

Taiwan New Year Bird Count
2023 Annual Report
The First Decade Milestone



Taiwan New Year Bird Count 2023 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

31

Open Data

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. The 10th report represents the results of the 2023 count and was conducted between December 17, 2022 and January 8, 2023. During the survey, 818 participants recorded 376,722 individuals from 339 species in 171 sample circles.

Thanks to the enthusiastic support of birders and members of the citizen science community, the tenth consecutive year of the Taiwan NYBC has been successfully completed! This marks the first decade milestone in the long-term citizen science monitoring of Taiwan's wintering birds. Such a feat would not have been possible without the support and assistance of various organizations such as the Forestry and Nature Conservation Agency and national park headquarter offices around Taiwan. The organizers would also like to express

their deepest gratitude and appreciation to all the participants, NGOs, and sponsors who have made this project a reality.

Over the past decade, the conservation of migratory waterbirds along the East Asian-Australasian Flyway (EAAF) has become a major topic in the Asia-Pacific region. Issues such as mudflat loss, the expansion of invasive species like *Spartina alterniflora*, climate change, overhunting, and rising sea levels all pose threats to waterbirds along the EAAF. Meanwhile, unchecked mangrove growth and the expansion of green energy installations such as solar panels and wind turbines also pose challenges. However, studies have shown that all is not lost, with rice paddy fields, fish ponds, and salt pans serving as refuges for wintering waterbirds by providing places to rest and forage. Yet this is not enough to save the millions of waterbirds along the flyway and more comprehensive actions must be taken.





As we celebrate the milestone of a decade of the Taiwan NYBC, it is important to look at some of the important results that it has achieved. These include the discovery of four migratory bird hotspots in Taiwan, the publication of journal articles using Taiwan NYBC findings, the completion of an international waterbird conservation documentary in collaboration with the University of Queensland, and the creation of a children's board game and coloring book highlighting bird conservation. We aspire to continue this important work well into the future. Towards this end, the organizers are happy to report that we are now supported by companies like E.SUN Bank.

The continuous stable execution of the Taiwan NYBC has allowed us to gain a deeper understanding of long-term trends in bird populations and the effectiveness of various conservation strategies. It has also provided researchers and conservationists with insights into the factors impacting Taiwan's wintering waterbirds. For instance, in 2017 it was recognized that mudflat loss in the Yellow Sea area was a major reason behind the sharp declines in many shorebird species. The region is a crucial stopover site for shorebirds, serving as a major replenishment point along the migration route for many migratory species. However, decreasing levels of biodiversity and food resources have made it difficult for many waterbirds to get the necessary amounts of energy needed to complete their travels. Subsequently, Taiwan NYBC data collected between 2014 and 2021 revealed a rapid decline in waterbirds in northeastern Taiwan's Yilan County. This was not only due to

mudflat loss in the Yellow Sea but was also related to agricultural land being increasingly converted to land for housing. These findings highlight the importance of land use planning with regard to conservation and emphasize the need for continuous monitoring via the use of citizen science.

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 Biodiversity Research Institute (TBRI). The organizers would also like to give special thanks to Allen Lyu (呂翊維 TWBF), Scott Pursner (潘森識 TWBF), Chiang Kung-kuo (蔣功國 WBST), Lin Kun-hai (林昆海 KWBS), Lin Ruey-shing (林瑞興 TBRI), Tsai Chih-yi (蔡芷怡 TBRI) and Lin Da-li (林大利 TBRI) for their tireless effort in making the first decade of the Taiwan NYBC a reality.

The English version is available on our website:
<https://nybc.tw>

For more information, please contact:

Mr. Allen Lyu
 E-mail nybc@bird.org.tw

Dr. Lin Da-li
 E-mail dalilin@tbri.gov.tw

TEL +886-2-8663-1252 ext.19 FAX +886-2-2930-3595

Website <http://nybc.bird.org.tw>

Facebook <http://www.facebook.com/nybctaiwan>



Forward from our Friends



Jerome Chie-Jen Ko

Associate Research Fellow, Taiwan
Biodiversity Research Institute,
Ministry of Agriculture

I believe birdwatchers in Taiwan are fortunate, with two major participatory birdwatching events each year, both perfectly timed to align with the seasons. Spring is a season that stirs the soul. Whether it's birds or people, there's a desire to be in smaller groups, or preferably, just be with that one special someone who makes your heart flutter. During this time, the quieter and less crowded survey structure of the Taiwan Breeding Bird Survey (BBS Taiwan) is quite fitting.

Winter is cold, and gathering together is the best way to stay warm. Participating in the Taiwan New Year Bird Count (Taiwan NYBC) is the perfect way to spend time together in large groups, be they of friends or family or both. Then, once you start taking part, you'll want to keep doing it year after year. Whether you're still growing as a birder or have matured as one; even if you aren't as active as you used to be, everyone is welcome. This is my motivation for participating in both the Taiwan BBS and Taiwan NYBC. I wish to thank everyone who participates. Together, our small personal efforts can accumulate into significant achievements, recording the present and looking toward the future for both ourselves and the birds. Happy birdwatching!

柯智仁





Scott Pursner

Taiwan Wild Bird Federation
Director of International Affairs
Division

Small actions have big impacts. In the case of the Taiwan New Year Bird Count, it's all about the power of birdwatching and community. What began as a conversation between a few birders in 2013 has since evolved into an annual project of global importance. The international community now relies on the Taiwan NYBC to gain a deeper understanding of the situation faced by wintering birds in Taiwan. Additionally, the project contributes to the broader understanding of migratory birds within the East Asian-Australasian Flyway. Thanks to the efforts of participating volunteers and citizen scientists, we now have 10 years of data, a much better understanding of the species that winter in Taiwan, and insight into the habitats they prefer.

At the local level, the Taiwan NYBC has created a community for those interested in nature, birdwatching, and citizen science. It has helped forge friendships and get people more curious about the world around them. It's due to these connections that the count can continue as it does and serve as such a strong example of people-powered science. Meanwhile, analysis of this data has allowed scientists to better understand species trends and the location of four migratory bird hotspots, the Yilan Plain, the Changhua Coast, the Chainan Coast, and the Kinmen Islands. Such knowledge is significant for birders, government agencies, conservationists, and international groups like Wetlands International, which uses the NYBC results as Taiwan's contribution to the Asia Waterbird Census. Who knows what the contributions of the Taiwan NYBC will be in another 10 years? Only time will tell.

Congratulations to all those involved in this extraordinary achievement!

潘森諾
Scott Pursner

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 1 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

Tsai Chih-yi

This section covers the results achieved during the Taiwan NYBC 2023 which took place from December 17, 2022 to January 8, 2023. It also provides updates on recent progress in migratory waterbird research. The authors would like to sincerely thank all the volunteers, groups, donors, and sponsors for their support and participation which made this report possible.

During the 2023 Taiwan New Year Bird Count, 818 participants performed bird surveys at 171 sampling sites over the course of 23 days. Sites were located throughout Taiwan proper, the Matsu Archipelago (馬祖列島), the Penghu Archipelago (澎湖群島), the Kinmen Islands (金門) and the Dongsha Islands (東沙). In total, 376,722 individuals were recorded representing 339 species. Meanwhile, of this year's 171 sites, 67 were located in Important Bird and Biodiversity Areas (IBAs).

