Fig 1

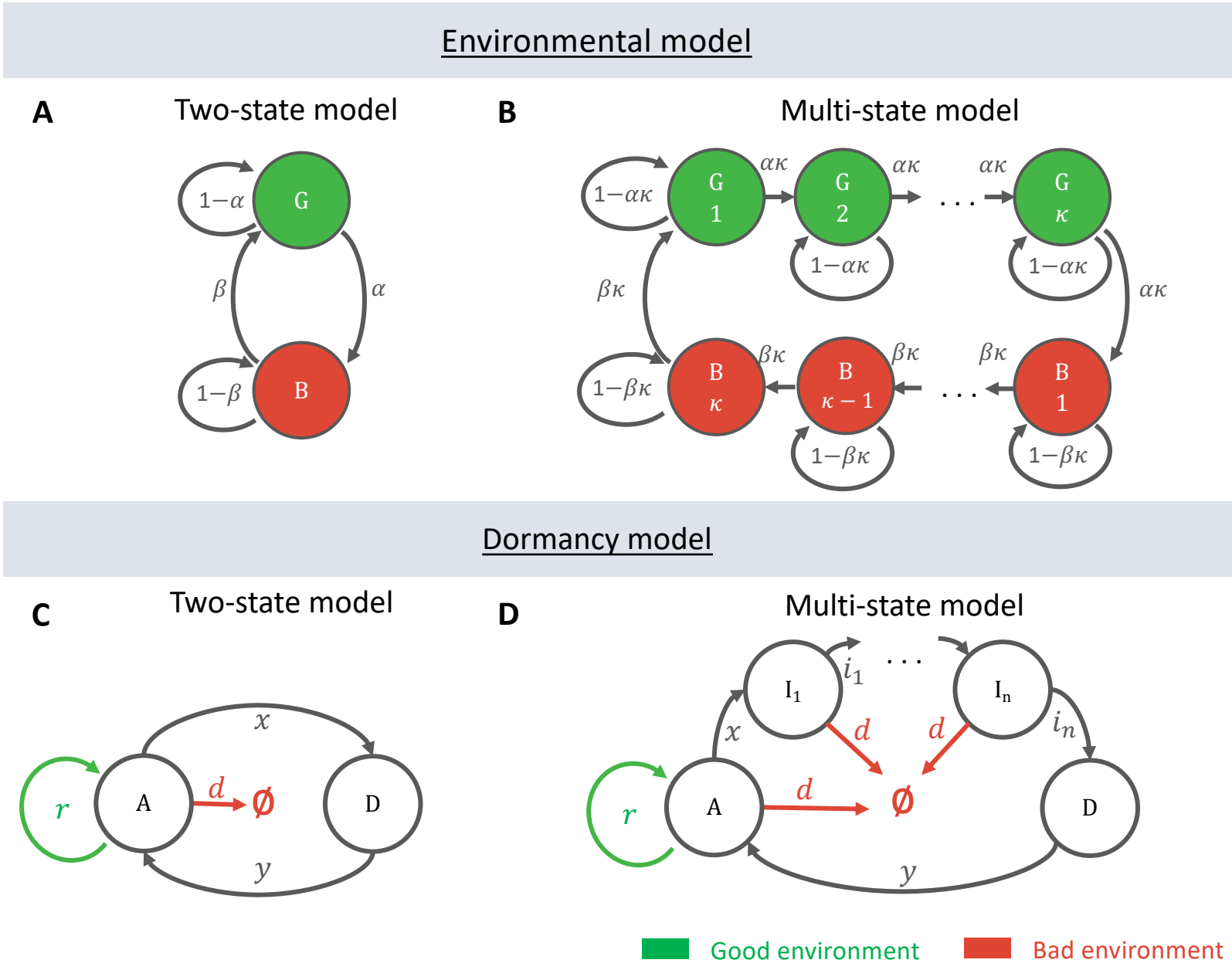

Environmental model
A
Two-state model
1−α
G
β
α
1−β
B
B
Multi-state model
1−ακ
ακ
G 1
G 2
G κ
1−βκ
βκ
B κ
B κ − 1
B 1
Dormancy model
C
Two-state model
x
r
A
d
Ø
D
y
D
Multi-state model
I1
i1
In
in
Good environment
Bad environment

