

The (Ecological) Tribe Has Spoken: Investigating the Applications and Limitations of Non-Documentary TV Shows as a Tool for Studying Biodiversity

Supplemental Information 3: Figures and Tables

Christopher Crowder^{1,2}, Thabisa McAnyana³, Geoffrey Cook¹

¹Department of Biology, University of Central Florida

²Wildlife Division, Nebraska Game and Parks Commission

³Biology Department, Nebraska Wesleyan University

Corresponding Author:

Christopher Crowder – CrowderFishScience[at]gmail.com

Date:

November 6, 2025

Figures

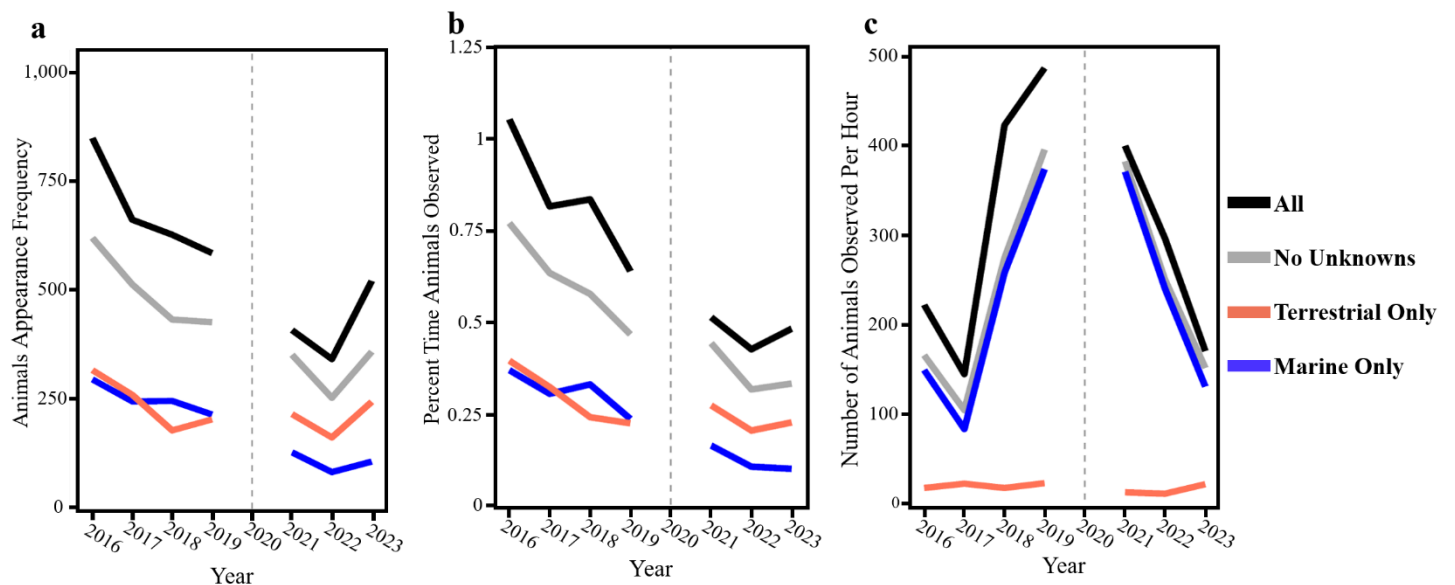


Figure 1. (a) The frequency in which animals appeared on the screen for both seasons filmed within the same year. This is count of appearances, not the abundance of the animals on the screen. (b) The percentage of screen time animals were observed for both seasons in the same year. (c) The mean number of animals observed per one hour of screen time. Please note the omission of 2020 in the figures. This was done to not obscure the trends in the way they were viewed.

