Red List Criteria: Criterion A

Past, present or future population reduction

Population Size

Time

3 generations or 10 years
(whichever is the longer)
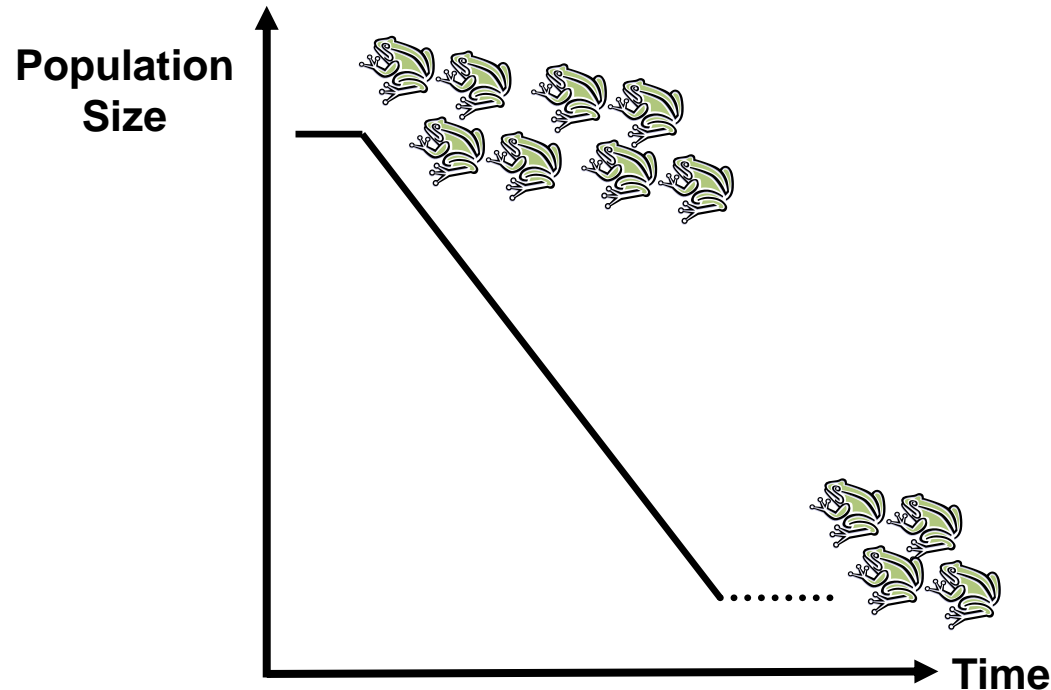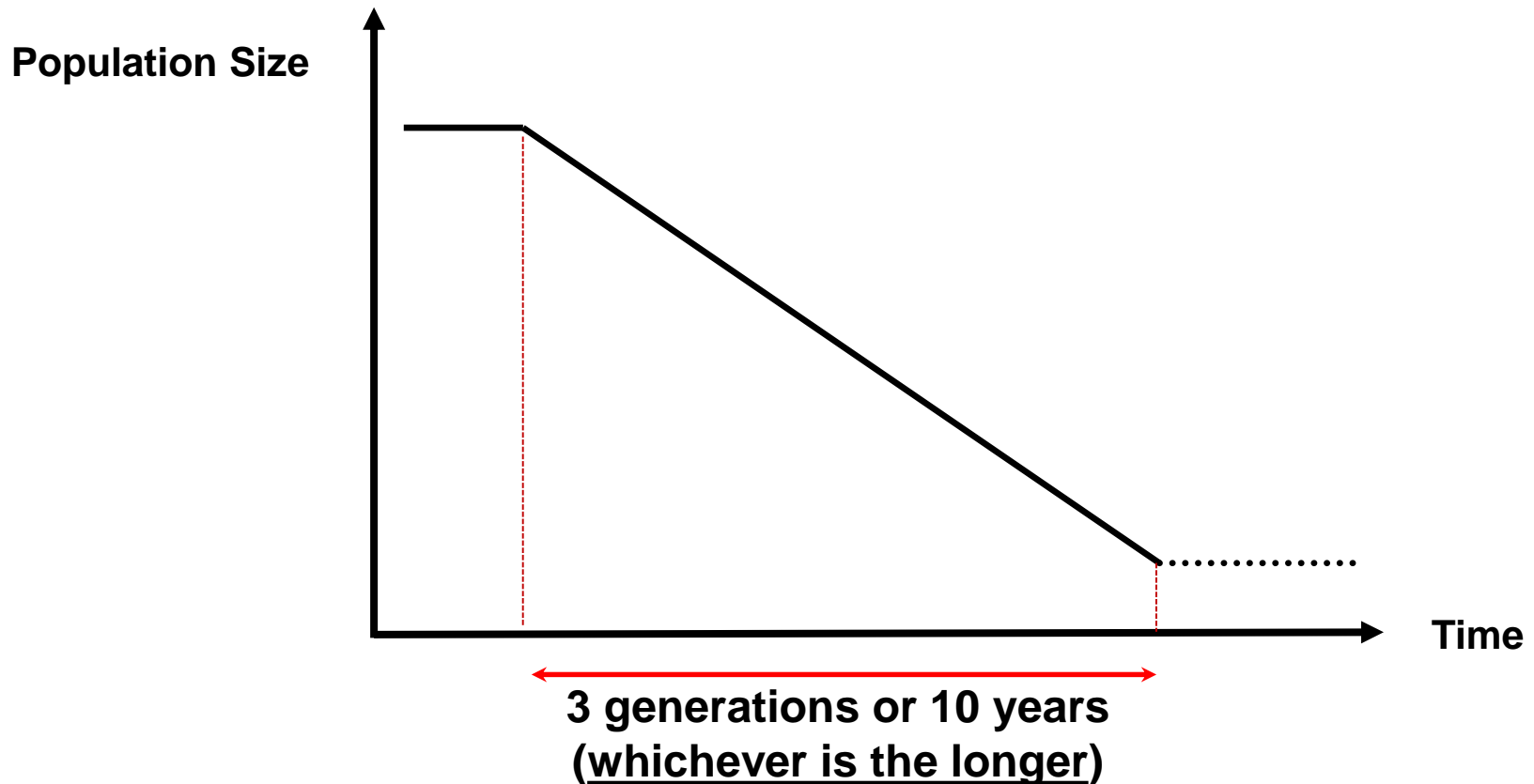
To use criterion A, we first need to know:

