Australian Government

NATIONAL ENVIRONMENTAL PROTECTION AGENCY



Australian Collision Risk Framework

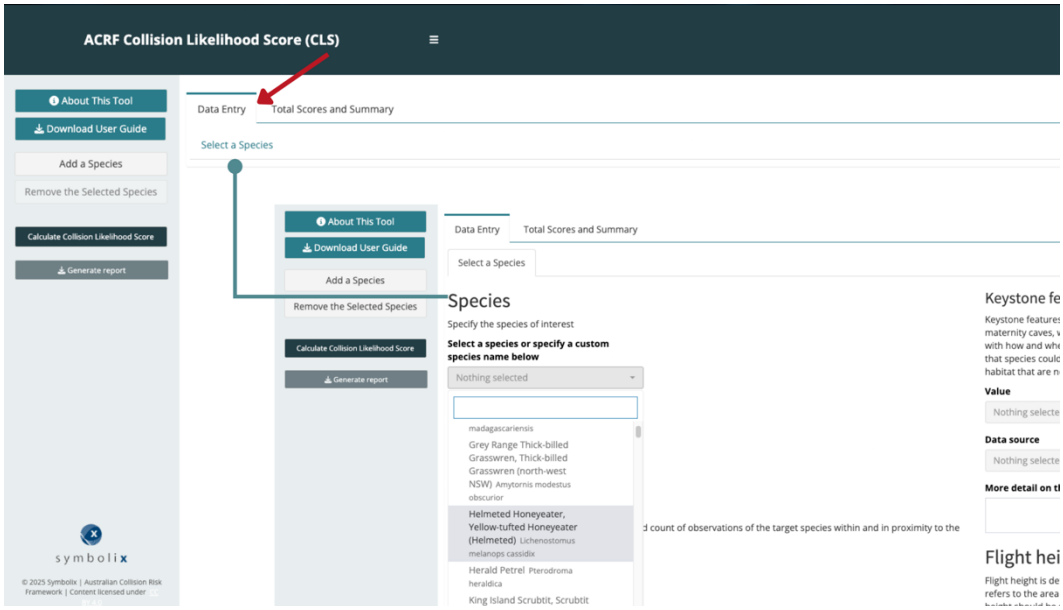
Collision Likelihood Score Tool User Guide

