



Assessing the conservation status of a species

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Mentors



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IUCN Red List Assessment: an estimate of **extinction risk**

What is the likelihood of a species becoming extinct in the near future, given current knowledge about **population trends**, **range**, and recent, current or projected **threats**?

It is not a final list of species that are priorities for conservation action



Illustration copyright Bob Diven



What can be assessed?

- All described taxa:



Tiger (*Panthera tigris*)



Sumatran Tiger
(*P. t. sumatrae*)



Malayan Tiger
(*P. t. jacksoni*)



Amur Tiger
(*P. t. altaica*)

- Species
- Subspecies
- Varieties (plants)
- Subpopulations
- Microorganisms..no....

- Undescribed taxa, **only if:**

- Clearly distinct species
- Voucher references provided
- Distribution information available
- Conservation benefit to the assessment

Oncorhynchus nerka
<http://dx.doi.org/10.2305/IUCN.UK.2011-2.RLTS.T135301A4071001.en> Download

NOT EVALUATED DATA DEFICIENT **LEAST CONCERN** NEAR THREATENED VULNERABLE ENDANGERED CRITICALLY ENDANGERED
 NE DD LC NT VU EN CR

[Summary](#) [Classification Schemes](#) [Images & External Links](#) [Bibliography](#) [Full Account](#)

Taxonomy [top]

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Actinopterygii	Salmoniformes	Salmonidae

Scientific Name: *Oncorhynchus nerka*
Species Authority: (Walbaum, 1792)
Infra-specific Taxa Assessed:
 See [Oncorhynchus nerka \(ALASKA COASTAL DOWNWELLING, EASTERN GULF OF ALASKA\)](#)
 See [Oncorhynchus nerka \(ALASKA COASTAL DOWNWELLING, WESTERN GULF OF ALASKA\)](#)
 See [Oncorhynchus nerka \(ALSEK RIVER\)](#)
 See [Oncorhynchus nerka \(ANADYR CURRENT\)](#)
 See [Oncorhynchus nerka \(ANADYR RIVER\)](#)
 See [Oncorhynchus nerka \(BERING-ALASKAN MIXING\)](#)
 See [Oncorhynchus nerka \(BERING SLOPE/KAMCHATKA CURRENTS\)](#)
 See [Oncorhynchus nerka \(COLUMBIA RIVER, Okanogan R/Osoyoos Lk\)](#)
 See [Oncorhynchus nerka \(COLUMBIA RIVER, Payette R\)](#)
 See [Oncorhynchus nerka \(COLUMBIA RIVER, Redfish Lk\)](#)
 See [Oncorhynchus nerka \(COLUMBIA RIVER, Suttle Lk/Deschutes R\)](#)
 See [Oncorhynchus nerka \(COLUMBIA RIVER, Upper, Headwater/Arrow, Whatsan Lk\)](#)
 See [Oncorhynchus nerka \(COLUMBIA RIVER, Wallowa Lk\)](#)
 See [Oncorhynchus nerka \(COLUMBIA RIVER, Wenatchee\)](#)
 See [Oncorhynchus nerka \(COLUMBIA RIVER, Yakima R\)](#)



Maui Chaff Flower
(*Achyranthes splendens* var. *splendens*)

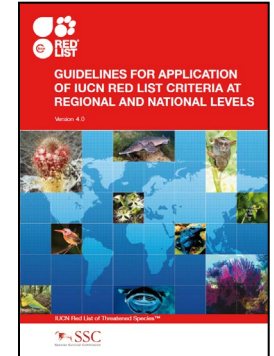


Image © Graham Beards

What can be assessed?

IUCN Red List Categories and Criteria apply to:

- **Global level assessments**
- **Regional and national level** only with the ***Guidelines for Application of IUCN Red List Criteria at Regional Levels***
- **Wild populations** inside their **natural range**, and populations resulting from conservation introductions (also called “benign introductions”)



Magnoliopsida > Sapindales > Sapindaceae
Aesculus hippocastanum
 Horse Chestnut
[Download Spatial data](#)

>Back to Red List Page

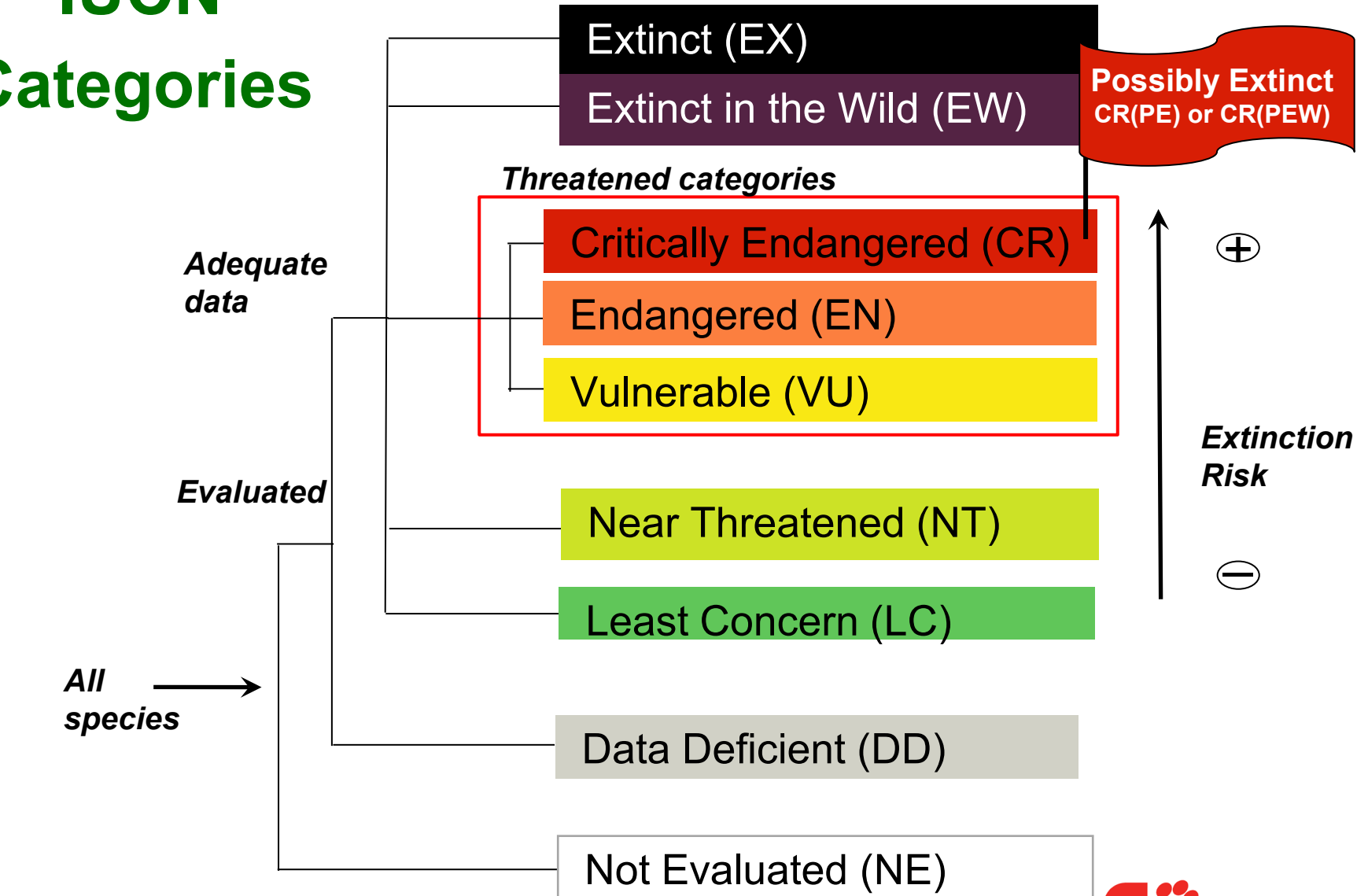
NE DO LC **NT** VU EN CR EW EX
THREATENED

Extant (resident)
 Introduced
 Possibly Extinct

BROWSE IMAGES
[ARKive \(38 found\)](#)

Botanic Gardens Conservation International (BGCI), International Union for Conservation of Nature (IUCN) 2013. Aesculus hippocastanum. The IUCN Red List of Threatened Species. Version 2016-3

The IUCN Categories



Nature of the Criteria

CRITERIA

A

Population reduction

B

Restricted geographic range

C

Small population size & decline

D

Very small or restricted population

E

Quantitative analysis

Quantitative thresholds

THREATENED CATEGORIES

Critically Endangered (CR)

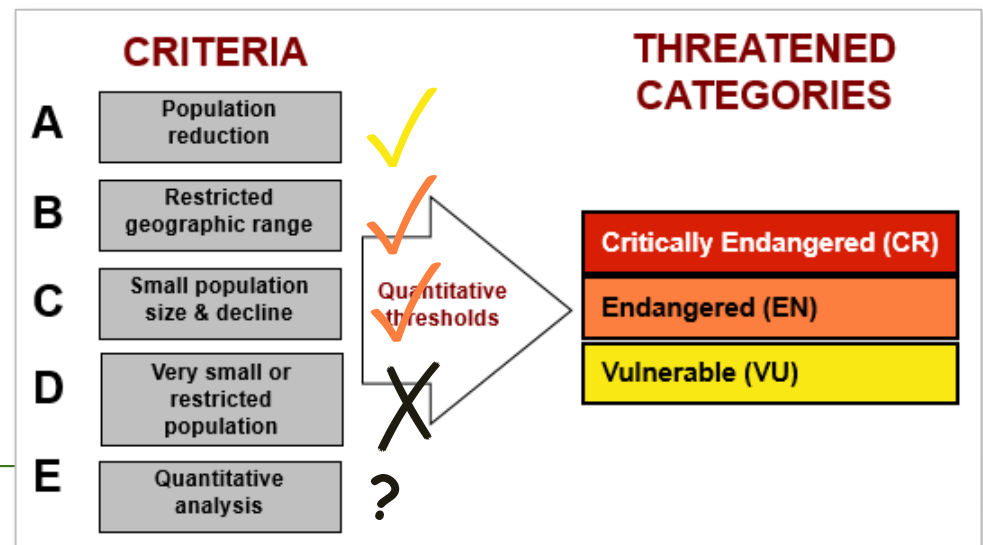
Endangered (EN)

Vulnerable (VU)

Why use multiple criteria?

Not all of the criteria will be suitable for all taxa.

- All taxa being assessed must be evaluated against all five criteria.
- Meeting **any one** of the criteria qualifies a taxon for listing at that level of threat
- **All** criteria met at the **highest level of threat** should be listed.