The site with the highest number of species counted was Tianliaoyang Wetland (田寮洋), New Taipei City (136 species). It was followed by Fenglin Township (鳳林), Hualien County (122 species), Little Kinmen (小金門), Kinmen County (114 species), Longluan Lake (龍鑾潭), Pingtung County (113 species), and both Xiangshan Wetland (香山濕地), Hsinchu City and Nan'ao Township (南澳), Yilan County (111 species).

The site with the most individuals counted was the Budai Salt Pan Wetlands (listed as PuTai [布袋]), Chiayi County (35,844 individuals). It was followed by Chi Lake (慈湖), Kinmen County (16,900 individuals), Puzi River Estuary (listed as Pozhi Stream [朴子溪口]), Chiayi County (13,389 individuals), Qiding Wetland (listed as Qiding [茄荳]), Kaohsiung City (13,297 individuals), Xiangshan Wetland (listed as HsianShen Wetland [香山濕地]), Hsinchu City (9,446 individuals), and Dingshan Area (listed as ChikuDingshan [七股頂山]), Chiku District, Tainan City (9,073 individuals).

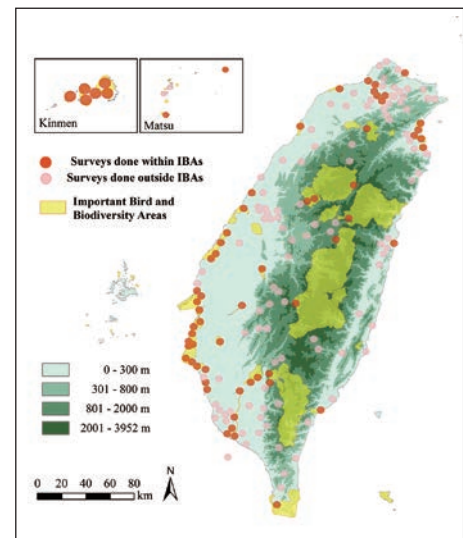


Fig. 1. NYBC 2023 site map highlighting surveys done in IBAs. Red circles indicate that survey circles were completely inside of or overlapped with IBAs. Pink circles indicate that survey circles were located completely outside of IBAs (credit: Tsai Chih-yi).

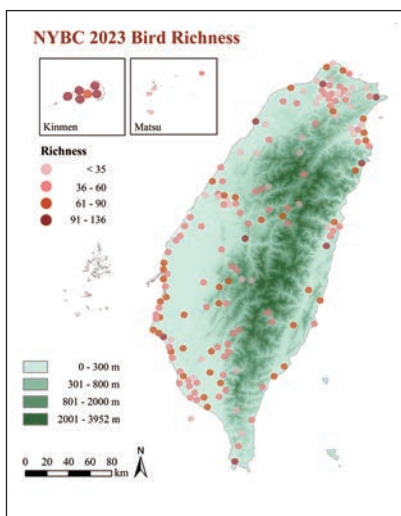


Fig 2. NYBC 2023 Bird Species Richness (credit: Tsai Chih-yi)

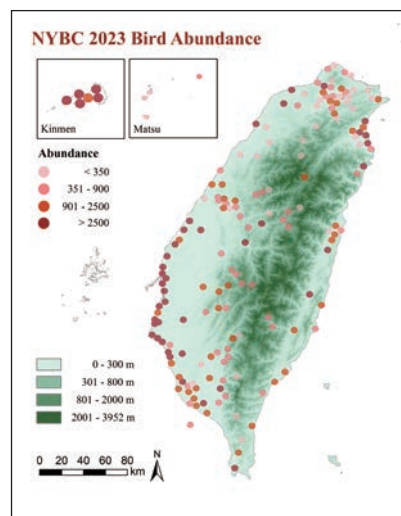


Fig 3. NYBC 2023 Bird Abundance (credit: Tsai Chih-yi)

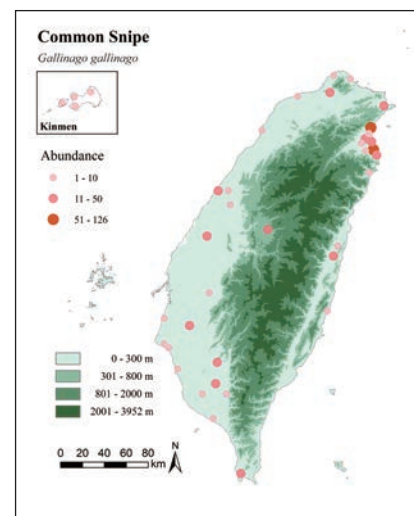


Fig 4. NYBC 2023 Distribution map for this year's mascot, the Common Snipe (*Gallinago gallinago*) (credit: Tsai Chih-yi)

Table1. Site-Based Results for the Taiwan NYBC 2019-2023

Site Number	Site Name	Number of Species					Number of Individuals				
		2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
1	Taian Waterfall	18	27	27	27	34	348	127	128	355	253
2	Huajiang Bridge	47	34	43	45	40	630	401	351	374	627
3	ShihLin	31	42	44	42	41	737	1040	687	818	735
4	Wenshan Muzha	9	56	56	54	51	49	897	1478	1299	1240
5	Taipei Parks	37	44	48	38	45	1256	1288	1148	723	637
6	Academia Sinica	25	30	36	33	36	273	363	307	438	417
7	Guandu Wetland	47	81	86	8	92	1793	4293	5850	5533	3615
8	Fuzhou Bridge	39	54	63	54	24	512	1145	1062	944	107
9	Gancheng Bridge	46	53	57	33	35	499	546	594	146	139
10	Zhonghe&Yonghe	49	48	50	58	51	1941	1343	1739	1584	1566
11	Xindian		51		35	43		870		559	365
12	Yehliu	24	30	28	34	39	99	183	145	198	200
13	Jinshan	74	65	66	52	75	880	486	817	35	534
14	WaTzuWei	27	25	43	35	35	313	591	1360	548	518
15	Fushan	32					633				
16	Tonghou	23	17	28	21	22	307	88	119	94	103
17	Xizhi	39	31	46	32	44	578	310	1115	238	560
18	Houtong	18	36	25	32	26	155	133	107	24	70
19	Pinglin			25	23	16			242	84	54
20	Guishan	79	80	76	73	83	1804	1403	1749	2152	1422
21	Neidong	17	34	36			115	290	308		
22	Shiding	41	40	36	39	44	412	488	342	447	333
23	TienLiaoYang	96	140	142	116	136	1968	3216	2701	1729	2141
24	Manyueyuan		27					190			
25	Sanxia	21					608				
26	Sanzhi	49	47	63	54	66	623	648	377	46	686
27	Chajiao	7					97				
28	Pingguang Rd.	52					284				
29	HsuTsu Kang	57	81	77	67	71	1253	3549	1702	1956	2932
30	Guoling Forest Park					55					3262
31	HsianShen Wetland	87	85	89	14	111	10046	8187	5737	12229	9446
32	National Tsing Hua University		18	26	2	27		270	331	28	331
33	Sanhudao	26	26	34	26	25	736	645	375	43	275
34	Mingfong Historic Trail	26	33	27	29	20	277	335	217	152	86
35	Dasyueshan923K	54	53	39	56	49	478	359	322	664	388
36	Dasyueshan2337K	34	40	30	42	39	611	622	159	445	432
37	Dasyueshan3752K	19	28	23	29	20	101	313	144	135	87
38	KaoMei Wetland	68	79	84	75	68	4636	3502	7623	5172	2423
39	Taichung Metropolitan Park	40	46	45	36	53	531	586	381	371	395
40	Dakeng	73	66	66	69	75	1603	1392	1647	2246	1940
41	National Museum of Natural Science	29	19	29	23	25	425	103	181	177	354
42	National Chung Hsing University	32	14	23	15	22	717	119	398	229	229