What is the generation length? Or is it likely that a three generation time period is less than 10 years?

Based on **any** of four subcriteria:

|	Timing of Reduction		Reduction Conditions		
	Past	**Future**	**Causes Understood**	**Causes Stopped**	**Effects are reversible**
A1	✔		✔	✔	✔
A2	✔				
A3		✔*			
A4	✔	✔*			

* Up to a maximum of 100 years into the future

A. Population size reduction. Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4

	Critically Endangered	Endangered	Vulnerable
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3 & A4	≥ 80%	≥ 50%	≥ 30%

		based on any of the following:	
A1	Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND have ceased.		(a) direct observation *[Except A3]*
A2	Population reduction observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.		(b) an index of abundance appropriate to the taxon
A3	Population reduction projected, inferred or suspected to be met in the future (up to a maximum of 100 years). *[(a) cannot be used for A3]*		(c) a decline in area of occupancy (AOO), extent of occurrence (EOO) and/or habitat quality
A4	An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.		(d) actual or potential levels of exploitation
			(e) effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.

Criterion A4

A "moving window" reduction

10 years / 3 generations

Present
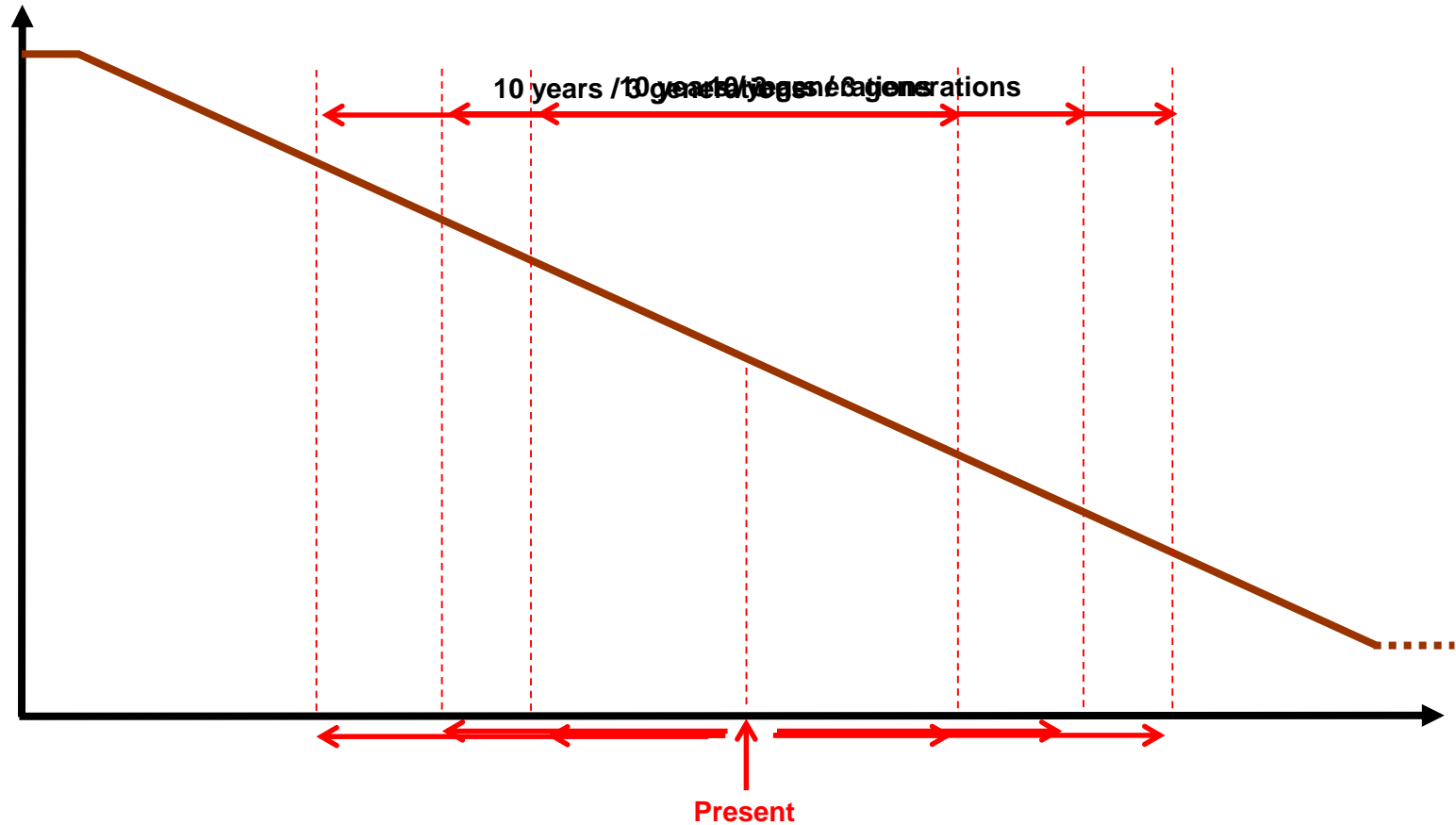
Criterion A4

A "moving window" reduction

Criterion A2

Reduction (1987-2017)

33% = Vulnerable

Criterion A4

Reduction (2003-2033)

58% = Endangered

Criterion A3

Reduction (2017-2047)

40% = Vulnerable

Assessment year →

| Past census data gathered every 2 yrs		Reduction rate over next 30 yrs (3 generations)	Estimated future populations	
Year	Population size		Year	Population size
1987	10,000	33%	**2017**	**6,700**
1989	10,000	38%	2019	6,160
1991	10,000	43%	2021	5,680
1993	10,000	47%	2023	5,260
1995	10,000	51%	2025	4,900
1997	10,000	54%	2027	4,600
1999	9,940	56%	2029	4,600
2001	9,820	57%	2031	4,180
2003	9,640	58%	2033	4,060
2005	9,400	57%	2035	4,000
2007	9,100	56%	2037	4,000
2009	8,740	54%	2039	4,000
2011	8,320	52%	2041	4,000
2013	7,840	49%	2043	4,000
2015	7,300	45%	2045	4,000
2017	**6,700**	40%	2047	4,000

Criterion A example: a marine fish

- Assessment being carried out in 2016

- Occurs on the eastern Atlantic along the coast of North Africa.