SUMMARY OF THE FIVE CRITERIA (A-E) USED TO EVALUATE IF A TAXON BELONGS IN AN IUCN RED LIST THREATENED CATEGORY (CRITICALLY ENDANGERED, ENDANGERED OR VULNERABLE).¹

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%
<p>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.</p> <p>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.</p> <p>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].</p> <p>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.</p>	<p>based on any of the following:</p> <p>(a) direct observation [except A3] (b) an index of abundance appropriate to the taxon (c) a decline in area of occupancy (AOO), extent of occurrence (EOO) and/or habitat quality (d) actual or potential levels of exploitation (e) effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.</p>		
B. Geographic range in the form of either B1 (extent of occurrence) AND/OR B2 (area of occupancy)			
	Critically Endangered	Endangered	Vulnerable
B1. Extent of occurrence (EOO)	< 100 km ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
AND at least 2 of the following 3 conditions:			
(a) Severely fragmented OR Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals			
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			
D. Very small or restricted population			
	Critically Endangered	Endangered	Vulnerable
D. Number of mature individuals	< 50	< 250	D1. < 1,000
D2. Only applies to the VU category 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 ² or number of locations ≤ 5
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



Rabb's Fringe-limbed Treefrog
Ecnomiohyla rabborum

Category: Critically Endangered



CR **A2ace;B1ab(iii)**



Criteria & subcriteria

Dealing with a lack of high quality data

- The threatened categories use quantitative thresholds
- BUT a lack of high quality data should not deter assessors from applying the IUCN Criteria
- Assessments can be based on observations, estimations, projections, inferences and suppositions
- GBIF-mediated data provides valuable information for the application of Criterion B and for producing species distribution maps



Essential tools for Red List assessments

www.iucnredlist.org

The image displays three overlapping document covers from the IUCN Red List. The top-left cover is titled "DOCUMENTATION STANDARDS AND CONSISTENCY CRITERIA FOR IUCN RED LIST ASSESSMENTS AND SPECIES ACCOUNTS" (Version 2, September 2013). The middle cover is titled "Rules of Procedure for IUCN Red List Assessments 2017–2020" (Version 3.0, September 2016). The right cover is titled "Guidelines for Using the IUCN Red List Categories and Criteria" (Version 13, March 2017). Each cover features the IUCN Red List logo and a red header bar with the text "THE IUCN RED LIST OF THREATENED SPECIES™".

DOCUMENTATION STANDARDS AND CONSISTENCY CRITERIA FOR IUCN RED LIST ASSESSMENTS AND SPECIES ACCOUNTS
Version 2 (September 2013)
A working document prepared by the IUCN Standards and Petitions Subcommittee

Rules of Procedure for IUCN Red List Assessments 2017–2020
Version 3.0
Citation: IUCN. 2016. Rules of Procedure for IUCN Red List Assessments 2017–2020. Version 3.0. Approved by the IUCN SSC Steering Committee in September 2016. Downloadable from: http://cmsdocs.s3.amazonaws.com/keydocuments/Rules_of_Procedure_for_Red_List_2017-2020.pdf

Guidelines for Using the IUCN Red List Categories and Criteria
Version 13 (March 2017)
Prepared by the Standards and Petitions Subcommittee of the IUCN Species Survival Commission.
Citation: IUCN Standards and Petitions Subcommittee. 2017. Guidelines for Using the IUCN Red List Categories and Criteria. Version 13. Prepared by the Standards and Petitions Subcommittee. Downloadable from <http://www.iucnredlist.org/documents/RedListGuidelines.pdf>

Online Training

IUCN Red List Assessor Training

<https://www.conservationtraining.org/course/index.php?categoryid=40>

Introduction to the IUCN Red List

The Extinction Crisis

Many of us already know that wildlife is to some extent "threatened", but relatively few people know what this means. The world's human population is growing fast, causing ever-increasing pressures on the animal, plant and fungi species around us. Globally, human activities are pushing tens of thousands of species towards extinction. As a result, the world today is facing an extinction crisis. As we lose species, we lose not only the planet's natural heritage, but also the environments that ensure our own survival. Our food - our water - the air we breathe, all depend on maintaining healthy ecosystems and the species that live within them.

Click below to learn more about the extinction crisis.

[Learn More](#)

IUCN Red List Assessments | What is a Red List Assessment?

Setting Conservation Priorities

When deciding which taxa should be actively (and/or legally) protected it is important to consider a range of factors, in addition to extinction risk.

Click on the tabs to the right to learn more about just some of the issues to consider.

- Extinction Risk
 - What is the taxon's risk of extinction? This could be the global Red List status (i.e. from *The IUCN Red List of Threatened Species™*) and/or the regional or national Red List status, if conservation priorities are being set for a particular region or country.
- Ecological Importance
- Phylogenetic Importance
- Historical or Cultural Importance
- Economic Feasibility
- International Agreements
- Global Population

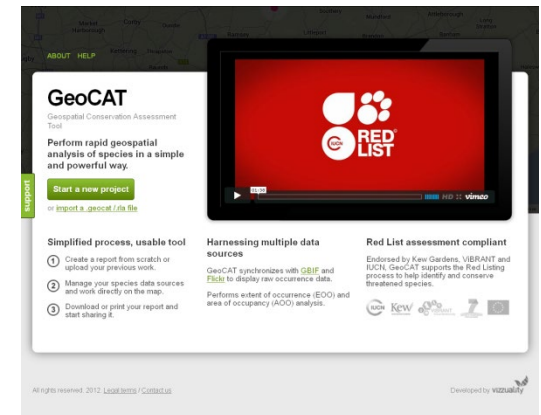
**Restricted geographic range + fragmentation/
few locations, continuing decline or extreme
fluctuations**



GeoCAT

<http://geocat.kew.org/>

Geospatial Conservation Assessment
Tool



[R Packages](#) - packages for R, e.g. rCAT, red, redlistr.

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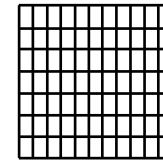
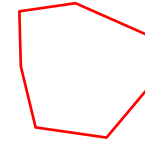
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A2 Population reduction observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.		(b) an index of abundance appropriate to the taxon	
A3 Population 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.	
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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			
D. Very small or restricted population			
	Critically Endangered	Endangered	Vulnerable
D. Number of mature individuals	< 50	< 250	D1. < 1,000
D2. Only applies to the VU category 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 ² or number of locations ≤ 5
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

Must meet :

B1: Estimated extent of occurrence

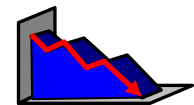
AND / OR

B2: Estimated area of occupancy



AND at least **TWO** of the sub-criteria a-c:

- a. Severely fragmented, or few locations
- b. Continuing decline
- c. Extreme fluctuations

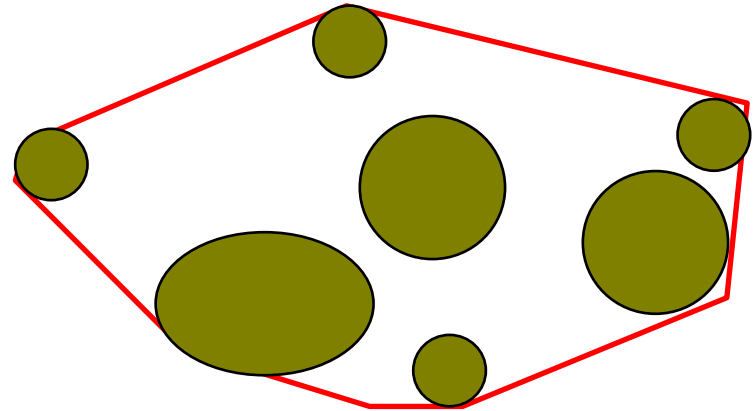


Extent of Occurrence

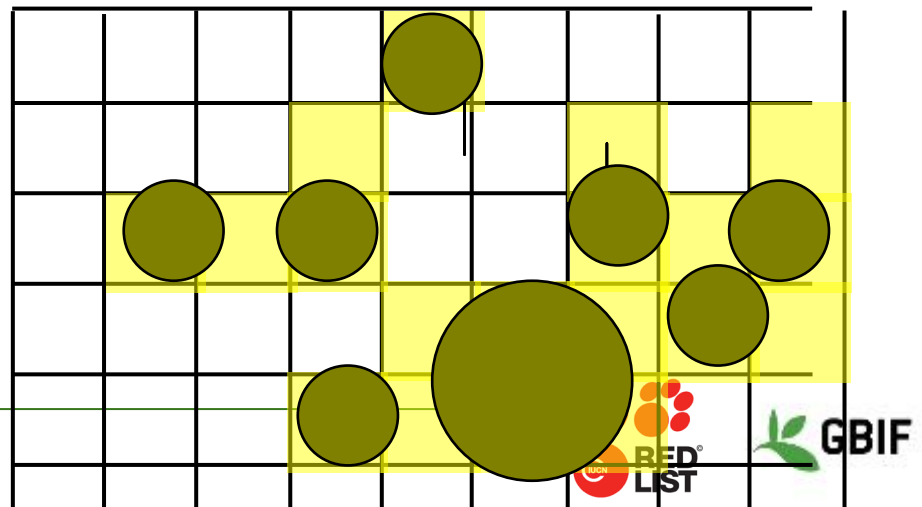
Area of Occupancy

Extent of Occurrence: area within the shortest continuous imaginary boundary drawn around all known, inferred, or projected sites presently occupied by the taxon.

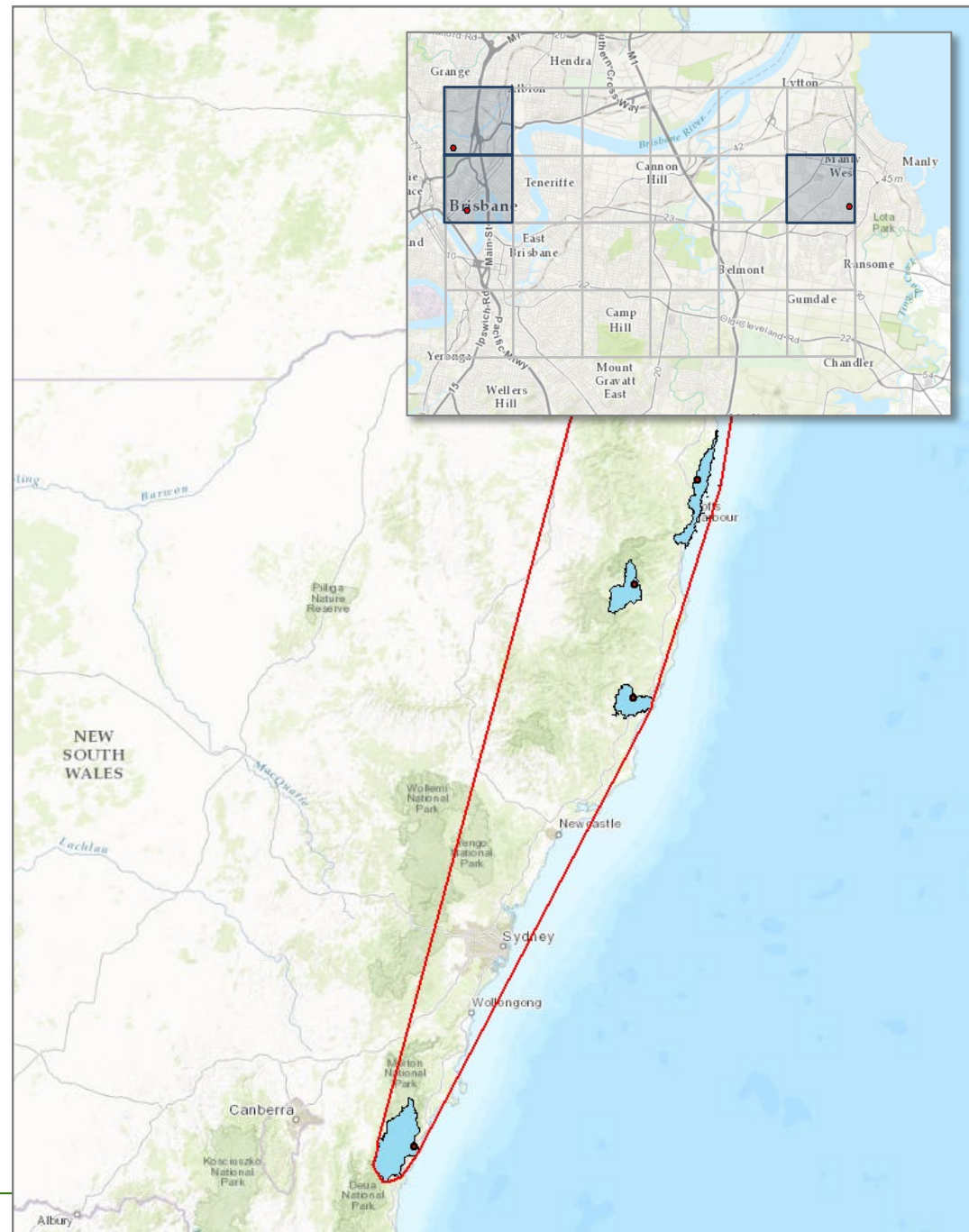
...EOO ≠ the species' range.