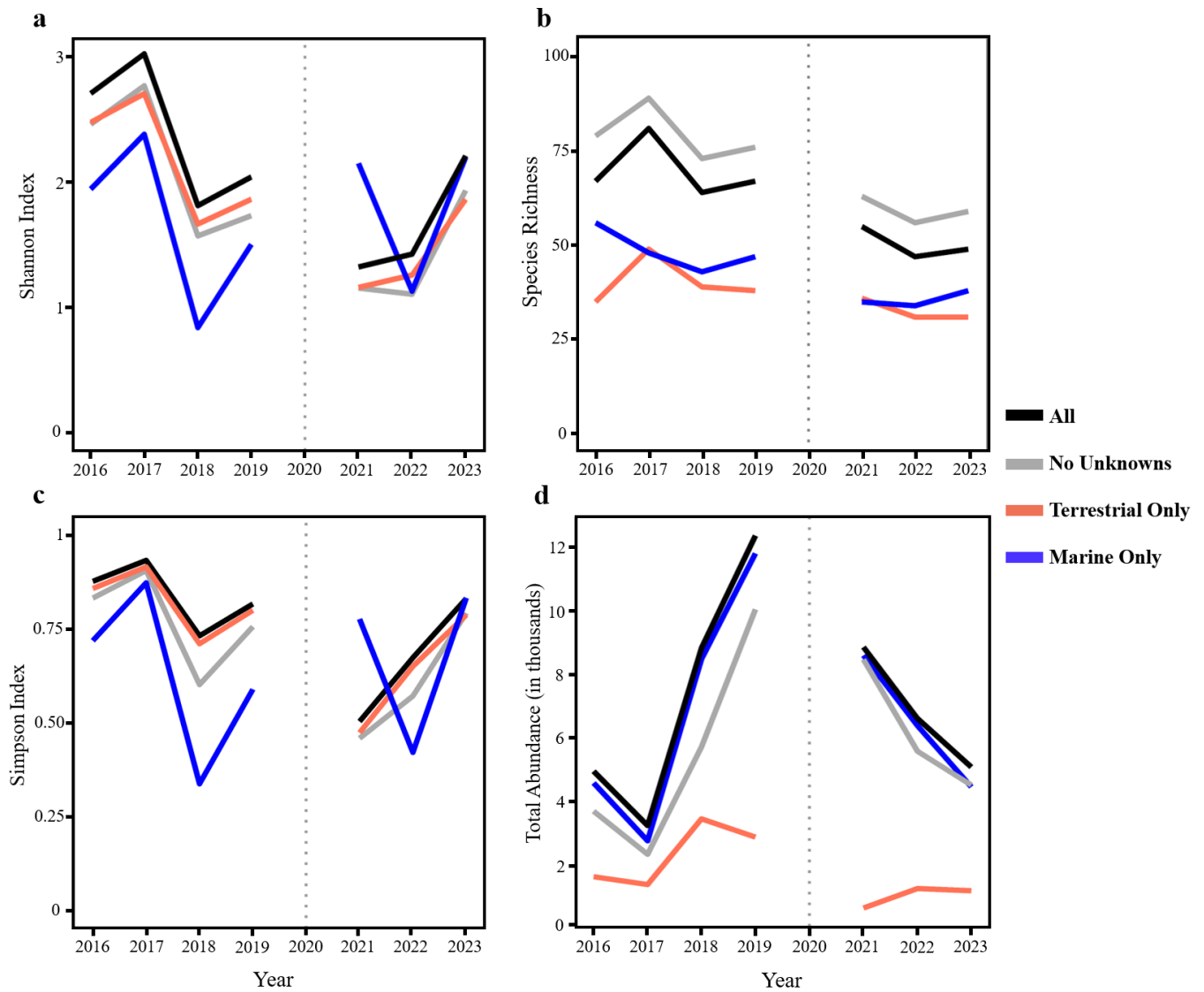
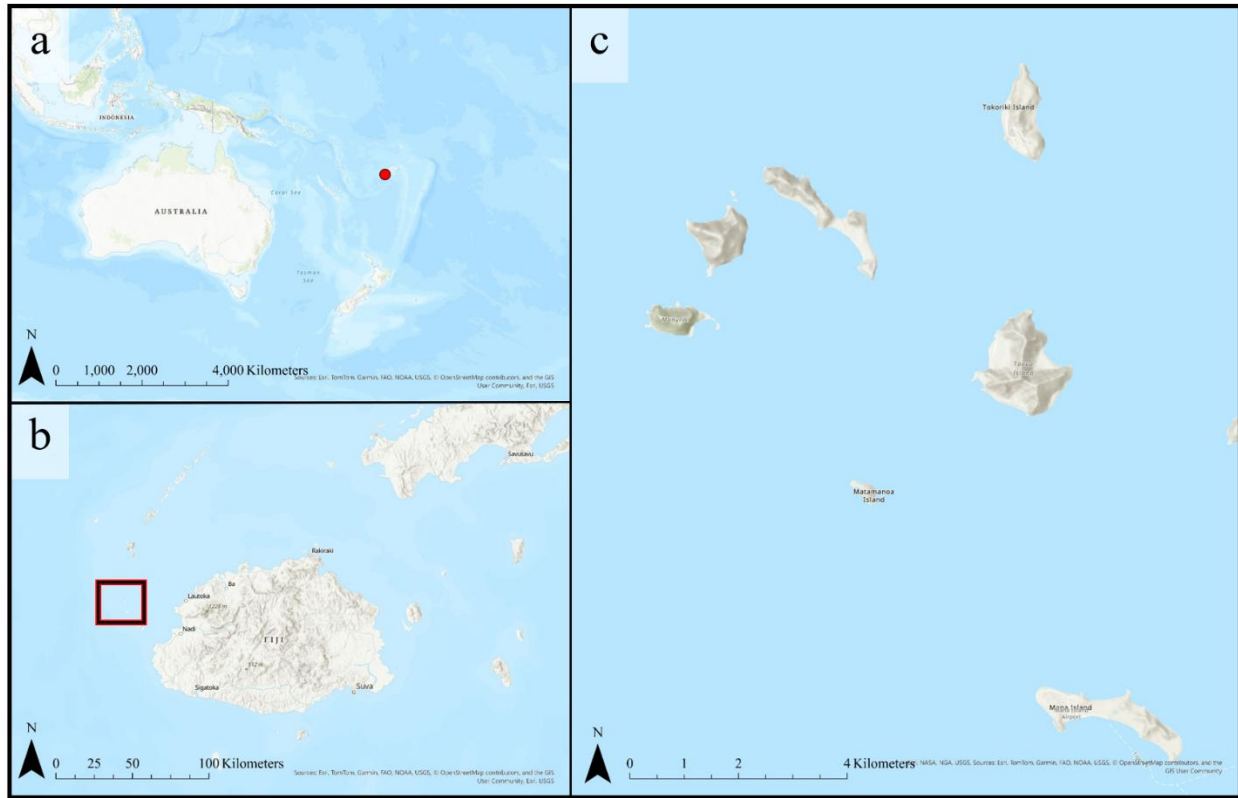