- Generation length 3 years.

- A commercial species, caught by trawlers and small longliners and gillnetters. Also caught as bycatch in shrimp fisheries.

- Annual catch data from early 1980s to 2000 relatively stable at 23,000-25,000 t. Data from 2000-2016 indicate a decline of 87% (from 24,688 t in 2000 to 3,252 t in 2016).

- The species continues to decline as it is still being targeted by commercial fisheries.

Criterion A example: a marine fish

87% decline (2000-2016)
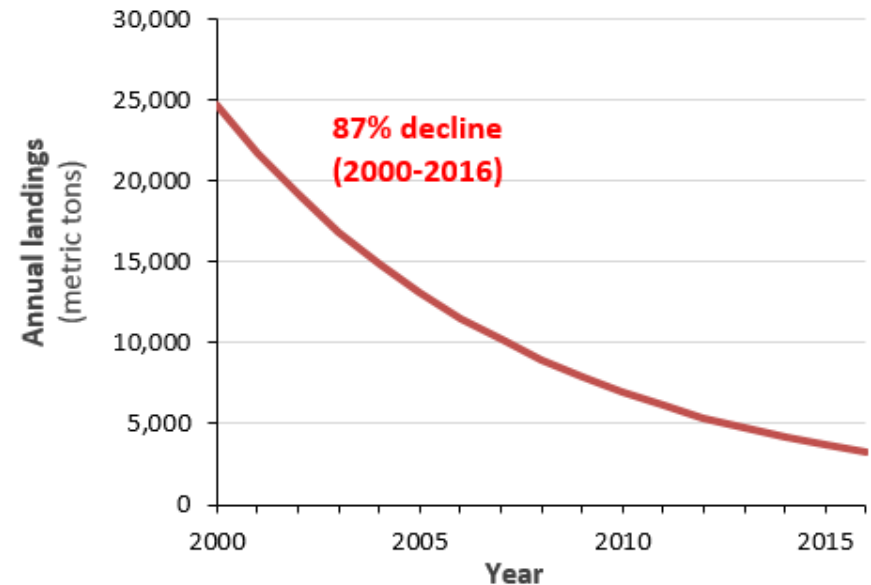
72% reduction (2006-2016)
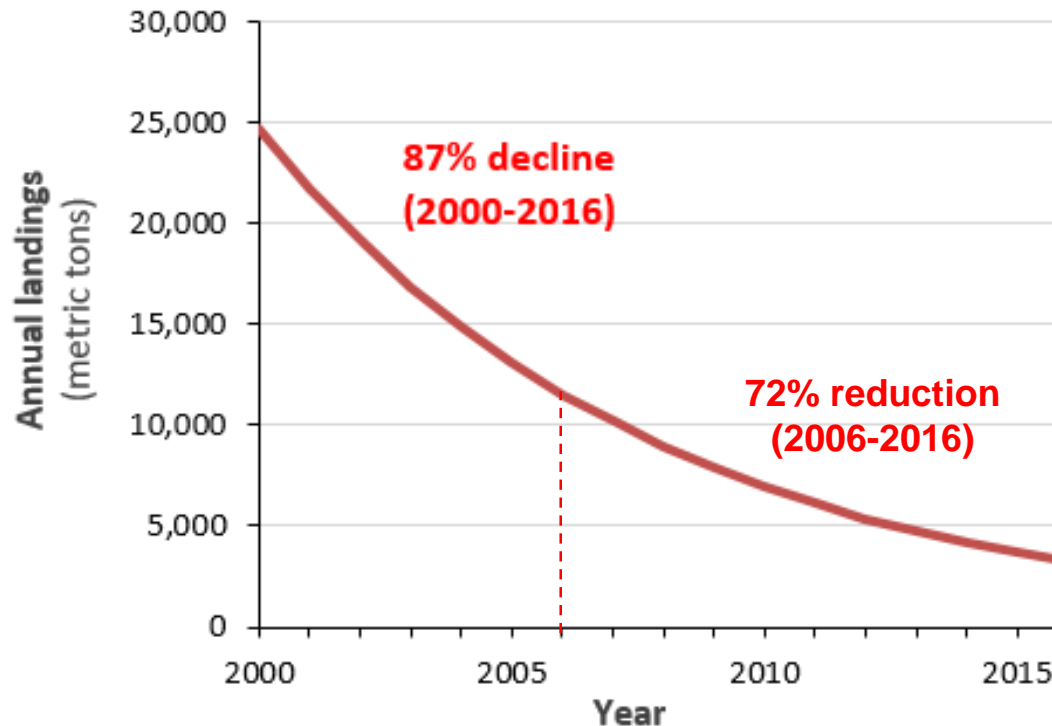
EN A2bd

