

Taiwan New Year 2022 Annual Report

BIRD COUNT

CONTENTS

02

Preface & Acknowledgements

04

Forward from our Friends

06

Goals

06

How the NYBC Works

07

Site-Based Results

13

Species Numbers and Population Trends

29

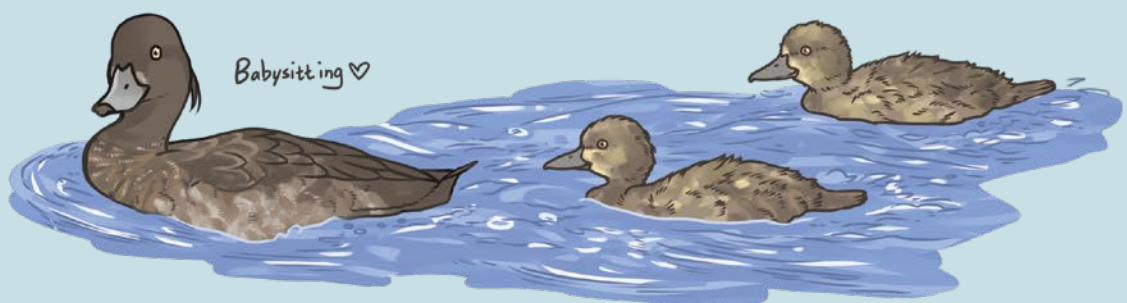
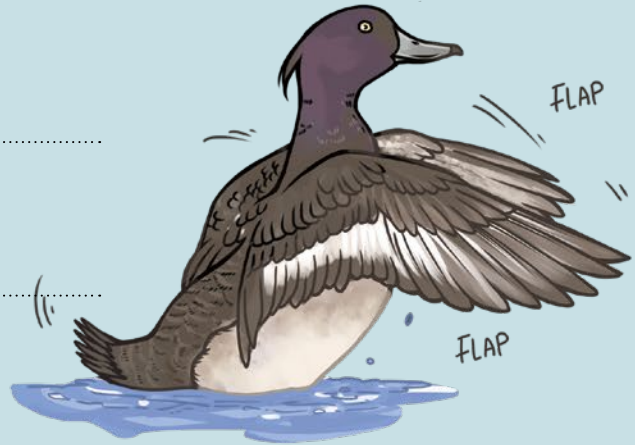
Open Data

30

NYBC History

31

Support the NYBC





Preface & Acknowledgements

Lin Da-li

The Taiwan New Year Bird Count is a citizen science project which aims to monitor the status and trends of migratory waterbirds in Taiwan proper and its outlying islands. This 9th report represents the results of 2022, and was conducted between December 18, 2021 and January 9, 2022. During the survey, 1,032 participants recorded 367,585 individuals from 325 species in 171 sample circles. Its results offer a glimpse into the situation facing migratory birds along the East Asian-Australasian Flyway (EAAF) in 2022.

The Taiwan NYBC results provide comprehensive insights into the distribution and community composition of the wintering avifauna of Taiwan. This has importance for conservation goals along the EAAF as it provides an in depth look at site usage for a number of migratory bird species. The data is also shared with Wetlands International for use in the Asian Waterbird Census.

Organizers would like to express their deepest gratitude and appreciation to all the participants, NGOs, donors, and sponsors without whom the Taiwan NYBC would not be possible.

In this report, the authors are also able to share the results of an analysis done using Taiwan NYBC data collected between 2014 and 2022. Using this information, population trajectory models have been made for Taiwan proper as well as three areas considered migratory bird hotspots: (1) the Changhua Coast in western Taiwan, (2) the Chianan Coast in southwestern Taiwan, and (3) the Yilan Plain in northeastern Taiwan. Of these three areas, the situation in the Yilan Plain is most concerning, with nine species of waterbird showing significant population declines. It is followed by Changhua (four species) and Chianan (one species). The data also showed that Eurasian Moorhen (*Gallinula chloropus*) numbers





have decreased dramatically in all areas, even though it is not a migratory waterbird. Meanwhile, a government-led removal of invasive African Sacred Ibis (*Threskiornis aethiopicus*) which began in 2019 has continued to yield positive results for resident species. More good news is that the Taiwan NYBC 2022 mascot, the Tufted Duck (*Aythya fuligula*), maintained stable numbers.

Yet what factors are driving this rapid species decline in certain areas? The authors conducted further analysis to get a clearer picture. Results showed that in the Yilan Plain, species which relied on rice paddy habitat had a higher decline rate than others. This indicates that rice paddy loss may be an important local threat to those migratory waterbird species. It also points to the need to investigate the relationship between agricultural land loss resulting from building expansions and luxury home creation in recent years and declining population numbers in Yilan. Also, previous studies identified tidal flat loss around the Yellow Sea as possibly one of the most pressing threats to migratory waterbirds along the EAAF. Our analysis supports this assessment. The authors suggest that both local land use planning policies within Taiwan as well as mitigation of Yellow Sea tidal flat loss are likely to be complementary in safeguarding the future of migratory waterbirds in Taiwan.

The Taiwan NYBC is organized by the Taiwan Wild Bird Federation (TWBF), the Wild Bird Society of Taipei

(WBST), the Kaohsiung Wild Bird Society (KWBS) and the Taiwan Endemic Species Research Institute (TESRI). The organizers would also like to give special thanks to Allen Lyu (呂翊維 TWBF), Scott Pursner (潘森識 TWBF), Wang Hsuan-hsuan (王宣護 TWBF), Chiang Kung-kuo (蔣功國 WBST), Lin Kun-hai (林昆海 KWBS), Lin Ruey-shing (林瑞興 TESRI), Tsai Chih-yi (蔡芷怡 TESRI) and Lin Da-li (林大利 TESRI) for their tireless effort in making the Taiwan NYBC 2022 a reality.

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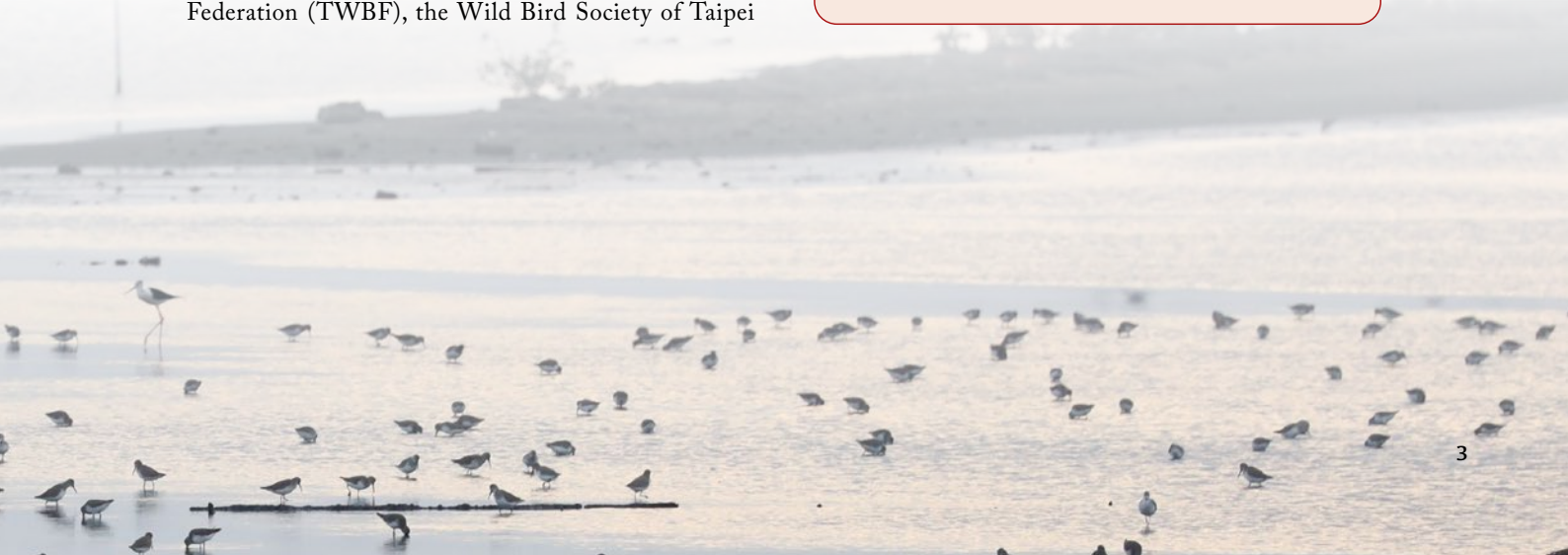
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Forward from our Friends

Shen Yu-lin

Project Manager, Wild Bird Association of Taiwan



張育霖

The Taiwan New Year Bird Count has now taken place successfully for nine years, a special achievement. I remember the first time I participated in the count was 2015 in New Taipei City's Neidong Area. I did it back then with expert birder Lin Da-li. That day we counted 26 Rusty Laughingthrushes, a number that still impresses me today. After taking part for a few years, I eventually began to take on leadership roles myself, even setting up new sample circles. It was in this way that I went from being a spring chicken to a bird boss and set me down the path to becoming the Taiwanese citizen scientist which I am today.

The Taiwan New Year Bird Count in many ways is like a health check for Taiwan's environment. Through the major efforts of local birders, we can get an idea of the conditions facing birds all over the country. Then, by performing follow-up analysis, we are able to gain a deeper understanding of the status and trends of our bird species. This information can be shared with government agencies and international organizations. Through international cooperation, we are able to contribute to the global dialogue on bird species and their conservation as well as population dynamics. This activity is not just about the fun of birdwatching. It also connects people, birds, and the environment.

I hope more people can join this meaningful event in the future and we can all better understand the world around us.





新年鳥計

Tsai Jing-Shiuan

Education and Outreach Specialist, Changhua Wild Bird Society

How do I explain why the Taiwan New Year Bird Count is so special? While doing the surveys, you always have two kinds of people. There are those that know birds well and recognize everything they see, saying things like, "add one Red-collared Dove, add five Eurasian Tree Sparrows, add another eight Red-collared Doves". It seems as if they're able to spot every bird in the area. Then you have those who don't have much experience with birds. For them it can be a bit overwhelming and it's common to hear, "Where are the birds? How can you recognize them so quickly?" Yet using Changhua as an example, it really is just about everyone coming together to do this activity. Surveys here are mainly done by car and there will be at least one person in each team who knows how to identify birds and helps those having difficulty understand what's going on.

Taking part in the Taiwan NYBC isn't as relaxing as general birdwatching because it has this surveying component to it. It really puts in perspective that birdwatching isn't so far removed from scientific study. To me, that's one of the most interesting things about the Taiwan NYBC. Living in Taiwan, where there is a large and active birdwatching community, it's really a great feeling to have old friends and new getting involved in this event. Together, we're able to both learn about the current situation facing our local environment as well as the changes taking place before us. It really goes to show that there are always new discoveries awaiting all of us. The Taiwan NYBC is waiting for you to join, this year and every year after!



Goals

- ◎ Recording the wintering avifauna of Taiwan proper and its outlying islands
- ◎ Mainstreaming biodiversity
- ◎ Enjoying birding

How the NYBC Works

Rules for the Taiwan NYBC are based on the basic principles set out in the Christmas Bird Count. Over the course of 23 days (with January 1st serving as a midpoint), volunteer teams choose one 24-hour period to count all the birds within a circle sample area whose radius is three kilometers. Routes within sample areas are provided for teams by the organizers. Teams are composed of at least one leader, at least one person experienced in birdwatching and surveys, and supporting volunteers. Group numbers could range from as few as three to over 100. While doing their count, teams record species name, number of individuals, location of route(s)/observation area, date, start and end time, number of participants, survey methods and weather conditions. Survey methods vary and include line transects, counting flocks, area searches, and others.





Site-Based Results

Lin Da-li, Tsai Chih-yi

From December 18, 2021 to January 9, 2022, NYBC 2022's 1,032 participants performed bird surveys at 171 sites (Fig 1, Table 1), recording 367,585 individuals from 325 species. A total of 68 of the 171 sites were located in Important Bird and Biodiversity Areas (IBAs, Fig 1). The southwest coast and northeastern plains of Taiwan proper were hotspots in both species richness and abundance (Fig 2, 3). The distribution map for this year's mascot, the Tufted Duck (*Aythya fuligula*), indicates that the central west coast, the Yilan Plain, and the estuaries of the Tamsui River are their main wintering sites (Fig 4).