Area of Occupancy: area within the extent of occurrence which is actually occupied by the taxon (measured by **overlaying a 2x2 km grid and counting number of occupied cells**).



- **Distribution map**
 - Data points (red dots)
 - Limits to distribution (blue polygons)
- **Extent of occurrence (EOO)**
 - Entire area within the minimum convex polygon (e.g., 121,536 km²)
- **Area of occupancy (AOO)**
 - Total occupied 2x2 km grid cells (e.g., 40 km²)

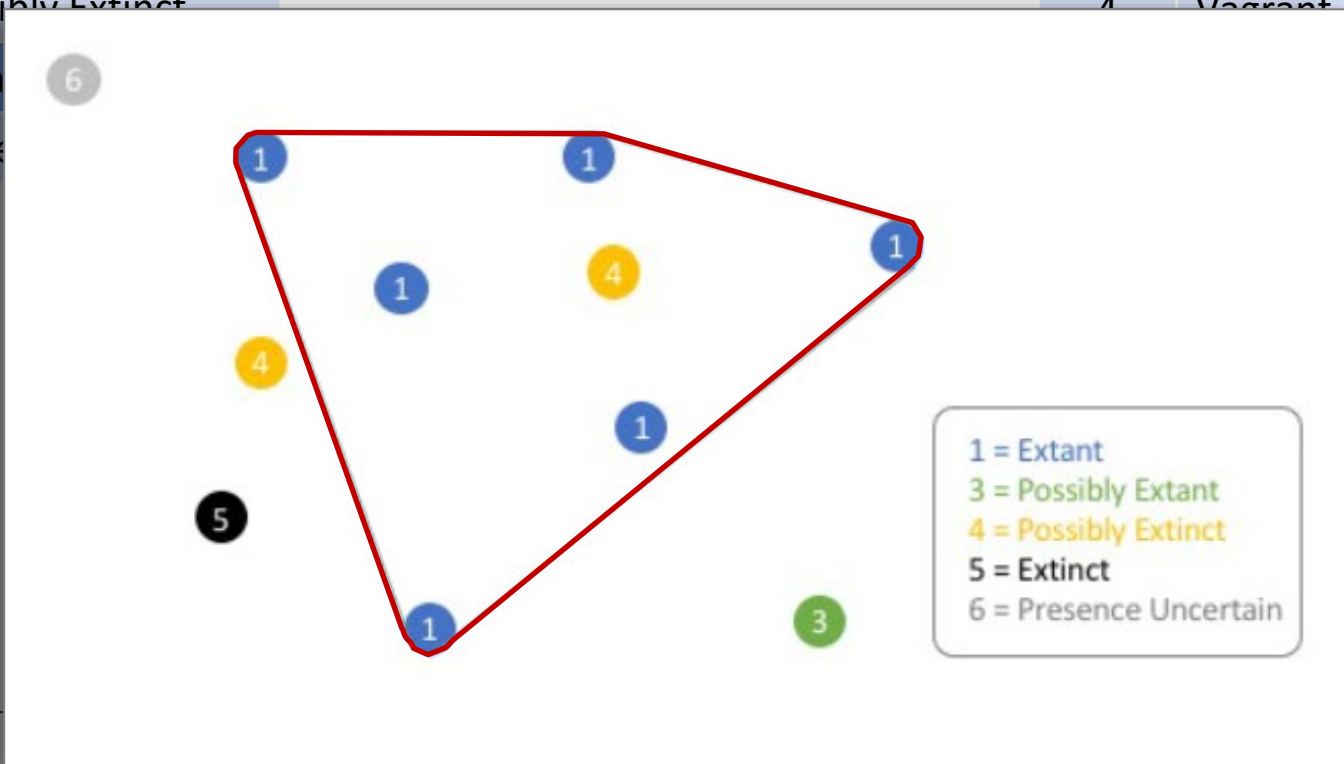


Presence/origin codes and EOO

Code	Presence
1	Extant
2	Probably Extant
3	Possibly Extant
4	Possibly Extinct
5	Extinct
6	Presence Uncertain

EOO calculator tool

Code	Origin
1	Native
2	Reintroduced
3	Introduced
4	Vegetation
5	Colonisation



B. Geographic range in the form of either B1 (extent of occurrence) AND/OR B2 (area of occupancy)

	Critically Endangered	Endangered	Vulnerable
B1. Extent of occurrence (EOO)	< 100 km ²	< 5,000 km ²	< 20,000 km ²
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AND at least 2 of the following 3 conditions:

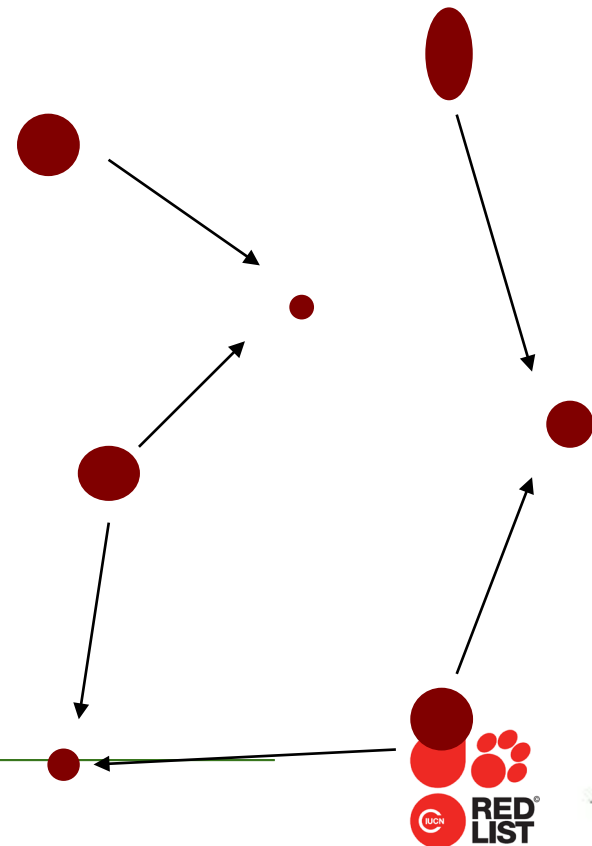
- | | | | |
|--|-----|-----|------|
| (a) Severely fragmented OR Number of locations | = 1 | ≤ 5 | ≤ 10 |
| (b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals. | | | |
| (c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals. | | | |

Severely Fragmented

Most individuals (>50%) found in **small, isolated subpopulations** between which there is **very little dispersal**. These subpopulations may be too small to be viable.

Taxa with highly mobile adult stages or producing large numbers of small, mobile diaspores can disperse more easily and are not so vulnerable to isolation through fragmented habitats.

Taxa producing small numbers of diaspores (or none at all), or only large ones are less able to disperse over wide areas and are more easily isolated.

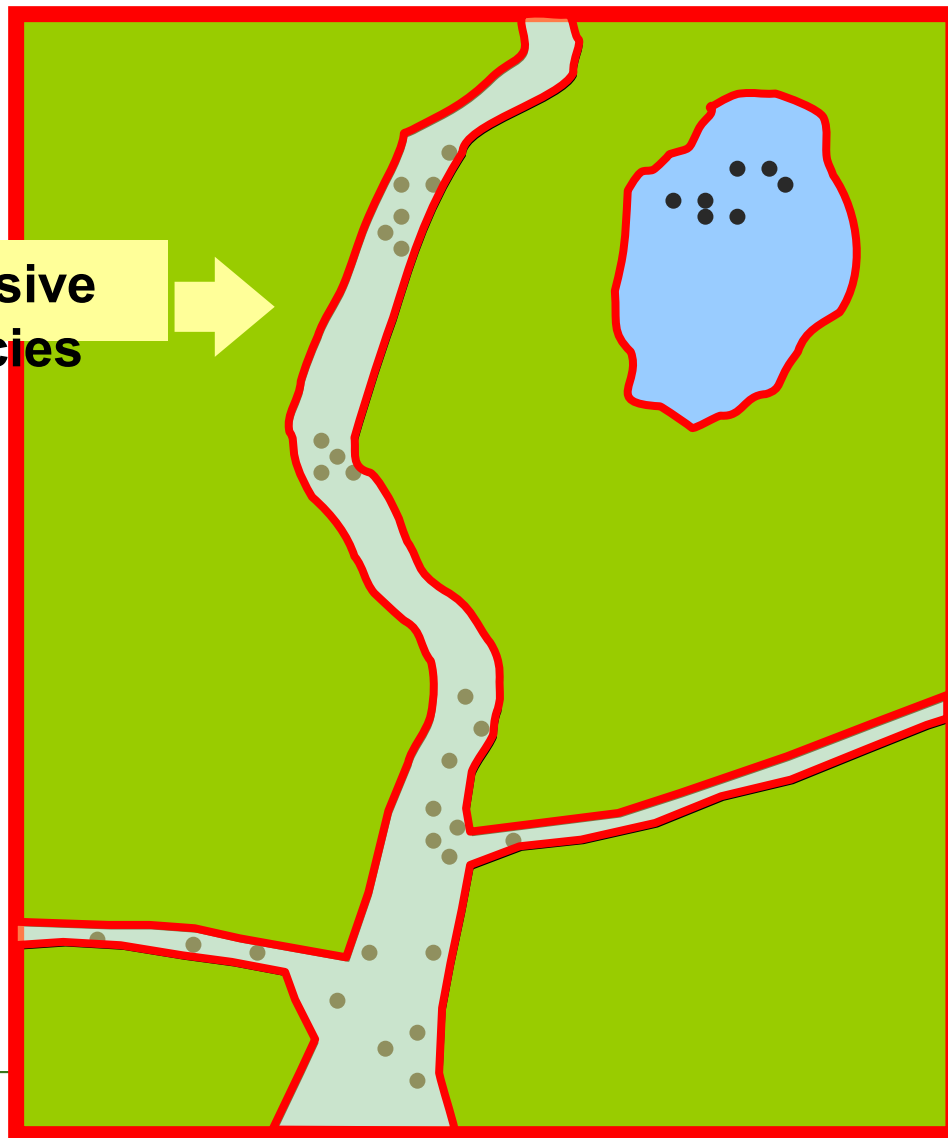


Location

Location is a geographically or ecologically distinct area in which a **single threatening event can rapidly affect all individuals of the taxon.**