Site Number	Site Name	Number of Species					Number of Individuals				
		2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
43	DaJia				4	46				796	878
44	TaTu Stream	30	37	30	4	31	1922	1248	2347	771	244
45	Fazi River	37	36	36	54		684	787	602	173	
46	TaLi Stream	34	38	37			845	1057	1163		
47	Taiping	28	50	51	37	51	554	838	920	525	839
48	Basianshan	19	39	37			107	265	267		
49	Wuling Farm	52	49	62	52	60	1791	1258	1970	1591	1305
50	Puli	65	65	66	76	68	1649	1894	1728	248	3898
51	Wushe	61	43	45	62	66	667	732	629	744	864
52	Mei Feng Farm	54		0	37	39	597		0	261	382
53	Kunyang	12	18	18	18	18	66	121	131	193	94
54	Aowanda			55	61	57			430	52	841
55	Dongpu	58					1717				
56	Jiji	87	82	85	91	92	2600	1479	2850	2182	3326
58	Huisun Forest Area	22	27	30	37	39	193	203	472	46	284
59	Tataka	30	34	27	23	30	396	637	295	369	753
60	HanPao & FuPao Wetland	34	37	37	46	59	3416	7294	1620	8311	4555
61	FangYuan	37	39	44	38	40	3966	4518	4019	387	4560
62	DongLuoHsi River	41	46	53	52	49	2899	3611	3461	4251	4429
63	Yiwu Wetland	54	67	71	65	59	5840	5305	4617	3921	3041
64	Huben	56	68	74	67	55	822	1346	1357	786	691
65	Douliu			38					1711		
66	Shibi	49	63	57	5	52	587	940	633	818	578
67	Fengshan	29		40	47	51	234		379	356	455
68	Chashan	24		25	45	51	315		326	427	449
69	Lantan Reservoir	25		39	5	50	198		578	13	925
70	PuTai	77	79	76	76	78	37988	34814	27556	2811	35844
71	Zengwen Reservoir	54	55	62	64	67	676	686	802	875	1113
72	Alishan	35	30	30	29	35	879	412	361	52	604
73	Aogu Wetland	83	90	95	79	89	14100	11372	8635	12882	6540
74	Guanghua	47	54	41	57	65	580	910	554	853	956
75	SzuTsao	69	73	74	78	96	6515	10661	10175	7439	6894
76	Tainan Tucheng	64	69	71	73	86	5217	5969	7146	597	8539
77	GuanTien	53	59	51	63	66	5400	7875	1520	7846	5727
78	Kantou Mountain	29	45	34	29	48	159	429	187	247	428
79	Qigu	69	64	62	69	64	2905	3003	3773	3755	3280
80	ChikuDingshan	47	40	49	49	72	5279	2659	16457	1259	9073
81	National Cheng Kung University	19	17	39		27	468	322	1585		654
82	Xinhua	24	21	48			314	162	522		
83	YungAn	45	49	43	46	60	1633	4717	2313	3921	2446
84	Shanping	29	27	34	38	51	229	352	270	444	766
85	Maolin	38	39	43	48	54	730	914	1009	635	752
86	Yellow Butterfly Valley	37	52	45	43	55	616	525	790	922	774



Site Number	Site Name	Number of Species					Number of Individuals				
		2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
87	Zuoying	57	65	43	72	67	2657	3137	867	264	2977
88	Cijin,Gushan&Yancheng	51	36	51	5	49	1449	526	1329	1297	1615
89	Weiwuying	38	30	32	38	39	584	507	791	1119	1169
90	NiaoSung	41	35	33	38	37	840	399	827	659	604
91	Kaohsiung Old Railway Bridge Wetland	55	49	48	46	53	1952	1371	1309	1469	1195
92	FengShan Reservoir	44	52	45	45	52	1875	2350	1841	2434	1904
93	Nanxing&Fengshan	45	48	53	54	51	452	970	1008	958	761
94	LinYuan	38	37	31	33	42	1587	2152	985	19	2429
95	Erjituanshan	57	26	54	66	57	746	353	664	1583	1089
96	Zhongliaooshan	46	45	50	43	19	377	729	504	444	242
97	YuanChungKang	59	52	48	36	56	2831	2540	1416	788	1289
98	Qieding	71	69	81	81	79	10719	14450	6116	1437	13297
99	Dongsha Islands	34	27				345	281			
100	Shihshan Forest Road	38	38	35	37	39	345	365	439	337	348
102	Wutai	17	15	29	27	28	63	72	195	146	181
103	Sandimen	41	43	48	35	42	697	447	708	559	758
104	National Pingtung University of Science and Technology	76	84	85	78	83	2119	2136	2798	323	2591
105	Linhoulin Forest Park	21	46	46	43	49	244	834	757	471	848
106	Kanding Wetland	58	59	54	63	68	1970	1781	1193	1558	3067
107	DaPengWan	62	75	70	77	69	2283	3802	2982	2643	2428
108	DahanShan		19	21	18	32		102	102	85	262
109	Shuangliou Forest Recreation Area	24	35	17		34	132	145	63		182
110	LungLuan Lake	104	122	92	119	113	2745	3824	3986	4396	4855
111	Mudan	54	53	56	51	60	1233	921	1284	915	1709
112	Pingtung Agricultural Biotechnology Park	48	64	56	6	62	1449	1735	1433	1979	2238
113	Weiliaoshan	42	50	40	5	51	525	599	775	546	665
114	Taiwu	72	38	43	32	52	847	379	466	344	676
115	YiChiLine	21	31	30	31	30	710	2487	1816	2235	1946
116	Zhu'an	77	65	54	74	84	7660	2835	4255	4334	7658
117	Yuanshan	32	32	35	31	31	2383	2018	3992	2637	1347
118	ShinnanMeifu	42	40	39	45	56	1195	719	3345	1456	4498
119	LanYang Stream	50	52	72	71	86	4044	1411	1967	2431	3484
120	Dazhou	33	44	38	4	33	1143	782	884	92	344
121	LiTse	45	75	70	75	83	4282	5991	3336	6191	8825
122	WuWeiKang	39	56	47	44	44	656	809	816	118	796
123	Nan'ao	105	114	104	12	111	1743	2345	2499	2212	2551
125	HuaLien River Mouth	39	46	38	42	48	672	690	332	71	580
126	SanMin	65	80	77	79	73	3795	5488	6181	781	3420
127	Ruisui	10	14	25			159	147	402		
128	JiAn	42	56	61	57	62	617	1370	1756	2234	1279
129	PeiNan Wetland		52	40	38	61		736	301	586	1500