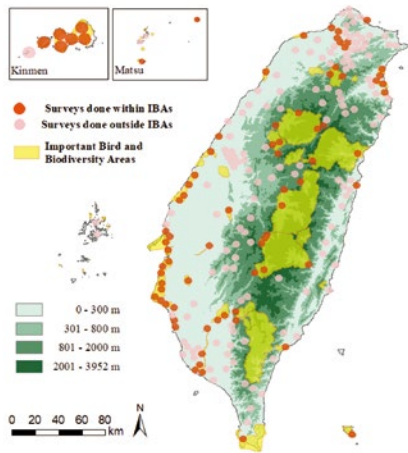


Fig 1. NYBC 2022 site map highlighting surveys done in IBAs. Red circles indicate that survey circles were completely inside of or overlapped with IBAs. Pink circles indicate that survey circles were located completely outside of IBAs (credit: Tsai Chih-yi).

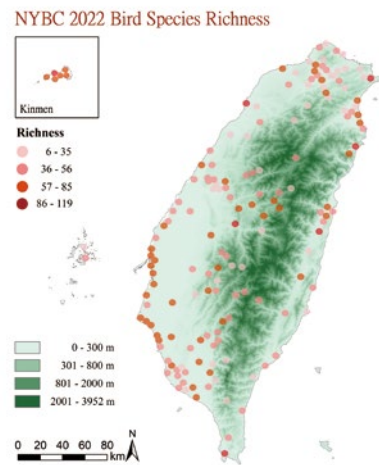


Fig 2. NYBC 2022 Bird Species Richness (credit: Tsai Chih-yi)

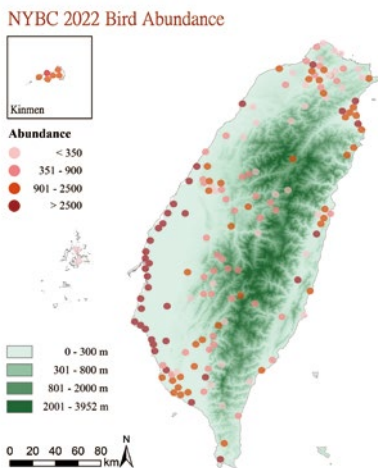


Fig 3. NYBC 2022 Bird Abundance (credit: Tsai Chih-yi)

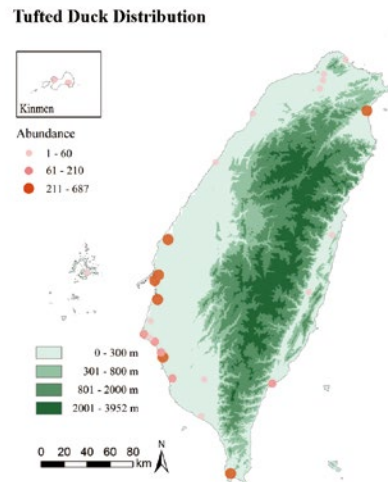


Fig 4. NYBC 2022 Distribution map for this year's mascot, the Tufted Duck (*Aythya fuligula*) (credit: Tsai Chih-yi)

Table 1. Site-Based Results for the Taiwan NYBC 2022

Site Number	Site Name	Number of Species					Number of Individuals				
		2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
1	Tai-an Waterfall	15	18	27	27	27	213	348	127	128	355
2	Huajiang Bridge	40	47	34	43	45	394	630	401	351	374
3	Shih-Lin	33	31	42	44	42	405	737	1040	687	818
4	Wenshan Muzha	48	9	56	56	54	704	49	897	1478	1299
5	Taipei Parks	43	37	44	48	38	1135	1256	1288	1148	723
6	Academia Sinica	29	25	30	36	33	269	273	363	307	438
7	Guandu Wetland	70	47	81	86	79	4680	1793	4293	5850	5533
8	Fuzhou Bridge	24	39	54	63	54	124	512	1145	1062	944
9	Gancheng Bridge	12	46	53	57	33	101	499	546	594	146
10	Zhonghe&Yonghe	29	49	48	50	58	102	1941	1343	1739	1584
11	Xindian	43		51		35	536		870		559
12	Yehliu	20	24	30	28	34	71	99	183	145	198
13	Jinshan	54	74	65	66	52	437	880	486	817	305
14	Wa-Tzu-Wei	32	27	25	43	35	272	313	591	1360	548
15	Fushan	40	32				586	633			
16	Tonghou		23	17	28	21		307	88	119	94
17	Xizhi	40	39	31	46	32	748	578	310	1115	238
18	Houtong	23	18	36	25	32	58	155	133	107	204
19	Pinglin				25	23				242	84
20	Guishan	71	79	80	76	73	1619	1804	1403	1749	2152
21	Neidong	31	17	34	36		301	115	290	308	
22	Shiding	40	41	40	36	39	368	412	488	342	447
23	Tien-Liao-Yang	111	96	140	142	116	1507	1968	3216	2701	1729
24	Manyueyuan			27					190		
25	Sanxia	12	21				251	608			
26	Sanzhi	54	49	47	63	54	614	623	648	377	460
27	Chajiao	8	7				171	97			
28	Pingguang Rd.	20	52				338	284			
29	Hsu-Tsu Kang	67	57	81	77	67	1655	1253	3549	1702	1956
30	Guoling Forest Park					47					2227
31	Hsian-Shen Wetland	76	87	85	89	104	4804	10046	8187	5737	12229
32	National Tsing Hua University	26		18	26	20	327		270	331	208
33	Sanhudao	35	26	26	34	26	542	736	645	375	430
34	Mingfong Historic Trail	29	26	33	27	29	248	277	335	217	152
35	Dasyueshan9-23K	48	54	53	39	56	214	478	359	322	664
36	Dasyueshan23-37K	37	34	40	30	42	373	611	622	159	445
37	Dasyueshan37-52K	19	19	28	23	29	116	101	313	144	135
38	Kao-Mei Wetland	57	68	79	84	75	2897	4636	3502	7623	5172
39	Taichung Metropolitan Park	35	40	46	45	36	354	531	586	381	371
40	Dakeng	62	73	66	66	69	1024	1603	1392	1647	2246
41	National Museum of Natural Science	31	29	19	29	23	350	425	103	181	177
42	National Chung Hsing University	28	32	14	23	15	305	717	119	398	229





Download Table 1 Here



Site Number	Site Name	Number of Species					Number of Individuals				
		2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
43	Da-Jia	39				40	857				796
44	Ta-Tu Stream	33	30	37	30	40	2234	1922	1248	2347	7701
45	Fazi River	33	37	36	36	54	238	684	787	602	1073
46	Ta-Li Stream	38	34	38	37		790	845	1057	1163	
47	Taiping	48	28	50	51	37	744	554	838	920	525
48	Basianshan	43	19	39	37		231	107	265	267	
49	Wuling Farm	59	52	49	62	52	1256	1791	1258	1970	1591
50	Puli	67	65	65	66	76	2153	1649	1894	1728	2048
51	Wushe	52	61	43	45	62	451	667	732	629	744
52	Mei Feng Farm	57	54			37	483	597			261
53	Kunyang	16	12	18	18	18	81	66	121	131	193
54	Aowanda				55	61				430	502
55	Dongpu	51	58				961	1717			
56	Jiji	82	87	82	85	91	2509	2600	1479	2850	2182
58	Huisun Forest Area	31	22	27	30	37	176	193	203	472	460
59	Tataka	25	30	34	27	23	285	396	637	295	369
60	Han-Pao & Fu-Pao Wetland	39	34	37	37	46	6086	3416	7294	1620	8311
61	Fang-Yuan	50	37	39	44	38	5872	3966	4518	4019	3807
62	Dong-Luo-Hsi River	37	41	46	53	52	1532	2899	3611	3461	4251
63	Yiwu Wetland	63	54	67	71	65	5684	5840	5305	4617	3921
64	Huben	51	56	68	74	67	770	822	1346	1357	786
65	Douliu	31			38		627			1711	
66	Shibi	56	49	63	57	50	657	587	940	633	818
67	Fengshan	26	29		40	47	255	234		379	356
68	Chashan	21	24		25	45	352	315		326	427
69	Lantan Reservoir	22	25		39	50	207	198		578	1030
70	Pu-Tai	82	77	79	76	76	39024	37988	34814	27556	28101
71	Zengwen Reservoir	59	54	55	62	64	658	676	686	802	875
72	Alishan	37	35	30	30	29	801	879	412	361	520
73	Aogu Wetland	93	83	90	95	79	14286	14100	11372	8635	12882
74	Guanghua	59	47	54	41	57	657	580	910	554	853
75	Szu-Tsao	76	69	73	74	78	9755	6515	10661	10175	7439
76	Tainan Tucheng	71	64	69	71	73	6294	5217	5969	7146	5970
77	Guan-Tien		53	59	51	63		5400	7875	1520	7846
78	Kantou Mountain	24	29	45	34	29	163	159	429	187	247
79	Qigu	67	69	64	62	69	4230	2905	3003	3773	3755
80	Chiku-Dingshan	42	47	40	49	49	2491	5279	2659	16457	12509
81	National Cheng Kung University	27	19	17	39		889	468	322	1585	
82	Xinhua	28	24	21	48		315	314	162	522	
83	Yung-An	79	45	49	43	46	2873	1633	4717	2313	3921
84	Shanping	36	29	27	34	38	326	229	352	270	444
85	Maolin	50	38	39	43	48	541	730	914	1009	635
86	Yellow Butterfly Valley	40	37	52	45	43	603	616	525	790	922

Site Number	Site Name	Number of Species					Number of Individuals				
		2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
87	Zuoying	63	57	65	43	72	3411	2657	3137	867	2604
88	Cijin,Gushan&Yancheng	55	51	36	51	50	1773	1449	526	1329	1297
89	Weiwuying	32	38	30	32	38	529	584	507	791	1119
90	Niao-Sung	35	41	35	33	38	546	840	399	827	659
91	Kaohsiung Old Railway Bridge Wetland	57	55	49	48	46	1381	1952	1371	1309	1469
92	Feng-Shan Reservoir	37	44	52	45	45	1816	1875	2350	1841	2434
93	Nanxing&Fengshan	43	45	48	53	54	394	452	970	1008	958
94	Lin-Yuan	29	38	37	31	33	1140	1587	2152	985	1009
95	Erjituanshan	53	57	26	54	66	516	746	353	664	1583
96	Zhongliaoshan	42	46	45	50	43	815	377	729	504	444
97	Yuan-Chung-Kang	50	59	52	48	36	1976	2831	2540	1416	788
98	Qieding	77	71	69	81	81	14347	10719	14450	6116	10437
99	Dongsha Islands	33	34	27			309	345	281		
100	Shihshan Forest Road	30	38	38	35	37	204	345	365	439	337
102	Wutai	27	17	15	29	27	160	63	72	195	146
103	Sandimen	22	41	43	48	35	167	697	447	708	559
104	National Pingtung University of Science and Technology	74	76	84	85	78	2109	2119	2136	2798	3203
105	Linhoulin Forest Park	39	21	46	46	43	339	244	834	757	471
106	Kanding Wetland	53	58	59	54	63	1733	1970	1781	1193	1558
107	Da-Peng-Wan	73	62	75	70	77	2889	2283	3802	2982	2643
108	DahanShan	38		19	21	18	255		102	102	85
109	Shuangliou Forest Recreation Area	19	24	35	17		65	132	145	63	
110	Lung-Luan Lake	95	104	122	92	119	2953	2745	3824	3986	4396
111	Mudan	57	54	53	56	51	758	1233	921	1284	915
112	Pingtung Agricultural Biotechnology Park	52	48	64	56	60	1015	1449	1735	1433	1979
113	Weiliaoshan	44	42	50	40	50	419	525	599	775	546
114	Taiwu	52	72	38	43	32	673	847	379	466	344
115	YiChiLine	25	21	31	30	31	1894	710	2487	1816	2235
116	Zhu'an	70	77	65	54	74	5902	7660	2835	4255	4334
117	Yuanshan	51	32	32	35	31	2636	2383	2018	3992	2637
118	Shinnan-Meifu	38	42	40	39	45	1687	1195	719	3345	1456
119	Lan-Yang Stream	50	50	52	72	71	1415	4044	1411	1967	2431
120	Dazhou	35	33	44	38	40	918	1143	782	884	902
121	Li-Tse	55	45	75	70	75	8387	4282	5991	3336	6191
122	Wu-Wei-Kang	37	39	56	47	44	797	656	809	816	1108
123	Nan'ao	104	105	114	104	102	2722	1743	2345	2499	2212
125	Hua-Lien River Mouth	50	39	46	38	42	903	672	690	332	701
126	San-Min		65	80	77	79		3795	5488	6181	7081
127	Ruisui	33	10	14	25		560	159	147	402	
128	Ji-An	56	42	56	61	57	402	617	1370	1756	2234
129	Pei-Nan Wetland	43		52	40	38	1346		736	301	586