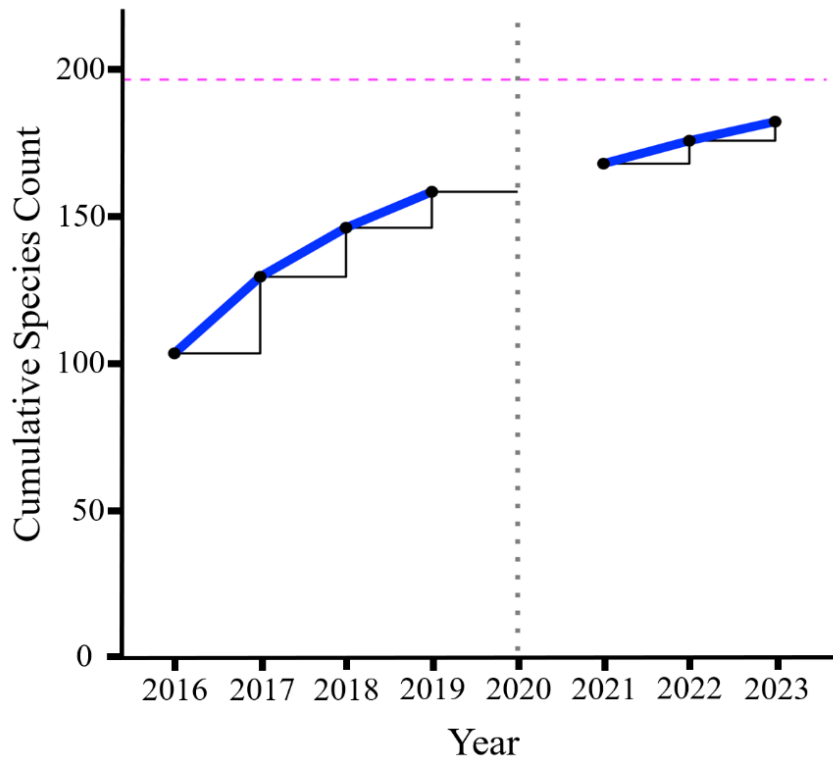


