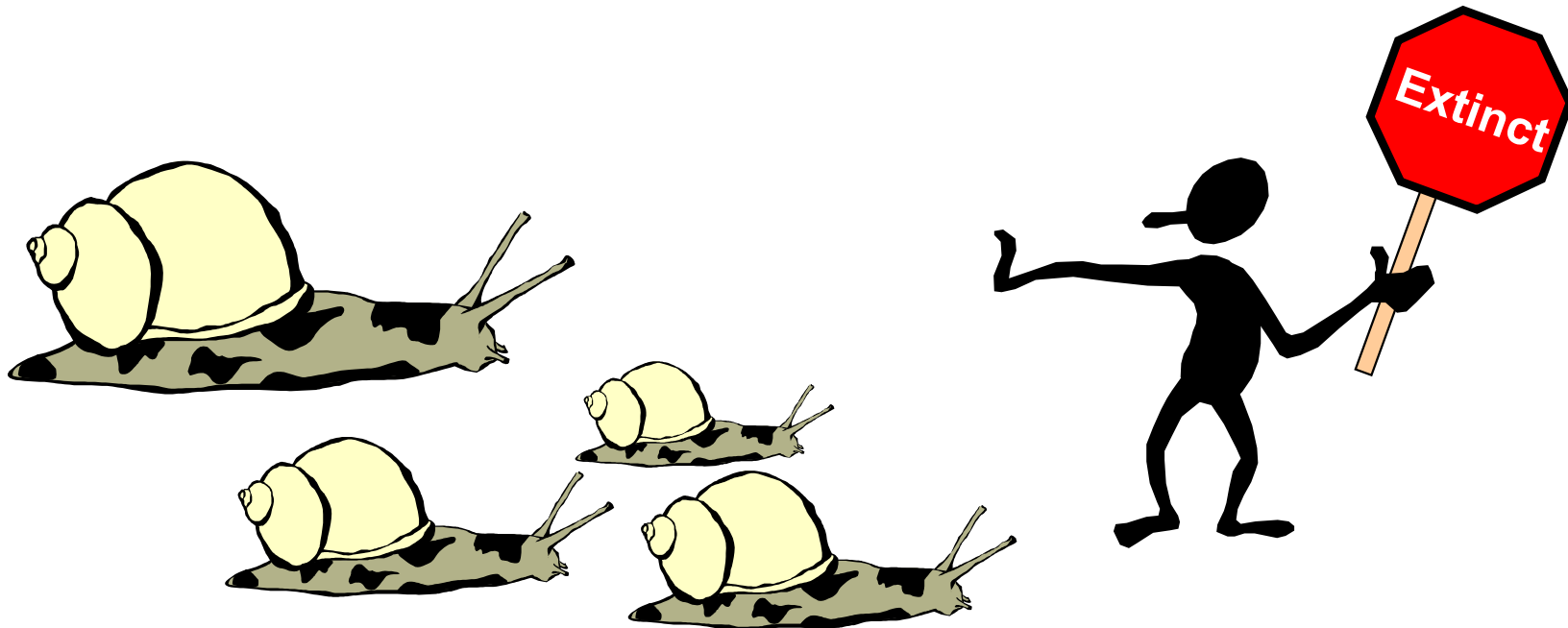




# Red List Criteria: Criteria C, D and E

# Criterion C

## Small population size and continuing decline



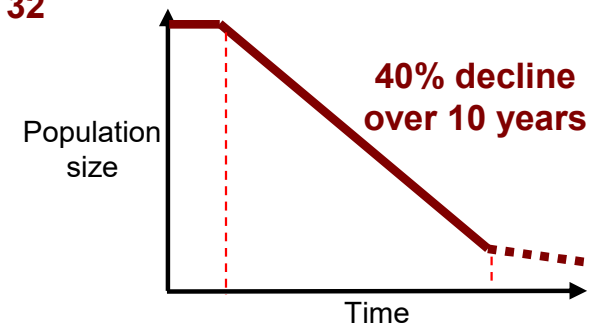
# Criterion C

## Criteria C, D and E

**Small estimated  
population size  