Site Number	Site Name	Number of Species					Number of Individuals				
		2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
130	Jihben Wetland	46		57	53	56	712		2675	3358	2361
131	Da Po Pond		38	69	41	37		633	2503	582	493
132	Southern Cross-Island Provincial Highway		38	55	44	52		221	532	684	411
133	Taitung Yima Forest Road	42	38	33	21	32	363	420	130	97	165
134	Sanxiantai		15	31	29	29		189	271	269	158
135	Tsai-Yuan Wetland	38	36	30	46	42	474	403	114	388	347
136	Chi Lake	76	105	96	98	92	9632	16234	5922	17414	8129
137	Little Kinmen	80	79	91	88	85	4809	3544	3423	4672	4554
138	Kinsa	82	88	90	75	76	3467	4539	5938	3202	2296
139	Kinmen County Forestry Affair Place	72	75	83	84	63	3945	2283	2978	5802	1224
141	Beigan	16	14	15	12		56	68	76	107	
142	Nangan	24	31	31	30		195	200	337	311	
143	Juguang	13	33	23	20		73	224	208	205	
144	Dongyin			48					387		
145	Shihmen	15	12	15			154	167	33		
146	Wuzhishan Range	46	45	40	53	26	561	613	1434	584	88
147	Chi-Tou	15	16	16	22	14	260	270	369	246	165
149	Kanggaokeng River	13	13	11	12	16	70	101	69	30	36
150	Jincheng	89	85	98	88	83	3296	3546	3928	2485	2469
151	Chonlin	73	67	87	84	71	1879	1353	2424	1977	1627
152	Meinong	50	49	49	49	60	1098	746	683	2514	1396
153	Tonglin	39	51	54	51	51	450	488	670	755	463
154	Shenmei Lake	58	48	50	53	62	513	398	446	359	2197
155	Yulao	31	38	27	30	25	321	353	268	274	249
156	Yangchoukeng	31	30	27	32	29	300	357	247	427	326
157	Zhongli	51	46	53		55	722	756	949		375
158	Ta Cheng	61	49	62	53	49	3804	2105	3972	4310	2900
159	Zhongzhengshan	22	22	11	21	28	152	125	26	141	256
160	Dongshan	56		46	73	54	519		370	896	517
162	Waipu Lotus Valley	46	50	52	46	48	1747	2191	1420	965	929
163	Dingzilanshi	31	32	43	40	30	242	239	189	217	224
164	Chukou	48	40	50	52	52	670	520	864	732	668
165	Jioufenershan	44	58	60	52	58	360	715	577	929	833
166	Zhuoshui River	65	59	60	57	67	11073	15699	10437	12912	16142
168	Pozhih Stream	44	39	58	62	66	3350	2475	6340	10666	14692
169	Ba-Chang-Hsi River	53	52	37			7353	2078	415		
170	Beimen	40	39	40		61	765	972	794		7678
171	Shou-Feng	36	30	44	45	38	2391	1558	921	1923	2407
173	Li-Yu-Tan	56	48	53	48	49	509	368	305	349	310
174	Danongdafu Forest Park	43	49	44	53	28	539	611	325	266	199
175	Shalun Farm	54	49	60	68	64	2838	3167	2926	2516	2574
176	Keelung River	47	39			41	1983	578			1572





Site Number	Site Name	Number of Species					Number of Individuals				
		2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
177	Erchong Floodway	52	49	60	47	58	1196	1235	1533	1594	1987
178	Maokong&Shenkeng	30	24				151	151			
179	Tunghai University	28	30	43	34	39	247	538	747	819	549
180	Nantun	41	32	40	29	30	1339	823	1045	331	1052
181	Dawu	50	51	50	54	55	536	465	541	505	707
182	Tai-Xi	41	50	46	39	44	1818	3032	5253	3109	6059
183	Sihu	31	14	24		60	472	100	115		3972
184	Kouhu		16	36		60		136	595		4152
186	Hou-Long-Hsi River	34	36				572	588			
187	Fonglin	104	101	110	118	109	2267	2400	3809	3649	5814
190	National Dong Hwa University	54	56	81	69	58	739	1563	1862	1403	2429
191	Lao Mei	24	21	11	25	6	148	81	36	120	11
192	Cueifong Lake	13	8				32	11			
193	Walami Trail	65		31	24	46	778		303	224	499
194	North-Cross Island Highway's Baling	33					350				
195	Wumei Elementary School Fengshu Branch	16	10				265	483			
196	Meishan Entrance(Meishan Lane)		54	47	61	49		1189	455	894	874
197	North-Cross Island Highway's Mingchih		28					125			
198	Cilan Villa		30					287			
199	Sishu		62	52	59	63		1647	1837	2443	4039
200	Yunei River		26	28	31	27		160	190	161	142
201	Nangang		8	19	13	11		39	44	33	31
202	Taipingshan Villa		9					50			
203	Tuchang Jioujihize		22					316			
204	Shakadang		17	20	26	8		166	82	135	27
205	Yushan Scenic Highway		28	20	22	19		214	196	281	50
206	Lion's Head Mountain			41	36	36			260	257	129
207	Si-ma-hsian Forest Trail			56					1152		
208	Ligavon			34					235		
209	Jiali Mountain			22					122		
210	Smangus			21					123		
211	Zhonggang River			51					2178		
x2	Öita City		19	24	28	17		116	266	237	63
212	Changbin				46	52				853	1071
213	Zhongyang Park				52	54				1340	1056
214	Dalu Forest Road				37					576	
215	Ssuyuan Yakou				37					345	
216	Zhong Zhi Guan				43	41				747	1305
217	Nan Shan Village				24					247	
218	Buqaiz					59					770
219	Danda lin dao					27					242
220	Danaiku					29					154
221	Lanpu					17					226





Species Numbers and Population Trends

Lin Da-li, Scott Pursner, Tsai Chih-yi

In 2022, 367,585 individuals from 325 species were recorded, including 3,730 Tufted Ducks (*Aythya fuligula*), this year's mascot.

To assess the population trends for migratory waterbirds wintering here, we analyzed data for Taiwan proper and three areas considered migratory bird hotspots: (1) the Changhua Coast in western Taiwan, (2) the Chianan Coast in southwestern Taiwan, and (3) the Yilan Plain in northeastern Taiwan. We used the R package "Poptrend" (Knappe 2016) to conduct the generalized additive mixed model analysis (GAMM), and set the survey year as the random factor.

Figure 5 shows the summary results: each number indicates the rate of change for each species in each area. Red triangles mean significant growth, blue triangles mean significant decline, and gray circles mean non-significant change. If a species is not included in a certain list, it means there was not sufficient data to analyze.

Plate 1-4 represent analysis results for the period of 2014 to 2022. For waterfowl and coots, the Eurasian Wigeon (*Mareca penelope*) experienced a significant decline in the Yilan Plain during this time but no real change elsewhere. Meanwhile, numbers for Northern Shoveler (*Spatula clypeata*), Tufted Duck (*Aythya fuligula*), and Eurasian Coot (*Fulica atra*) increased significantly throughout Taiwan.

Results regarding shorebirds were not positive. Aside from the Little Ringed Plover (*Chaeadrius dubius*) and Black-bellied Plover (*Pluvialis squatarola*), whose

numbers showed significant increases in the Changhua Coast area, population numbers for other shorebird species, like Sanderling (*Calidris alba*), decreased significantly. These numbers serve as a warning for researchers and conservationists that more must be done to ensure species survival in Taiwan, including improving and maintaining the condition of their habitats, especially tidal flats. Appropriate conservation actions should also be developed accordingly.

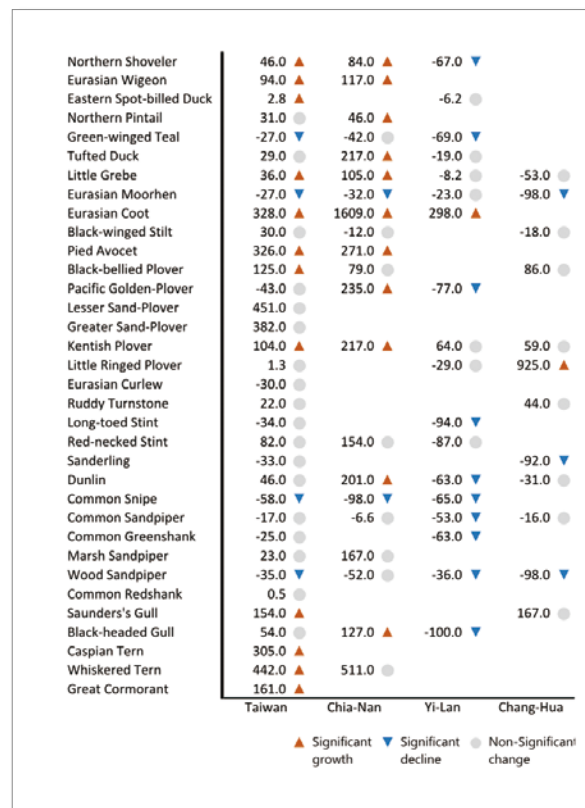
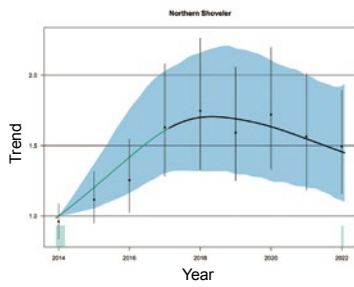


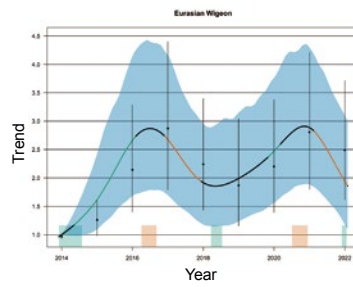
Fig 5. Estimated percentage change in abundance between 2014 and 2022 for 34 migratory waterbird species in Taiwan proper and three migratory bird hotspots: Chianan, Yilan, and Changhua. Blank spaces indicate that analysis was not possible due to an insufficient number of count records.

Plate 1. Population trajectories for waterbirds in Taiwan proper between 2014 and 2022. For periods where there is a significant increase, the trend line is green; where there is a significant decrease, the trend line is orange; and where there is no significant change, the trend line is black.