Fig 2

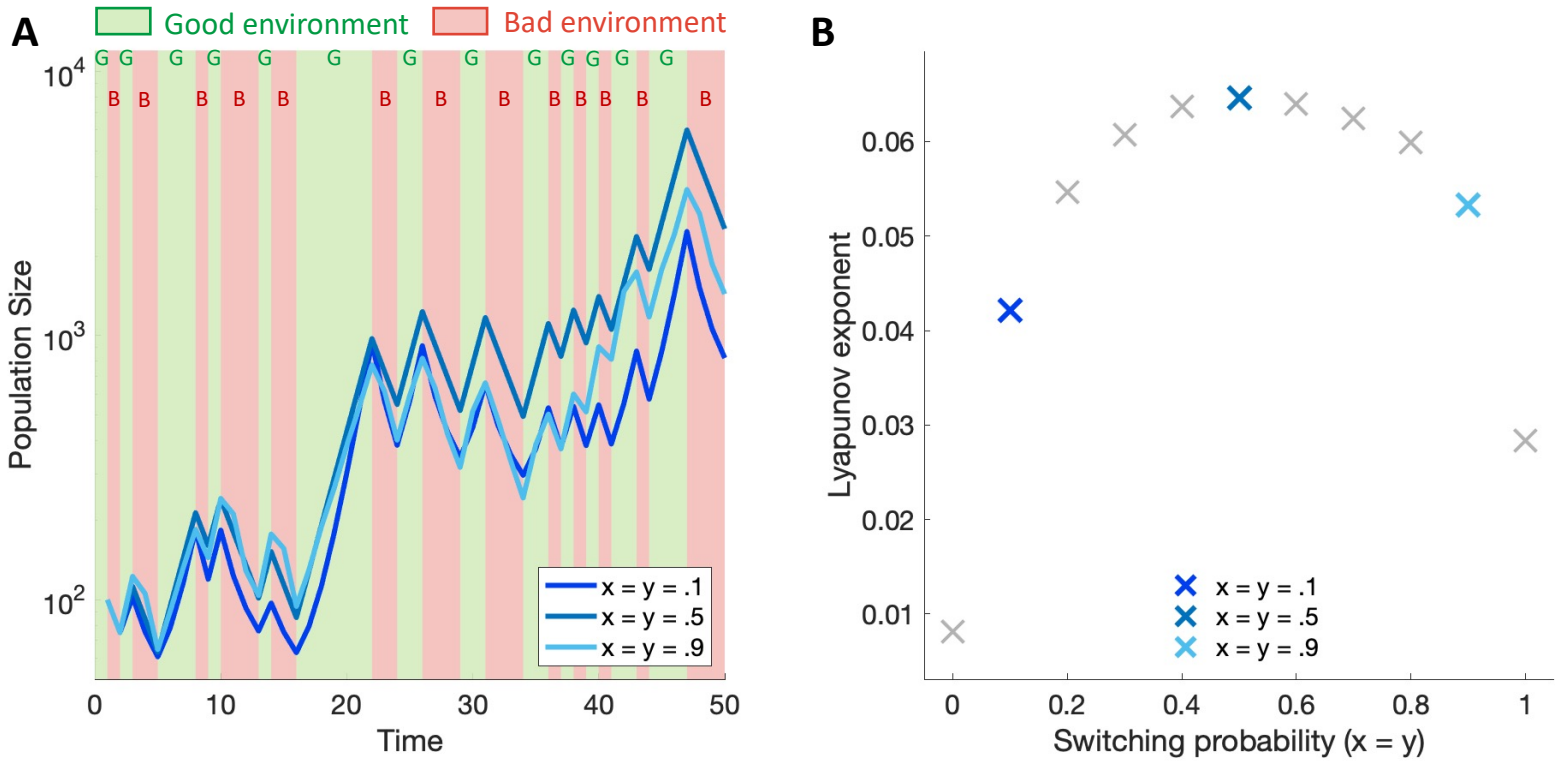

A
Good environment
Bad environment
Population Size
Time
x = y = .1
x = y = .5
x = y = .9
B
Lyapunov exponent
Switching probability (x = y)
x = y = .1
x = y = .5
x = y = .9