Location

Invasive
species



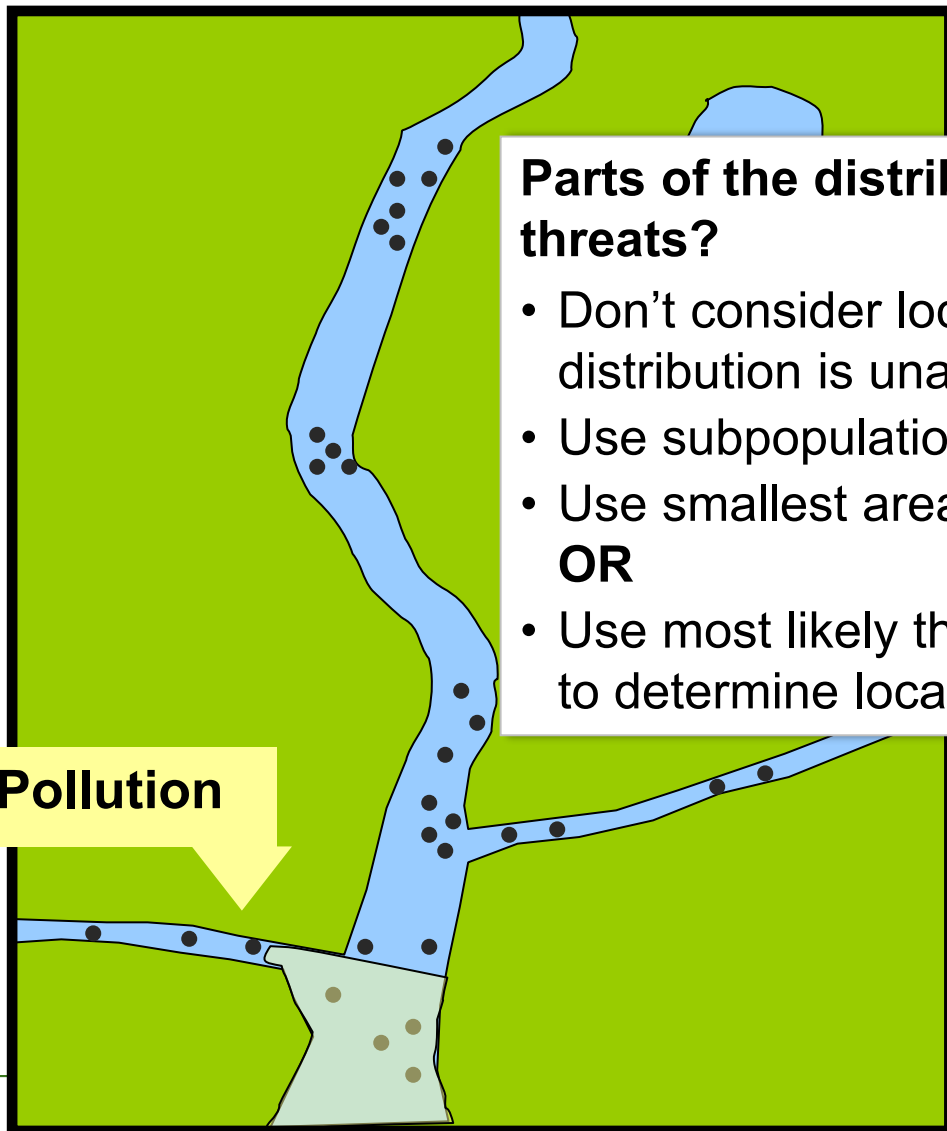
2 locations

Location



4 locations

Location



Parts of the distribution not affected by any threats?

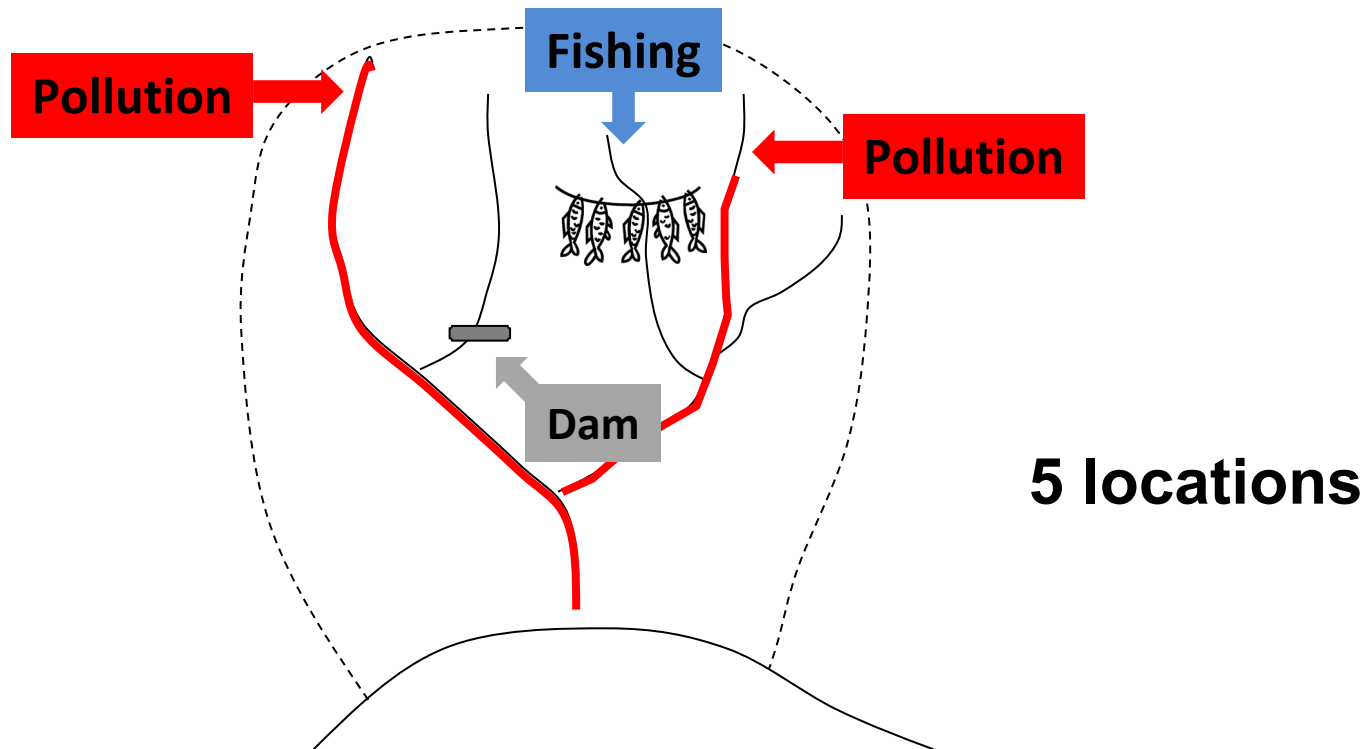
- Don't consider locations at all (if >50% of distribution is unaffected); **OR**
- Use subpopulations as surrogate for locations; **OR**
- Use smallest area affected to determine locations; **OR**
- Use most likely threat to occur in unaffected areas to determine locations there.

Pollution

4-5 or >5 locations...?

Location

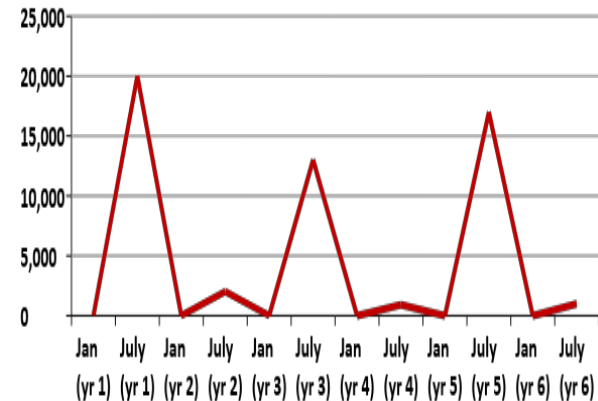
If most serious threat does not affect entire distribution: can use other threats to count locations in areas not affected by most serious threat.



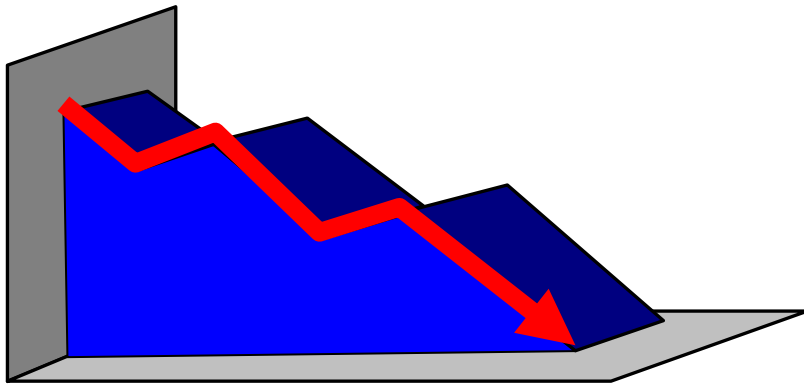
If there are no plausible threats, do not consider locations at all.

Extreme Fluctuations

Wide, rapid and frequent variation in population size, or subpopulations, or locations, or distribution (typically tenfold increase or decrease)



