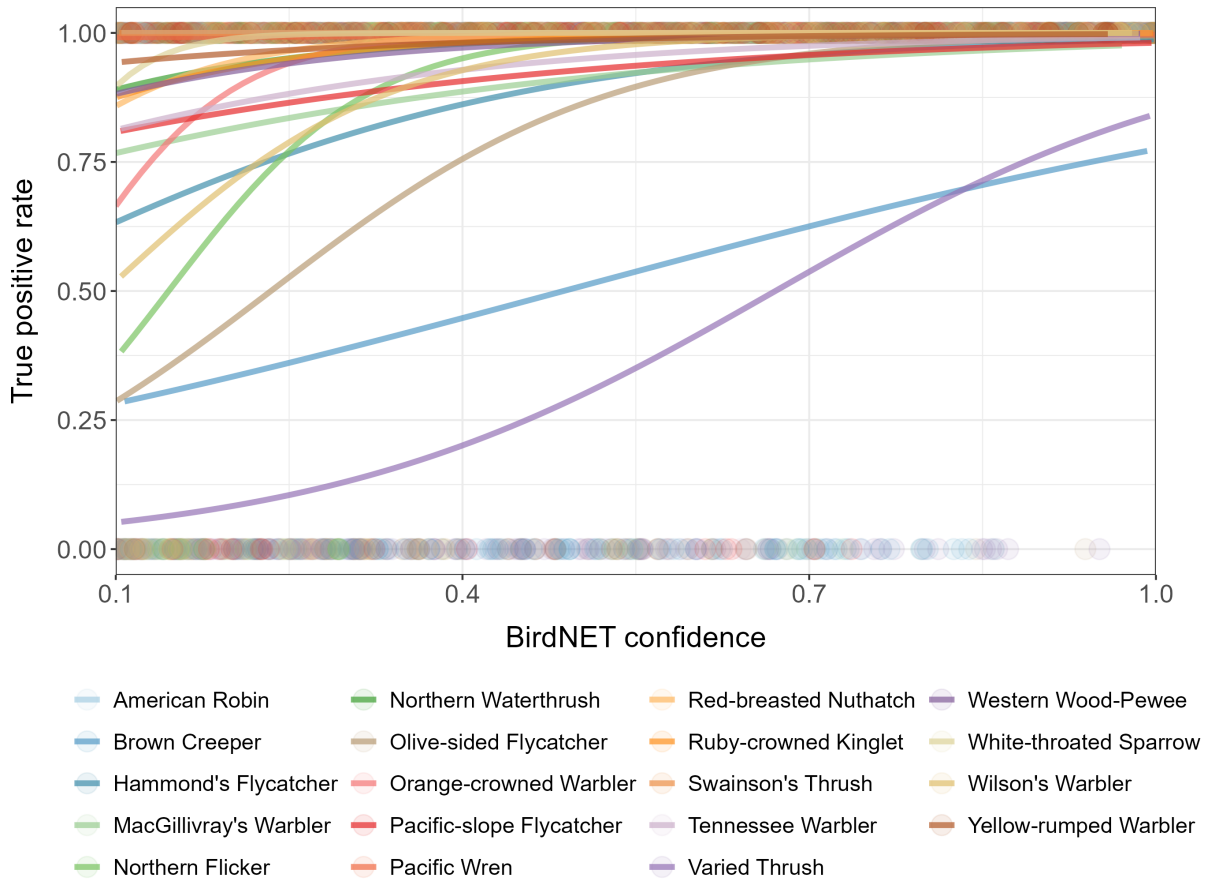# How to do BirdNET validation

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BirdNET Quick Review

After processing audio files with BirdNET, a detection table is generated. This table includes columns detailing where each detection occurred (file name, start time, and end time), the detected species name, and a "confidence" score. The confidence score ranges from 0.1 to 1, indicating the likelihood that a detection is accurate.