Fig 3

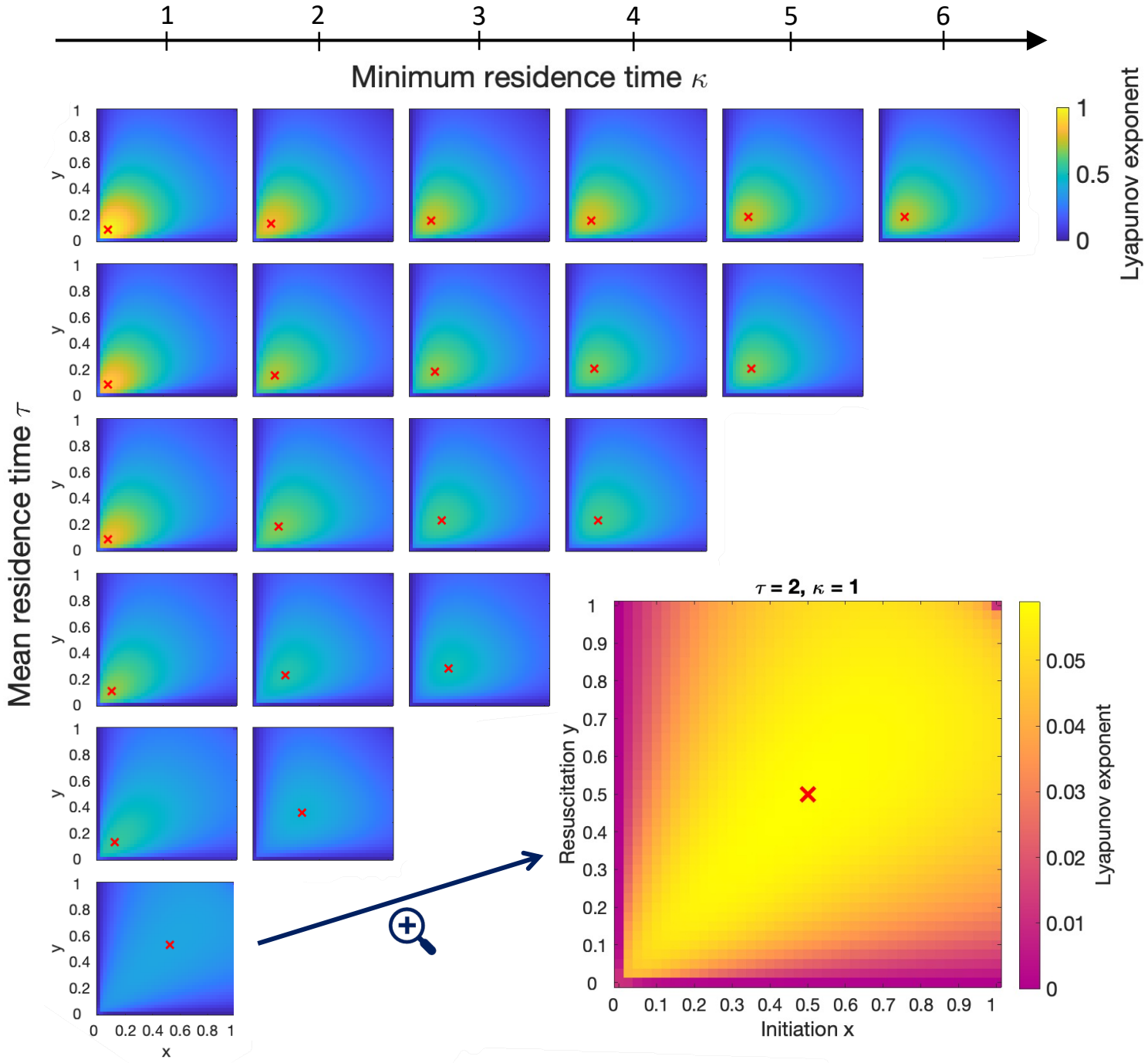

Minimum residence time κ
Mean residence time τ
Lyapunov exponent
τ = 2, κ = 1
Resuscitation y
Initiation x
Lyapunov exponent
x
y