Site Number	Site Name	Number of Species					Number of Individuals				
		2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
130	Jhihben Wetland		57	53	56	71		2675	3358	2361	1483
131	Da Po Pond	38	69	41	37	62	633	2503	582	493	1511
132	Southern CrossIsland Provincial Highway	38	55	44	52	44	221	532	684	411	758
133	Taitung Yima Forest Road	38	33	21	32	47	420	130	97	165	354
134	Sanxiantai	15	31	29	29	40	189	271	269	158	470
135	TsaiYuan Wetland	36	30	46	42		403	114	388	347	
136	Chi Lake	105	96	98	92	107	16234	5922	17414	8129	16900
137	Little Kinmen	79	91	88	85	114	3544	3423	4672	4554	5316
138	Kinsa	88	90	75	76	98	4539	5938	3202	2296	4670
139	Kinmen County Forestry Affair Place	75	83	84	63	93	2283	2978	5802	1224	4133
141	Beigan	14	15	12		17	68	76	107		126
142	Nangan	31	31	30		33	200	337	311		219
143	Juguang	33	23	20		31	224	208	205		135
144	Dongyin		48			55		387			560
145	Shihmen	12	15				167	33			
146	Wuzhishan Range	45	40	53	26	52	613	1434	584	88	1015
147	ChiTou	16	16	22	14		270	369	246	165	
149	Kanggaokeng River	13	11	12	16	14	101	69	30	36	83
150	Jincheng	85	98	88	83	101	3546	3928	2485	2469	3324
151	Chonlin	67	87	84	71	81	1353	2424	1977	1627	2137
152	Meinong	49	49	49	6	75	746	683	2514	1396	1979
153	Tonglin	51	54	51	51	51	488	670	755	463	423
154	Shenmei Lake	48	50	53	62	71	398	446	359	2197	816
155	Yulao	38	27	30	25	28	353	268	274	249	194
156	Yangchoukeng	30	27	32	29	27	357	247	427	326	281
157	Zhongli	46	53	0	55	58	756	949	0	375	689
158	Ta Cheng	49	62	53	49	50	2105	3972	4310	29	2221
159	Zhongzhengshan	22	11	21	28	24	125	26	141	256	230
160	Dongshan		46	73	54	51		370	896	517	295
162	Waipu Lotus Valley	50	52	46	48	47	2191	1420	965	929	1945
163	Dingzilanhsi	32	43	40	3	47	239	189	217	224	210
164	Chukou	40	50	52	52	62	520	864	732	668	984
165	Jiufenershan	58	60	52	58	60	715	577	929	833	746
166	Zhuoshui River	59	60	57	67	58	15699	10437	12912	16142	8144
168	Pozhih Stream	39	58	62	66	58	2475	6340	10666	14692	13389
169	BaChangHsi River	52	37	0		81	2078	415	0		4648
170	Beimen	39	40	0	61	60	972	794	0	7678	1016
171	ShouFeng	30	44	45	38	56	1558	921	1923	247	2062
173	LiYuTan	48	53	48	49	26	368	305	349	31	118
174	Danongdafa Forest Park	49	44	53	28		611	325	266	199	
175	Shalun Farm	49	60	68	64	68	3167	2926	2516	2574	2639
176	Keelung River	39			41		578			1572	



Site Number	Site Name	Number of Species					Number of Individuals				
		2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
177	Erchong Floodway	49	60	47	58	55	1235	1533	1594	1987	1526
178	Maokong&Shenkeng	24					151				
179	Tunghai University	30	43	34	39	28	538	747	819	549	473
180	Nantun	32	40	29	3	39	823	1045	331	152	1252
181	Dawu	51	50	54	55	44	465	541	505	77	902
182	TaiXi	50	46	39	44	42	3032	5253	3109	659	5224
183	Sihu	14	24	0	6	65	100	115	0	3972	4019
184	Kouhu	16	36	0	6	61	136	595	0	4152	4756
186	HouLongHsi River	36					588				
187	Fonglin	101	110	118	19	122	2400	3809	3649	5814	8295
190	National Dong Hwa University	56	81	69	58	54	1563	1862	1403	2429	1863
191	Lao Mei	21	11	25	6	5	81	36	120	11	14
192	Cueifong Lake	8					11				
193	Walami Trail		31	24	46			303	224	499	
195	Wumei Elementary School Fengshu Branch	10		0			483		0		
196	Meishan Entrance(Meishan Lane)	54	47	61	49		1189	455	894	874	
197	NorthCross Island Highway's Mingchih	28					125				
198	Cilan Villa	30					287				
199	Sishu	62	52	59	63	59	1647	1837	2443	439	2805
200	Yunei River	26	28	31	27	38	160	190	161	142	199
201	Nangang	8	19	13	11	4	39	44	33	31	9
202	Taipingshan Villa	9					50				
203	Tuchang Jioujihze	22					316				
204	Shakadang	17	20	26	8		166	82	135	27	
205	Yushan Scenic Highway	28	20	22	19		214	196	281	5	
206	Lion's Head Mountain		41	36	36	40		260	257	129	275
207	Simahsian Forest Trail		56					1152			
208	Ligavon		34					235			
209	Jiali Mountain		22					122			
210	Smangus		21					123			
211	Zhonggang River		51					2178			



Species Numbers and Population Trends

Tsai Chih-yi

In 2023, 376,722 individuals from 339 species were recorded. This includes 614 Common Snipe (*Gallinago gallinago*), this year's mascot.

To assess the population trends of migratory waterbirds wintering in Taiwan, we analyzed data collected over the past 10 years (2014–2023) for 57 species recorded locally and belonging to the Anatidae, Rallidae, Charadriidae, Recurvirostridae, and Scolopacidae families. The scope of the analysis covered Taiwan proper (excluding offshore islands), and four migratory bird hotspots: (1) the Changhua Coast, (2) the Yilan Plain, (3) the Chianan Coast, and the (4) Kinmen Islands. This is the first year Kinmen has been included, with NYBC surveys there only beginning in 2019. We used the R package “poptrend” (Knappe 2016) to conduct generalized additive mixed model analysis (GAMM).

Regional Trends

Population trends for wintering waterbirds in Taiwan from 2014 to 2023 may have been influenced by the loss of mudflats in the Yellow Sea, a crucial stopover site for migratory birds. Meanwhile, environmental changes in Taiwan may also have affected the willingness of waterbirds to winter here.

Looking at the data, population numbers for Green-winged Teal (*Anas crecca*) and Eurasian Moorhen (*Gallinula chloropus*) on Taiwan proper continue to show a significant decline. Meanwhile, in the Yilan Plain, the number of bird species which showed significant population declines was smaller than last year. It remains to be seen though if the overall trend of declining waterbird numbers there will slow down. On the Changhua Coast, numbers for Eurasian Curlew (*Numenius arquata*) significantly decreased this year. Further south, along the Chianan Coast, many waterbird species continued to show significant upward trends and we hope this can be maintained into the future. Lastly, in Kinmen, the populations of the Black-bellied Plover (*Pluvialis squatarola*) and Lesser Sand Plover (*Charadrius mongolus*) have shown significant increases, while the Green Sandpiper (*Tringa ochropus*) has shown a significant decline.