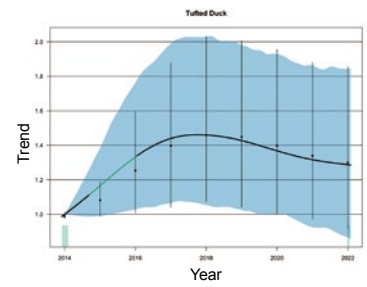
(a) Northern Shoveler



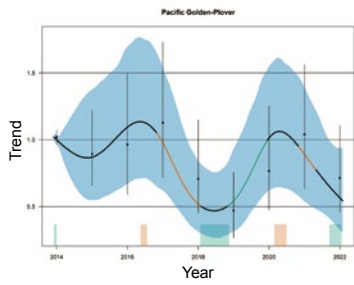
(b) Eurasian Wigeon



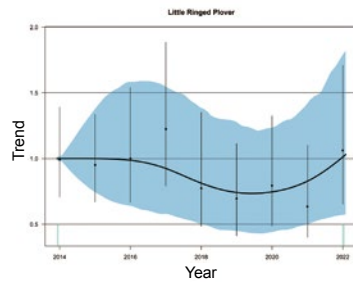
(c) Tufted Duck



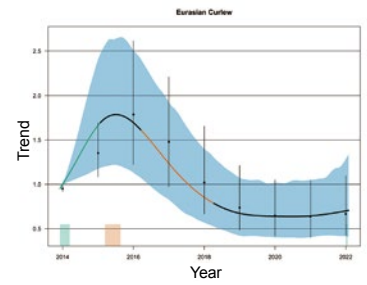
(g) Pacific Golden-Plover



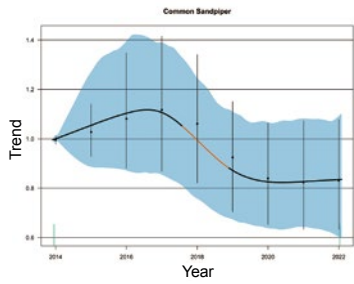
(h) Little Ringed Plover



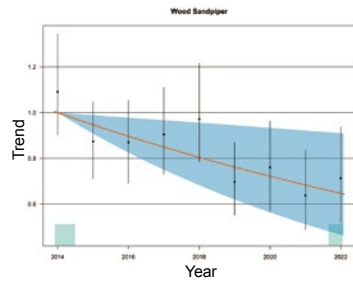
(i) Eurasian Curlew



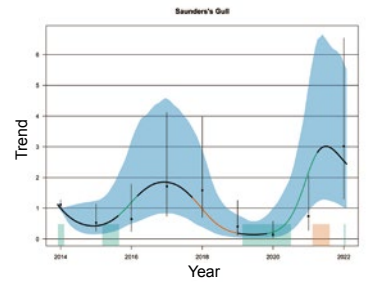
(m) Common Sandpiper



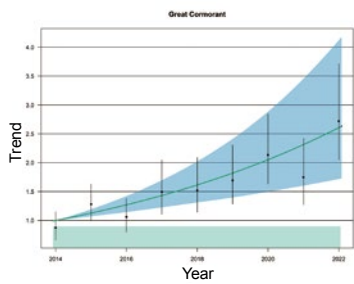
(n) Wood Sandpiper



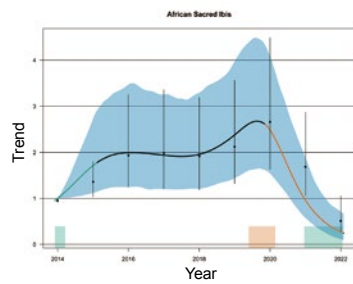
(o) Saunders's Gull



(s) Common Cormorant



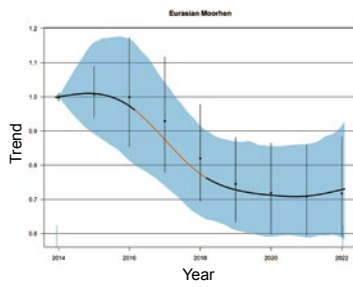
(t) African Sacred Ibis



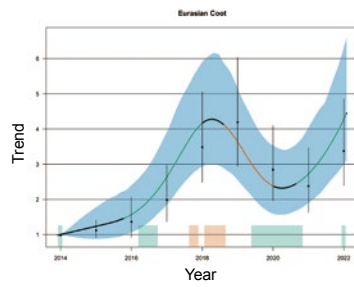


is a significant decrease, the trend line is orange. Periods where the curvature is significantly positive or negative are marked on the x axis by green and orange rectangles, respectively.

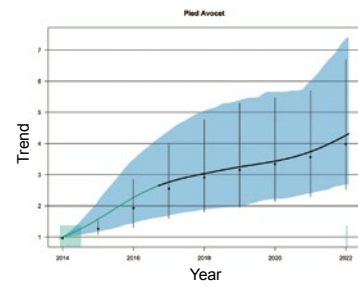
(d) Eurasian Moorhen



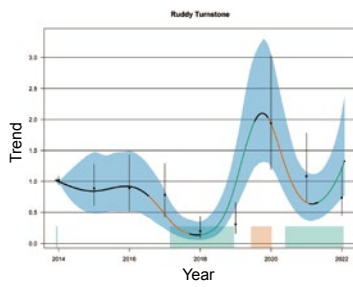
(e) Eurasian Coot



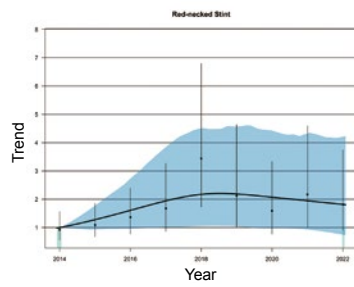
(f) Pied Avocet



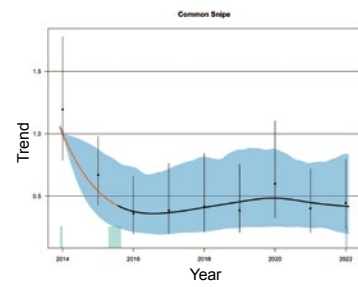
(j) Ruddy Turnstone



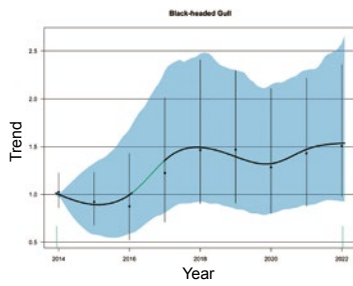
(k) Red-necked Stint



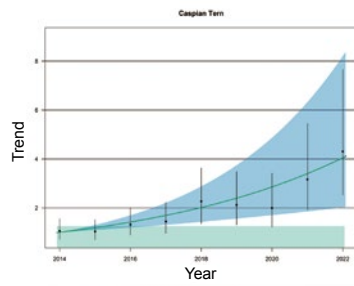
(l) Common Snipe



(p) Black-headed Gull



(q) Caspian Tern



(r) Whiskered Tern

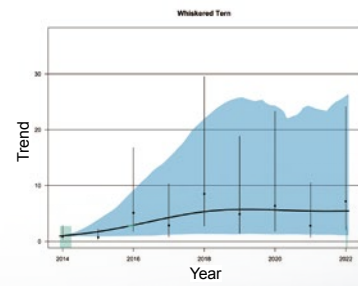
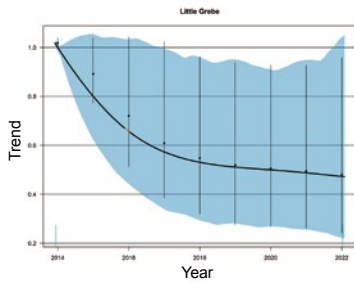
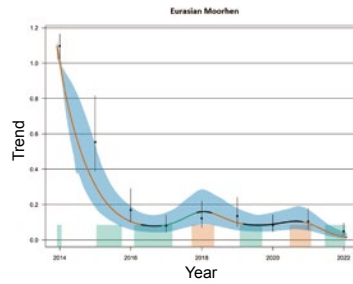


Plate 2. Population trajectories of waterbirds counted along the Changhua Coast (western Taiwan) between 2014 and 2022. For periods where there is a significant increase, the trend line is in green; for periods where there is a significant decrease, the trend line is in orange. Periods where the curvature is significantly positive or negative are marked on the x axis by green and orange rectangles, respectively.

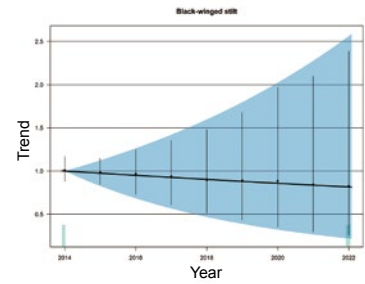
(a) Little Grebe



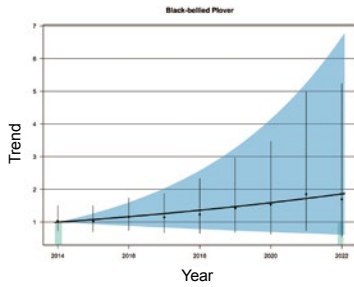
(b) Eurasian Moorhen



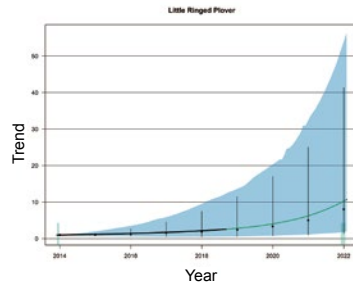
(c) Black-winged Stilt



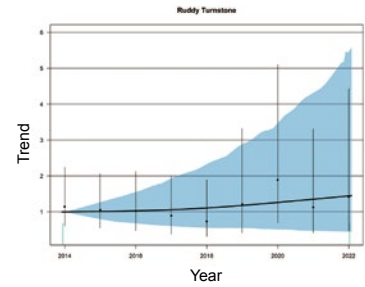
(d) Black-bellied Plover



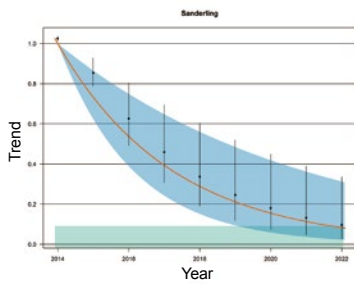
(e) Little Ringed Plover



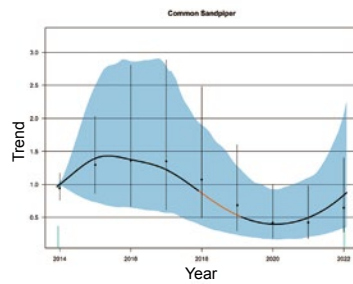
(f) Ruddy Turnstone



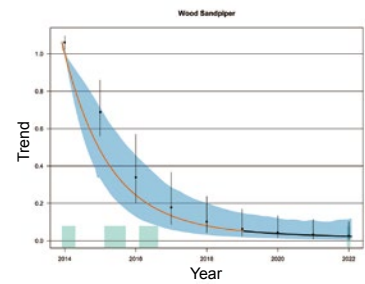
(g) Sanderling



(h) Common Sandpiper



(i) Wood Sandpiper



(j) Saunders's Gull

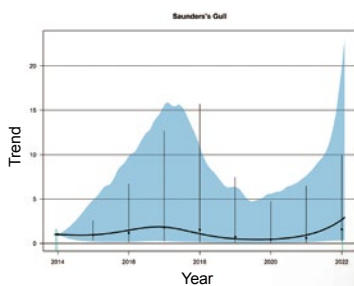
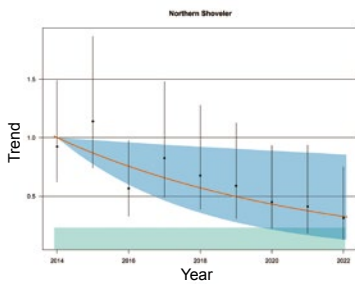


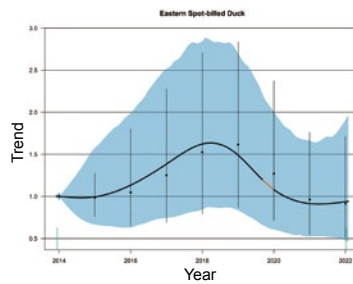


Plate 3. Population trajectories for waterbirds counted in the Yilan Plain (northeastern Taiwan) between 2014 and 2022. For periods where there is a significant increase, the trend line is in green; for periods where there is a significant decrease, the trend line is in orange. Periods where the curvature is significantly positive or negative are marked on the x axis by green and orange rectangles, respectively.