Fig 5

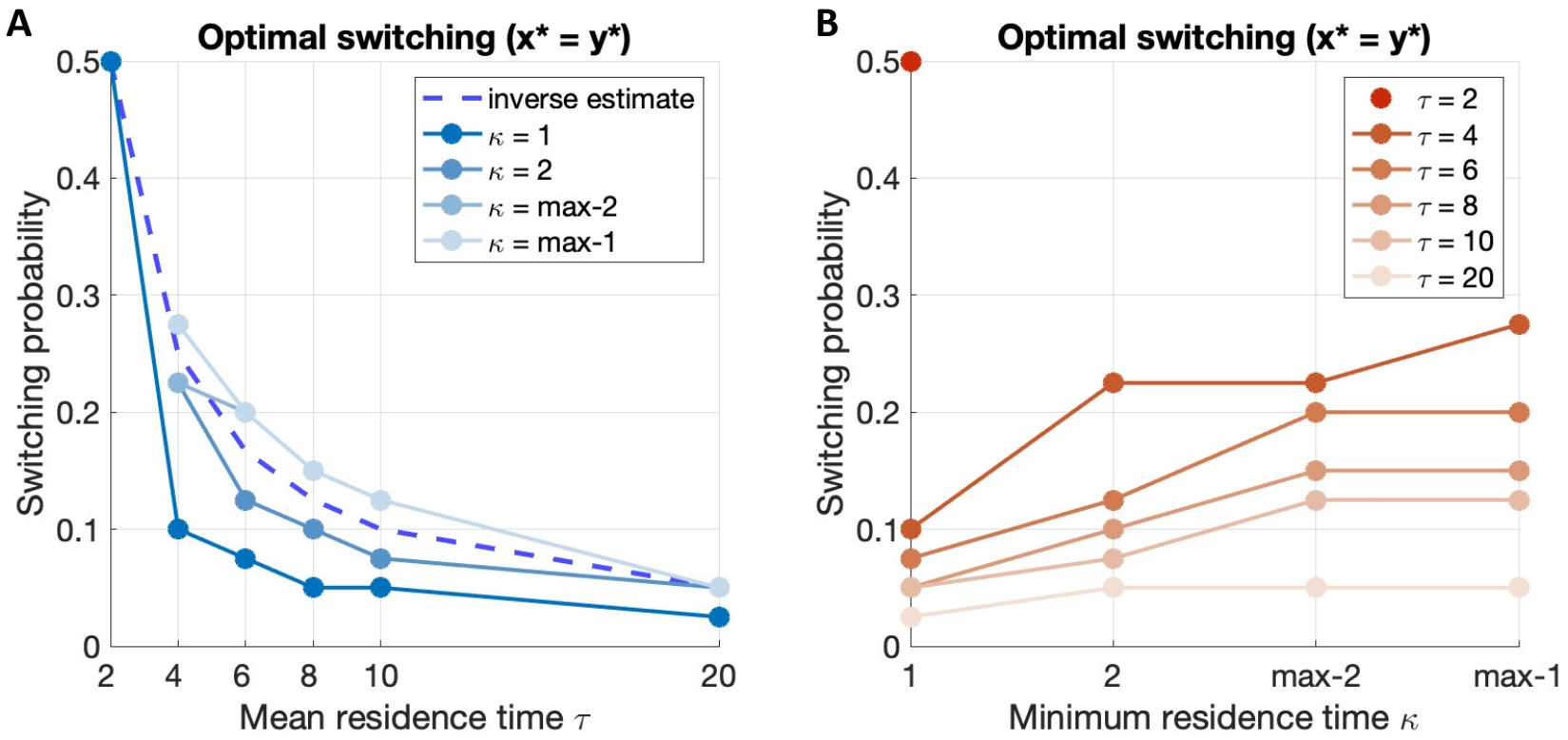

A
Optimal switching (x* = y*)
inverse estimate
κ = 1
κ = 2
κ = max-2
κ = max-1
Switching probability
0
0.1
0.2
0.3
0.4
0.5
2
4
6
8
10
20
Mean residence time τ
B
Optimal switching (x* = y*)
τ = 2
τ = 4
τ = 6
τ = 8
τ = 10
τ = 20
Switching probability
0
0.1
0.2
0.3
0.4
0.5
1
2
max-2
max-1
Minimum residence time κ