and continuing  
decline**

**C1: estimated  
decline in a  
specific time  
period**

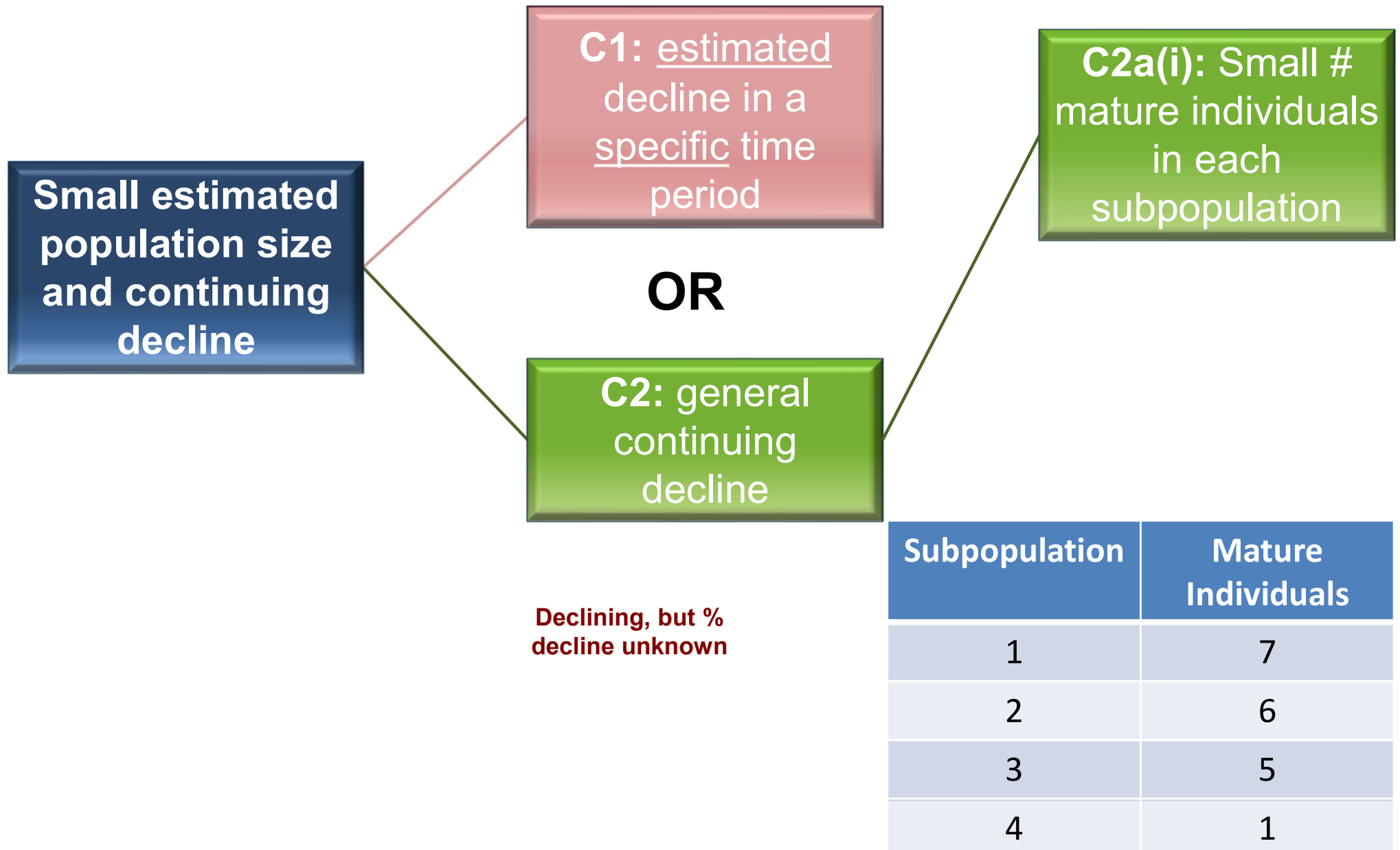
- 10 years ago: population size = 32
- This year: population size = 19
- Decline is continuing