Continuing Decline

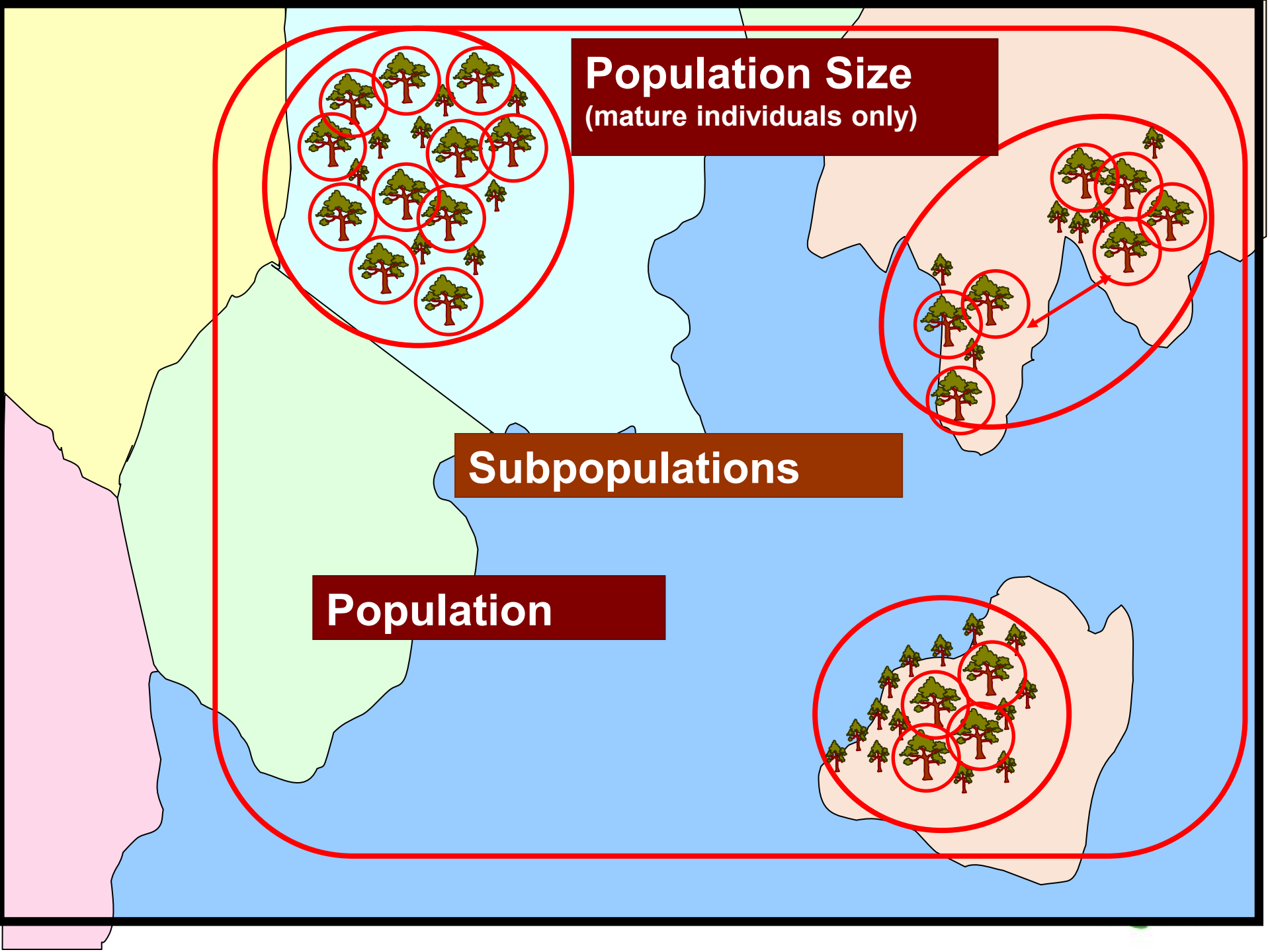


Continuing Decline is a recent, current or projected future decline which is liable to continue unless remedial measures are taken. Can be observed, estimated, inferred or projected.

Population Size
(mature individuals only)

Subpopulations

Population



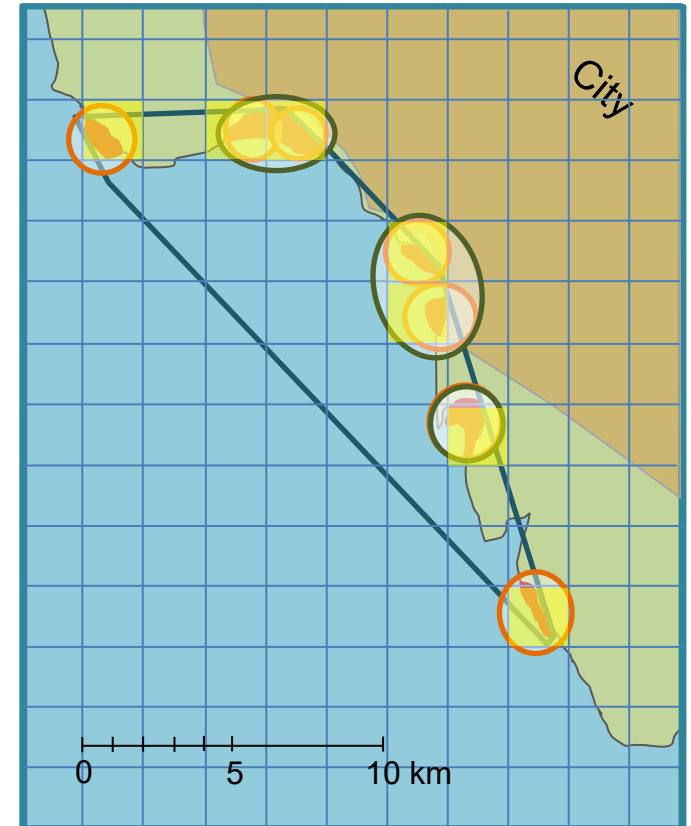
Example: a cone snail

- Known from only 6 sites along a 25 km stretch of coastline with a city occupying part of the area.
 - EOO = 150 km²
 - AOO = 28 km²
- Dispersal abilities between areas is not well known; there may be movement between groups. So severe fragmentation unknown.

Main threats recorded are:

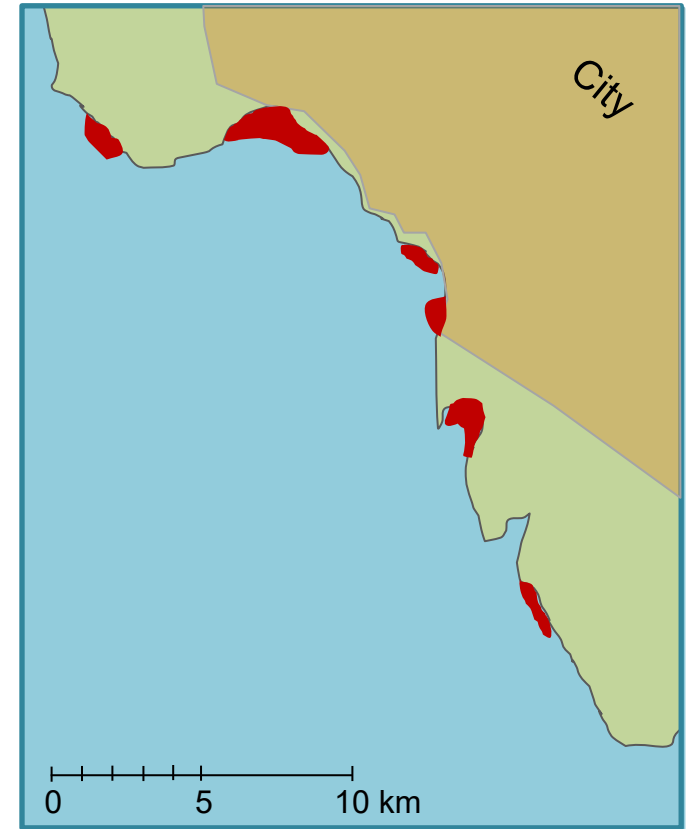
- Collection for shell trade.
- Habitat loss and decline from pollution and urban expansion.

- Locations = 5
- Continuing decline in habitat quality & population size
- No known extreme fluctuations



Example: a cone snail

- Known from only 6 sites along a 25 km stretch of coastline with a city occupying part of the area.
- EOO = 150 km² **EN B1**
- AOO = 28 km² **EN B2**
- Dispersal abilities between areas is not well known; there may be movement between groups. So severe fragmentation unknown.
- Main threats recorded are:
 - Collection for shell trade.
 - Habitat loss and decline from pollution and urban expansion.
- Locations = 5 **EN B1a+2a**
- Continuing decline in habitat quality & population size
- No known extreme fluctuations



EN B1ab(iii,iv)+2ab(iii,iv)

Exercise : Applying Criterion B



You will use www.geocat.kew.org to determine EOO and AOO measurements for the species *Brachypelma smithi* (F.O.Pickard-Cambridge, 1897) and *Aphonopelma anax* (Chamberlin, 1940) - two tarantula species –and apply criterion B of the IUCN Categories and Criteria in your group

Remember, in a real assessment you would apply all criteria

For the purposes of this exercise you will use the global IUCN Categories and Criteria. Ordinarily, you would use the Guidelines for Application of IUCN Red List Criteria at Regional and National Levels for national assessments

We will discuss your assessments in plenary

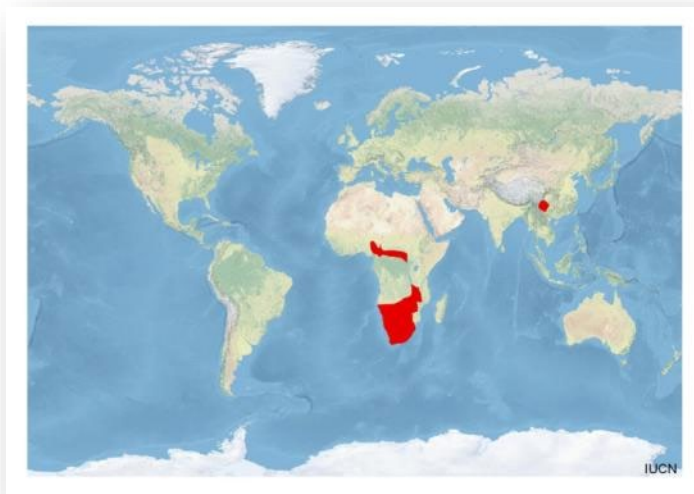
Brachypelma smithi (F.O.Pickard-Cambridge, 1897)

Extent of occurrence	11,848 km2	VU
Area of Occupancy	64 km2	EN
		Justification (please state whether this is observed, estimated, projected, inferred or suspected)
Severe Fragmentation	Yes or No - (MAYBE)	Possibly, we know that it is restricted to clearings and this could prevent movement between populations, particularly if we also have evidence of habitat degradation
Number of Locations	1	The illegal pet trade could occur across all of its distribution, not tied to specific locations
Continuing Decline	<u>Yes</u> or No	Suspected continuing decline of mature individuals due to pressure from illegal trade
Extreme Fluctuations	Yes or <u>No</u>	NO evidence of extreme fluctuations
Final Assessment	EN B2 ab(v)	

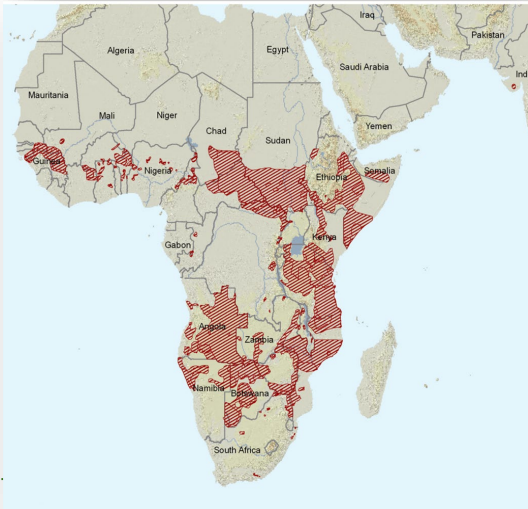
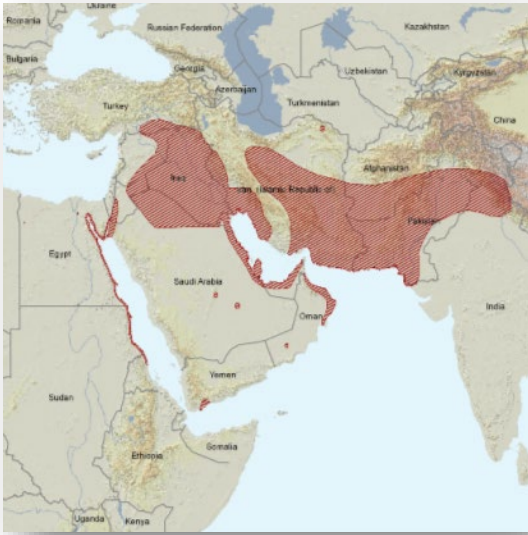
Aphonopelma anax (Chamberlin, 1940)