Fig 4

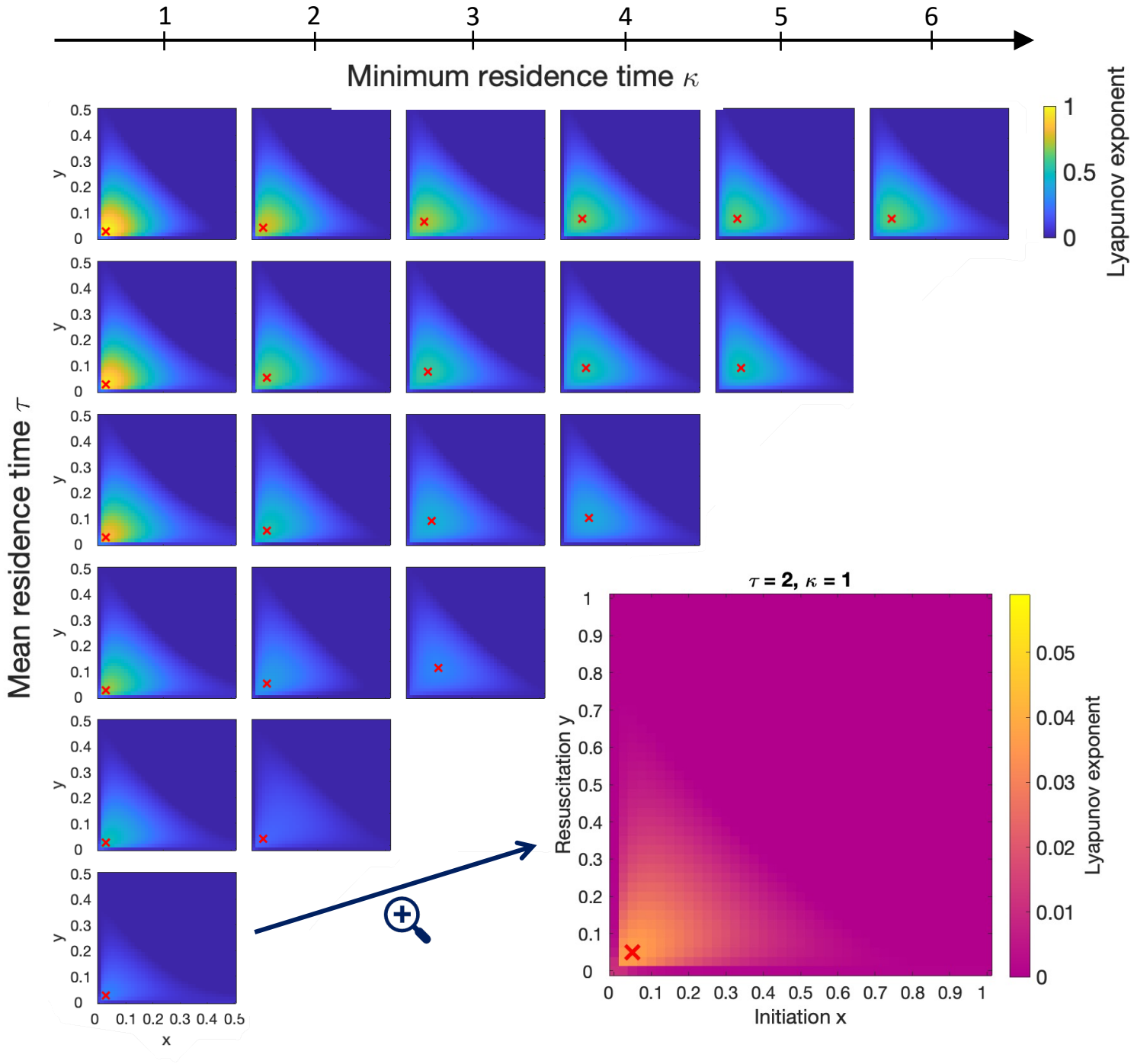

Minimum residence time κ
1
2
3
4
5
6
Mean residence time τ
7
6
5
4
3
2
Lyapunov exponent
1
0.5
0
τ = 2, κ = 1
Resuscitation y
Initiation x
Lyapunov exponent
0.05
0.04
0.03
0.02
0.01
0
x
y