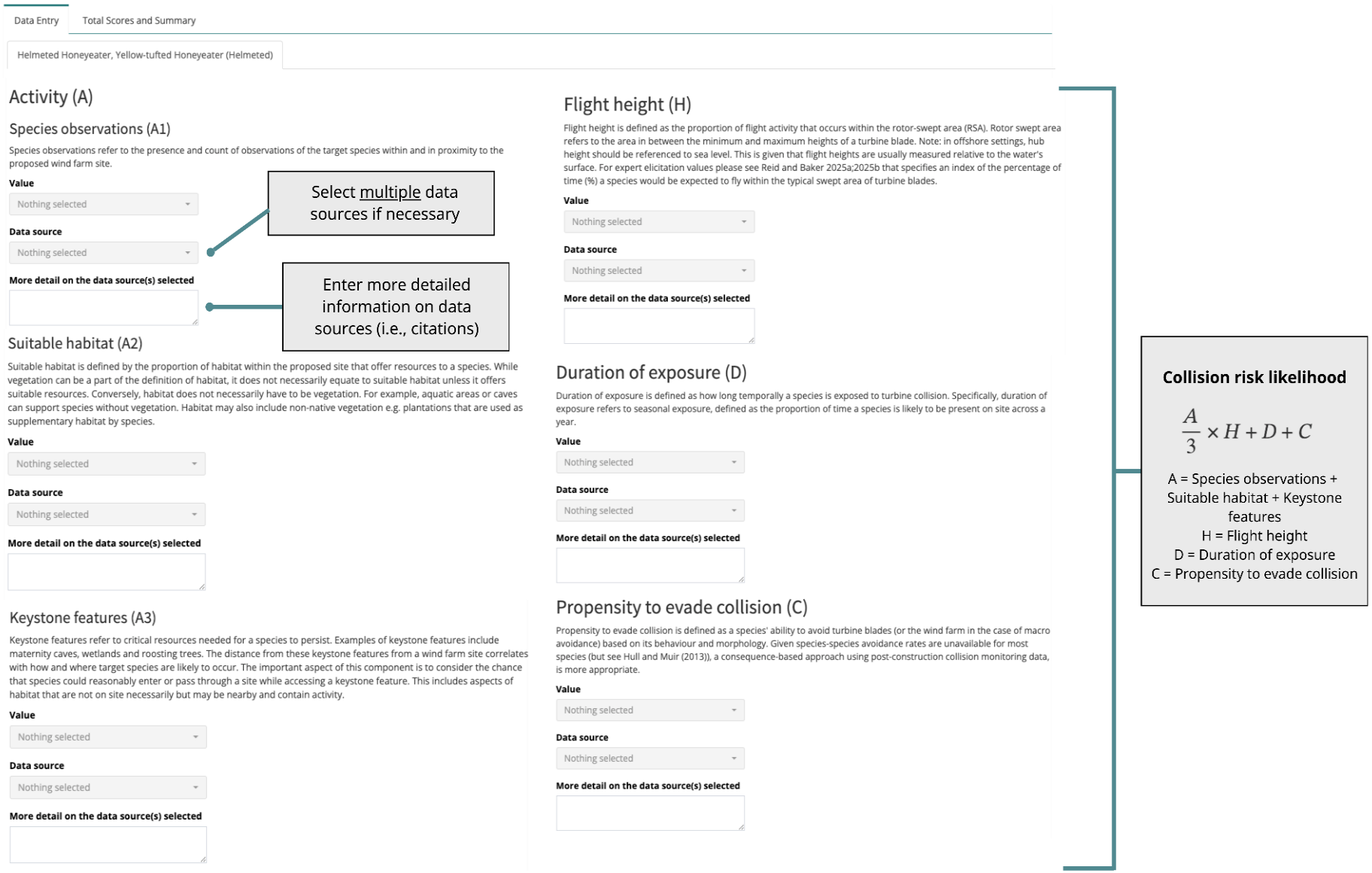
This guide steps the user through using the Collision Likelihood Score online tool. The Collision Likelihood Score is a structured, qualitative assessment of collision likelihood risk using ranked criteria. CLS combines species activity, flight height, seasonal exposure, and collision history to generate transparent risk ratings. CLS is appropriate when data are insufficient for a CRM, during early project stages, or when collision risk is clearly very low or very high.

Please note the data and examples shown in this guide are to illustrate the use of the online tool interface only and do not represent any recommendation about inputs or real-world scenarios.