- Three generations = 9 years.   Measure reduction over **10 years**

- Reduction over **past** 10 years (2006-2016) = **72%**. EN A1 or EN A2…?

- Cause of reduction has not stopped.   **EN A2**

- Reduction measurement based on:

  - Fisheries data (index of abundance).   **EN A2b**

  - Exploitation   **EN A2d**

Criterion A example: a whale
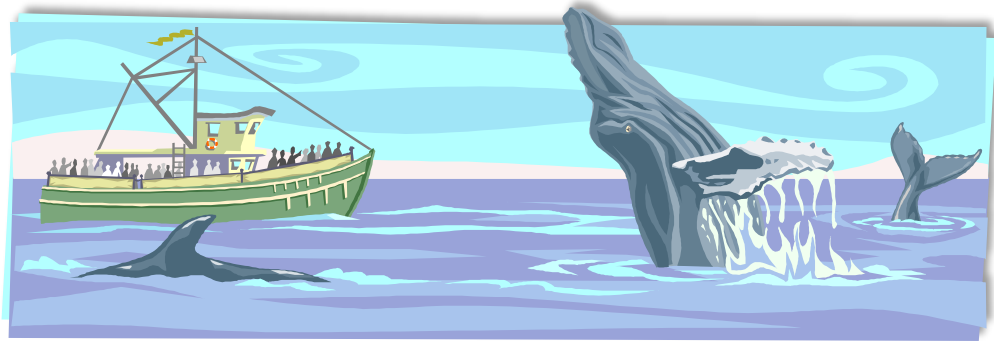
- Generation length ~ 31 years

- Population decline <u>70-90%</u> over past 3 generations. Populations appear to be recovering.

- Population declines caused by commercial whaling:
    - Cause and effects of decline is <u>fully understood</u>
    - Commercial whaling has <u>stopped</u>
    - Pop decline appears to be <u>reversible</u>   CR/EN A1

- Percentage decline based on:
    - Whale sightings and observations   CR/EN A1a
    - Stock monitoring surveys and reports   CR/EN A1b
    - Whaling statistics and records   CR/EN A1d

- Given uncertainty in the decline and current stability and population recovery, is listed as EN.

EN A1abd

Criterion A example: a tree

- Generation length unknown; ~ 50 years in similar species

- Endemic to dry forest, which have been intensively cut for agriculture over last century. Today only highly fragmented forest patches remain, and suffer:
  - Intense predation from deer and cattle
  - Uncontrolled fires

- Estimated 95% habitat loss over past 150 years: given population densities & distribution, suspected population decline of at least 50%.   **EN A2**

- Habitat loss ongoing. Regeneration close to zero due to intensive grazing; seeds also consumed by butterfly larvae – suspected population decline of up to 80% over next 100 years.   **CR/EN A3**

- Population decline rate based on:
  - Massive habitat loss   **A2+3c**
  - Introduced predators   **A2+3e**

EN A2ce+3ce

Near Threatened (NT) and Criterion A :

Close to meeting the threshold for Vulnerable

- Population has undergone a **40%** reduction in the last three generations.