Fig 6

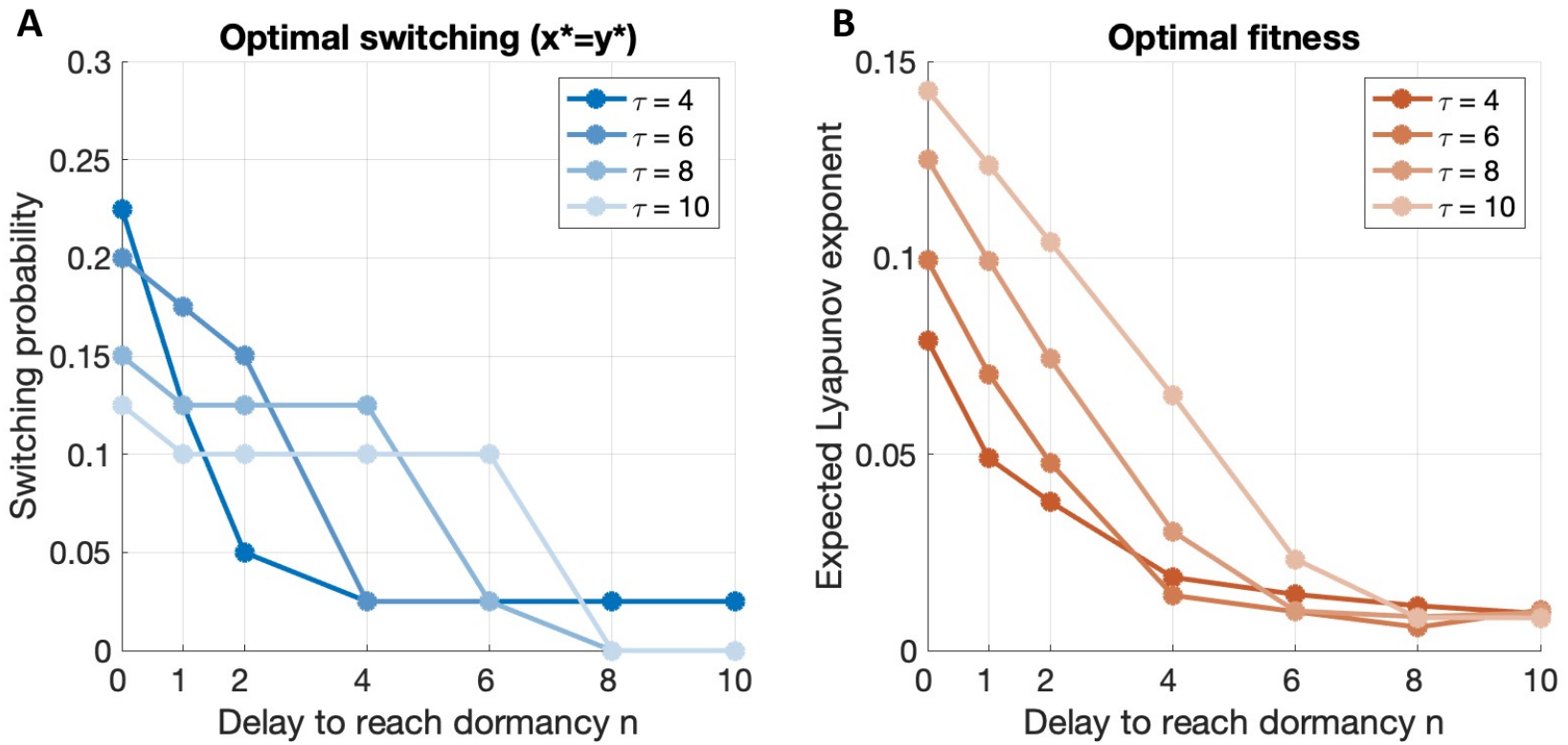
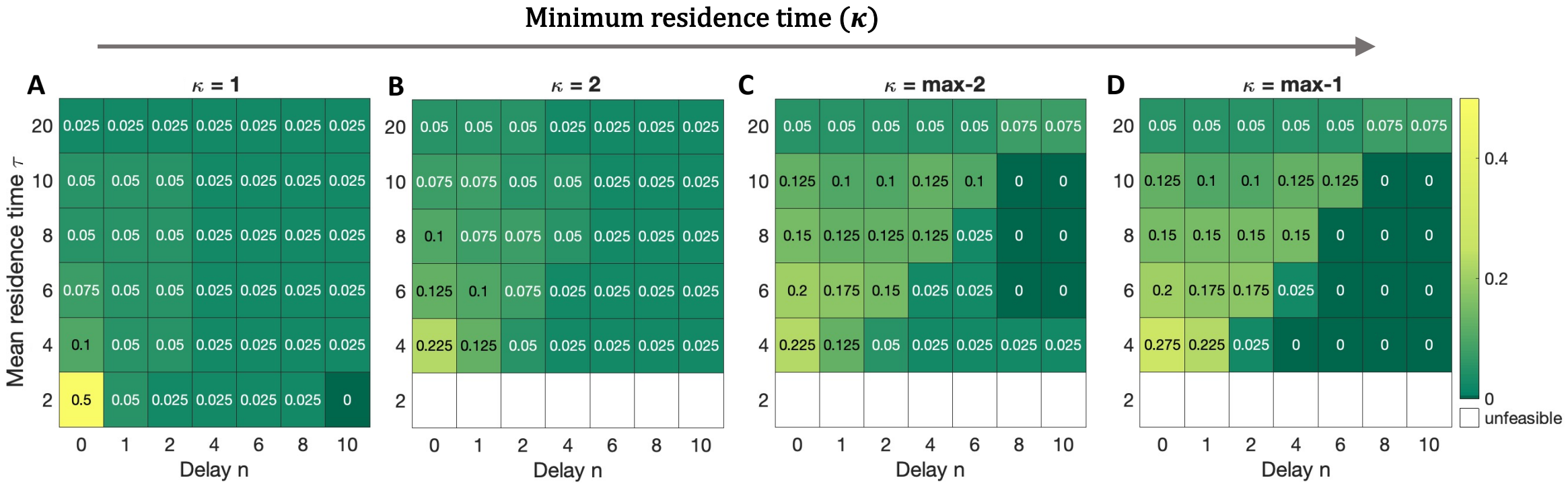