# Criterion C

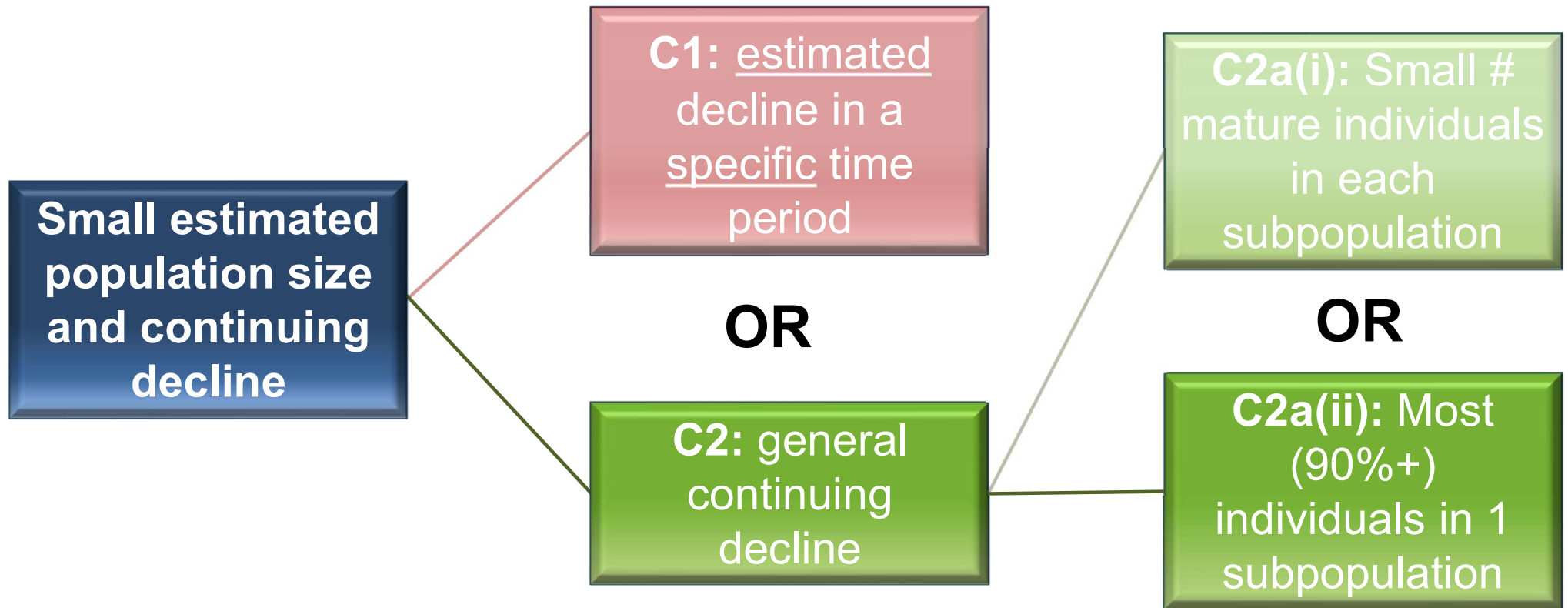
Criteria C, D and E





# Criterion C

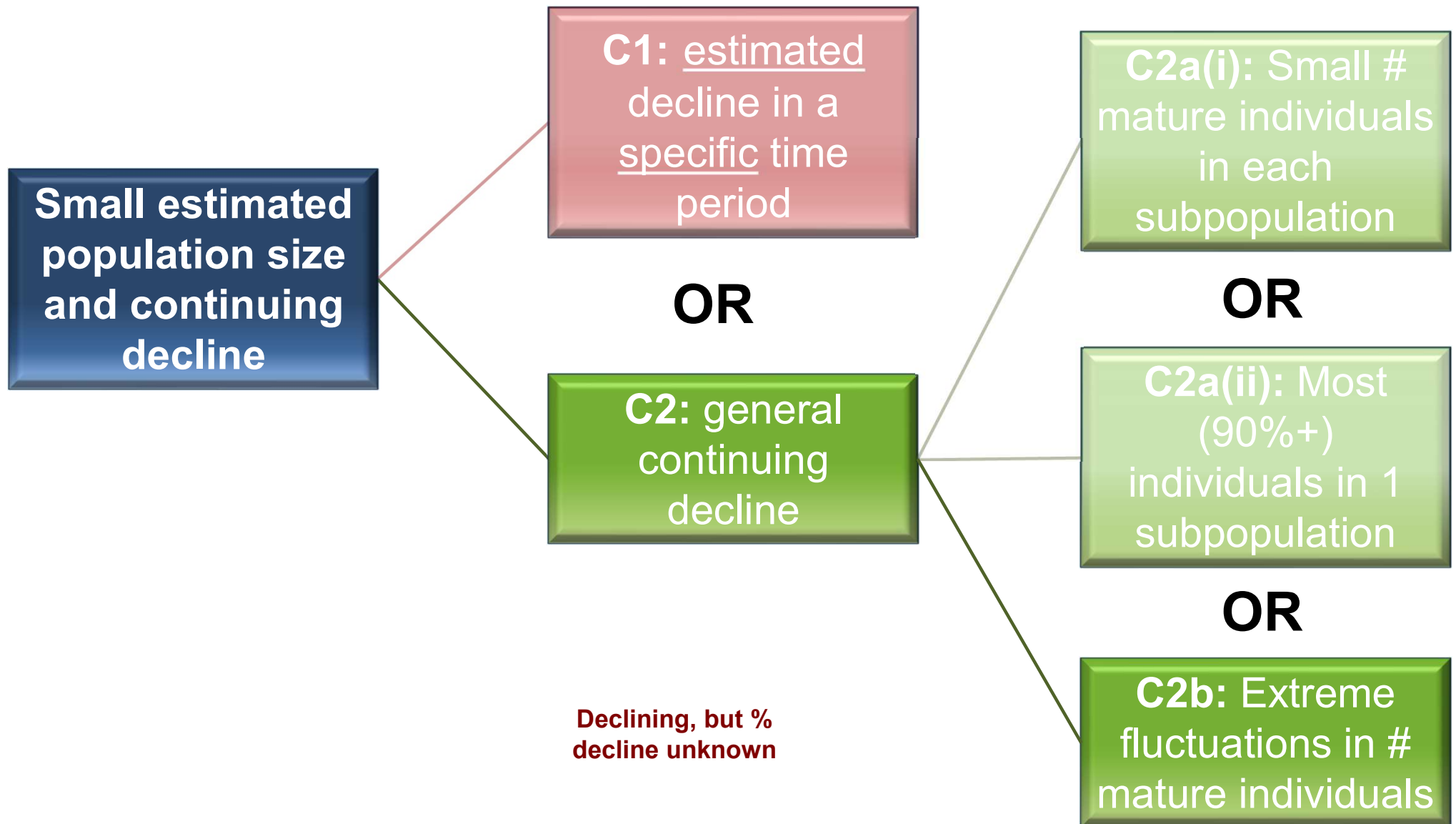
Criteria C, D and E



**Declining, but % decline unknown**

# Criterion C

Criteria C, D and E



## C. Small population size and decline

	Critically Endangered	Endangered	Vulnerable
Number of mature individuals	< 250	< 2,500	< 10,000
AND at least one of C1 or C2			
C1. An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):	25% in 3 years or 1 generation (whichever is longer)	20% in 5 years or 2 generations (whichever is longer)	10% in 10 years or 3 generations (whichever is longer)
C2. An observed, estimated, projected or inferred continuing decline AND at least 1 of the following 3 conditions:			
(a) (i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
(ii) % of mature individuals in one subpopulation =	90–100%	95–100%	100%
(b) Extreme fluctuations in the number of mature individuals			