- Causes of reduction are understood, have stopped, and the reduction is reversible.

Near Threatened
(nearly meets VU A1)
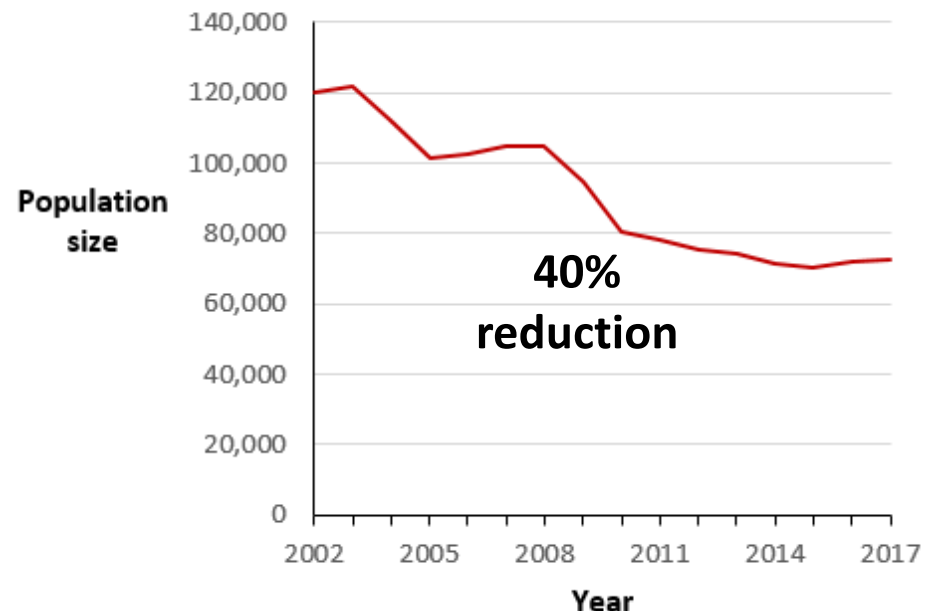
Near Threatened (NT) and Criterion A :

Close to meeting the threshold for Vulnerable

- Population has undergone a **20-25%** reduction in the last three generations.

- We don't know what has caused this reduction, and the population appears to still be declining.

Near Threatened
(nearly meets VU A2)
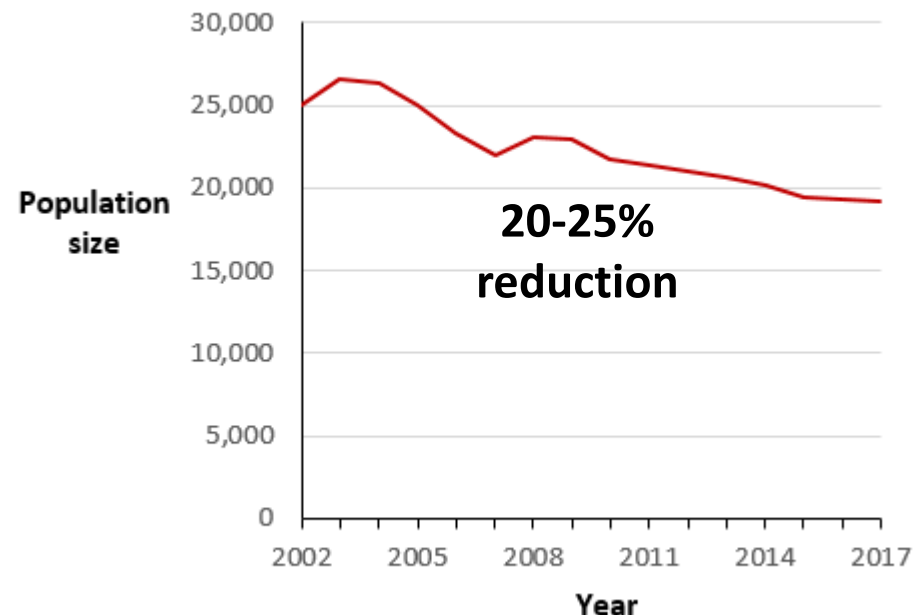
CriterionA_Workbook.xls
(https://www.iucnredlist.org/resources/criterion-a)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	**Calculating 3 generation decline with exponential assumption and only 2 years of data**													
2	Instructions: Enter data only in blue-highlighted cells. The result is in the yellow-highlighted cells.													
3	Notes: constant exponential rate is assumed													
4	Generation time (years)=	15		Assessment period=		45	years		...					
5	Assessment year=	2005		3 generations ago=		1960			...					
6														
7	**Year 1**	**Population in year 1**	**Year 2**	**Population in year 2**	**# years between 3-gen ago and Year1**	**# years btw Year2 and present**	**# years btw estimates**	**Annual change**	**Change btw 3-gen ago & Yr1**	**Change btw Yr2 & present**	**Population 3 gen ago:1960**	**Population current:2005**	**3-gen change**	
8	1970	10,000	1990	7,000	10	15	20	98.23%	84%	77%	11,952	5,357	-55.2%	(reduction)
9														
10														
11														
12														
13														
14			For graph only:											
15		Year	Predicted	Year	Observed									
16		1960	11952	1970	10,000									
17		2005	5357	1990	7,000									
18		1970	10000											
19		1990	7000											
20														
21														