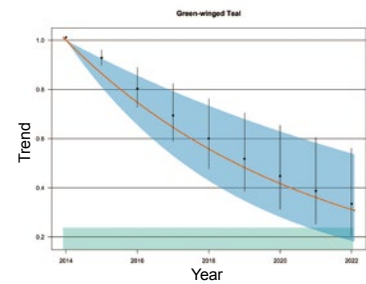
(a) Northern Shoveler



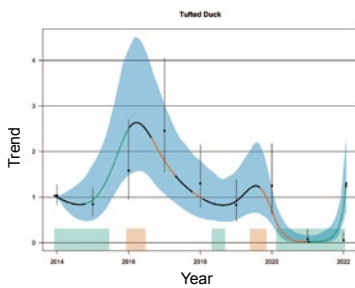
(b) Eastern Spot-billed Duck



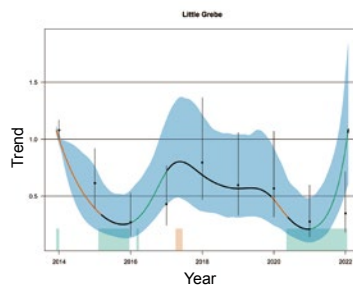
(c) Green-winged Teal



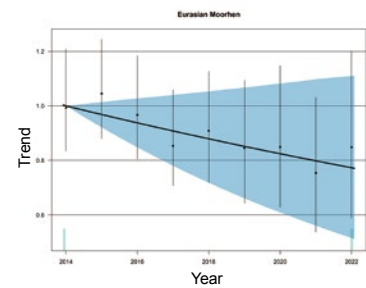
(d) Tufted Duck



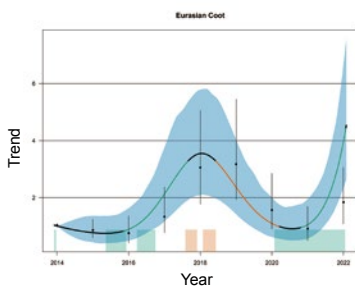
(e) Little Grebe



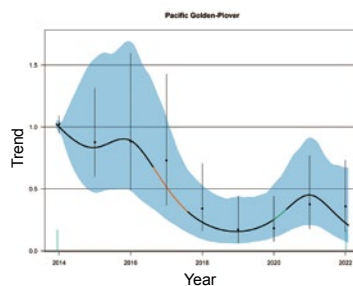
(f) Eurasian Moorhen



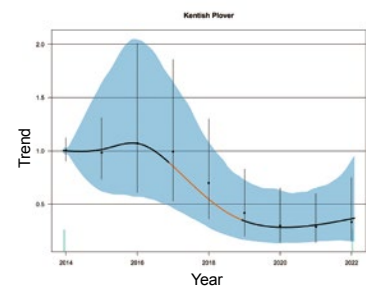
(g) Eurasian Coot



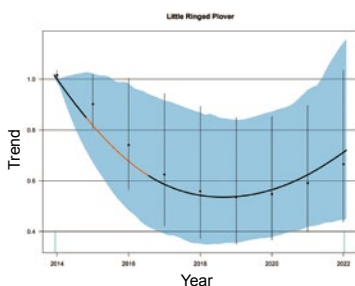
(h) Pacific Golden-Plover



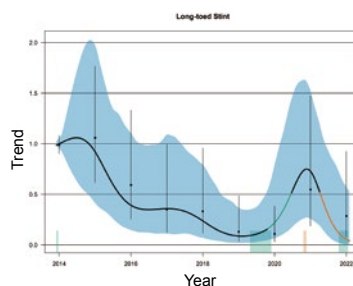
(i) Kentish Plover



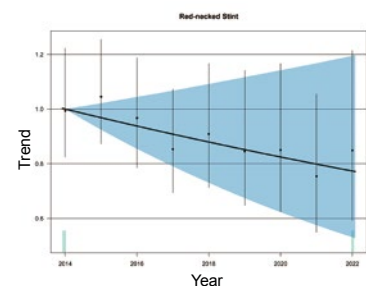
(j) Little Ringed Plover



(k) Long-toed Stint



(l) Red-necked Stint



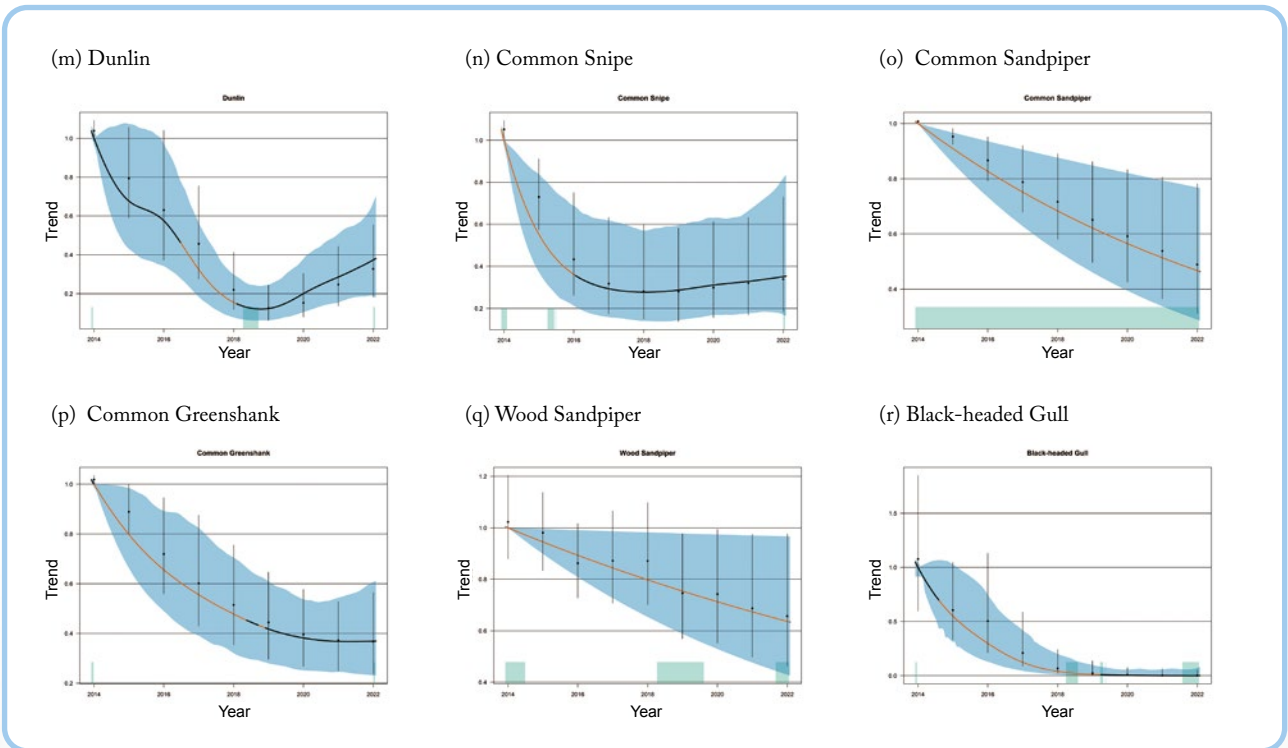
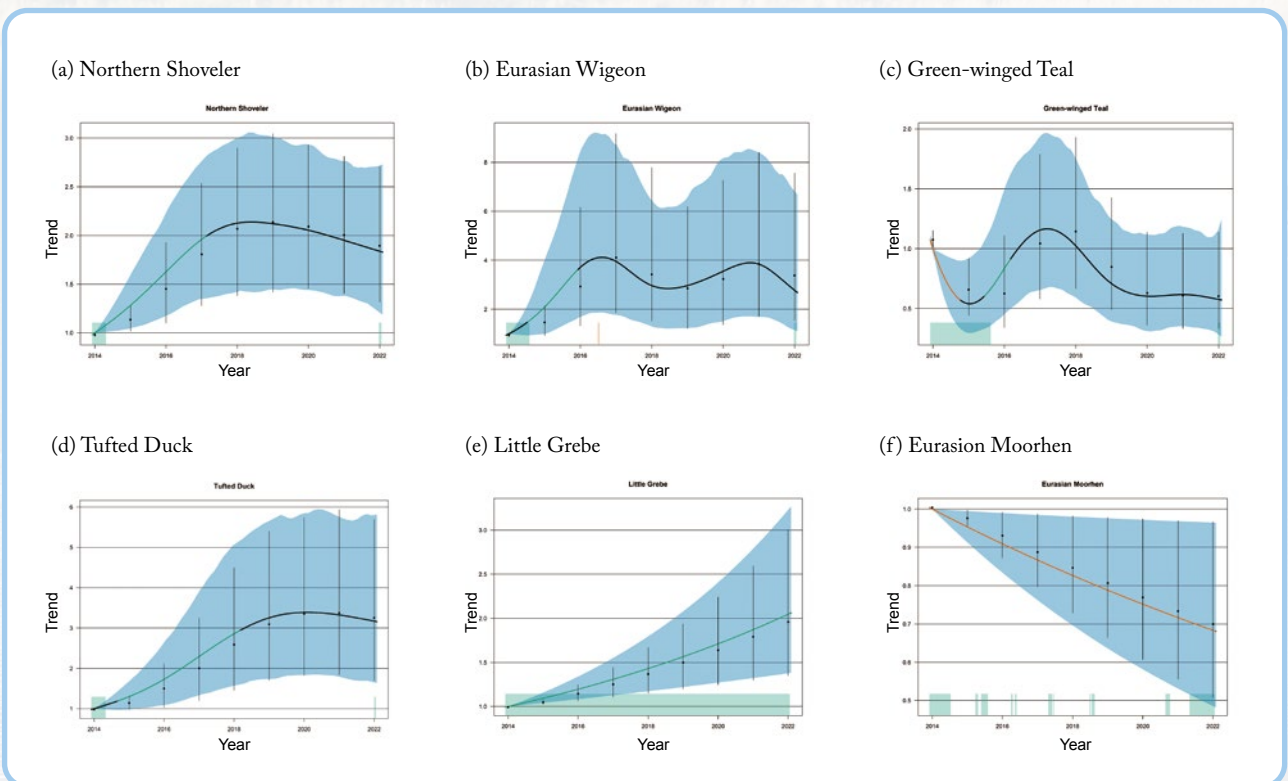
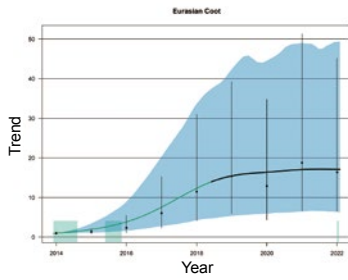


Plate 4. Population trajectories for waterbirds counted along the Chianan Plain (southwestern Taiwan) between 2014 and 2022. For periods where there is a significant increase, the trend line is in green; for periods where there is a significant decrease, the trend line is in orange. Periods where the curvature is significantly positive or negative are marked on the x axis by green and orange rectangles, respectively.