# Near Threatened (NT) and Criterion C :

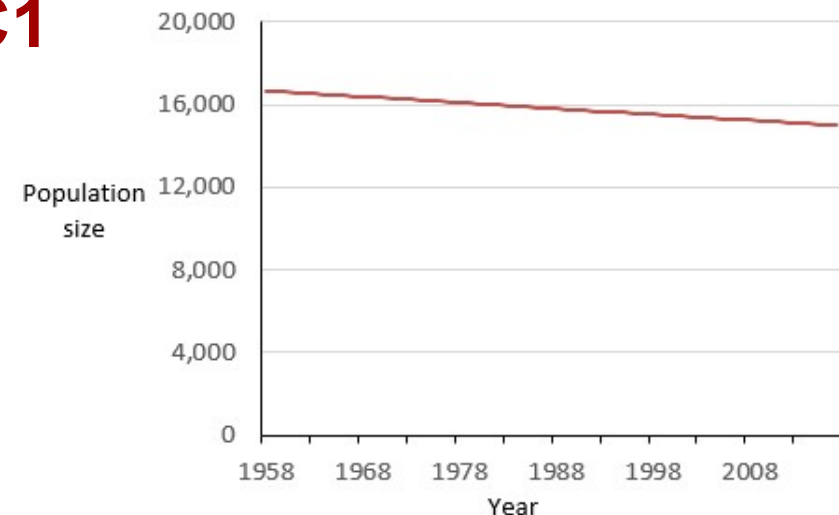
*Close to qualifying for Vulnerable*

- Continuing decline in population size.
- Current population size estimate = 15,000. →
- Generation length = 20 years.
- Estimated 10% decline over the last 60 years. →

**Nearly  
meets VU C**

**subcriterion C1**

**Near Threatened  
(nearly meets VU C1)**





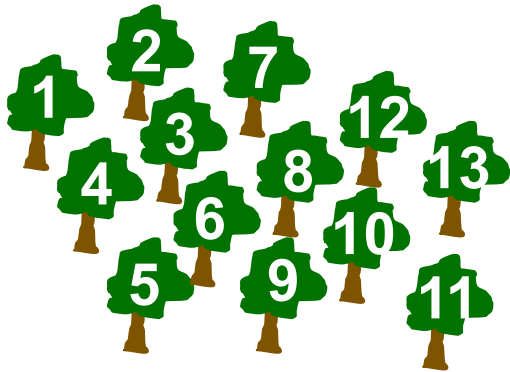
## Near Threatened (NT) and Criterion C :

*Close to qualifying for Vulnerable*

- Current population size estimate = 15,000 → **Nearly meets VU C**
- Continuing decline in population size at an unknown rate.
- There is only one population (no separate subpopulations) → **subcriterion C2a(ii)**

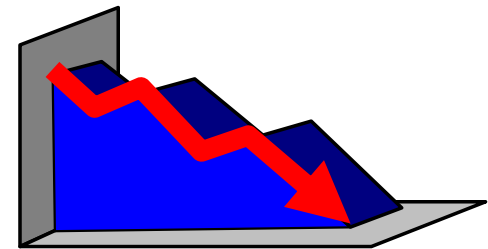
**Near Threatened**  
**(nearly meets VU C2a(ii))**

## Criterion C points to remember:

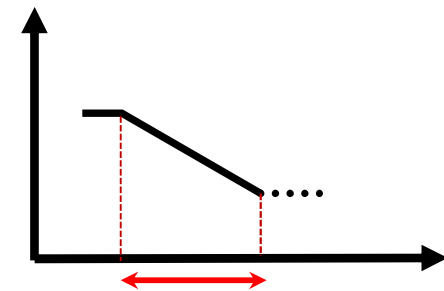


To use criterion C, an **estimate** of the population size is needed...

... and there also needs to be evidence of continuing decline in population size



## Criterion C points to remember:



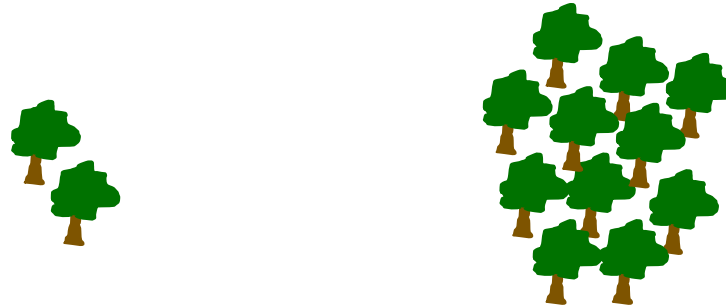
1, 2 or 3 generations?  
or  
3, 5 or 10 years?