Table 2. 2019-2023 NYBC Data by Species

Scientific Name	Common Name	2019	2020	2021	2022	2023
<i>Anser albifrons</i>	Greater White-fronted Goose	0	1	7	2	60
<i>Anser fabalis</i>	Taiga Bean-Goose	0	0	9	0	15
<i>Anser serrirostris</i>	Tundra Bean-Goose	0	7	18	17	5
<i>Tadorna tadorna</i>	Common Shelduck	2	7	3	4	16
<i>Nettapus coromandelianus</i>	Cotton Pygmy-Goose	1	1	0	0	1
<i>Aix galericulata</i>	Mandarin Duck	12	6	7	0	12
<i>Anas querquedula</i>	Garganey	11	31	30	28	20
<i>Anas clypeata</i>	Northern Shoveler	11609	13766	11728	11400	11192
<i>Anas strepera</i>	Gadwall	96	56	135	76	202
<i>Anas falcata</i>	Falcated Duck	18	69	52	24	41
<i>Anas penelope</i>	Eurasian Wigeon	8190	10035	13858	7755	9752
<i>Anas zonorhyncha</i>	Eastern Spot-billed Duck	4132	3538	3540	3665	4429
<i>Anas platyrhynchos</i>	Mallard	147	92	117	156	264
<i>Anas acuta</i>	Northern Pintail	5759	3566	4522	4033	9524
<i>Anas crecca</i>	Green-winged Teal	7229	6712	7516	6277	6911
<i>Aythya ferina</i>	Common Pochard	21	122	26	65	128
<i>Aythya nyroca</i>	Ferruginous Duck	1	0	4	19	12
<i>Aythya fuligula</i>	Tufted Duck	4014	3346	3233	3730	4275
<i>Aythya marila</i>	Greater Scaup	40	33	21	8	18
<i>Mergellus albellus</i>	Smew	0	1	0	0	1
<i>Arborophila crudigularis</i>	Taiwan Partridge	94	92	89	114	106
<i>Pavo cristatus</i>	Indian Peafowl	0	9	25	82	48
<i>Coturnix japonica</i>	Japanese Quail	0	4	0	1	1
<i>Bambusicola sonorivox</i>	Taiwan Bamboo-Partridge	301	229	233	284	345
<i>Syrnaticus mikado</i>	Mikado Pheasant	3	0	1	4	1
<i>Phasianus colchicus</i>	Ring-necked Pheasant	86	195	115	164	163
<i>Lophura swinhoii</i>	Swinhoe's Pheasant	12	19	12	16	34
<i>Tachybaptus ruficollis</i>	Little Grebe	1259	1417	1159	1475	1941
<i>Podiceps cristatus</i>	Great Crested Grebe	33	178	123	120	83
<i>Podiceps nigricollis</i>	Eared Grebe	5	19	19	2	9
<i>Columba livia</i>	Rock Pigeon	5714	5265	8085	9332	8914
<i>Columba pulchricollis</i>	Ashy Wood-Pigeon	400	455	378	120	341
<i>Streptopelia orientalis</i>	Oriental Turtle-Dove	825	870	745	809	1878
<i>Streptopelia tranquebarica</i>	Red Collared-Dove	9488	9462	9296	11465	11624
<i>Streptopelia chinensis</i>	Spotted Dove	3686	3699	3358	3099	4316
<i>Chalcophaps indica</i>	Asian Emerald Dove	16	34	26	39	42
<i>Treron sieboldii</i>	White-bellied Pigeon	111	102	174	175	169
<i>Treron formosae</i>	Whistling Green-Pigeon	42	91	21	138	41
<i>Centropus sinensis</i>	Greater Coucal	25	36	37	32	68
<i>Centropus bengalensis</i>	Lesser Coucal	15	23	17	23	19
<i>Caprimulgus affinis</i>	Savanna Nightjar	23	588	25	56	37
<i>Aerodramus brevirostris</i>	Himalayan Swiftlet	0	0	1	2	2
<i>Apus pacificus</i>	Pacific Swift	9	3	5	4	5
<i>Apus nipalensis</i>	House Swift	2144	1520	3076	3297	2653
<i>Gallirallus striatus</i>	Slaty-breasted Rail	1	1	1	1	4
<i>Gallinula chloropus</i>	Eurasian Moorhen	3384	3905	3328	3642	3838
<i>Fulica atra</i>	Eurasian Coot	2023	1186	1589	2391	2646
<i>Amaurornis phoenicurus</i>	White-breasted Waterhen	217	310	248	247	390



Scientific Name	Common Name	2019	2020	2021	2022	2023
<i>Zapornia fusca</i>	Ruddy-breasted Crake	8	13	22	15	15
<i>Zapornia pusilla</i>	Baillon's Crake	0	1	0	0	1
<i>Himantopus himantopus</i>	Black-winged Stilt	12283	14869	11337	13924	14193
<i>Recurvirostra avosetta</i>	Pied Avocet	4380	4609	4337	6072	7280
<i>Haematopus ostralegus</i>	Eurasian Oystercatcher	130	212	123	7	33
<i>Pluvialis squatarola</i>	Black-bellied Plover	895	1015	1411	1336	1812
<i>Pluvialis fulva</i>	Pacific Golden-Plover	3210	7293	5476	3652	4710
<i>Vanellus vanellus</i>	Northern Lapwing	100	177	207	455	1085
<i>Charadrius mongolus</i>	Lesser Sand-Plover	156	225	208	664	269
<i>Charadrius leschenaultii</i>	Greater Sand-Plover	350	499	262	870	147
<i>Charadrius alexandrinus</i>	Kentish Plover	16908	15753	23376	29957	20126
<i>Charadrius hiaticula</i>	Common Ringed Plover	0	0	0	1	1
<i>Charadrius placidus</i>	Long-billed Plover	0	8	2	3	1
<i>Charadrius dubius</i>	Little Ringed Plover	1280	1578	1312	1895	1984
<i>Rostratula benghalensis</i>	Greater Painted-snipe	50	70	64	69	85
<i>Hydrophasianus chirurgus</i>	Pheasant-tailed Jacana	281	281	143	462	455
<i>Numenius phaeopus</i>	Whimbrel	47	220	188	104	66
<i>Numenius madagascariensis</i>	Far Eastern Curlew	1	2	2	3	3
<i>Numenius arquata</i>	Eurasian Curlew	713	877	776	749	206
<i>Limosa lapponica</i>	Bar-tailed Godwit	6	15	55	11	40
<i>Limosa limosa</i>	Black-tailed Godwit	142	7	3	103	6
<i>Arenaria interpres</i>	Ruddy Turnstone	1145	1968	726	1033	669
<i>Calidris tenuirostris</i>	Great Knot	14	9	19	76	81
<i>Calidris canutus</i>	Red Knot	1	2	2	0	91
<i>Calidris pugnax</i>	Ruff	5	9	1	7	7
<i>Calidris falcinellus</i>	Broad-billed Sandpiper	2	4	0	1	11
<i>Calidris ferruginea</i>	Curlew Sandpiper	67	22	2	1	3
<i>Calidris temminckii</i>	Temminck's Stint	3	10	6	10	9
<i>Calidris subminuta</i>	Long-toed Stint	231	599	252	637	625
<i>Calidris ruficollis</i>	Red-necked Stint	1652	1010	1534	1189	1176
<i>Calidris alba</i>	Sanderling	162	256	182	210	232
<i>Calidris alpina</i>	Dunlin	14250	12906	16835	26128	23541
<i>Calidris minuta</i>	Little Stint	0	5	0	0	1
<i>Scolopax rusticola</i>	Eurasian Woodcock	4	6	6	8	7
<i>Gallinago gallinago</i>	Common Snipe	388	579	430	453	614
<i>Xenus cinereus</i>	Terek Sandpiper	8	2	4	19	7
<i>Actitis hypoleucos</i>	Common Sandpiper	424	466	534	511	590
<i>Tringa ochropus</i>	Green Sandpiper	101	123	112	98	148
<i>Tringa brevipes</i>	Gray-tailed Tattler	57	33	0	7	7
<i>Tringa erythropus</i>	Spotted Redshank	47	7	3	2	25
<i>Tringa nebularia</i>	Common Greenshank	1342	2331	1572	1714	1422
<i>Tringa stagnatilis</i>	Marsh Sandpiper	784	518	584	680	484
<i>Tringa glareola</i>	Wood Sandpiper	1225	1511	1258	1533	1802
<i>Tringa totanus</i>	Common Redshank	434	481	356	556	761
<i>Turnix suscitator</i>	Barred Buttonquail	5	5	6	47	32
<i>Glareola maldivarum</i>	Oriental Pratincole	0	0	0	52	1
<i>Saundersilarus saundersi</i>	Saunders's Gull	11	9	184	188	143
<i>Chroicocephalus ridibundus</i>	Black-headed Gull	6580	5794	6124	6997	6741