	A	B	C	D	E	F	G	H	I	J
1	id	site	datetime	start	end	scientific_	common_name	confidence	filepath	category
2	1199882	14_09	2022-07-06T04:15:00Z	12	15	Contopus	Olive-sided Flycatcher	0.1362	E:\Audio\2022_|	[0.1,0.15)
3	1630362	N_06	2022-06-16T04:10:00Z	18	21	Contopus	Olive-sided Flycatcher	0.1088	E:\Audio\2022_|	[0.1,0.15)
4	197492	14_31	2020-06-19T06:35:00Z	27	30	Contopus	Olive-sided Flycatcher	0.1008	E:\Audio\2020_|	[0.1,0.15)
5	1023829	N_14	2021-05-23T05:05:00Z	36	39	Contopus	Olive-sided Flycatcher	0.116	E:\Audio\2021_|	[0.1,0.15)
6	1639178	N_06	2022-07-01T05:05:00Z	21	24	Contopus	Olive-sided Flycatcher	0.1105	E:\Audio\2022_|	[0.1,0.15)
7	325661	14_41	2020-07-07T04:15:00Z	0	3	Contopus	Olive-sided Flycatcher	0.1113	E:\Audio\2020_|	[0.1,0.15)
8	328303	14_41	2020-07-14T04:45:00Z	12	15	Contopus	Olive-sided Flycatcher	0.1025	E:\Audio\2020_|	[0.1,0.15)
9	575781	14_09	2021-06-02T05:30:00Z	9	12	Contopus	Olive-sided Flycatcher	0.1337	E:\Audio\2021_|	[0.1,0.15)
10	517483	N_25	2020-07-06T05:40:00Z	48	51	Contopus	Olive-sided Flycatcher	0.1073	E:\Audio\2020_|	[0.1,0.15)
11	329821	14_41	2020-07-17T04:40:00Z	12	15	Contopus	Olive-sided Flycatcher	0.1238	E:\Audio\2020_|	[0.1,0.15)
12	1669324	N_09	2022-06-13T06:55:00Z	0	3	Contopus	Olive-sided Flycatcher	0.1049	E:\Audio\2022_|	[0.1,0.15)
13	1795091	N_16	2022-05-31T05:00:00Z	48	51	Contopus	Olive-sided Flycatcher	0.146	E:\Audio\2022_|	[0.1,0.15)
14	351662	N_04	2020-06-25T04:30:00Z	18	21	Contopus	Olive-sided Flycatcher	0.1269	E:\Audio\2020_|	[0.1,0.15)

However, there is no established "threshold" for users to determine which detections to trust. Setting a high threshold can increase precision but may exclude valid detections, while a low threshold retains more detections but may lower precision. A species-specific threshold can be identified by creating a calibration curve that links BirdNET confidence scores to true positive probabilities, though this process requires a validated dataset.

Validation Steps

All validation datasets are stored in a Google Drive, organized by species in individual folders. Each species folder includes up to 360 recording segments (each 9 seconds long) and a .csv file named "SPECIES NAME_validation.csv" that serves as metadata for these segments. The segments are randomly selected from all detections for that species, stratified by confidence score. The validation task involves listening to each segment to verify if BirdNET correctly identified the species and writing down this information in the .csv file.

To conduct species validation, follow these steps:

- In the species folder, download and open the "SPECIES NAME_validation.csv" file. Add two new columns beside the category column labeled "validation" and "note."

	A	B	C	D	E	F	G	H	I	J	K	L
1	id	site	datetime	start	end	scientific_	common_name	confidenc	filepath	category	validation	note
2	62445	14_09	2020-07-07T05:15:00Z	9	12	Contopus	Olive-sided Flycatcher	0.6983	E:\Audio\2020_p	[0.65,0.7)	Y	typical song
3	76470	14_13	2020-06-12T06:00:00Z	0	3	Contopus	Olive-sided Flycatcher	0.4609	E:\Audio\2020_p	[0.45,0.5)	Y	
4	76476	14_13	2020-06-12T06:00:00Z	15	18	Contopus	Olive-sided Flycatcher	0.6089	E:\Audio\2020_p	[0.6,0.65)	Y	song
5	77095	14_13	2020-06-13T05:50:00Z	54	57	Contopus	Olive-sided Flycatcher	0.8972	E:\Audio\2020_p	[0.85,0.9)	Y	
6	77149	14_13	2020-06-13T06:05:00Z	57	60	Contopus	Olive-sided Flycatcher	0.2396	E:\Audio\2020_p	[0.2,0.25)	N	
7	77156	14_13	2020-06-13T06:10:00Z	54	57	Contopus	Olive-sided Flycatcher	0.5227	E:\Audio\2020_p	[0.5,0.55)		
8	77635	14_13	2020-06-14T06:15:00Z	33	36	Contopus	Olive-sided Flycatcher	0.9137	E:\Audio\2020_p	[0.9,0.95)		
9	78171	14_13	2020-06-16T05:10:00Z	45	48	Contopus	Olive-sided Flycatcher	0.7496	E:\Audio\2020_p	[0.7,0.75)		

- Listen to each recording and view the spectrogram if needed. If the BirdNET detection is accurate (e.g., Olive-sided Flycatcher is present in the recording), enter "Y" in the validation column. If it is not

accurate (e.g., no Olive-sided Flycatcher was heard), enter "N."

- To avoid judgement bias, "hide" the confidence column by `right click > Hide`.

- A helpful tip: sort the .csv file by ID to match the sequence of the segments in the folder.

- Can try downloading the files or listening to them on browser to see which makes you more comfortable. I personally liked to download them as it's quicker if I need to check the spectrogram in Audacity.

- Record notes if there is any special vocalizations (e.g., call, begging call, high quality signals) and/or possible reasons for misidentification (e.g., background noise, misidentified as XYZ species).

- Both Xeno-Canto and All About Birds have good examples of vocalizations.

- After completing all the segments, save your file as "SPECIES_NAME_validation_YOUR_INITIAL.csv" and upload it to the species folder.

Updates

- Here is the full list of species (122 species in total), feel free to let me know the species you wanted to do next. I will update the species recording segments on the Google Drive. (I didn't upload all as the file size is too large)
- Let me know roughly how long it will take for you to finish each species. :)