Figure 2. (a) Shannon index, (b) species richness, (c) Simpson diversity index, and (d) total abundance for all animals, all but unknown animals, terrestrial animals only, and marine animals only. Grouping these separately provides insight into variation in these metrics based on the environment and identification of these animals. Please note the omission of 2020 in the figures.

Supplemental Figures



Supplemental Figure 1. (a) Map of Pacific Ocean/Oceania region with Fiji within black box. (b) The Mamanuca Islands, within the red and black box, are off the west coast of Viti Levu. (c) The most common filming locations within the Mamanuca Islands, at approximately 17.673° S , 177.107° E.



Supplemental Figure 2. Accumulation curve for cumulative taxa counts for each year of filming for those that could be identified down to the family, genus, or species level. Black line is cumulative taxon count displayed stepwise while the blue line is linear connecting each point by year. The pink line represents the theoretical asymptote of the estimated maximum number of unique taxa from this data source ($n = 198$) if editing and footage collection methods continue to be similar. Please note the omission of 2020 in the figure.

Tables

Table 1. Counts of all individual animals identified down to genus or species level. Individuals that could not be identified to the genus or species level are enumerated in the “count unidentified” column. The amount of time (in seconds) for each screen classification category and sub-category is provided for each animal by the type of footage captured.

Animal Category	Number of Taxa Identified	Count Identified	Count Unidentified	Total Screen Time (sec)	Transition Time (sec)	Interaction Time (sec)	Hunting Time (sec)	Background of Focus Time (sec)	Theme Song Time (sec)
Amphibians	2	6		15	15				
Frogs	1	2		3	3				
Toads	1	4		12	12				
Birds	31	1,559	523	640	595			42	3
Birds of Prey	2	10		21	21				
Foraging or Shore Birds	29	1,549	523	619	574			42	3
Fishes	84	37,023	6,047	968	856	29	67	6	10
Rays	2	18		49	37		10		2
Reef Fishes	76	36,857	6039	738	653	29	44	6	6
Sharks	6	148	8	181	166		13		2
Invertebrates	46	753	2,986	1,481	585	159	122	615	
Ants			1,431	92	68	12	2	10	
Bees/Wasps	1	304	238	18	17			1	
Beetles			3	7	5	2			
Butterflies/Moths	6	9	51	83	21	11		51	
Crabs	9	261	56	263	230	12	21		
Flies/Gnats/Dragonfly	2	61	434	143	30	34		79	
Jellyfish	1	2		5	5				
Lobsters	1	2		6	3		3		
Octopus/Cuttlefish	2	11		66	34		32		
Other Bugs	10	34	3	132	48	78	5	1	
Sea Stars	1	2		3	2		1		
Shellfish or Barnacles	1	2	24	22			22		
Spiders	11	62	6	121	117	1		3	
Unknown Flying			739	483	4	9		470	
Worms	1	3	1	37	1		36		
Mammals	9	687	1	433	392	2	36	1	2
Bats	1	557		259	256			1	2
Dolphins	2	69	1	48	48				
Goats	1	21		44	8		36		
Rats	1	15		24	22	2			
Whales	4	25		58	58				
Reptiles	10	273	4	480	450	25		4	1
Lizards	7	79	2	147	141	2		4	
Snakes	2	151	2	305	295	10			
Turtles	1	43		28	14	13			1
TOTAL	182	40,301	9,561	4,017	2,893	215	225	668	16

Table 2. Top five most abundant taxa identified to the genus level for each of the broader animal groupings. Where possible, taxonomically related species were grouped at the genus or family level (e.g. terns).