Steps to using the tool

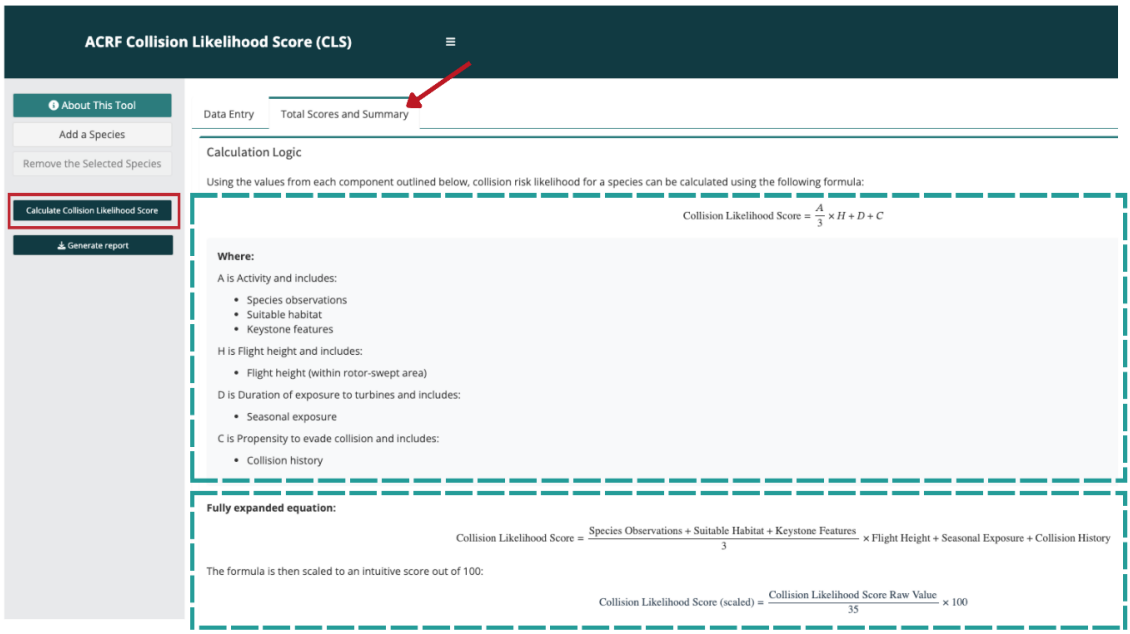
1. Data Entry



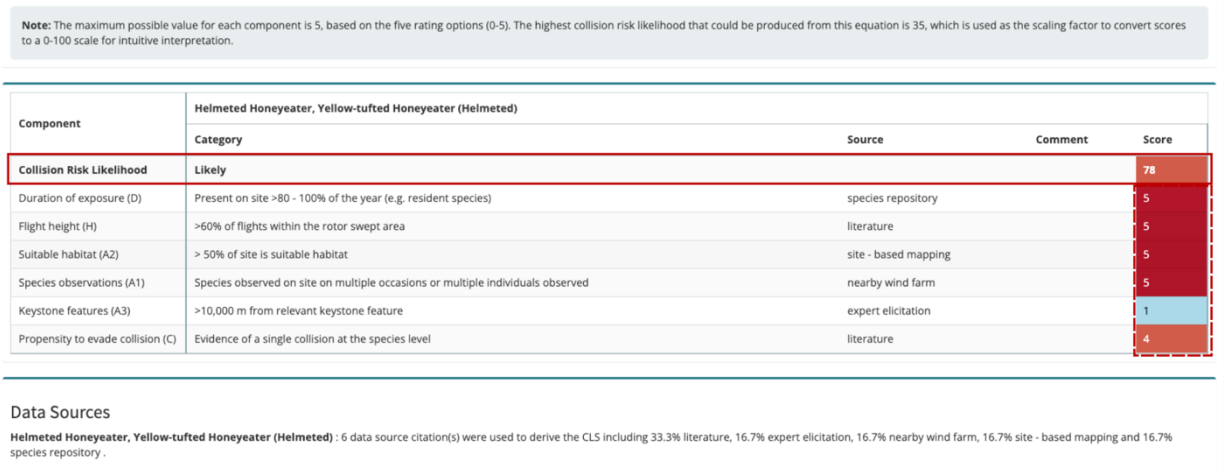

Data Entry
Total Scores and Summary
Helmeted Honeyeater, Yellow-tufted Honeyeater (Helmeted)
Activity (A)
Species observations (A1)
Species observations refer to the presence and count of observations of the target species within and in proximity to the proposed wind farm site.
Value
Nothing selected
Data source
Nothing selected
More detail on the data source(s) selected
Select multiple data sources if necessary
Enter more detailed information on data sources (i.e., citations)
Suitable habitat (A2)
Suitable habitat is defined by the proportion of habitat within the proposed site that offer resources to a species. While vegetation can be a part of the definition of habitat, it does not necessarily equate to suitable habitat unless it offers suitable resources. Conversely, habitat does not necessarily have to be vegetation. For example, aquatic areas or caves can support species without vegetation. Habitat may also include non-native vegetation e.g. plantations that are used as supplementary habitat by species.
Value
Nothing selected
Data source
Nothing selected
More detail on the data source(s) selected
Keystone features (A3)
Keystone features refer to critical resources needed for a species to persist. Examples of keystone features include maternity caves, wetlands and roosting trees. The distance from these keystone features from a wind farm site correlates with how and where target species are likely to occur. The important aspect of this component is to consider the chance that species could reasonably enter or pass through a site while accessing a keystone feature. This includes aspects of habitat that are not on site necessarily but may be nearby and contain activity.
Value
Nothing selected
Data source
Nothing selected
More detail on the data source(s) selected
Flight height (H)
Flight height is defined as the proportion of flight activity that occurs within the rotor-swept area (RSA). Rotor swept area refers to the area in between the minimum and maximum heights of a turbine blade. Note: in offshore settings, hub height should be referenced to sea level. This is given that flight heights are usually measured relative to the water's surface. For expert elicitation values please see Reid and Baker 2025a;2025b that specifies an index of the percentage of time (%) a species would be expected to fly within the typical swept area of turbine blades.
Value
Nothing selected
Data source
Nothing selected
More detail on the data source(s) selected
Duration of exposure (D)
Duration of exposure is defined as how long temporally a species is exposed to turbine collision. Specifically, duration of exposure refers to seasonal exposure, defined as the proportion of time a species is likely to be present on site across a year.
Value
Nothing selected
Data source
Nothing selected
More detail on the data source(s) selected
Propensity to evade collision (C)
Propensity to evade collision is defined as a species' ability to avoid turbine blades (or the wind farm in the case of macro avoidance) based on its behaviour and morphology. Given species-species avoidance rates are unavailable for most species (but see Hull and Muir (2013)), a consequence-based approach using post-construction collision monitoring data, is more appropriate.
Value
Nothing selected
Data source
Nothing selected
More detail on the data source(s) selected
Collision risk likelihood
$\frac{A}{3} \times H + D + C$
A = Species observations + Suitable habitat + Keystone features
H = Flight height
D = Duration of exposure
C = Propensity to evade collision