To use subcriterion C1, you need to know the generation length...

... and you also need data to be able to estimate the rate of decline.

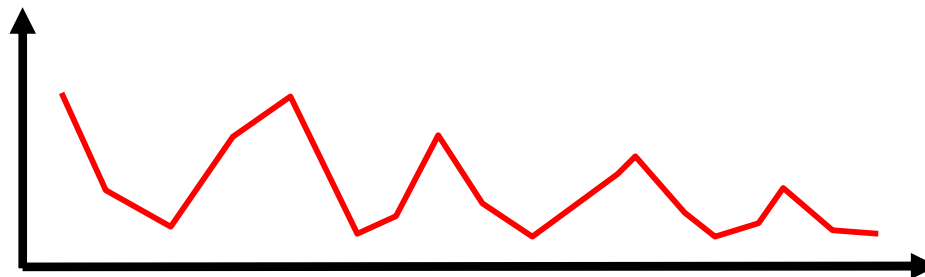
Species 1				
Past census data gathered every 2 yrs		Reduction rate over next 30 yrs	Estimated future population s	
Year	Population size		Year	Population size
1970	10,000	33%	2002	6,160
1972	10,000	38%	2004	5,680
1974	10,000	43%	2006	5,260
1976	10,000	47%	2008	4,900
1978	10,000	51%	2010	4,600
1980	10,000	54%	2012	4,600
1982	9,940	56%	2014	4,180
1984	9,820	57%	2016	4,060
1986	9,640	58%	2018	4,000
1988	9,400	57%	2020	4,000
1990	9,100	56%	2022	4,000
1992	8,740	54%	2024	4,000
1994	8,320	52%	2026	4,000
1996	7,840	49%	2028	4,000
1998	7,300	45%	2030	4,000
2000	6,700	40%	2032	4,000

## Criterion C points to remember:



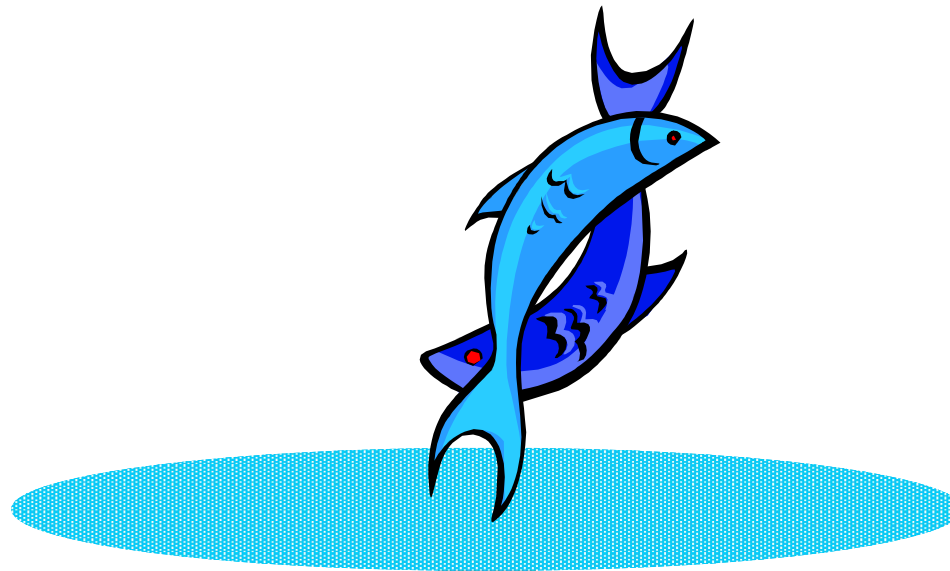
For subcriterion C2, continuing decline can be at an unknown rate, but you also need information about the population structure for C2a ...