Amphibians			Birds			Fish		
Common Name	Scientific Name	Count	Common Name	Scientific Name	Count	Common Name	Scientific Name	Count
Cane Toad	<i>Rhinella marina</i>	4	Wedge-tailed Shearwater	<i>Ardena pacifica</i>	864	Fiji Sardinella	<i>Sardinella fijiensis</i>	17,080
Fiji Tree Frog	<i>Platymantis vitiensis</i>	2	All Terns	<i>Thalasseus bergii</i> / <i>Sterna sumatrana</i> / <i>Gygis alba</i> / <i>Onychoprion fuscatus</i>	248	Anchovies	<i>Encrasicholina spp.</i>	7,641
-	-	-	All Boobies	<i>Sula sula</i> / <i>Sula leucogaster</i>	139	Indian Mackerel	<i>Rastrelliger kanagurta</i>	5,648
-	-	-	Black Noddy	<i>Anous minutus</i>	117	Snappers and Fusiliers	<i>Caesio spp.</i> / <i>Pterocaesio spp.</i> / <i>Lutjanus spp.</i> / <i>Macolor spp.</i>	3,594
-	-	-	Pacific Reef Heron	<i>Egretta sacra</i>	101	Chromis	<i>Chromis spp.</i>	766
Invertebrates			Mammals			Reptiles		
Oriental Paper Wasp	<i>Polistes olivaceus</i>	304	Flying Fox	<i>Pteropus spp.</i>	557	Pacific Tree Boa	<i>Candoia bibroni</i>	136
Tawny Hermit Crab	<i>Coenobita rugosus</i>	83	Spinner Dolphin	<i>Stenella longirostris</i>	52	Fijian Iguana	<i>Brachylophus spp.</i>	55
Smooth-handed Ghost Crab	<i>Ocypode cordimanus</i>	73	Goat	<i>Capra aegragrus hircus</i>	21	Hawksbill Sea Turtle	<i>Eretmochelys imbricata</i>	43
Mottled Lightfoot Crab	<i>Grapsus albolineatus</i>	65	Bottlenose Dolphin	<i>Tursiops spp.</i>	17	Yellow-lipped Sea Krait	<i>Laticauda colubrina</i>	15
Fiji Muscidae Fly	<i>Dichaetomyia spp.</i>	34	Polynesian Rat	<i>Rattus exulans</i>	15	All Skinks	<i>Emoia spp.</i>	12

Table 3. Linear model results for all identified taxa that had an R² value greater than the pre-determined threshold of 0.5. Linear model results include the total number of individuals observed, the number of years out of the 7 years reviewed the species was observed, as well as the linear model intercept, slope, and R² value.

Common Name	Scientific Name	n	# Years Appears	Intercept/ Slope	R ²	Common Name	Scientific Name	n	# Years Appears	Intercept/ Slope	R ²
Giant Asian Mantis	<i>Hierodula patellifera</i>	6	3	4.35/-0.64	0.96	Kelp Gull	<i>Larus dominicanus</i>	18	3	29.07/-4.07	0.78
Great Eggfly	<i>Hypolimnas bolina</i>	4	3	0.47/0.21	0.96	Damselfish	<i>Pomacentrus spp.</i>	78	4	48.2/-7.65	0.78
Black Noddy	<i>Anous minutus</i>	117	3	-65/19.5	0.95	Common Myna	<i>Acridotheres tristis</i>	5	3	3.67/-0.5	0.75
Swamp Harrier	<i>Circus approximans</i>	4	3	0.34/0.26	0.94	Giant Trevally	<i>Caranx ignobilis</i>	37	3	-18.67/15.5	0.75
Common House Gecko	<i>Hemidactylus frenatus</i>	9	5	3.49/-0.40	0.90	Wolf Spider	<i>Zoica spp.</i>	9	3	6/-1.5	0.75
Hawksbill Sea Turtle	<i>Eretmochelys imbricata</i>	43	3	-8.53/8.57	0.89	Whitetip Reef Shark	<i>Triaenodon obesus</i>	42	6	16.42/-2.57	0.69
Golden Damselfish	<i>Amblyglyphidodon aureus</i>	12	3	12.57/-3.21	0.89	Tawny Hermit Crab	<i>Coenobita rugosus</i>	83	6	41.3/-7.91	0.68
Bicolor Chromis	<i>Pycnochromis margaritifera</i>	18	3	19.35/-3.64	0.83	Pacific Tree Boa	<i>Candoia bibroni</i>	136	7	30.28/-2.71	0.64
Northern Silver Orbweaver	<i>Leucauge granulata</i>	8	3	-3/1.21	0.79	Snapper	<i>Lutjanus spp.</i>	13	4	8.65/-1.35	0.6
Wedge-Tailed Shearwater	<i>Ardena pacifica</i>	864	4	134.5/32.6	0.79	Banana Fusilier	<i>Pterocaesio pisang</i>	78	4	29.67/-2.90	0.57