2. Total Scores and Summary

Once all relevant information is filled in, click the Calculate Collision Likelihood Score button then select the Total Scores and Summary tab. This tab provides more information about the equation used for collision risk likelihood and an expanded version for transparency.



This tab also provides a risk table showing the individual scoring for each component of the equation (out of 5) which are added up to calculate an overall **Collision Risk Likelihood** score at the bottom (out of 100). Data sources are also included on the bottom.



Note: The maximum possible value for each component is 5, based on the five rating options (0-5). The highest collision risk likelihood that could be produced from this equation is 35, which is used as the scaling factor to convert scores to a 0-100 scale for intuitive interpretation.

Component	Helmeted Honeyeater, Yellow-tufted Honeyeater (Helmeted)			
	Category	Source	Comment	Score
Collision Risk Likelihood	**Likely**			78
Duration of exposure (D)	Present on site >80 - 100% of the year (e.g. resident species)	species repository		5
Flight height (H)	>60% of flights within the rotor swept area	literature		5
Suitable habitat (A2)	> 50% of site is suitable habitat	site - based mapping		5
Species observations (A1)	Species observed on site on multiple occasions or multiple individuals observed	nearby wind farm		5
Keystone features (A3)	>10,000 m from relevant keystone feature	expert elicitation		1
Propensity to evade collision (C)	Evidence of a single collision at the species level	literature		4

Data Sources

Helmeted Honeyeater, Yellow-tufted Honeyeater (Helmeted) : 6 data source citation(s) were used to derive the CLS including 33.3% literature, 16.7% expert elicitation, 16.7% nearby wind farm, 16.7% site - based mapping and 16.7% species repository .