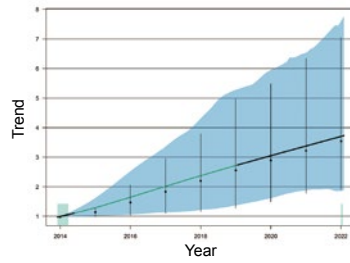




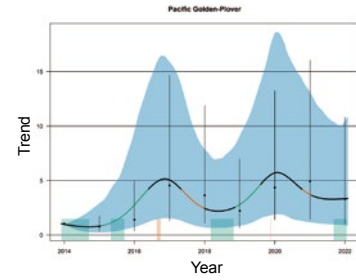
(g) Eurasian Coot



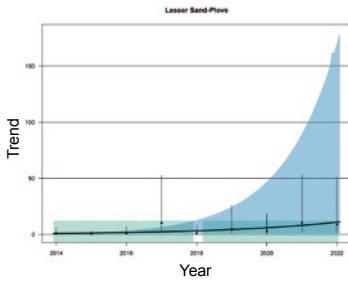
(h) Pied Avocet



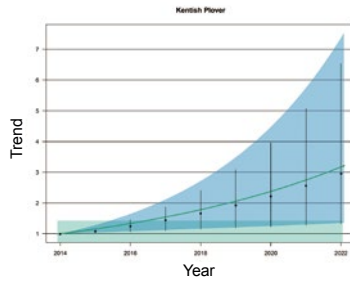
(i) Pacific Golden-Plover



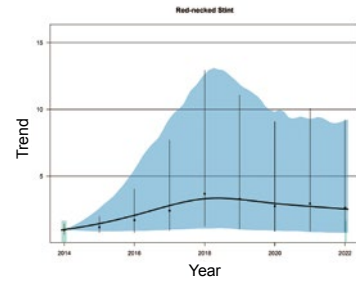
(j) Lesser Sand-Plover



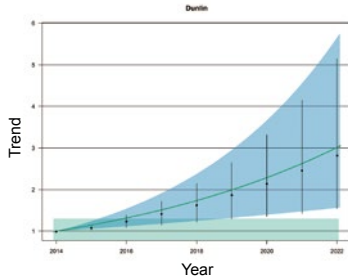
(k) Kentish Plover



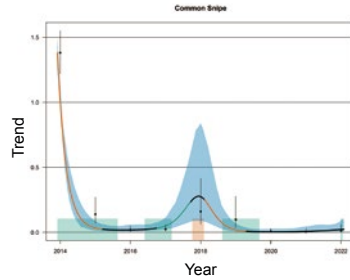
(l) Red-necked Stint



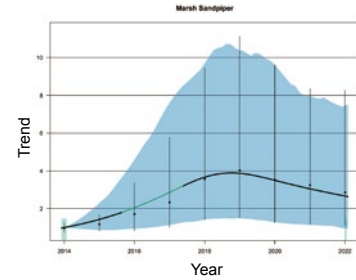
(m) Dunlin



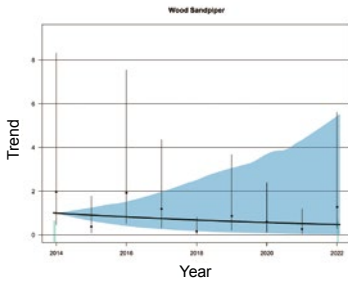
(n) Common Snipe



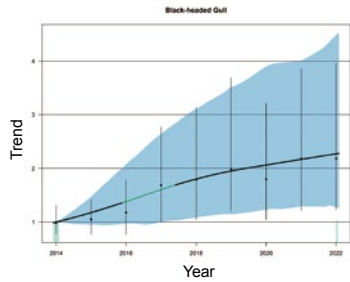
(o) Marsh Sandpiper



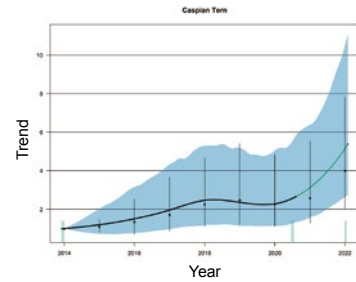
(p) Wood Sandpiper



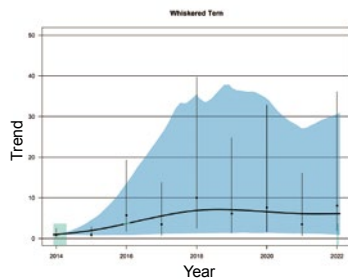
(q) Black-headed Gull



(r) Caspian Tern



(s) Whiskered Tern



The taxonomy and English names of species in this report follow the eBird/Clements Checklist of Birds of the World Version 2022 (Clements et al. 2022).



Table 2. 2017-2022 NYBC Data by Species

Common Name	2017	2018	2019	2020	2021	2022
Graylag Goose	0	0	2	0	0	0
Swan Goose	0	0	0	0	0	1
Greater White-fronted Goose	0	0	0	1	7	2
Taiga Bean-Goose	7	0	0	0	9	0
Tundra Bean-Goose	0	0	0	7	18	17
Tundra Swan	1	0	0	1	0	0
Ruddy Shelduck	0	2	2	0	0	0
Common Shelduck	4	9	2	7	3	4
Cotton Pygmy-Goose	0	0	1	1	0	0
Mandarin Duck	22	9	12	6	7	0
Baikal Teal	0	3	1	1	0	0
Garganey	146	49	11	31	30	28
Northern Shoveler	14103	14193	11609	13766	11728	11400
Gadwall	139	61	96	56	135	76
Falcated Duck	34	18	18	69	52	24
Eurasian Wigeon	12237	6860	8190	10035	13858	7755
American Wigeon	0	0	0	1	0	0
Philippine Duck	0	0	0	0	1	0
Eastern Spot-billed Duck	3400	4177	4132	3538	3540	3665
Mallard	66	94	147	92	117	156
Northern Pintail	6446	3760	5759	3566	4522	4033
Green-winged Teal	6844	6829	7229	6712	7516	6277
Common Pochard	174	39	21	122	26	65
Ferruginous Duck	1	0	1	0	4	19
Baer's Pochard	0	1	0	0	0	0
Tufted Duck	4420	3308	4014	3346	3233	3730
Greater Scaup	37	2	40	33	21	8
Long-tailed Duck	0	0	0	0	0	0
Common Goldeneye	0	0	0	0	0	0
Smew	0	0	0	1	0	0
Common Merganser	1	0	0	0	1	0
Red-breasted Merganser	4	0	0	0	1	0
Scaly-sided Merganser	0	0	0	0	0	0
Taiwan Partridge	61	74	94	92	89	114
Indian Peafowl	0	0	0	9	25	82
Blue-breasted Quail	0	0	0	4	0	0
Japanese Quail	2	1	0	4	0	1
Taiwan Bamboo-Partridge	247	207	301	229	233	284
Mikado Pheasant	1	0	3	0	1	4
Ring-necked Pheasant	103	137	86	195	115	164
Swinhoe's Pheasant	30	17	12	19	12	16
Little Grebe	1308	1242	1259	1417	1159	1475
Great Crested Grebe	60	125	33	178	123	120
Eared Grebe	2	5	5	19	19	2
Rock Pigeon	5732	4970	5714	5265	8085	9332
Ashy Wood-Pigeon	470	749	400	455	378	120
Oriental Turtle-Dove	1026	1042	825	870	745	809
Red Collared-Dove	10288	7932	9488	9462	9296	11465
Spotted Dove	3347	2873	3686	3699	3358	3099
Asian Emerald Dove	14	22	16	34	26	39
White-bellied Pigeon	109	97	111	102	174	175
Whistling Green-Pigeon	59	84	42	91	21	138
Black-chinned Fruit-Dove	0	0	0	0	0	1




[Download Table 2 Here](#)


Common Name	2017	2018	2019	2020	2021	2022
Greater Coucal	18	38	25	36	37	32
Lesser Coucal	18	24	15	23	17	23
Asian Koel	6	0	0	1	1	1
Plaintive Cuckoo	1	0	0	0	0	0
Savanna Nightjar	0	0	23	588	25	56
White-throated Needletail	1	6	0	0	0	0
Silver-backed Needletail	0	2	0	0	5	0
Himalayan Swiftlet	0	0	0	0	1	2
Pacific Swift	0	0	9	3	5	4
House Swift	1825	3732	2144	1520	3076	3297
Brown-cheeked Rail	0	0	5	2	2	0
Slaty-breasted Rail	0	4	1	1	1	1
Eurasian Moorhen	3514	2984	3384	3905	3328	3642
Eurasian Coot	1448	2330	2023	1186	1589	2391
Black-backed Swamphen	0	0	0	1	0	0
White-breasted Waterhen	226	342	217	310	248	247
Slaty-legged Crake	0	0	0	1	2	0
Ruddy-breasted Crake	14	16	8	13	22	15
Baillon's Crake	0	0	0	1	0	0
Siberian Crane	0	0	58	0	0	0
Red-crowned Crane	0	0	0	0	0	0
Black-winged Stilt	10772	11207	12283	14869	11337	13924
Pied Avocet	3729	3570	4380	4609	4337	6072
Eurasian Oystercatcher	96	16	130	212	123	7
Black-bellied Plover	638	479	895	1015	1411	1336
Pacific Golden-Plover	7047	3031	3210	7293	5476	3652
Northern Lapwing	134	178	100	177	207	455
Gray-headed Lapwing	0	1	1	1	2	2
Lesser Sand-Plover	261	246	156	225	208	664
Greater Sand-Plover	100	131	350	499	262	870
Kentish Plover	26995	18998	16908	15753	23376	29957
Common Ringed Plover	1	1	0	0	0	1
Long-billed Plover	1	0	0	8	2	3
Little Ringed Plover	2222	1287	1280	1578	1312	1895
Greater Painted-snipe	28	27	50	70	64	69
Pheasant-tailed Jacana	257	40	281	281	143	462
Whimbrel	202	36	47	220	188	104
Little Curlew	0	0	0	0	0	0
Far Eastern Curlew	14	2	1	2	2	3
Eurasian Curlew	2254	950	713	877	776	749
Bar-tailed Godwit	0	2	6	15	55	11
Black-tailed Godwit	164	202	142	7	3	103
Ruddy Turnstone	632	458	1145	1968	726	1033
Great Knot	86	6	14	9	19	76
Red Knot	73	201	1	2	2	0
Ruff	6	10	5	9	1	7
Broad-billed Sandpiper	3	3	2	4	0	1
Sharp-tailed Sandpiper	5	30	0	0	0	2
Curlew Sandpiper	14	1	67	22	2	1
Temminck's Stint	6	3	3	10	6	10
Long-toed Stint	239	149	231	599	252	637
Spoon-billed Sandpiper	0	1	0	0	0	0
Red-necked Stint	1770	3330	1652	1010	1534	1189



Common Name	2017	2018	2019	2020	2021	2022
Sanderling	92	108	162	256	182	210
Dunlin	17646	15003	14250	12906	16835	26128
Little Stint	2	5	0	5	0	0
Long-billed Dowitcher	2	1	1	2	1	4
Eurasian Woodcock	3	9	4	6	6	8
Common Snipe	441	486	388	579	430	453
Pin-tailed Snipe	0	0	0	2	0	0
Swinhoe's Snipe	0	0	0	0	0	0
Terek Sandpiper	2	158	8	2	4	19
Red Phalarope	0	0	0	0	1	0
Common Sandpiper	622	544	424	466	534	511
Green Sandpiper	77	94	101	123	112	98
Gray-tailed Tattler	33	527	57	33	0	7
Spotted Redshank	17	20	47	7	3	2
Common Greenshank	2308	1792	1342	2331	1572	1714
Lesser Yellowlegs	0	0	1	0	0	0
Marsh Sandpiper	630	817	784	518	584	680
Wood Sandpiper	1663	1669	1225	1511	1258	1533
Common Redshank	535	289	434	481	356	556
Barred Buttonquail	8	8	5	5	6	47
Oriental Pratincole	4	1	0	0	0	52
Saunders's Gull	136	84	11	9	184	188
Black-headed Gull	6648	6433	6580	5794	6124	6997
Pallas's Gull	0	1	0	0	1	0
Black-tailed Gull	1	13	17	3	7	3
Herring Gull	225	69	129	86	59	63
Lesser Black-backed Gull	14	1	1	4	2	1
Slaty-backed Gull	0	68	0	0	0	0
Little Tern	56	56	97	58	40	97
Gull-billed Tern	6	8	3	3	13	68
Caspian Tern	965	2170	1780	1250	2369	3267
White-winged Tern	1	1	12	3	0	0
Whiskered Tern	4317	12236	6441	8597	3521	9762
Common Tern	0	0	0	0	0	0
Great Crested Tern	0	5	0	0	0	39
Streaked Shearwater	0	0	0	0	0	0
Black Stork	1	0	0	1	1	0
Oriental Stork	2	0	0	3	7	22
Pelagic Cormorant	0	0	0	1	0	0
Great Cormorant	8705	15494	18473	9960	16306	15273
Japanese Cormorant	23	17	1	22	0	0
Dalmatian Pelican	0	0	4	0	0	0
Great Bittern	2	2	1	1	1	5
Yellow Bittern	70	84	49	103	115	134
Schrenck's Bittern	0	1	0	0	1	0
Cinnamon Bittern	33	21	17	29	19	17
Gray Heron	5536	5671	5483	5124	4899	4692
Purple Heron	31	17	24	30	22	25
Great Egret	6548	4976	5969	5790	4867	6163
Intermediate Egret	463	458	468	456	318	352
Chinese Egret	14	0	0	1	0	0
Little Egret	10210	8077	7601	8772	7229	8768
Pacific Reef-Heron	7	9	14	14	17	11
Cattle Egret	3500	3679	3712	4022	5534	4126
Chinese Pond-Heron	70	43	32	61	52	50