... or extreme fluctuations for C2b



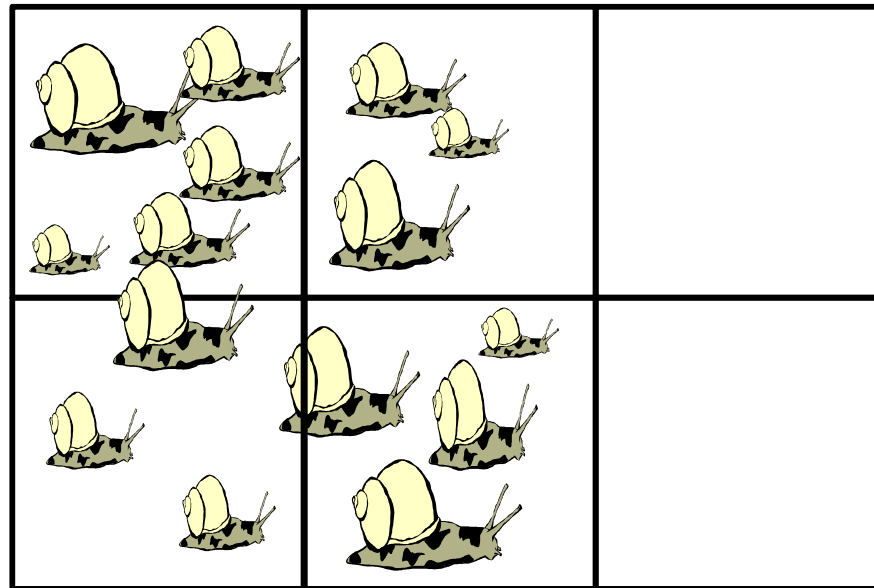
# Criterion D

**Very small or restricted population**



Based on

**D and D1** : VERY small population size



OR

**VU D2** : VERY restricted AOO or few locations AND plausible serious threat

## D. Very small or restricted population

	Critically Endangered	Endangered	Vulnerable
D. Number of mature individuals	< 50	< 250	D1. < 1,000
D2. <i>Only applies to the VU category</i> Restricted area of occupancy or number of locations with a plausible future threat that could drive the taxon to CR or EX in a very short time.	-	-	D2. typically: AOO < 20 km <sup>2</sup> or number of locations ≤ 5

**VU D2: Must** have a plausible threat that could drive the species into **Critically Endangered or Extinct** within a very short time (e.g., within 1 or 2 generations after the threatening event occurs)

## Criterion D example: a freshwater fish

- A small freshwater fish species with a generation length of 4 years.
- Restricted to one lake on a small off-shore island.
- The entire lake fits within four 2x2 km grid cells.
- No current threats affecting the population.
- Within the last 10 years, two predatory fish species have been introduced to a lake in a separate river system on the same island, and to a lake on a neighbouring island.
- Within 3 years after these introductions, a native species (closely related to the species being assessed) has become extinct from those lakes.



**Vulnerable  
(VU D2)**



## Criterion D example: a freshwater fish

- A small freshwater fish species with a generation length of 4 years.
- Restricted to one lake on a small off-shore island.
- The entire lake fits within four 2x2 km grid cells.
- The island, and all neighbouring islands, are all very well protected. So, there are no current threats, and no potential future threats that are likely to affect this species.



**Least Concern**

## Near Threatened (NT) and Criterion D :

*Close to qualifying for Vulnerable*

- Current population size estimate = 1,500. → **Nearly meets VU D1**
- No current or future threats identified.
- Population currently stable.

**Near Threatened**  
**(nearly meets VU D1)**

## Near Threatened (NT) and Criterion D :

*Close to qualifying for Vulnerable*

- Current population size is a very uncertain estimate of 2,000.
- It is possible that the population size is actually closer to 1,000.



**Nearly meets  
VU D1**

**Near Threatened  
(nearly meets VU D1)**

## Near Threatened (NT) and Criterion D :

*Close to qualifying for Vulnerable*

- Species occurs in only 3 sites.
- AOO = 12 km<sup>2</sup>
- No current threats affecting the population.
- Potential threat exists, but is likely to rapidly push the species into Endangered.

**Nearly meets  
VU D2**

**Near Threatened  
(nearly meets VU D2)**

## Criterion D points to remember:

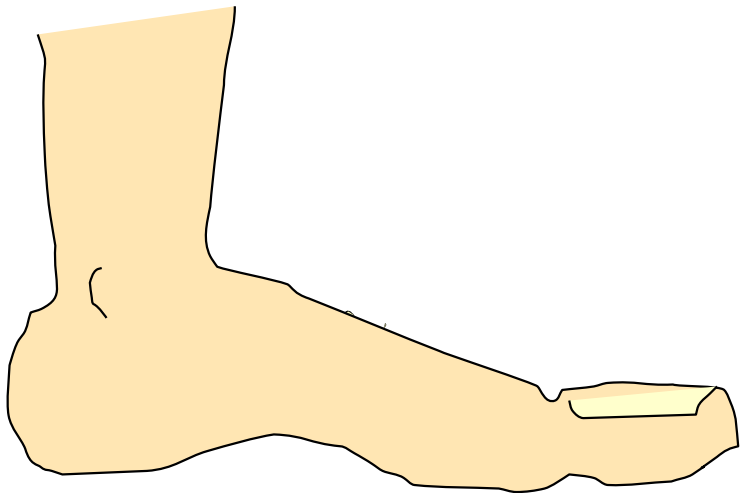


To use criterion D (or subcriterion D1), an estimate of the population size is needed.

D1 & D2  Vulnerable category only

## Criterion D points to remember:

For D2, there must be a serious plausible threat to the population and this must be stated in the assessment.