3. Interpretation:

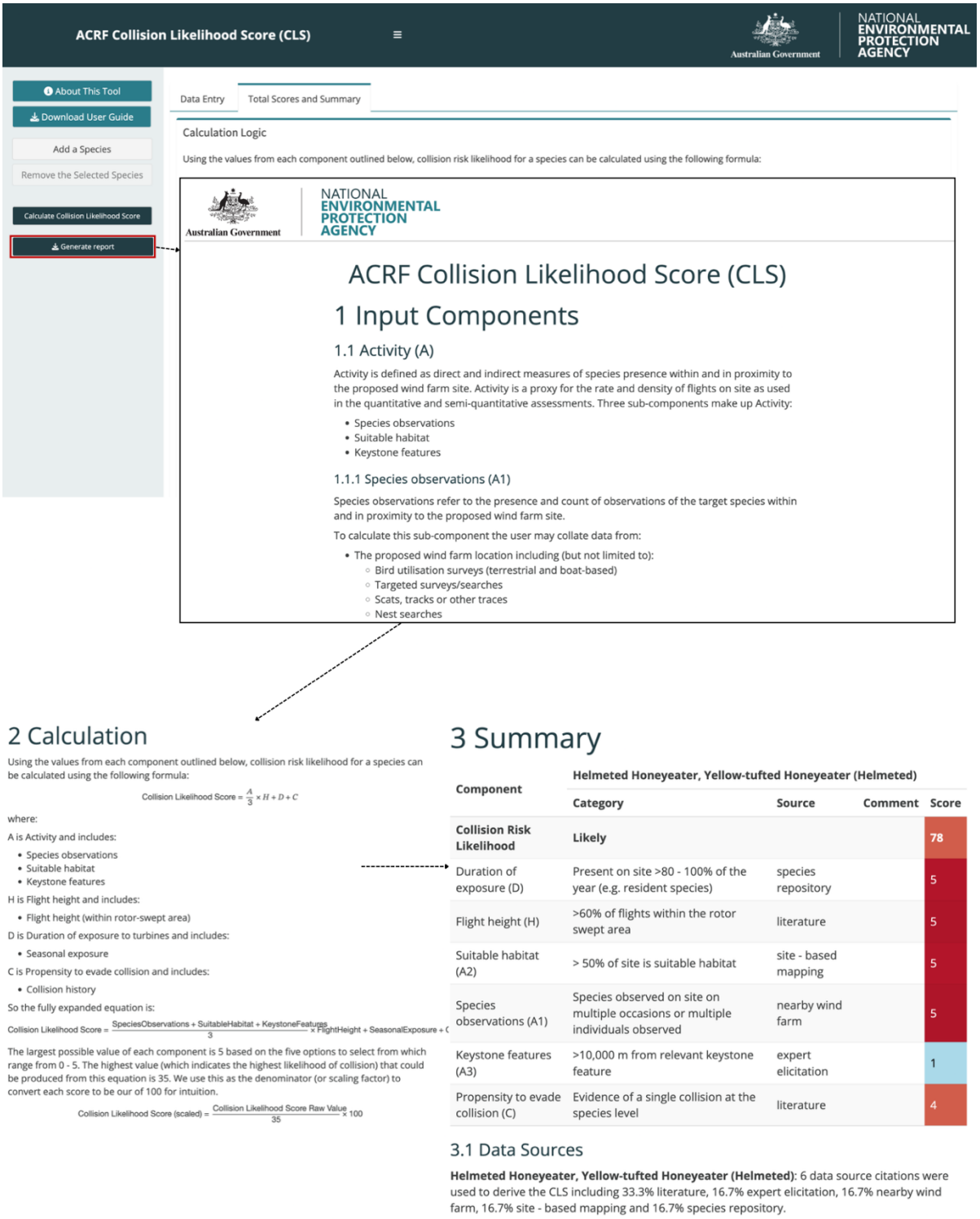
The colours in the results table provide a measure of likelihood based on the CLS. The mapping between the score and colour is shown below. Within each risk metric the colour represents the range of possible scores, so the user can see at a glance which metrics are driving the collision risk profile. Note that these are qualitative scores - a score of 90 doesn't mean a 90% chance. To score highly represents a higher level of risk across multiple categories.

While the CLS cannot provide a single quantitative measure of the number of collisions predicted, it provides a standardised measure for comparing relative risk between species, sites, different avoidance actions, and mitigation strategies.

Collision likelihood score (scaled)	Risk rating
>90	Very likely
>60-90	Likely
>40-60	Possible
>10-40	Unlikely
≤10	Very unlikely