Common Name	2017	2018	2019	2020	2021	2022
Striated Heron	26	26	17	29	23	116
Black-crowned Night-Heron	3324	3114	2555	2075	2001	2449
Malayan Night-Heron	69	90	63	78	91	92
Glossy Ibis	0	0	0	6	0	3
Sacred Ibis	1173	1256	1374	1723	456	109
Eurasian Spoonbill	9	17	10	31	24	53
Black-faced Spoonbill	1454	1947	2009	2193	1470	2409
Osprey	207	194	186	233	212	228
Black-shouldered Kite	93	130	132	187	180	188
Oriental Honey-buzzard	53	59	59	63	83	101
Black Baza	0	0	1	0	0	0
Crested Serpent-Eagle	365	240	218	265	293	289
Mountain Hawk-Eagle	4	10	19	5	17	15
Black Eagle	28	22	49	35	42	53
Greater Spotted Eagle	0	0	1	0	0	0
Imperial Eagle	0	1	0	0	0	0
Gray-faced Buzzard	6	2	4	4	7	3
Eurasian Marsh-Harrier	0	0	0	1	0	0
Eastern Marsh-Harrier	5	22	8	14	19	17
Northern Harrier	1	0	0	1	5	0
Pied Harrier	0	0	0	1	0	1
Crested Goshawk	146	111	98	126	129	119
Chinese Sparrowhawk	0	0	0	1	1	0
Japanese Sparrowhawk	5	5	2	4	4	2
Besra	32	19	19	31	30	29
Eurasian Sparrowhawk	2	6	3	3	4	5
Northern Goshawk	1	1	0	2	2	0
Black Kite	227	221	273	334	251	400
White-tailed Eagle	0	0	1	1	1	0
White-bellied Sea-Eagle	0	0	0	0	0	0
Eastern Buzzard	0	0	49	65	55	42
Upland Buzzard	0	0	0	0	0	0
Australasian Grass-Owl	0	0	0	0	0	0
Mountain Scops-Owl	42	10	31	41	11	25
Collared Scops-Owl	31	11	11	26	10	318
Ryukyu Scops-Owl	0	0	0	0	0	0
Oriental Scops-Owl	0	0	1	0	0	0
Tawny Fish-Owl	1	1	0	0	0	0
Collared Owlet	2	3	8	4	3	5
Brown Wood-Owl	1	0	1	1	0	0
Himalayan Owl	2	2	3	0	1	1
Long-eared Owl	1	0	1	2	0	1
Short-eared Owl	3	0	0	2	4	3
Northern Boobook	1	2	5	2	1	1
Eurasian Hoopoe	34	44	84	95	54	54
Common Kingfisher	357	360	334	439	449	471
White-throated Kingfisher	25	42	35	50	33	31
Black-capped Kingfisher	0	0	0	0	0	0
Collared Kingfisher	1	0	0	0	0	0
Pied Kingfisher	12	21	24	34	23	14
Taiwan Barbet	384	460	604	786	822	782
Eurasian Wryneck	4	1	3	3	9	3
Gray-capped Woodpecker	196	239	265	292	285	321
White-backed Woodpecker	7	7	7	9	15	12
Gray-faced Woodpecker	0	4	3	4	4	10



Common Name	2017	2018	2019	2020	2021	2022
Eurasian Kestrel	76	77	74	97	108	98
Eurasian Hobby	1	1	1	0	2	1
Peregrine Falcon	30	50	35	41	45	41
Gray-chinned Minivet	391	939	673	505	504	803
Scarlet Minivet	0	0	0	2	0	0
Ashy Minivet	22	23	32	33	2	3
Large Cuckooshrike	0	5	1	6	2	5
Black-winged Cuckooshrike	2	8	12	1	4	8
White-bellied Erpornis	278	226	389	324	410	464
Black-naped Oriole	24	18	25	19	26	24
Maroon Oriole	63	70	71	74	72	60
Black Drongo	1441	1429	1195	1399	1415	1623
Ashy Drongo	3	4	0	3	1	2
Bronzed Drongo	277	260	308	302	302	394
Hair-crested Drongo	7	3	4	5	0	0
Black-naped Monarch	387	343	481	516	594	628
Japanese Paradise-Flycatcher	0	0	2	0	0	0
Amur Paradise-Flycatcher	0	0	0	1	0	0
Bull-headed Shrike	2	3	1	1	0	1
Red-backed Shrike	0	0	0	1	0	0
Brown Shrike	971	862	633	834	813	1285
Long-tailed Shrike	356	346	349	334	311	342
Chinese Gray Shrike	1	0	1	0	0	1
Eurasian Jay	21	43	81	63	73	78
Azure-winged Magpie	5	13	17	17	7	25
Taiwan Blue-Magpie	286	422	353	244	327	341
Gray Treepie	876	1074	1130	1521	1395	1229
Eurasian Magpie	1043	998	1022	1076	1181	1182
Eurasian Nutcracker	29	16	16	25	15	21
House Crow	0	1	0	2	0	0
Rook	0	2	3	1	1	1
Carrion Crow	0	0	2	4	1	0
Large-billed Crow	148	228	356	486	267	374
Collared Crow	38	51	51	76	58	54
Coal Tit	48	27	21	90	27	113
Chestnut-bellied Tit	23	213	169	78	77	170
Green-backed Tit	209	190	334	292	370	364
Japanese Tit	1	0	0	0	0	0
Yellow Tit	31	46	72	43	56	65
Chinese Penduline-Tit	27	6	40	0	8	0
Eurasian Skylark	5	13	474	103	158	203
Oriental Skylark	292	249	366	293	133	418
Striated Prinia	8	6	6	6	0	6
Yellow-bellied Prinia	474	468	499	797	668	643
Plain Prinia	1375	1357	1249	1617	1465	1577
Zitting Cisticola	68	28	36	50	34	57
Golden-headed Cisticola	18	8	9	22	7	7
Black-browed Reed-Warbler	2	2	2	7	1	0
Oriental Reed-Warbler	28	15	18	24	20	19
Pallas's Grasshopper-Warbler	0	0	1	0	0	0
Middendorff's Grasshopper-Warbler	4	0	0	4	0	2
Lanceolated Warbler	0	0	0	0	0	0
Taiwan Bush-Warbler	4	3	3	0	2	0
Russet Bush Warbler	0	0	0	1	0	0





Common Name	2017	2018	2019	2020	2021	2022
Taiwan Cupwing	30	24	18	18	10	18
Gray-throated Martin	1026	2025	2372	1562	1847	2025
Bank Swallow	1	4	0	3	7	10
Barn Swallow	2462	2782	2566	3889	2497	3005
Pacific Swallow	3404	3972	2814	4136	3581	5274
Red-rumped Swallow	6	11	3	8	24	61
Striated Swallow	2513	4005	2233	1970	2784	2681
Asian House-Martin	663	338	540	331	989	676
Collared Finchbill	269	211	207	144	278	380
Styan's Bulbul	1557	976	1678	1650	1439	1601
Light-vented Bulbul	10224	11082	10669	12007	10754	11474
Sooty-headed Bulbul	0	0	0	3	1	0
Black Bulbul	3580	4070	5416	5309	4749	4985
Brown-eared Bulbul	3	3	0	15	2	5
Chestnut Bulbul	0	0	0	1	1	6
Yellow-browed Warbler	218	92	338	101	119	94
Hume's Leaf Warbler	0	0	1	0	0	0
Pallas's Leaf Warbler	24	8	26	29	12	10
Radde's Warbler	1	0	0	0	0	0
Yellow-streaked Warbler	1	0	0	0	0	0
Dusky Warbler	90	79	169	133	139	138
Eastern Crowned Leaf Warbler	1	0	0	0	0	0
Two-barred Warbler	0	0	0	1	0	0
Arctic Warbler	288	226	206	248	267	299
Claudia's Leaf Warbler	0	0	0	0	0	0
Hartert's Leaf Warbler	0	0	0	2	0	0
Asian Stubtail	1	9	6	2	6	5
Rufous-faced Warbler	310	310	465	395	410	488
Japanese Bush-Warbler	3	6	6	8	9	1
Manchurian Bush-Warbler	61	68	54	78	66	82
Brownish-flanked Bush-Warbler	21	15	29	18	26	23
Yellowish-bellied Bush-Warbler	17	19	23	43	39	29
Black-throated Tit	622	605	936	686	785	1310
Taiwan Fulvetta	19	45	43	73	54	37
Vinous-throated Parrotbill	420	462	329	266	334	316
Golden Parrotbill	0	2	40	4	80	70
Taiwan Yuhina	1079	1523	2196	1609	1524	2185
Japanese White-eye	0	0	0	2	0	0
Zosterops simplex	5697	6070	7328	7167	9121	8429
Lowland White-eye	2	0	0	0	0	0
Rufous-capped Babbler	830	750	873	877	825	818
Taiwan Scimitar-Babbler	906	760	841	882	976	1030
Black-necklaced Scimitar-Babbler	244	172	195	222	169	200
Dusky Fulvetta	271	120	202	206	149	170
Morrison's Fulvetta	1605	1964	2250	2095	2038	2306
Hwamei	16	51	27	116	79	80
Taiwan Hwamei	80	66	71	36	62	53
Rufous-crowned Laughingthrush	11	25	207	6	1	120
Black-throated Laughingthrush	1	1	4	6	15	16
Rusty Laughingthrush	30	36	81	24	10	51
White-whiskered Laughingthrush	44	107	47	89	59	76
White-eared Siberia	498	728	837	780	1021	997
Steere's Liocichla	313	303	397	258	251	254
Taiwan Barwing	18	64	95	70	97	108



Common Name	2017	2018	2019	2020	2021	2022
Flamecrest	79	88	52	151	55	76
Eurasian Nuthatch	34	48	78	32	85	64
Eurasian Wren	4	16	29	11	6	5
Brown Dipper	15	16	25	19	31	22
Asian Glossy Starling	104	213	156	356	215	504
European Starling	3	0	12	15	0	0
Rosy Starling	0	0	0	1	0	2
Daurian Starling	1	0	0	0	0	0
Chestnut-cheeked Starling	6	5	0	3	12	0
Black-collared Starling	470	455	397	531	699	715
White-shouldered Starling	359	188	188	484	256	583
Chestnut-tailed Starling	162	141	285	184	179	439
Red-billed Starling	289	157	174	375	123	168
White-cheeked Starling	100	59	68	21	61	58
Common Myna	2517	2267	2467	2872	2927	3376
Jungle Myna	0	3	0	0	0	0
Javan Myna	4565	4652	4977	6337	7896	8287
Crested Myna(Taiwan)	446	516	288	419	359	522
Crested Myna(Kinmen & Matsu)	2702	4084	3263	4433	3792	3335
White's Thrush				24	15	5
Scaly Thrush				5	0	0
Chinese Blackbird	116	58	141	136	182	101
Island Thrush	2	2	1	8	20	2
Japanese Thrush	0	0	0	0	0	1
Gray-backed Thrush	2	3	0	1	0	1
Eyebrowed Thrush	9	21	12	7	7	8
Brown-headed Thrush	297	384	243	550	552	421
Pale Thrush	310	173	56	324	406	114
Red-throated Thrush	0	0	0	0	1	0
Dusky Thrush	134	47	10	98	73	26
Naumann's Thrush	6	1	0	3	3	6
Gray-streaked Flycatcher	8	0	1	2	1	0
Ferruginous Flycatcher	1	1	2	2	0	2
Asian Brown Flycatcher	8	7	10	4	4	5
Oriental Magpie-Robin	205	207	254	301	309	284
White-rumped Shama	36	21	53	91	114	113
Hill Blue Flycatcher	0	0	0	1	0	0
Vivid Niltava	127	139	83	107	73	114
Blue-and-white Flycatcher	0	0	1	0	0	1
Verditer Flycatcher	0	3	3	0	0	2
Lesser Shortwing	2	0	0	0	0	0
White-browed Shortwing	14	10	6	9	7	2
Japanese Robin	0	2	3	0	2	3
Siberian Blue Robin	0	0	1	0	0	0
Bluethroat	1	1	4	1	1	0
Taiwan Whistling-Thrush	81	53	99	91	59	70
Blue Whistling-Thrush	20	30	15	28	37	19
Little Forktail	8	16	13	12	11	4
Siberian Rubythroat	226	182	207	247	277	357
White-tailed Robin	29	32	38	34	44	41
Red-flanked Bluetail	9	9	9	11	14	6
White-browed Bush-Robin	2	2	6	6	5	1
Collared Bush-Robin	34	46	35	39	52	53
Korean Flycatcher	0	0	0	0	1	0