Scientific Name	Common Name	2019	2020	2021	2022	2023
<i>Larus crassirostris</i>	Black-tailed Gull	17	3	7	3	51
<i>Larus argentatus</i>	Herring Gull	129	86	59	63	107
<i>Larus fuscus</i>	Lesser Black-backed Gull	1	4	2	1	4
<i>Larus schistisagus</i>	Slaty-backed Gull	0	0	0	0	2
<i>Sternula albifrons</i>	Little Tern	97	58	40	97	48
<i>Gelochelidon nilotica</i>	Gull-billed Tern	3	3	13	68	9
<i>Hydroprogne caspia</i>	Caspian Tern	1780	1250	2369	3267	2747
<i>Chlidonias leucopterus</i>	White-winged Tern	12	3	0	0	1
<i>Chlidonias hybrida</i>	Whiskered Tern	6441	8597	3521	9762	11081
<i>Ciconia boyciana</i>	Oriental Stork	0	3	7	22	2
<i>Phalacrocorax carbo</i>	Great Cormorant	18473	9960	16306	15273	20715
<i>Phalacrocorax capillatus</i>	Japanese Cormorant	1	22	0	0	8
<i>Ixobrychus sinensis</i>	Yellow Bittern	49	103	115	134	101
<i>Ixobrychus cinnamomeus</i>	Cinnamon Bittern	17	29	19	17	26
<i>Ardea cinerea</i>	Gray Heron	5483	5124	4899	4692	4849
<i>Ardea purpurea</i>	Purple Heron	24	30	22	25	38
<i>Ardea alba</i>	Great Egret	5969	5790	4867	6163	6353
<i>Mesophoyx intermedia</i>	Intermediate Egret	468	456	318	352	409
<i>Egretta garzetta</i>	Little Egret	7601	8772	7229	8768	9318
<i>Egretta sacra</i>	Pacific Reef-Heron	14	14	17	11	15
<i>Bubulcus ibis</i>	Cattle Egret	3712	4022	5534	4126	4395
<i>Ardeola bacchus</i>	Chinese Pond-Heron	32	61	52	50	31
<i>Butorides striata</i>	Striated Heron	17	29	23	116	29
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	2555	2075	2001	2449	2652
<i>Gorsachius melanolophus</i>	Malayan Night-Heron	63	78	91	92	155
<i>Threskiornis aethiopicus</i>	Sacred Ibis	1374	1723	456	109	45
<i>Platalea leucorodia</i>	Eurasian Spoonbill	10	31	24	53	125
<i>Platalea minor</i>	Black-faced Spoonbill	2009	2193	1470	2409	2736
<i>Pandion haliaetus</i>	Osprey	186	233	212	228	236
<i>Elanus caeruleus</i>	Black-shouldered Kite	132	187	180	188	179
<i>Pernis ptilorhynchus</i>	Oriental Honey-buzzard	59	63	83	101	87
<i>Spilornis cheela</i>	Crested Serpent-Eagle	218	265	293	289	259
<i>Nisaetus nipalensis</i>	Mountain Hawk-Eagle	19	5	17	15	7
<i>Ictinaetus malaiensis</i>	Black Eagle	49	35	42	53	44
<i>Butastur indicus</i>	Gray-faced Buzzard	4	4	7	3	3
<i>Circus spilonotus</i>	Eastern Marsh-Harrier	8	14	19	17	21
<i>Circus cyaneus</i>	Northern Harrier	0	1	5	0	2
<i>Accipiter trivirgatus</i>	Crested Goshawk	98	126	129	119	130
<i>Accipiter gularis</i>	Japanese Sparrowhawk	2	4	4	2	3
<i>Accipiter virgatus</i>	Besra	19	31	30	29	39
<i>Accipiter nisus</i>	Eurasian Sparrowhawk	3	3	4	5	7
<i>Accipiter gentilis</i>	Northern Goshawk	0	2	2	0	1
<i>Milvus migrans</i>	Black Kite	273	334	251	400	336
<i>Buteo japonicus</i>	Eastern Buzzard	49	65	55	42	78
<i>Buteo hemilasius</i>	Upland Buzzard	0	0	0	0	1
<i>Otus spilocephalus</i>	Mountain Scops-Owl	31	41	11	25	14
<i>Otus lettia</i>	Collared Scops-Owl	11	26	10	318	10
<i>Glaucidium brodiei</i>	Collared Owlet	8	4	3	5	3
<i>Ninox japonica</i>	Northern Boobook	5	2	1	1	3
<i>Upupa epops</i>	Eurasian Hoopoe	84	95	54	54	169
<i>Alcedo atthis</i>	Common Kingfisher	334	439	449	471	500



Scientific Name	Common Name	2019	2020	2021	2022	2023
<i>Halcyon smyrnensis</i>	White-throated Kingfisher	35	50	33	31	14
<i>Ceryle rudis</i>	Pied Kingfisher	24	34	23	14	23
<i>Psilopogon nuchalis</i>	Taiwan Barbet	604	786	822	782	1002
<i>Jynx torquilla</i>	Eurasian Wryneck	3	3	9	3	3
<i>Dendrocopos canicapillus</i>	Gray-capped Woodpecker	265	292	285	321	296
<i>Dendrocopos leucotos</i>	White-backed Woodpecker	7	9	15	12	7
<i>Picus canus</i>	Gray-faced Woodpecker	3	4	4	10	5
<i>Falco tinnunculus</i>	Eurasian Kestrel	74	97	108	98	130
<i>Falco subbuteo</i>	Eurasian Hobby	1	0	2	1	1
<i>Falco peregrinus</i>	Peregrine Falcon	35	41	45	41	41
<i>Pericrocotus solaris</i>	Gray-chinned Minivet	673	505	504	803	669
<i>Pericrocotus speciosus</i>	Scarlet Minivet	0	2	0	0	39
<i>Pericrocotus divaricatus</i>	Ashy Minivet	32	33	2	3	39
<i>Coracina macei</i>	Large Cuckooshrike	1	6	2	5	6
<i>Lalage melaschistos</i>	Black-winged Cuckooshrike	12	1	4	8	7
<i>Erpornis zantholeuca</i>	White-bellied Erpornis	389	324	410	464	339
<i>Oriolus chinensis</i>	Black-naped Oriole	25	19	26	24	25
<i>Oriolus traillii</i>	Maroon Oriole	71	74	72	60	84
<i>Dicrurus macrocercus</i>	Black Drongo	1195	1399	1415	1623	1737
<i>Dicrurus leucophaeus</i>	Ashy Drongo	0	3	1	2	3
<i>Dicrurus aeneus</i>	Bronzed Drongo	308	302	302	394	289
<i>Dicrurus hottentottus</i>	Hair-crested Drongo	4	5	0	0	2
<i>Hypothymis azurea</i>	Black-naped Monarch	481	516	594	628	649
<i>Lanius bucephalus</i>	Bull-headed Shrike	1	1	0	1	2
<i>Lanius cristatus</i>	Brown Shrike	633	834	813	1285	753
<i>Lanius schach</i>	Long-tailed Shrike	349	334	311	342	349
<i>Garrulus glandarius</i>	Eurasian Jay	81	63	73	78	63
<i>Cyanopica cyanus</i>	Azure-winged Magpie	17	17	7	25	24
<i>Urocissa caerulea</i>	Taiwan Blue-Magpie	353	244	327	341	368
<i>Dendrocitta formosae</i>	Gray Treepie	1130	1521	1395	1229	1751
<i>Pica pica</i>	Eurasian Magpie	1022	1076	1181	1182	1155
<i>Nucifraga caryocatactes</i>	Eurasian Nutcracker	16	25	15	21	29
<i>Corvus frugilegus</i>	Rook	3	1	1	1	9
<i>Corvus corone</i>	Carrion Crow	2	4	1	0	1
<i>Corvus macrorhynchos</i>	Large-billed Crow	356	486	267	374	373
<i>Corvus torquatus</i>	Collared Crow	51	76	58	54	85
<i>Periparus ater</i>	Coal Tit	21	90	27	113	50
<i>Sittiparus castaneiventris</i>	Chestnut-bellied Tit	169	78	77	170	39
<i>Parus monticolus</i>	Green-backed Tit	334	292	370	364	260
<i>Machlolophus holsti</i>	Yellow Tit	72	43	56	65	36
<i>Remiz consobrinus</i>	Chinese Penduline-Tit	40	0	8	0	10
<i>Alauda arvensis</i>	Eurasian Skylark	474	103	158	203	383
<i>Alauda gulgula</i>	Oriental Skylark	366	293	133	418	262
<i>Prinia crinigera</i>	Striated Prinia	6	6	0	6	2
<i>Prinia flaviventris</i>	Yellow-bellied Prinia	499	797	668	643	632
<i>Prinia inornata</i>	Plain Prinia	1249	1617	1465	1577	1581
<i>Cisticola juncidis</i>	Zitting Cisticola	36	50	34	57	36
<i>Cisticola exilis</i>	Golden-headed Cisticola	9	22	7	7	8
<i>Acrocephalus bistrigiceps</i>	Black-browed Reed-Warbler	2	7	1	0	1
<i>Acrocephalus orientalis</i>	Oriental Reed-Warbler	18	24	20	19	10
<i>Locustella ochotensis</i>	Middendorff's Grasshopper-Warbler	0	4	0	2	1