**D2.** typically:

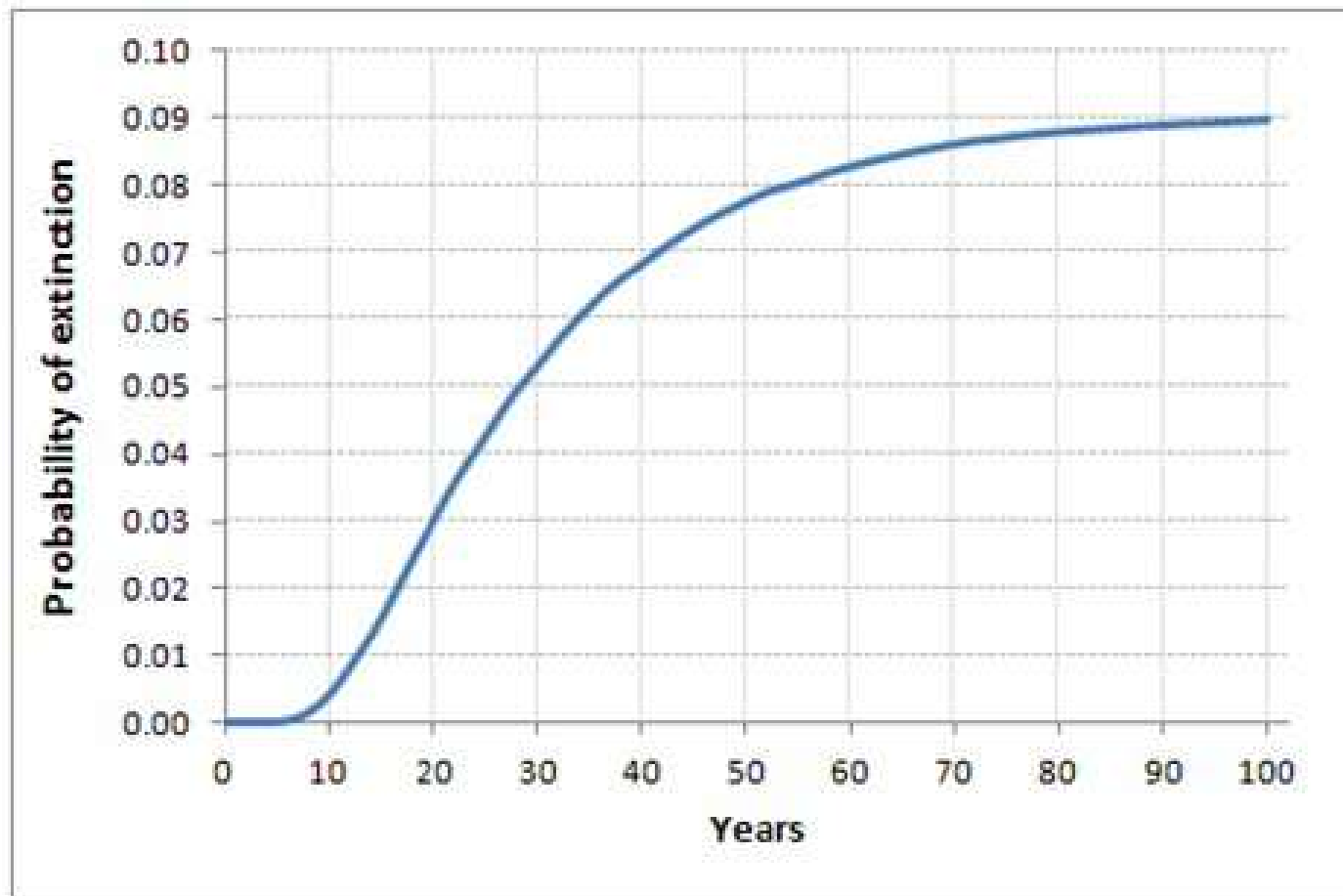
AOO < 20 km<sup>2</sup> or  
number of locations ≤ 5

For D2, the thresholds noted in the criteria are examples only.

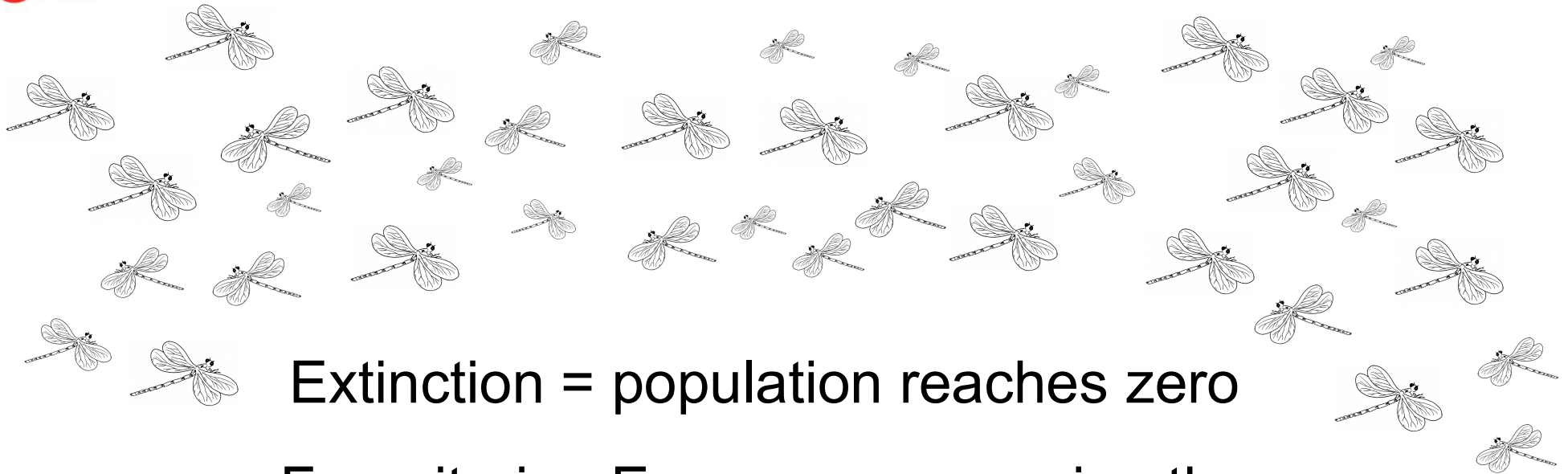
	Criterion A	Criterion C	Criterion D
Small population size		X	X
Population decline	X	X	
Generation length estimate	X	For C1	
Specific population structure		For C2a	
Decline rate thresholds	Higher	Lower	
Time period for decline	Longer	Shorter	