Common Name	2017	2018	2019	2020	2021	2022
Mugimaki Flycatcher	1	0	3	0	0	0
Snowy-browed Flycatcher	10	32	18	11	15	96
Taiga Flycatcher	2	0	0	0	1	0
Red-breasted Flycatcher	4	0	2	4	3	2
Plumbeous Redstart	170	223	261	239	238	178
Daurian Redstart	484	517	685	716	572	735
Blue Rock-Thrush	123	116	108	146	118	92
Siberian Stonechat	26	19	44	34	41	28
Japanese Waxwing	0	0	0	19	0	0
Plain Flowerpecker	23	30	31	26	47	89
Fire-breasted Flowerpecker	42	55	95	54	87	81
Fork-tailed Sunbird	11	6	18	48	51	16
Orange-cheeked Waxbill	19	5	0	0	21	31
Indian Silverbill	16	25	81	164	154	230
White-rumped Munia	477	281	480	675	601	543
Nutmeg Mannikin	2284	3058	3417	5579	4793	4443
Chestnut Munia	158	7	78	1215	677	1441
Alpine Accentor	8	1	0	7	9	9
Russet Sparrow	9	28	2	0	35	2
Eurasian Tree Sparrow	27687	22238	30217	30144	21741	26208
Forest Wagtail	1	1	0	0	0	0
Gray Wagtail	634	614	615	613	584	701
Western Yellow Wagtail	1	0	0	0	0	0
Eastern Yellow Wagtail	1233	1628	1298	1956	1542	2946
Citrine Wagtail	0	1	0	0	1	0
Japanese Wagtail	0	0	0	0	0	0
White Wagtail	770	824	1011	1122	1483	1563
Richard's Pipit	146	210	227	238	316	275
Blyth's Pipit	0	1	0	0	0	0
Olive-backed Pipit	226	320	344	394	321	332
Pechora Pipit	1	1	0	1	0	0
Red-throated Pipit	245	184	133	220	128	156
American Pipit	13	2	1	10	30	7
Brambling	121	52	1	2	103	52
Hawfinch	0	0	0	0	0	0
Yellow-billed Grosbeak	76	53	111	110	182	74
Japanese Grosbeak	1	0	0	0	0	0
Common Rosefinch	0	0	0	1	1	0
Taiwan Rosefinch	2	5	14	5	13	3
Brown Bullfinch	32	32	27	0	27	14
Gray-headed Bullfinch	2	6	8	9	2	13
Oriental Greenfinch	106	41	61	117	180	35
Common Redpoll	0	0	0	1	0	0
Eurasian Siskin	0	118	20	123	298	4
Black-headed Bunting	0	1	0	0	0	0
Red-headed Bunting	2	1	0	0	0	0
Chestnut-eared Bunting	1	1	1	5	1	0
Yellow-throated Bunting	0	15	1	2	2	0
Ochre-rumped Bunting	0	1	0	0	0	0
Pallas's Bunting	0	0	0	1	1	0
Yellow-breasted Bunting	0	1	0	0	0	0
Little Bunting	36	36	9	20	9	61
Rustic Bunting	1	0	0	1	1	0
Yellow Bunting	0	1	14	0	1	0



Common Name	2017	2018	2019	2020	2021	2022
Black-faced Bunting	344	444	395	520	478	608
Yellow-browed Bunting	0	0	0	7	5	0
Tristram's Bunting	0	3	0	0	2	0
Muscovy Duck (Domestic type)	19	30	37	35	54	35
Indian Peafowl (Domestic type)	5	31	6	0	0	2
Zebra Dove	14	21	56	21	26	55
Red-billed Blue-Magpie	0	0	0	0	0	0
Great Myna	3	2	0	1	0	0
Vinous-breasted Starling	7	6	4	2	4	2
Indochinese Yuhina	1	0	0	0	0	0
Common Waxbill	0	0	0	0	0	0
White-headed Munia	2	0	0	0	0	0
Budgerigar (Domestic type)	0	2	0	0	0	0
Rose-ringed Parakeet	1	0	0	0	1	0
Alexandrine Parakeet	1	0	2	0	2	0
Sulphur-crested Cockatoo	0	0	0	1	0	0
Tanimbar Corella	0	1	0	0	0	1
Greater Flamingo	0	0	0	0	0	0
Phoenicopterus roseus	3	1	0	0	0	0
Anatidae	2	0	0	3	1001	185
Anser spp.	0	0	0	0	0	0
Anas	0	0	0	1	6	0
Domestic Mallard	6	3	0	68	30	145
Anatidae	1	0	0	1	0	0
Treron	0	0	0	1	0	0
Columbidae	4	20	1	0	2	1
Cuculidae	1	0	0	0	0	0
Apus	0	2	0	0	1	0
Apodidae	0	0	0	5	18	0
Charadriidae	0	96	0	0	50	10
Scolopacidae/Charadriidae	2550	0	0	0	4000	0
Numenius	0	6	0	0	0	0
Calidris	285	0	0	0	0	0
Gallinago	0	2	19	0	18	21
Laridae	15	0	0	2	0	0
Larus	9	1	0	0	1	2
Ardeidae	2	17	0	0	7	1
Ardeidae	0	0	0	1	0	2
Accipitridae	4	3	4	5	2	3
Circus spp.	0	0	0	0	3	0
Accipiter	1	0	1	3	2	6
Strigidae	0	0	0	0	0	0
Picidae	0	2	0	6	1	2
Falco	0	2	2	0	0	1
Lanius	1	0	0	0	0	0
Alauda	0	0	102	0	0	0
Eurasian Skylark/Oriental Skylark	0	20	0	26	31	3
Prinia	3	0	0	0	0	1
Acrocephalus	0	0	0	1	0	0
Hirundinidae	10	3	0	304	1	0
Hirundo rustica/Hirundo tahitica	0	0	0	1	0	50
Red-rumped Swallow/Striated Swallow	3	20	0	0	2	8
Pycnonotidae	4	1	4	3	4	15





Common Name	2017	2018	2019	2020	2021	2022
Sylviidae	0	1	0	0	0	0
Phylloscopidae	3	0	6	9	11	7
Horornis	0	1	2	0	1	0
Japanese Bush Warbler/Manchurian Bush Warbler	8	2	3	3	1	1
Timaliidae	0	0	0	10	4	2
Ianthocincla spp.	0	0	0	1	0	0
Garrulax	0	0	0	14	13	11
Sturnidae	4	0	0	27	10	4
Acridotheres	0	0	0	4	0	14
Turdidae	46	60	73	74	106	115
Turdidae	0	0	0	47	20	11
Dicaeum	0	0	0	7	0	16
Estrildidae	0	0	0	0	0	0
Motacillidae	5	1	1	0	0	0
Motacilla	1	11	10	10	11	19
Anthus	1	7	10	14	5	3
Emberizidae	3	2	41	1	0	0
Emberiza	0	0	0	26	54	67
Charadriiformes	0	0	0	100	0	2005

Open Data

All Taiwan NYBC data is open to the public and can be found at the following two websites:

(1) Global Biodiversity Information Facility (GBIF)

<https://www.gbif.org/dataset/4daa291b-0e9d-4e21-b78d-6b4e96093adc>

(This year, organizers uploaded all NYBC data (137,404 observations) between 2014 and 2022 to GBIF with bilingual metadata.)

(2) Taiwan’s Environmental Protection Administration (行政院環保署)

<https://opendata.epa.gov.tw/>



NYBC History

2013

2013.Oct.16 – Launch of official NYBC website
2013.Oct.24 – Launch of official NYBC Facebook page
2013.Dec.28 – NYBC 2014 begins

2014

2014.Jan.12 – NYBC 2014 ends
2014.Aug.19 – Poster presentation introducing NYBC debuts at IOC26 in Tokyo, Japan
2014.Dec.20 – NYBC 2015 begins

2015

2015.Jan.11 – NYBC 2015 ends
2015.Mar.10 – First NYBC press conference held to discuss results of NYBC 2015
2015.Dec.19 – NYBC 2016 begins

2016

2016.Jan.10 – NYBC 2016 ends
2016.Mar.22 – NYBC 2016 Press Conference held
2016.Nov.28 – NYBC becomes member of the Asian Waterbird Census, contributing data on behalf of Taiwan
2016.Dec.17 – NYBC 2017 begins

2017

2017.Jan.08 – NYBC 2017 ends
2017.Apr.11 – NYBC 2017 Press Conference held
2017.Dec.16 – NYBC 2018 begins

2018

2018.Jan.07 – NYBC 2018 ends
2018.Aug.23 – Oral presentation on NYBC results made at IOC27 in Vancouver, Canada
2018.Nov.19 – NYBC organizers attend AWC annual meeting
2018.Dec.15 – NYBC 2019 begins

2019

2019.Jan.06 – NYBC 2019 ends
2019.Dec.21 – NYBC 2020 begins

2020

2020.Jan.12 – NYBC 2020 ends
2020.Dec.19 – NYBC 2021 begins
2020.Dec.22 – Publication of State of Taiwan's Birds 2020 report



2021

- 2021.Jan.10 – NYBC 2021 ends
- 2021.Mar.22 – A Far-eastern Curlew “AAD” arrives in Taiwan
- 2021.May.19 – Taiwan’s COVID-19 Level 3 alert begins
- 2021.Jun.20 – Oral presentation at webinar “Taiwan - The Beautiful Isle - Its Birds and Conservation” organized by the Oriental Bird Club
- 2021.Jul.27 – Taiwan’s COVID-19 Level 3 alert ends
- 2021.Dec.18 – NYBC 2022 begins

2022

- 2022.Jan.9 – NYBC 2022 ends
- 2022.Aug.15 – Presentation on Taiwan NYBC at International Ornithological Congress 2022
- 2022.Nov.19 – Presentation on Taiwan NYBC at Land Bird Monitoring Webinar

Support the NYBC

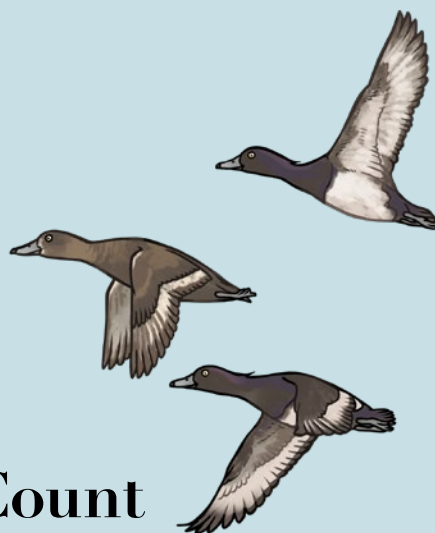


Help us continue the count!

The Taiwan NYBC is one of the most successful citizen science projects in Taiwan. Now in its ninth year, the data collected is critically important to conservation initiatives at both the local and international level, helping inform the decisions of conservationists and policy-makers alike. Yet its success is dependent on a number of factors, one of the main ones being financing. To learn more about how you could help to support this important annual event, contact the Taiwan NYBC at nybc@bird.org.tw or visit us at <http://nybc.tw>.

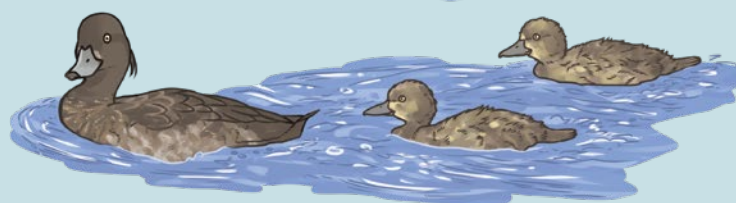
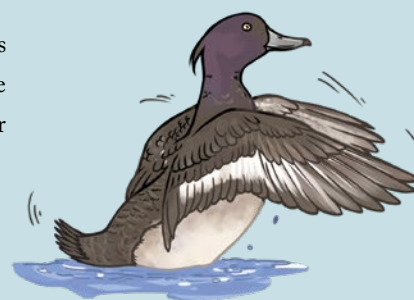


Taiwan New Year Bird Count 2022 Annual Report



The materials presented in this work and the geographical designations employed therein do not imply any opinion whatsoever on the part of the TWBF or TESRI concerning the legal status of any country, territory, or area, or concerning the delineation of borders or boundaries.

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