Scientific Name	Common Name	2019	2020	2021	2022	2023
<i>Locustella alishanensis</i>	Taiwan Bush-Warbler	3	0	2	0	2
<i>Locustella mandelli</i>	Russet Bush Warbler	0	1	0	0	1
<i>Pnoepyga formosana</i>	Taiwan Cupwing	18	18	10	18	17
<i>Riparia chinensis</i>	Gray-throated Martin	2372	1562	1847	2025	1582
<i>Riparia riparia</i>	Bank Swallow	0	3	7	10	5
<i>Hirundo rustica</i>	Barn Swallow	2566	3889	2497	3005	2125
<i>Hirundo tahitica</i>	Pacific Swallow	2814	4136	3581	5274	3724
<i>Cecropis daurica</i>	Red-rumped Swallow	3	8	24	61	71
<i>Cecropis striolata</i>	Striated Swallow	2233	1970	2784	2681	2851
<i>Delichon dasypus</i>	Asian House-Martin	540	331	989	676	679
<i>Spizixos semitorques</i>	Collared Finchbill	207	144	278	380	207
<i>Pycnonotus taivanus</i>	Styan's Bulbul	1678	1650	1439	1601	2028
<i>Pycnonotus sinensis</i>	Light-vented Bulbul	10669	12007	10754	11474	12458
<i>Pycnonotus aurigaster</i>	Sooty-headed Bulbul	0	3	1	0	1
<i>Hypsipetes leucocephalus</i>	Black Bulbul	5416	5309	4749	4985	5423
<i>Hypsipetes amaurotis</i>	Brown-eared Bulbul	0	15	2	5	1
<i>Hemixos castanonotus</i>	Chestnut Bulbul	0	1	1	6	43
<i>Phylloscopus inornatus</i>	Yellow-browed Warbler	338	101	119	94	179
<i>Phylloscopus proregulus</i>	Pallas's Leaf Warbler	26	29	12	10	190
<i>Phylloscopus fuscatus</i>	Dusky Warbler	169	133	139	138	117
<i>Phylloscopus borealis</i>	Arctic Warbler	206	248	267	299	241
<i>Phylloscopus goodsoni</i>	Hartert's Leaf Warbler	0	2	0	0	3
<i>Abroscopus albogularis</i>	Rufous-faced Warbler	465	395	410	488	448
<i>Horornis diphone</i>	Japanese Bush-Warbler	6	8	9	1	2
<i>Horornis borealis</i>	Manchurian Bush-Warbler	54	78	66	82	97
<i>Horornis fortipes</i>	Brownish-flanked Bush-Warbler	29	18	26	23	25
<i>Horornis acanthizoides</i>	Yellowish-bellied Bush-Warbler	23	43	39	29	20
<i>Aegithalos concinnus</i>	Black-throated Tit	936	686	785	1310	775
<i>Fulvetta formosana</i>	Taiwan Fulvetta	43	73	54	37	52
<i>Sinosuthora webbiana</i>	Vinous-throated Parrotbill	329	266	334	316	377
<i>Suthora verreauxi</i>	Golden Parrotbill	40	4	80	70	30
<i>Yuhina brunneiceps</i>	Taiwan Yuhina	2196	1609	1524	2185	1370
<i>Zosterops simplex</i>	Zosterops simplex	7328	7167	9121	8429	8678
<i>Cyanoderma ruficeps</i>	Rufous-capped Babbler	873	877	825	818	820
<i>Pomatorhinus musicus</i>	Taiwan Scimitar-Babbler	841	882	976	1030	981
<i>Megapomatorhinus erythrocnemis</i>	Black-necklaced Scimitar-Babbler	195	222	169	200	207
<i>Schoeniparus brunneus</i>	Dusky Fulvetta	202	206	149	170	87
<i>Alcippe morrisonia</i>	Morrison's Fulvetta	2250	2095	2038	2306	2288
<i>Garrulax canorus</i>	Hwamei	27	116	79	80	91
<i>Garrulax taewanus</i>	Taiwan Hwamei	71	36	62	53	64
<i>Ianthocincla ruficeps</i>	Rufous-crowned Laughingthrush	207	6	1	120	5
<i>Ianthocincla chinensis</i>	Black-throated Laughingthrush	4	6	15	16	24
<i>Ianthocincla poecilorhyncha</i>	Rusty Laughingthrush	81	24	10	51	36
<i>Trochalopteron morrisonianum</i>	White-whiskered Laughingthrush	47	89	59	76	85
<i>Heterophasia auricularis</i>	White-eared Sibia	837	780	1021	997	1244
<i>Liocichla steerii</i>	Steere's Liocichla	397	258	251	254	318
<i>Actinodura morrisoniana</i>	Taiwan Barwing	95	70	97	108	108
<i>Regulus goodfellowi</i>	Flamecrest	52	151	55	76	122
<i>Sitta europaea</i>	Eurasian Nuthatch	78	32	85	64	46
<i>Troglodytes troglodytes</i>	Eurasian Wren	29	11	6	5	1
<i>Cinclus pallasi</i>	Brown Dipper	25	19	31	22	16