Criterion A2: EN
Criterion A1: VU

First Subpopulation

Population Size
14,000
12,000
10,000
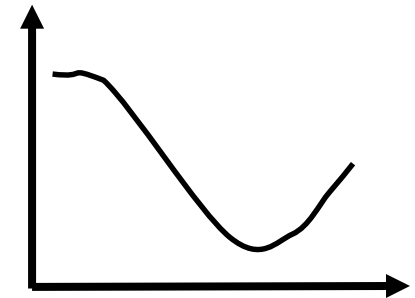8,000

Intro **Exponential Decline** Linear Decline

Guidelines for Using the IUCN Red List Categories and Criteria

Criterion A points to remember:
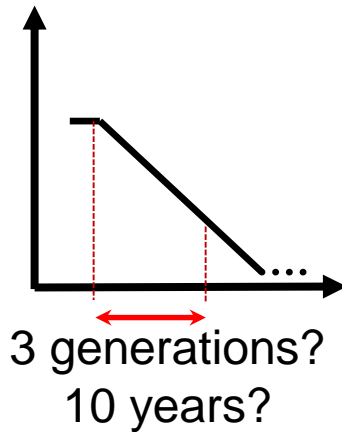
To use criterion A, an estimate of the **generation length** is needed

3 generations?
10 years?

Reduction in population size may be a one-off event...

... Or it may be ongoing

Criterion A points to remember:

Criterion A1 uses higher thresholds than A2, A3 and A4

A. Population size reduction. Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4			
	Critically Endangered	Endangered	Vulnerable
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3 & A4	≥ 80%	≥ 50%	≥ 30%

A1 Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND have ceased.

Criterion A points to remember:

