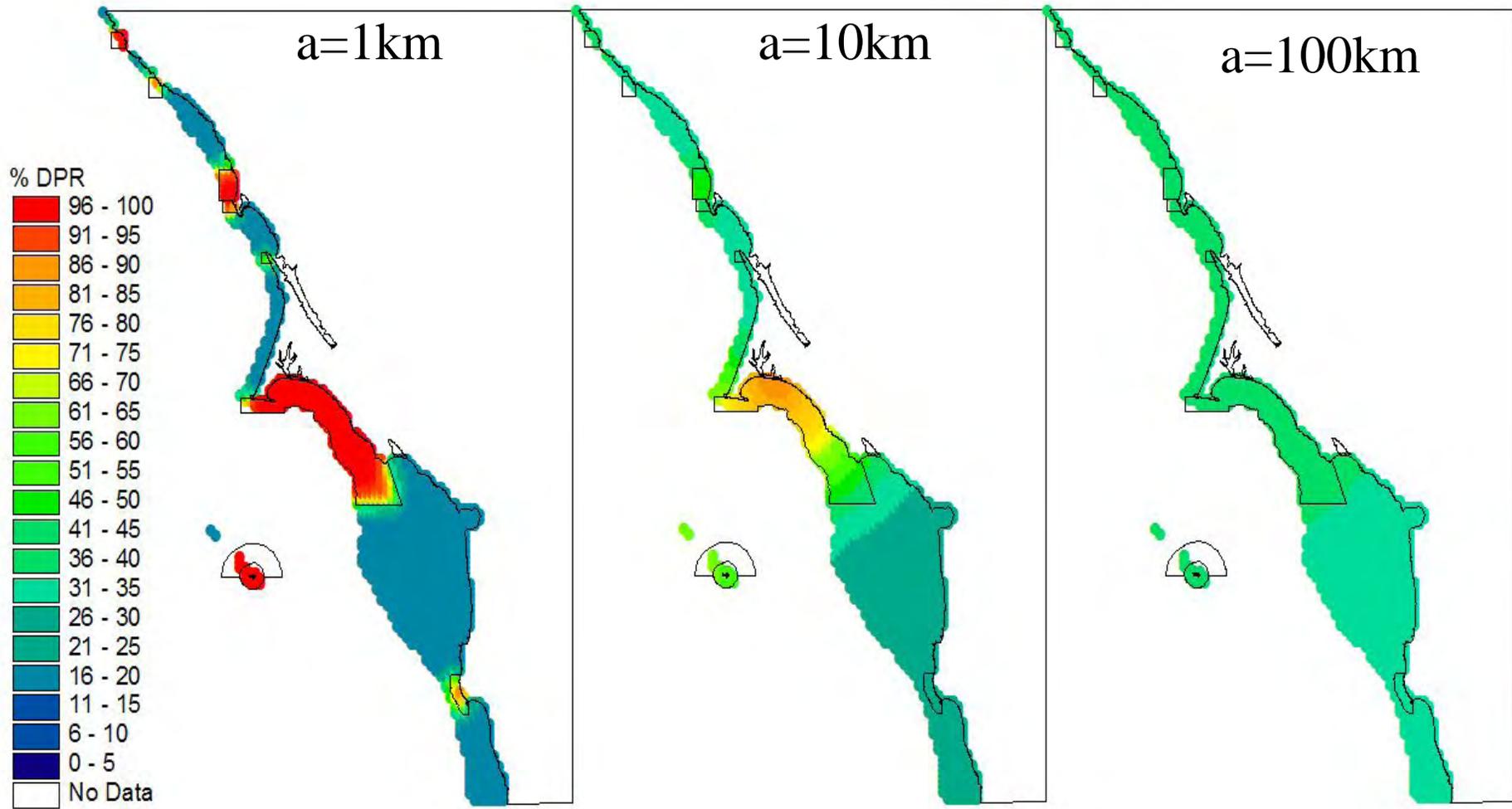
Quantitative Analyses of Networks

- So far, just Logic
- Network Influence on Sustainability affects areas outside MPAs
- Need Quantitative Analyses

Connectivity with proposed MPAs and 20% LEP Outside MPAs

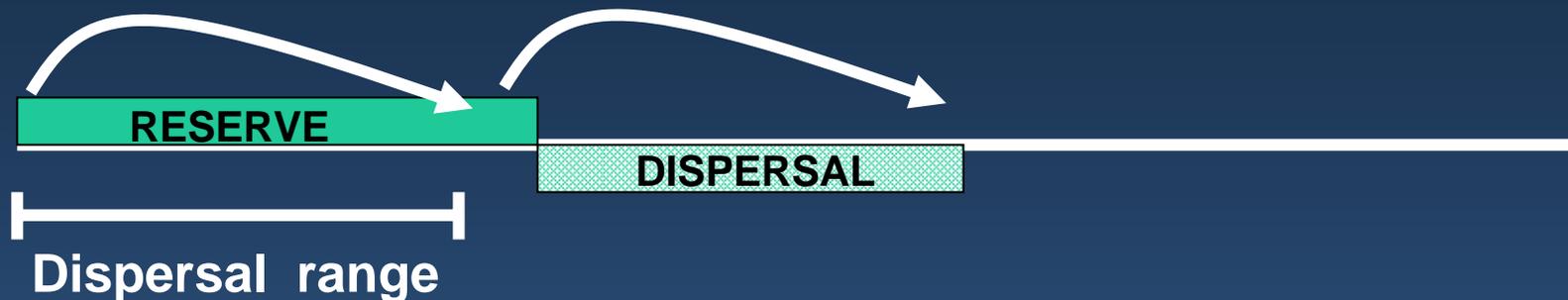


Connectivity with proposed MLPA and BRBC reserves and 20% LEP OUTSIDE RESERVES

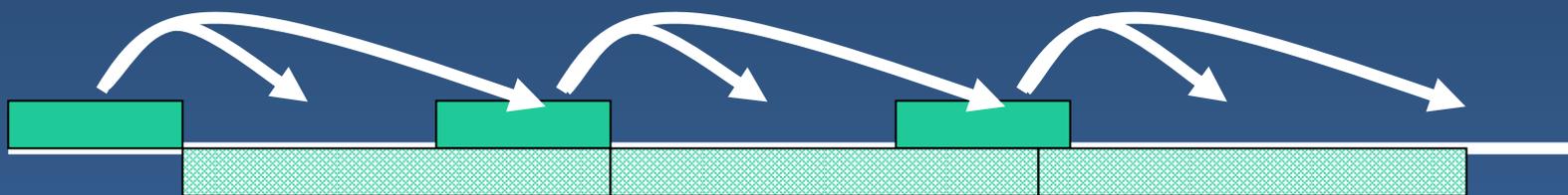


Many Other Benefits of Networks

Single Large Reserve



Network of Several Reserves



- Same protection in much smaller area
- Greater fisheries benefits
- More flexibility in design = fewer costs
- Greater geographic / habitat / species representation
- Spreads risks of catastrophes

Evaluation of Network

Proposals



Send us
some kelp!



Send us
some
inverts!

- Comprehensive Habitat Coverage
- Replication
- Networks by Habitat
 - Sizes
 - Spacings