A
Optimal switching (x*=y*)
Switching probability
Delay to reach dormancy n
τ = 4
τ = 6
τ = 8
τ = 10
B
Optimal fitness
Expected Lyapunov exponent
Delay to reach dormancy n
τ = 4
τ = 6
τ = 8
τ = 10

Fig 7


Minimum residence time (κ)
A
κ = 1
B
κ = 2
C
κ = max-2
D
κ = max-1
Mean residence time τ
20 0.025 0.025 0.025 0.025 0.025 0.025 0.025
10 0.05 0.05 0.05 0.025 0.025 0.025 0.025
8 0.05 0.05 0.05 0.025 0.025 0.025 0.025
6 0.075 0.05 0.05 0.025 0.025 0.025 0.025
4 0.1 0.05 0.05 0.025 0.025 0.025 0.025
2 0.5 0.05 0.025 0.025 0.025 0.025 0
20 0.05 0.05 0.05 0.025 0.025 0.025 0.025
10 0.075 0.075 0.05 0.05 0.025 0.025 0.025
8 0.1 0.075 0.075 0.05 0.025 0.025 0.025
6 0.125 0.1 0.075 0.025 0.025 0.025 0.025
4 0.225 0.125 0.05 0.025 0.025 0.025 0.025
2
20 0.05 0.05 0.05 0.05 0.05 0.075 0.075
10 0.125 0.1 0.1 0.125 0.1 0 0
8 0.15 0.125 0.125 0.125 0.025 0 0
6 0.2 0.175 0.15 0.025 0.025 0 0
4 0.225 0.125 0.05 0.025 0.025 0.025 0.025
2
20 0.05 0.05 0.05 0.05 0.05 0.075 0.075
10 0.125 0.1 0.1 0.125 0.125 0 0
8 0.15 0.15 0.15 0.15 0 0 0
6 0.2 0.175 0.175 0.025 0 0 0
4 0.275 0.225 0.025 0 0 0 0
2
0 1 2 4 6 8 10
Delay n
0.4
0.2
0
unfeasible