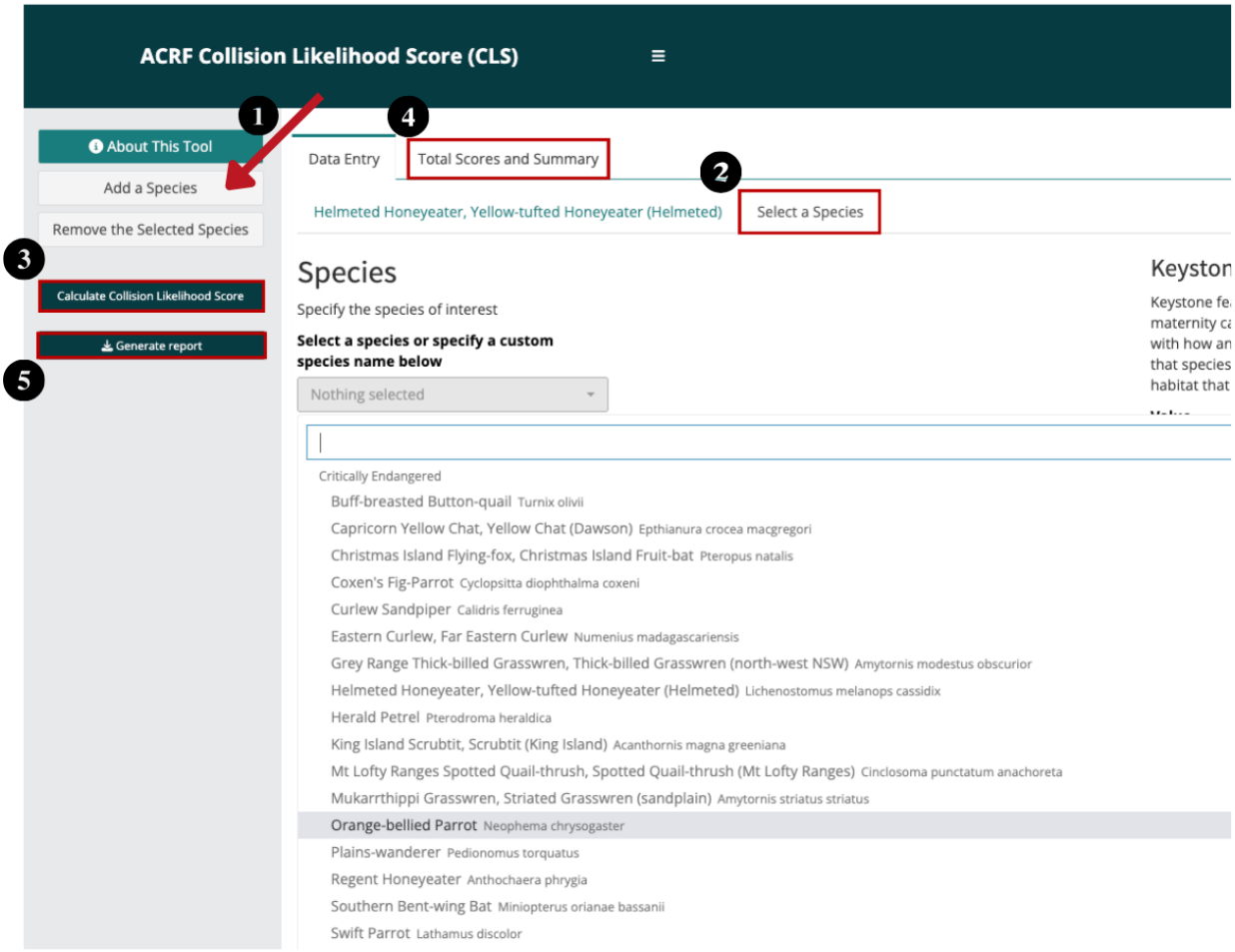
4. Generate report

The final step is to generate a report which will provide a downloadable html that includes all the information that was input for that species and a summary table of the collision risk likelihood estimation, and which data sources were used to derive the estimates.



5. Additional species

You can add additional species at any time using the Add a Species button. Fill in the information for that species then click Calculate Collision Likelihood Score to update the values in the Total Scores and Summary tab. You can also click Generate report to re-download the report with the new species.



Component	Helmeted Honeyeater, Yellow-tufted Honeyeater (Helmeted)				Orange-bellied Parrot			
	Category	Source	Comment	Score	Category	Source	Comment	Score
Collision Risk Likelihood	**Likely**			78	**Likely**			66
Duration of exposure (D)	Present on site >80 - 100% of the year (e.g. resident species)	species repository		5	Present on site >60 - 80% of the year (e.g. migratory species with extended use including using the site for breeding and overwintering)	literature		4
Flight height (H)	>60% of flights within the rotor swept area	literature		5	>40 - 60% of flights within the rotor swept area	proxy species		4
Suitable habitat (A2)	> 50% of site is suitable habitat	site - based mapping		5	> 25 - 50% suitable habitat	literature, species habitat preferences		4
Species observations (A1)	Species observed on site on multiple occasions or multiple individuals observed	nearby wind farm		5	Species observed on site on multiple occasions or multiple individuals observed	historical records, literature		5
Keystone features (A3)	>10,000 m from relevant keystone feature	expert elicitation		1	>1,000 - 5,000 m from relevant keystone feature	literature, proxy species		3
Propensity to evade collision (C)	Evidence of a single collision at the species level	literature		4	Evidence of collision at the genus level	nearby wind farms		3