Table 4. Linear model results for Shannon and Simpson diversity indices, species richness, and abundance for each episode, season, and season-pair. Further, the results were grouped by (a) all animals, (b) all but unknown, (c) terrestrial only animals, and (d) marine animals only.

a	Measurement	Intercept	Slope	R²	b	Measurement	Intercept	Slope	R²
	Shannon					Shannon			
	By Episode	2.63	0.00	0.01		By Episode	2.74	0.00	0.01
	Season	5.30	-0.08	0.32		Season	1.99	-0.05	0.12
	Year	2.88	-0.19	0.41		Year	2.60	-0.19	0.42
	Simpson					Simpson			
	By Episode	0.39	0.00	0.00		By Episode	0.32	0.00	0.02
	Season	0.39	0.00	0.00		Season	0.82	-0.01	0.16
	Year	0.89	-0.03	0.22		Year	0.83	-0.03	0.19
	Richness					Richness			
	By Episode	7.26	-0.01	0.07		By Episode	7.86	-0.02	0.11
	Season	7.26	-0.01	0.07		Season	51.51	-1.68	0.63
	Year	81.57	-4.78	0.76		Year	81.57	-4.78	0.76
	Abundance					Abundance			
	By Episode	163.65	0.51	0.00		By Episode	178.74	0.57	0.01
	Season	163.65	0.51	0.01		Season	2006.3	115.6	0.05
	Year	6102.10	255.3	0.03		Year	4052.9	423.4	0.11
c	Measurement	Intercept	Slope	R²	d	Measurement	Intercept	Slope	R²
	Shannon					Shannon			
	By Episode	1.98	0.00	0.00		By Episode	2.15	0.00	0.02
	Season	1.59	-0.04	0.13		Season	5.17	-0.02	0.02
	Year	2.23	-0.18	0.53		Year	2.79	-0.13	0.24
	Simpson					Simpson			
	By Episode	0.52	0.00	0.11		By Episode	0.32	0.00	0.00
	Season	0.61	0.00	0.01		Season	0.78	0.00	0.02
	Year	0.79	-0.03	0.22		Year	0.92	-0.03	0.19
	Richness					Richness			
	By Episode	4.23	-0.01	0.05		By Episode	5.85	-0.01	0.05
	Season	25.42	-1.02	0.53		Season	34.30	-0.8	0.36
	Year	42.14	-3.17	0.82		Year	50.28	-1.67	0.35
	Abundance					Abundance			
	By Episode	175.05	2.24	0.01		By Episode	30.31	0.04	0.00
	Season	1794.4	114.8	0.05		Season	367.65	8.65	0.01
	Year	3643.0	417.1	0.11		Year	706.0	39.79	0.08

Supplemental Tables

Supplemental Table 1. The season numbers, cumulative run time of the show, number of animals observed, and the total amount of time animals were observed on screen by filming year. The cumulative total across all years is presented in the final row.

Filming Year	Season #	Total Run Time (hrs)	Total Number of Animals Observed	Time Animals on Screen (sec)
2016	33/34	22.30	4,946	850
2017	35/36	22.45	3,236	664
2018	37/38	20.83	8,811	630
2019	39/40	25.35	12,349	588
2021	41/42	22.11	8,845	413
2022	43/44	22.32	6,602	347
2023	45/46	29.87	5,073	525
7 years	14 seasons	165.23	49,862	4,017