Extent of occurrence	124985 km2 LC	
Area of Occupancy	268 km2 EN	
		Justification (please state whether this is observed, estimated, projected, inferred or suspected)
Severe Fragmentation	Yes or <u>No</u>	The species is common over its range, I am assuming that there is movement between population
Number of Locations	Many	Threat is from urban and agricultural development
Continuing Decline	<u>Yes</u> or No	Observed habitat degradation due to increasing urban and agricultural development
Extreme Fluctuations	Yes or <u>No</u>	No evidence
Final Assessment	LC (does not fulfil at least 2 of the conditions required to pass into endangered)	

Mapping standards for IUCN Red List assessments



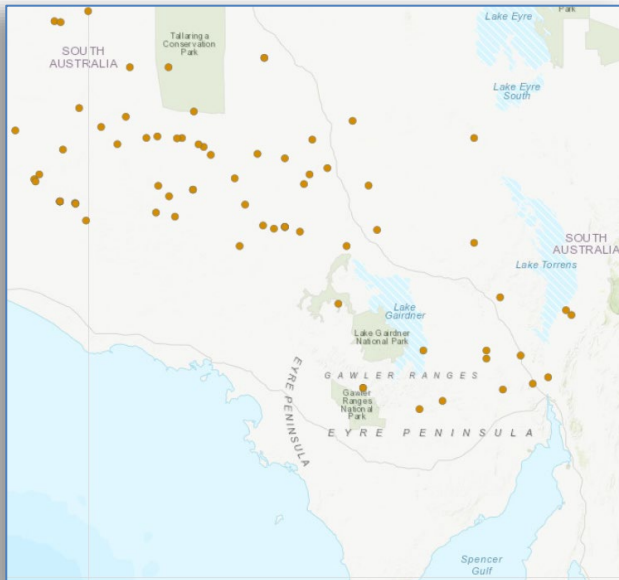
What are we mapping?



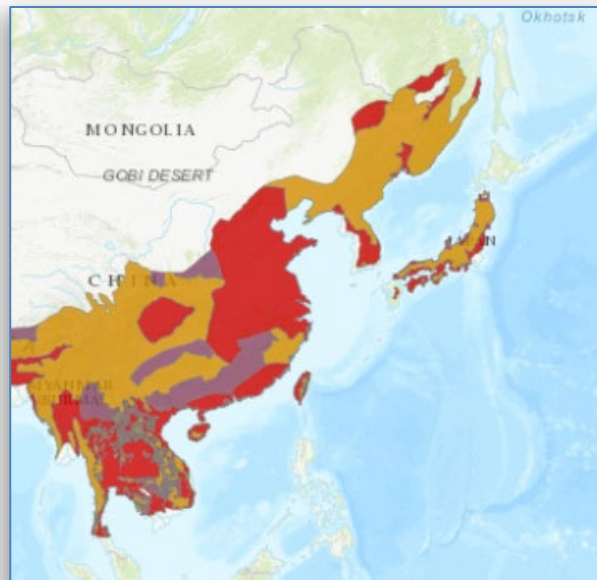
- Known or inferred limits of the species' distribution.
- Distribution depicted as points, polygons or a combination of points and polygons.
- **Polygons:**
 - The species probably only occurs within the polygons.
 - Does *not* mean species is distributed equally within the polygon or occurs everywhere in the polygon

Mapping Standards

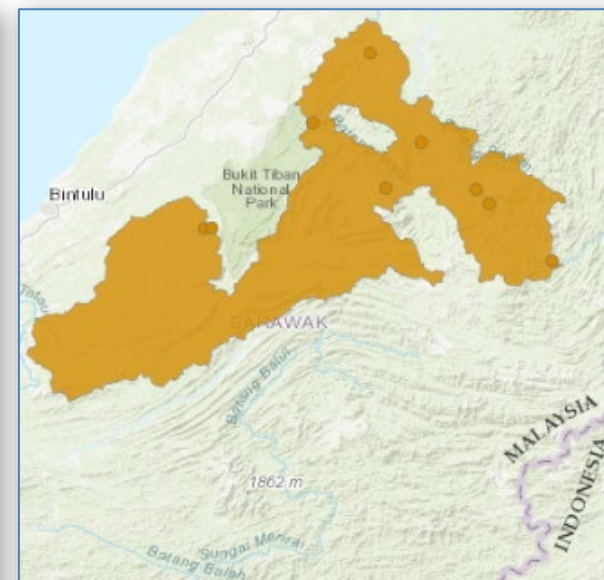
The preferred approach for preparing the map depends on the taxonomic group and the system in which the species occurs.



Plants



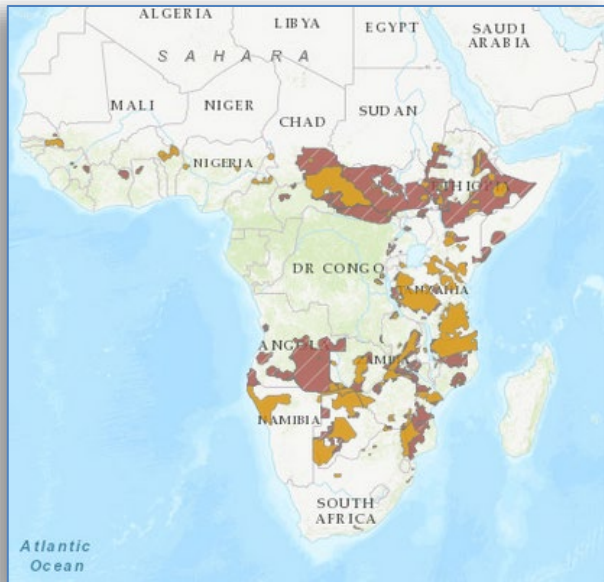
Vertebrates



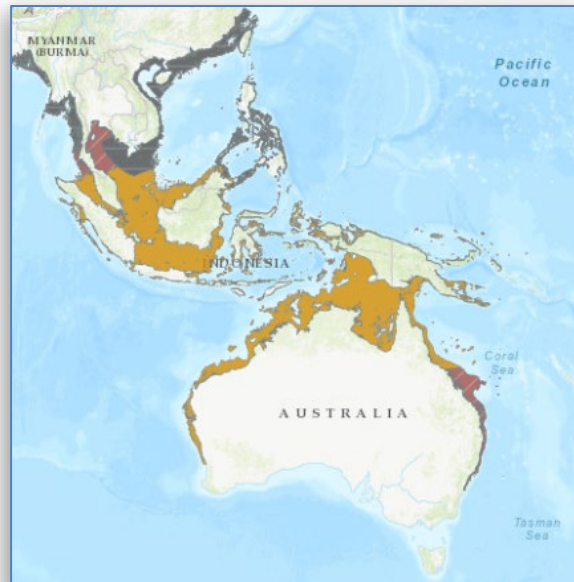
Invertebrates

Mapping Standards

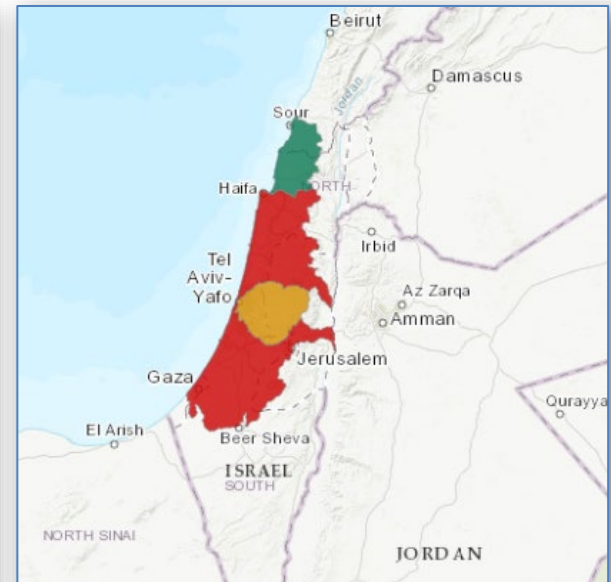
Preferred approaches for preparing maps for depends on the taxonomic group and the system in which the species occurs.