# Criterion E

## Quantitative analysis







Extinction = population reaches zero

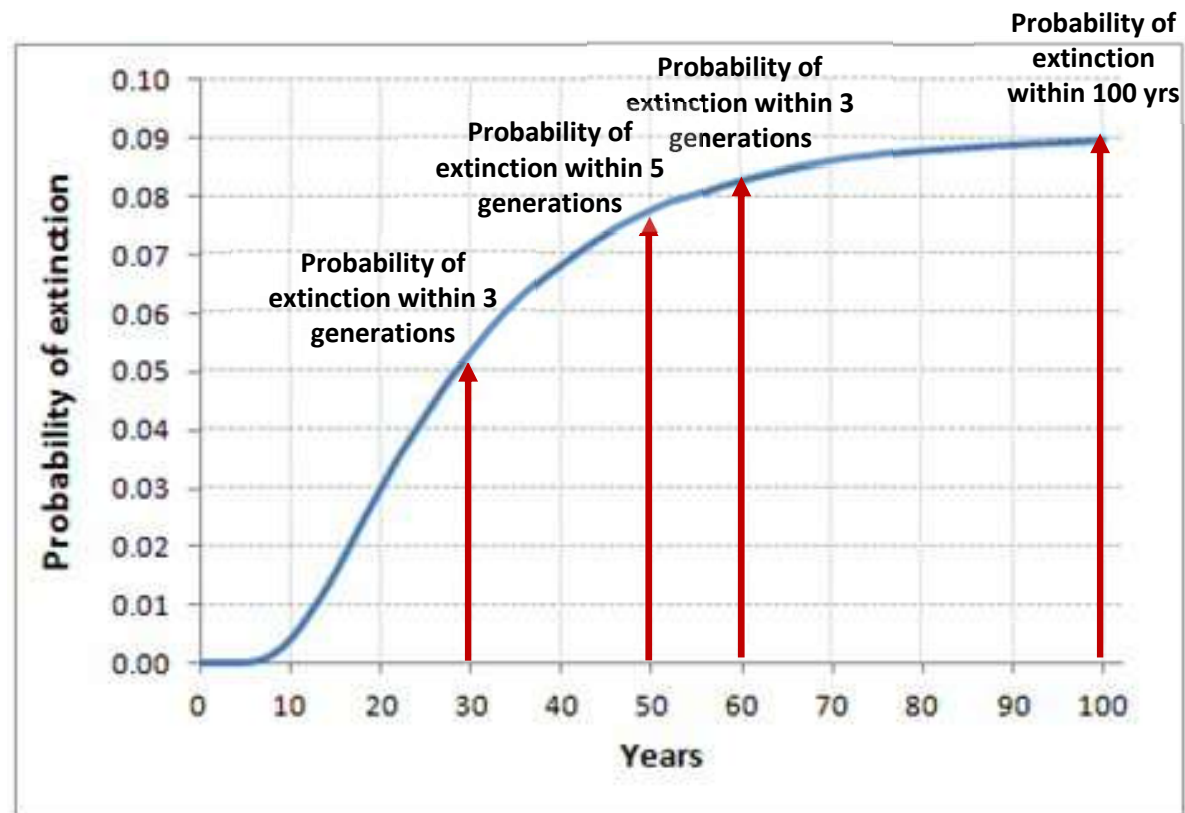
For criterion E, we are measuring the **probability** of extinction

## E. Quantitative Analysis

	Critically Endangered	Endangered	Vulnerable
Indicating the probability of extinction in the wild to be:	≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.)	≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)	≥ 10% in 100 years

The time periods you need to use will depend on the generation length of the species:

- Generation length  $\geq 34$  years, do one assessment (100 years).
- Generation length 20-33 years, do two assessments (3 generations and 100 years).
- Generation length  $< 20$  years, do three assessments (3 generations or 10 years, 5 generations or 20 years, and 100 years).



## Quantitative Analysis