Consider the pattern of population reduction
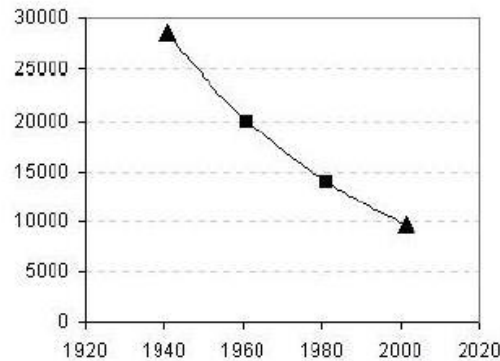
Figure 5.1. Exponential decline
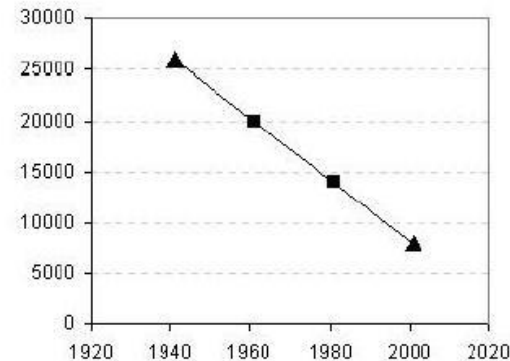
Figure 5.2. Linear decline
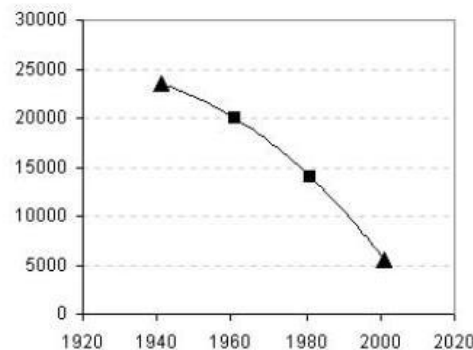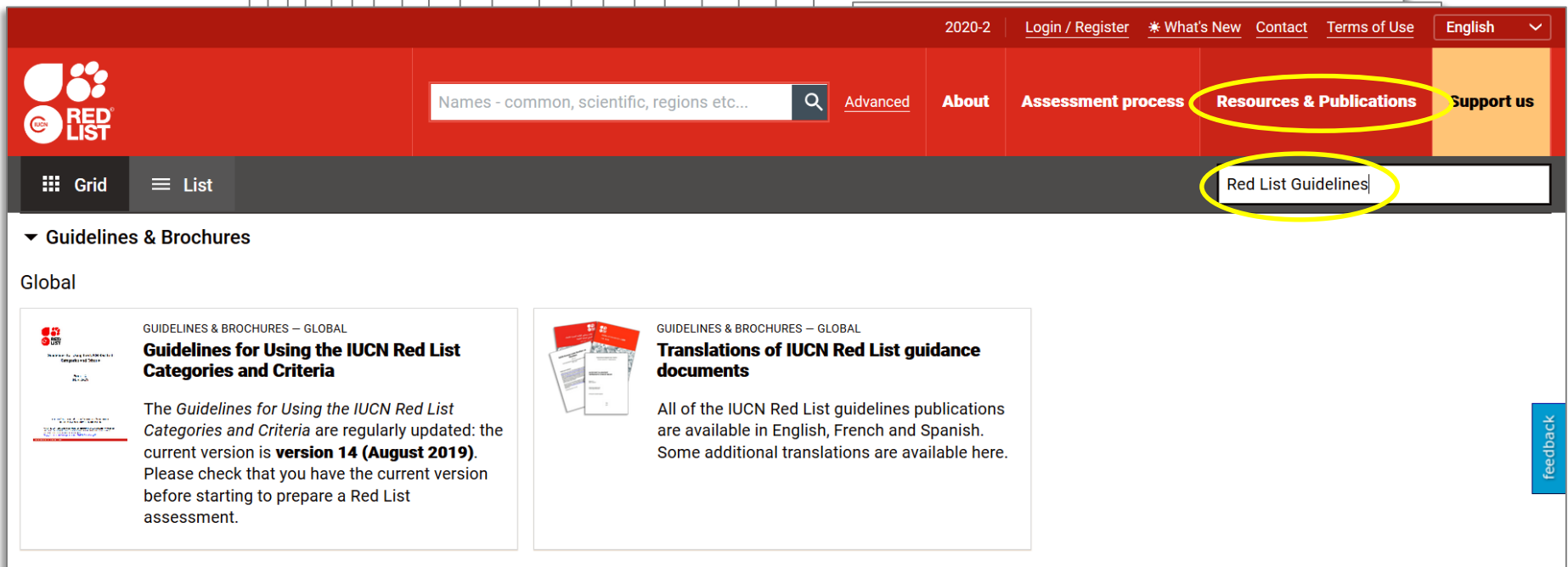
Figure 5.3. Accelerated decline

Refer to Red List Guidelines: sections 4.5 and 5

Criterion A exercise: Case Study
(30 minutes)

1. Select one person in your group to be the reporter.

2. <u>Reporters</u>:
   - Use the flip chart to record your group's assessment.
   - You will also present the group's discussion to the rest of the participants.

3. Read through the case study provided.

4. As a group, discuss the case study and assess the species using **only criterion A**.

5. Make full use of the resources available to help you (including asking the facilitators for advice!)