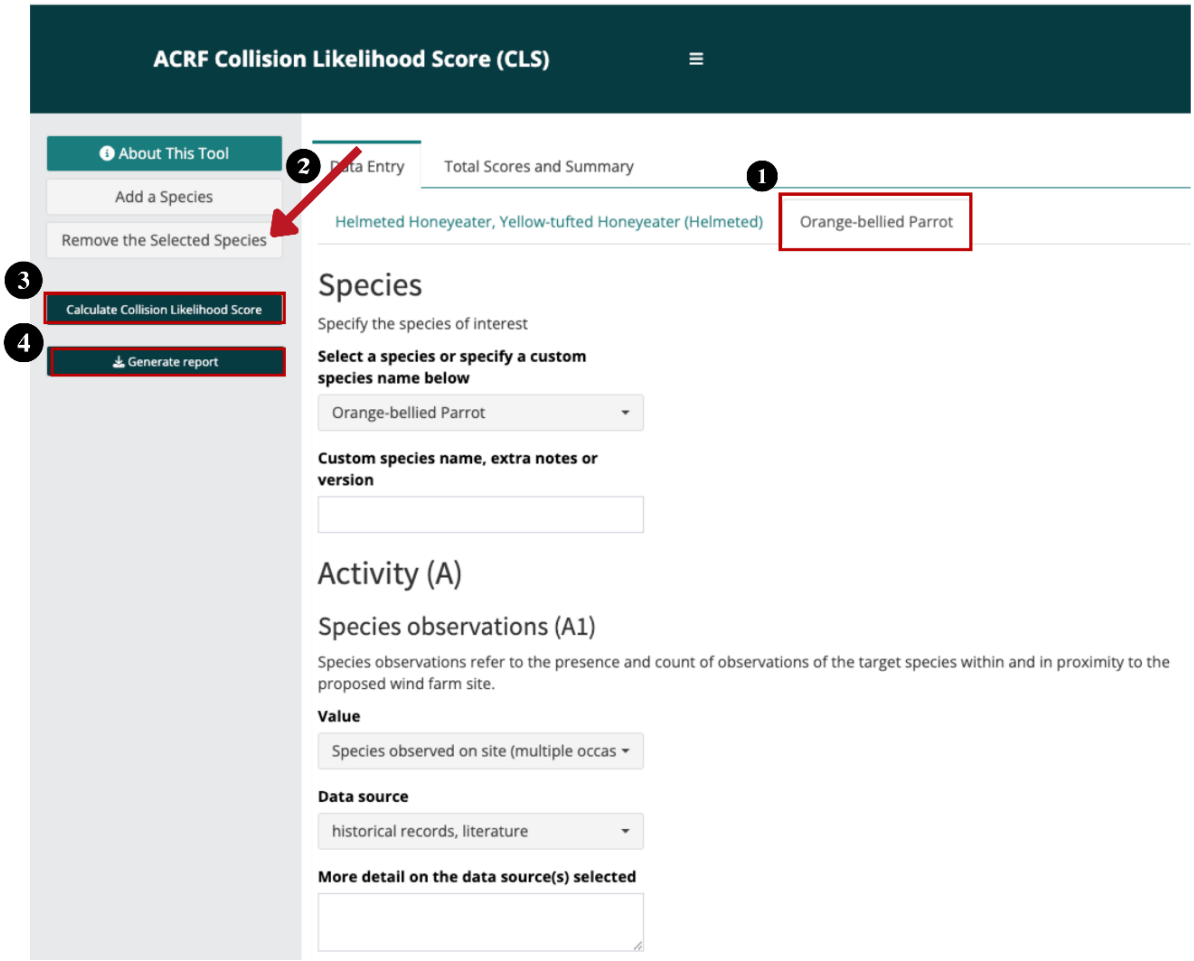
Data Sources

Helmeted Honeyeater, Yellow-tufted Honeyeater (Helmeted) : 6 data source citation(s) were used to derive the CLS including 33.3% literature, 16.7% expert elicitation, 16.7% nearby wind farm, 16.7% site - based mapping and 16.7% species repository .

Orange-bellied Parrot : 9 data source citation(s) were used to derive the CLS including 44.4% literature, 22.2% proxy species, 11.1% historical records, 11.1% nearby wind farms and 11.1% species habitat preferences .

6. Remove species

You can also delete species using the Remove the Selected Species button. Select the tab of the species you want to remove, click the Remove the Selected Species button, and click the Calculate Collision Likelihood Score button to update. Finally, click Generate report to download the updated report.



Citation
National Environmental Protection Authority. 2026. Collision Likelihood Score (CLS) Tool User Guide. In: *Australian Collision Risk Framework*. Canberra. CC-BY 4.0."

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