Terrestrial



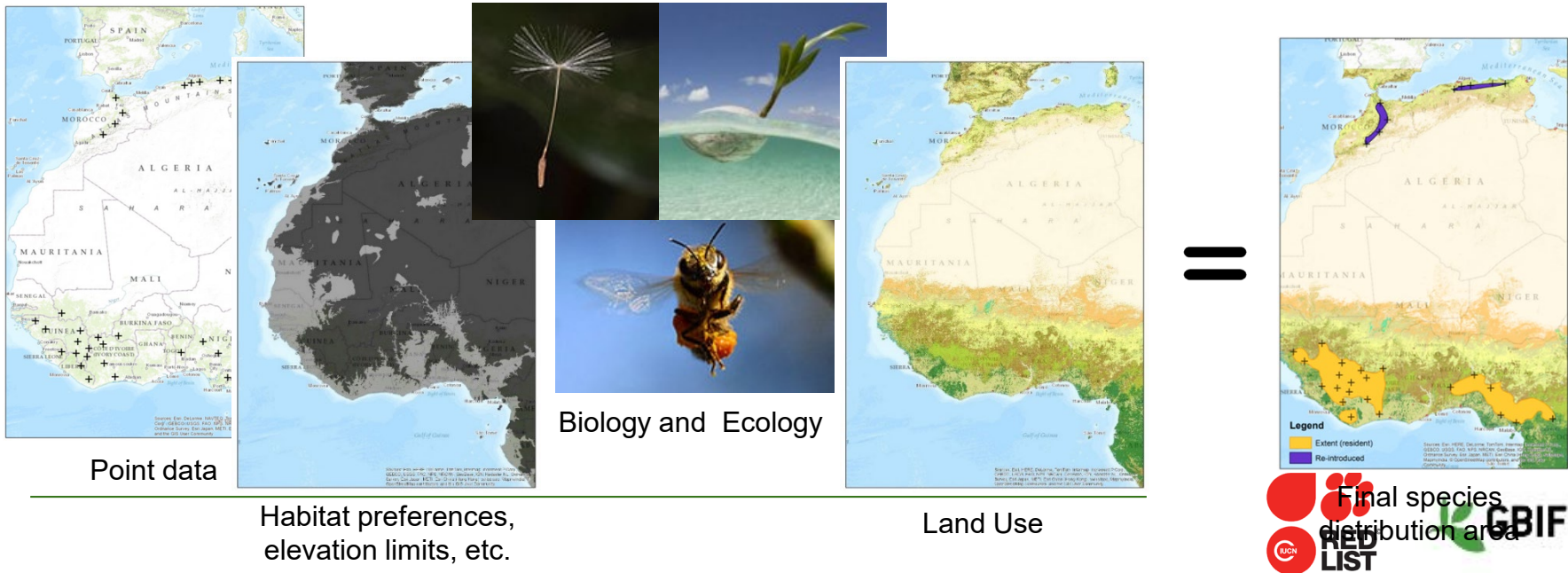
Marine



Freshwater

Polygon maps

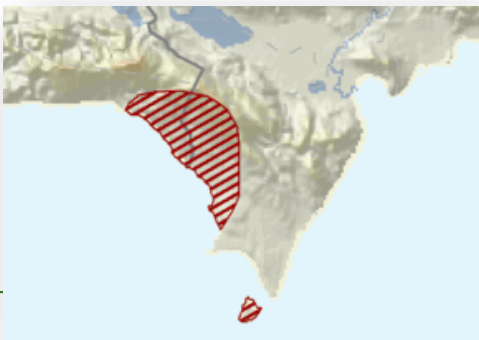
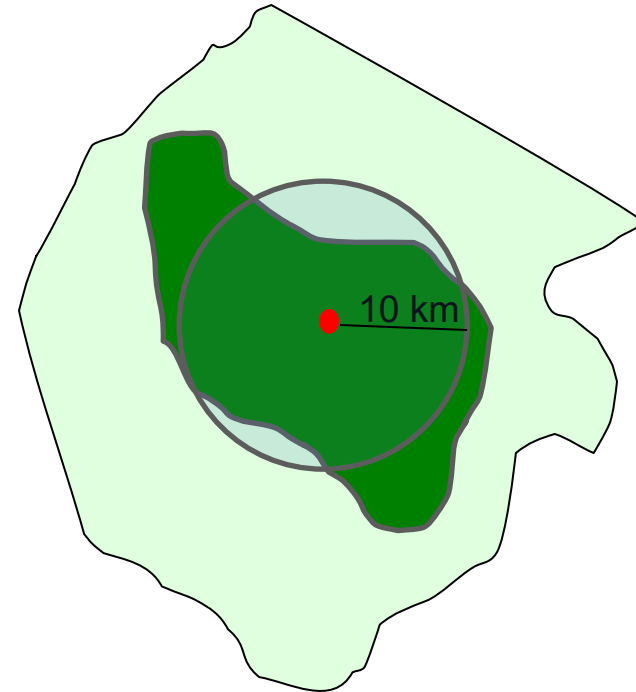
1. Plot observation and collection data points.
2. Create a polygon around the data points using information on habitat preferences, elevation limits, dispersal patterns, bathymetry (for marine taxa), and so on.
3. Refine the polygon, removing likely unoccupied areas (e.g., heavily degraded habitats, inappropriate altitudes, climate or temperature restrictions, etc.)



Polygon maps

species with fewer than 3 data points

- Use habitat and ecology information to create the polygon.
- OR
- If no habitat or ecology data are available a 10 km radius circle can be drawn around data points.

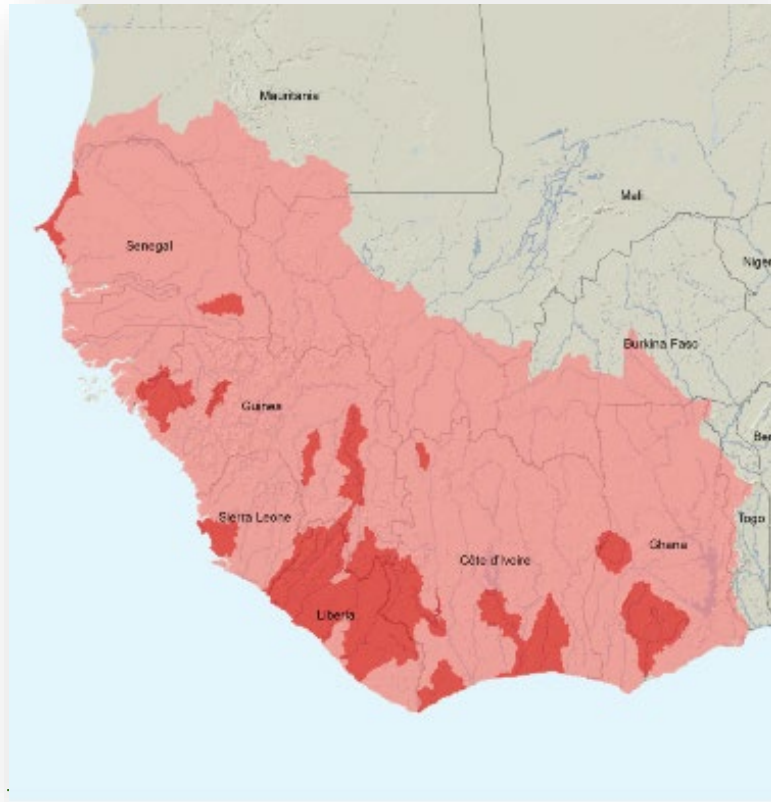


- **For coastal terrestrial species,** clip the final polygon to the coastline (to exclude marine habitats).

Polygon maps

Freshwater species

Freshwater species are mapped to catchments as these are considered to be the minimum management unit for freshwater conservation.



- Plot known observation and collection data points.
- Intersect points with catchments to identify areas where the species currently occurs.
- Use publications and expert knowledge to expand range to other potentially occupied catchments, if necessary.

Species with sensitive spatial data

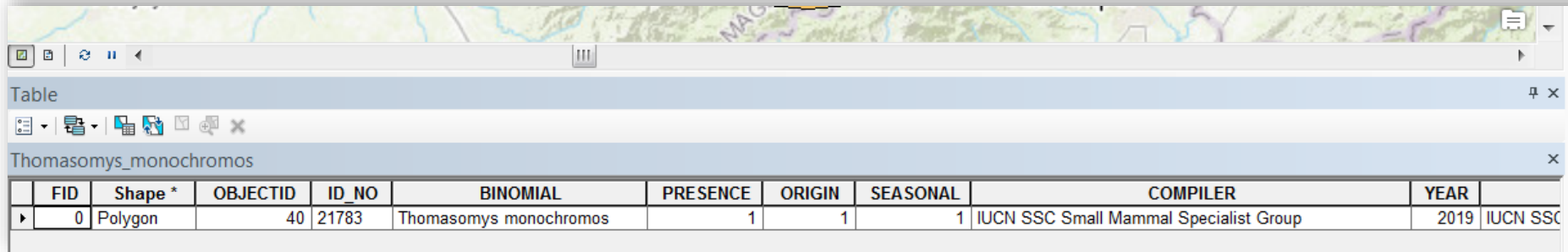
Some species should not have their exact locations published, but accurate spatial data must still be provided for analysis purposes. You can:

- withhold the map from the published assessment; **or**
- publish a generalised map that does not identify the exact location of the species.



Spatial Data Attributes

- **Attributes** = data attached to points and polygons.



The screenshot shows a GIS application window with a map in the background and a table in the foreground. The table is titled 'Thomasomys_monochromos' and contains the following data:

FID	Shape *	OBJECTID	ID_NO	BINOMIAL	PRESENCE	ORIGIN	SEASONAL	COMPILER	YEAR	
0	Polygon	40	21783	Thomasomys monochromos	1	1	1	IUCN SSC Small Mammal Specialist Group	2019	IUCN SSC

- Attributes tell us:
 - the name of the species;
 - the exact location of the data point;
 - the identity of the HydroBASIN;
 - whether the species still exists in that area or if it is now extinct from there;
 - who compiled the data and when;
 - whether the species is data sensitive;
 - etc...
- There are minimum attribute requirements for maps supporting a Red List assessment.

Required Data Attributes

Field	Darwin Core	Description	Polygons / Basins	Points
SCI_NAME	genericName & specificEpithet	Scientific name for species	✓	✓
HYBAS_ID		HydroBASIN ID (only if mapping HydroBASINS)	✓	
PRESENCE	occurrenceStatus	Codes identifying whether the species is currently present in the area	✓	✓
ORIGIN	establishmentMeans	Codes identifying whether the species is native to the area	✓	✓
SEASONAL	Behavior?	Codes identifying which season(s) the species is present in the area	✓	✓

Codes for Presence, Origin and Seasonality

Code	Presence
1	Extant
2	Probably Extant
3	Possibly Extant
4	Possibly Extinct
5	Extinct (post 1500)
6	Presence uncertain

Code	Origin (establishment Means)
1	Native
2	Reintroduced
3	Introduced
4	Vagrant
5	Origin Uncertain
6	Assisted Colonisation

Code	Seasonality
1	Resident
2	Breeding Season
3	Non-breeding Season
4	Passage
5	Seasonal Occurrence Uncertain

Required Data Attributes

Field	Darwin Core	Description	Polygons / Basins	Points
COMPILER		Name of individual(s) or institution responsible for creating the map	✓	✓
YRCOMPILED	DateLastModified	Year in which the map was created or last modified	✓	✓
CITATION	InstitutionCode	Name of individual(s)/institution responsible for providing the data	✓	✓
DEC_LAT	DecimalLatitude	Geographical latitude, in decimal degrees (between -90 and 90)		✓
DEC_LONG	DecimalLongitude	Geographical longitude, in decimal degrees (between -180 and 180)		✓
SPATIALREF	GeodaticDatum	Ellipsoid, geodetic datum or spatial reference system upon which the geographic coordinates are based (WGS84 preferred)		✓

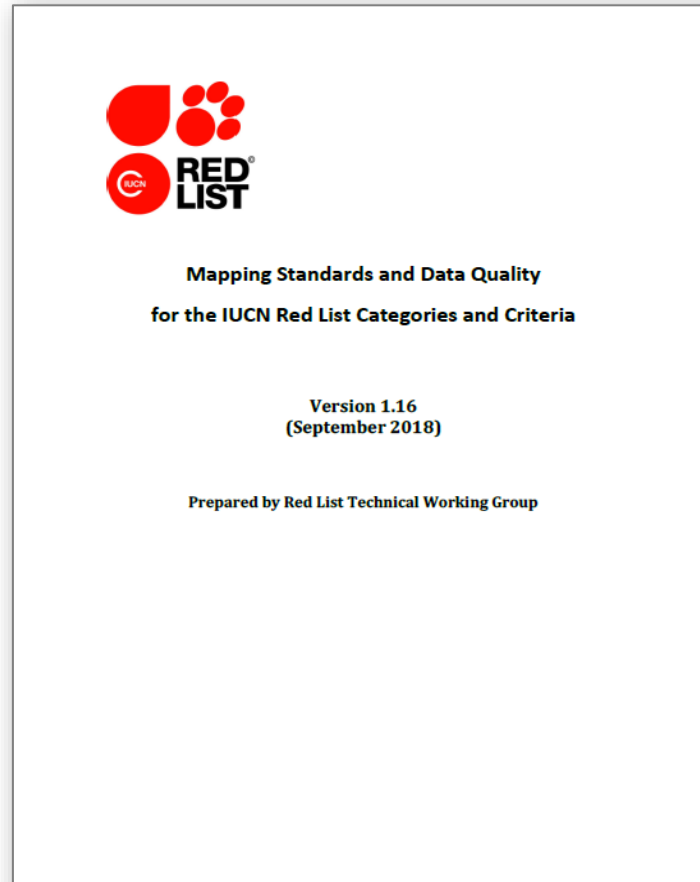
Required Data Attributes

Field	DARWIN CORE	Description	Polygons / Basins	Points
SUBSPECIES	infraspecificEpithet	Subspecies name (only if a subspecies is being mapped)	✓	✓
SUBPOP	N/A	Subpopulation name (only if a subpopulation is being mapped)	✓	✓
DATA_SENS	informationWithheld, dataGeneralizations, any 'Remarks' fields	Used to flag species with sensitive spatial data. Tells the Red List Unit to withhold the point or polygon from the web site.	✓	✓
SENS_COMM	informationWithheld determines:accessRights	Comments on why the data are considered sensitive (required if DATA_SENS = "Y")	✓	✓

Recommended Data Attributes

Field	Darwin Core	Definition	Polygon / Basin	Point
EVENT_YEAR	year	Year the observation was recorded or the specimen was collected.		✓
SOURCE	associatedReferences	Primary source of the data	✓	✓
CATALOG_NO	catalogNumber	An identifier (preferably unique) for the record within a larger dataset or collection		✓
DIST_COMM	locationRemarks / eventRemarks	Distribution comments, referring directly to the polygon or point	✓	✓
ISLAND	Island	Name of the island the point or polygon is on	✓	✓
TAX_COMM	taxonRemarks	Taxonomic comments, referring directly to the polygon or point	✓	✓
BasisOfRec	basisOfRecord	Specific nature of the record (restricted list of options)		✓

<https://www.iucnredlist.org/resources/mappingstandards>



Mapping tools and resources

The screenshot displays the IUCN Red List website's navigation and content sections. At the top right, there are links for '2019-2', 'Login / Register', 'Contact', 'Terms of Use', and a language dropdown set to 'English'. The main navigation bar includes 'About', 'Assessment process', 'Resources & Publications' (circled in yellow), and 'Support us'. A search bar is located below the navigation, with the text 'Names - common, scientific, regions etc...' and a search icon. Below the navigation, the 'Spatial Data & Mapping Resources' section is expanded, showing a list of resources. The resources are arranged in a grid. The first row contains three items: 'Spatial Data Download', 'METADATA for Digital Distribution Maps of The IUCN Red List of Threatened Species', and 'IUCN Red List of Threatened Species Mapping Standards'. The second row contains 'IUCN Red List of Threatened Species - Mapping Attributes standards', 'Presence, Seasonal and Origin codes for distribution maps and country coding', and 'GIS Tools, Software and Recommended Base data' (circled in red). The third row contains 'ArcGIS: Mapping FAQ, Guidance and Tips Document' and 'Google Maps: Mapping Using Google Maps and Google Earth'. At the bottom left, there are two main navigation items: 'Summary Statistics' and 'Spatial Data & Mapping Resources' (circled in red). A vertical 'feedback' button is visible on the right side of the 'GIS Tools' resource card.

2019-2 | [Login / Register](#) | [Contact](#) | [Terms of Use](#) | English

[About](#) | [Assessment process](#) | [Resources & Publications](#) | [Support us](#)

Names - common, scientific, regions etc...

▼ Spatial Data & Mapping Resources

- Spatial Data Download**
SPATIAL DATA & MAPPING RESOURCES
Spatial data for species assessed on The IUCN Red List can be downloaded from this page.
- METADATA for Digital Distribution Maps of The IUCN Red List of Threatened Species**
SPATIAL DATA & MAPPING RESOURCES
Details of the metadata for digital distribution maps published on *The IUCN Red List of Threatened Species*TM. Includes constraints on use of IUCN Red List spatial data and how to cite spatial data from the Red List.
- IUCN Red List of Threatened Species Mapping Standards**
SPATIAL DATA & MAPPING RESOURCES
Guidance document explaining the required standards to follow when preparing distribution maps for publication on *The IUCN Red List of Threatened Species*TM. Version 1.6 (2018).
- IUCN Red List of Threatened Species - Mapping Attributes standards**
SPATIAL DATA & MAPPING RESOURCES
MS Excel file containing all of the attribute fields and their associated data standards for both point and polygon features classes. Version 1.6 (2018).
- Presence, Seasonal and Origin codes for distribution maps and country coding**
SPATIAL DATA & MAPPING RESOURCES
Details of the Presence, Origin and Seasonality codes used in spatial data attributes for distribution maps. These codes are also used in assessment accounts for recording country occurrence and, for marine species, occurrence in FAO fishing areas.
- GIS Tools, Software and Recommended Base data**
SPATIAL DATA & MAPPING RESOURCES
The following tools, software and base data are available to help assessors create the spatial distribution maps as part of an IUCN Red List assessment.
- ArcGIS: Mapping FAQ, Guidance and Tips Document**
SPATIAL DATA & MAPPING RESOURCES
Advice and answers to frequently asked questions for creating species distribution maps using ESRI ArcGIS for inclusion in IUCN Red List assessments.
- Google Maps: Mapping Using Google Maps and Google Earth**
SPATIAL DATA & MAPPING RESOURCES
Instructions on how to use Google Maps to create species distribution maps for inclusion in an IUCN Red List assessment.

▶ [Summary Statistics](#)

▶ [Spatial Data & Mapping Resources](#)

feedback

GBIF Data Use Club

Aims to:

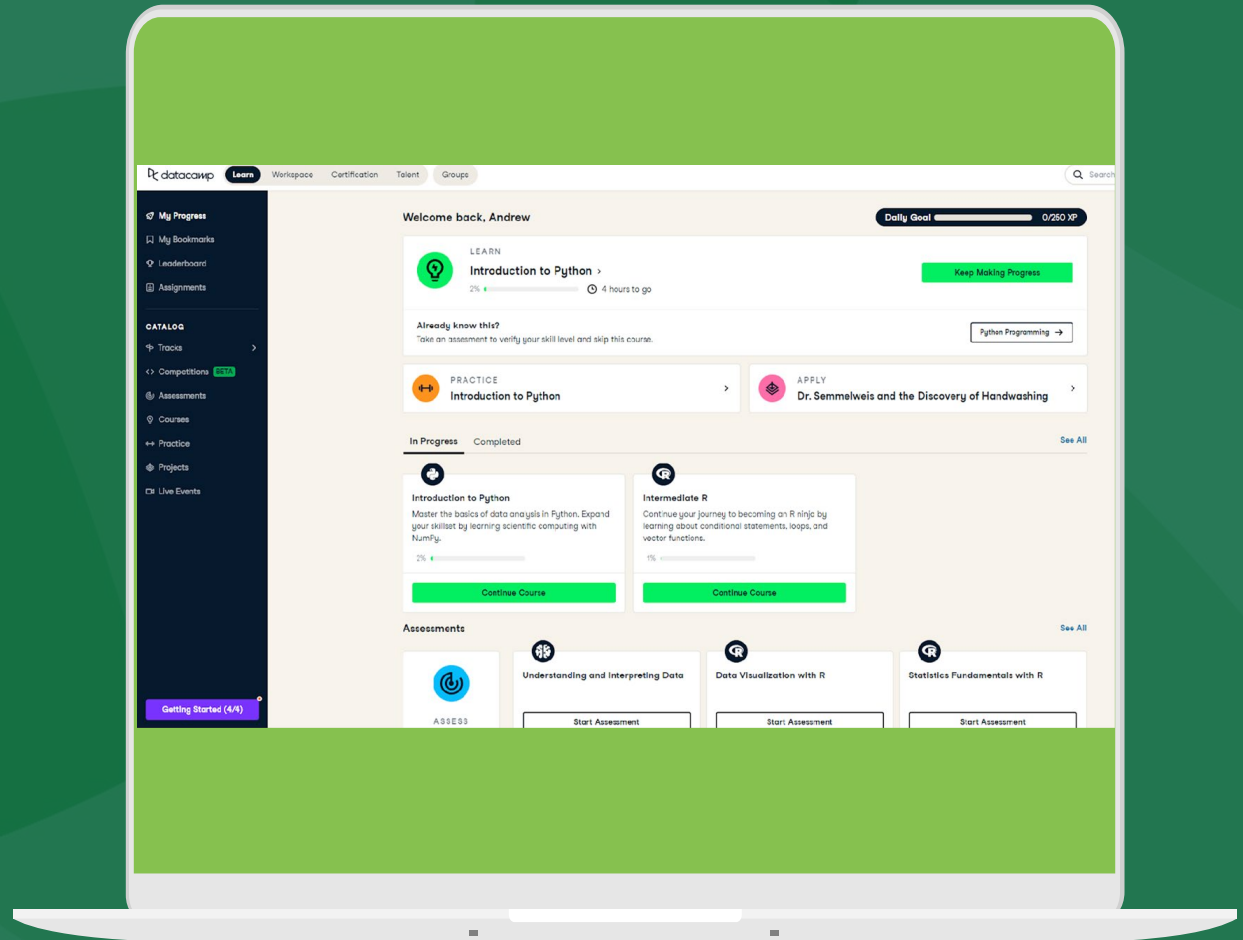
1. Showcase the science powered by GBIF
1. Provide GBIF community with tools for addressing data literacy skills gaps and support more complex data analysis and manipulation
1. Increase understanding of what GBIF-mediated data is, how it can be accessed, and what is use best practice



BUILDING DATA LITERACY

DataCamp Partnership

- 150 licences available for GBIF community
- Courses cover R, Python, SQL, Spreadsheets
- Trial one year programme
- Prioritise funded programmes and node-lead training development that supplements current training
- Those receiving licences must attend tutorial series



Dealing with data uncertainty

Uncertainty in the data itself (different to the lack of data) should also be considered in a Red List assessment

For example: A species has a range of population size estimates from 3 separate studies.

Study A: Population size = 100-200 (Endangered)

Study B: Population size = 200-350 (Endangered or Vulnerable)

Study C: Population size = 280-410 (Vulnerable)

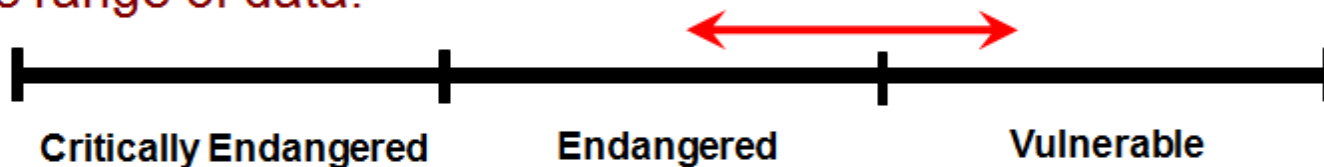


Dealing with data uncertainty

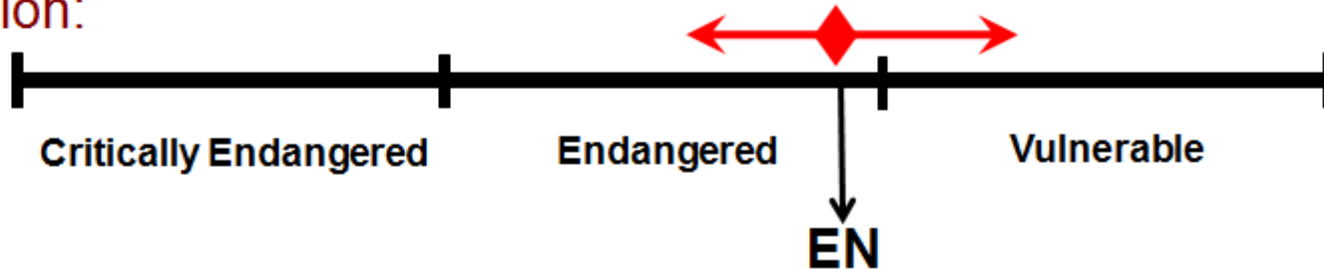
1. Record the range of possible values based on the available studies:

“Based on the studies A, B and C, the current population size is between 100 and 410”

2. State the range of potential Red List Categories that may be used based on the range of data:



3. Select one of these categories using all available information (on population size, trends, habitat status, ongoing threats, etc.) to justify your decision:



Dealing with data uncertainty

- Species with **VERY** uncertain data (suggesting in a very wide range of potential categories) should be listed as Data Deficient.