Scientific Name	Common Name	2019	2020	2021	2022	2023
<i>Aplonis panayensis</i>	Asian Glossy Starling	156	356	215	504	649
<i>Sturnus vulgaris</i>	European Starling	12	15	0	0	22
<i>Gracupica nigricollis</i>	Black-collared Starling	397	531	699	715	722
<i>Sturnia sinensis</i>	White-shouldered Starling	188	484	256	583	267
<i>Sturnia malabarica</i>	Chestnut-tailed Starling	285	184	179	439	568
<i>Spodiopsar sericeus</i>	Red-billed Starling	174	375	123	168	1149
<i>Spodiopsar cineraceus</i>	White-cheeked Starling	68	21	61	58	135
<i>Acridotheres tristis</i>	Common Myna	2467	2872	2927	3376	3244
<i>Acridotheres javanicus</i>	Javan Myna	4977	6337	7896	8287	6776
<i>Acridotheres cristatellus</i>	Crested Myna(Taiwan)	288	419	359	522	386
<i>Acridotheres cristatellus</i>	Crested Myna(Kinmen & Matsu)	3263	4433	3792	3335	3425
<i>Zoothera aurea</i>	White's Thrush	0	24	15	5	96
<i>Zoothera dauma</i>	Scaly Thrush	0	5	0	0	2
<i>Turdus mandarinus</i>	Chinese Blackbird	141	136	182	101	171
<i>Turdus poliocephalus</i>	Island Thrush	1	8	20	2	22
<i>Turdus cardis</i>	Japanese Thrush	0	0	0	1	7
<i>Turdus hortulorum</i>	Gray-backed Thrush	0	1	0	1	21
<i>Turdus obscurus</i>	Eyebrowed Thrush	12	7	7	8	60
<i>Turdus chrysolaus</i>	Brown-headed Thrush	243	550	552	421	936
<i>Turdus pallidus</i>	Pale Thrush	56	324	406	114	532
<i>Turdus eunomus</i>	Dusky Thrush	10	98	73	26	76
<i>Turdus naumanni</i>	Naumann's Thrush	0	3	3	6	22
<i>Muscicapa griseisticta</i>	Gray-streaked Flycatcher	1	2	1	0	1
<i>Muscicapa dauurica</i>	Asian Brown Flycatcher	10	4	4	5	17
<i>Copsychus saularis</i>	Oriental Magpie-Robin	254	301	309	284	466
<i>Copsychus malabaricus</i>	White-rumped Shama	53	91	114	113	289
<i>Niltava vivida</i>	Vivid Niltava	83	107	73	114	134
<i>Brachypteryx montana</i>	White-browed Shortwing	6	9	7	2	8
<i>Larvivora akahige</i>	Japanese Robin	3	0	2	3	5
<i>Luscinia svecica</i>	Bluethroat	4	1	1	0	5
<i>Myophonus insularis</i>	Taiwan Whistling-Thrush	99	91	59	70	89
<i>Myophonus caeruleus</i>	Blue Whistling-Thrush	15	28	37	19	39
<i>Enicurus scouleri</i>	Little Forktail	13	12	11	4	4
<i>Calliope calliope</i>	Siberian Rubythroat	207	247	277	357	243
<i>Cinclidium leucurum</i>	White-tailed Robin	38	34	44	41	61
<i>Tarsiger cyanurus</i>	Red-flanked Bluetail	9	11	14	6	25
<i>Tarsiger indicus</i>	White-browed Bush-Robin	6	6	5	1	4
<i>Tarsiger johnstoniae</i>	Collared Bush-Robin	35	39	52	53	60
<i>Ficedula hyperythra</i>	Snowy-browed Flycatcher	18	11	15	96	16
<i>Ficedula parva</i>	Red-breasted Flycatcher	2	4	3	2	3
<i>Phoenicurus fuliginosus</i>	Plumbeous Redstart	261	239	238	178	183
<i>Phoenicurus aureus</i>	Daurian Redstart	685	716	572	735	1098
<i>Monticola solitarius</i>	Blue Rock-Thrush	108	146	118	92	122
<i>Saxicola maurus</i>	Siberian Stonechat	44	34	41	28	18
<i>Dicaeum minullum</i>	Plain Flowerpecker	31	26	47	89	73
<i>Dicaeum ignipectus</i>	Fire-breasted Flowerpecker	95	54	87	81	62
<i>Aethopyga christinae</i>	Fork-tailed Sunbird	18	48	51	16	57
<i>Estrilda melpoda</i>	Orange-cheeked Waxbill	0	0	21	31	4
<i>Euodice malabarica</i>	Indian Silverbill	81	164	154	230	153
<i>Lonchura striata</i>	White-rumped Munia	480	675	601	543	375
<i>Lonchura punctulata</i>	Nutmeg Mannikin	3417	5579	4793	4443	4244





Scientific Name	Common Name	2019	2020	2021	2022	2023
<i>Lonchura atricapilla</i>	Chestnut Munia	78	1215	677	1441	609
<i>Prunella collaris</i>	Alpine Accentor	0	7	9	9	1
<i>Passer rutilans</i>	Russet Sparrow	2	0	35	2	6
<i>Passer montanus</i>	Eurasian Tree Sparrow	30217	30144	21741	26208	28420
<i>Motacilla cinerea</i>	Gray Wagtail	615	613	584	701	669
<i>Motacilla tschutschensis</i>	Eastern Yellow Wagtail	1298	1956	1542	2946	4380
<i>Motacilla alba</i>	White Wagtail	1011	1122	1483	1563	1275
<i>Anthus richardi</i>	Richard's Pipit	227	238	316	275	147
<i>Anthus hodgsoni</i>	Olive-backed Pipit	344	394	321	332	460
<i>Anthus cervinus</i>	Red-throated Pipit	133	220	128	156	195
<i>Anthus rubescens</i>	American Pipit	1	10	30	7	25
<i>Fringilla montifringilla</i>	Brambling	1	2	103	52	33
<i>Eophona migratoria</i>	Yellow-billed Grosbeak	111	110	182	74	128
<i>Carpodacus formosanus</i>	Taiwan Rosefinch	14	5	13	3	6
<i>Pyrrhula nipalensis</i>	Brown Bullfinch	27	0	27	14	2
<i>Pyrrhula erythaca</i>	Gray-headed Bullfinch	8	9	2	13	3
<i>Chloris sinica</i>	Oriental Greenfinch	61	117	180	35	116
<i>Spinus spinus</i>	Eurasian Siskin	20	123	298	4	82
<i>Emberiza fucata</i>	Chestnut-eared Bunting	1	5	1	0	1
<i>Emberiza pallasi</i>	Pallas's Bunting	0	1	1	0	1
<i>Emberiza pusilla</i>	Little Bunting	9	20	9	61	107
<i>Emberiza rustica</i>	Rustic Bunting	0	1	1	0	2
<i>Emberiza spodocephala</i>	Black-faced Bunting	395	520	478	608	936
<i>Cairina moschata (Domestic type)</i>	Muscovy Duck (Domestic type)	37	35	54	35	65
<i>Geopelia striata</i>	Zebra Dove	56	21	26	55	45
<i>Acridotheres burmannicus</i>	Vinous-breasted Starling	4	2	4	2	17
<i>Staphida torqueola</i>	Indochinese Yuhina	0	0	0	0	21
<i>Psittacula krameri</i>	Rose-ringed Parakeet	2	0	2	0	1
<i>Cacatua galerita</i>	Sulphur-crested Cockatoo	0	0	0	1	4
<i>Anser spp.</i>	Anser spp.	0	0	0	0	16
<i>Anas spp.</i>	Anas	0	1	6	0	2
Anatidae	Domestic Mallard	0	68	30	145	104
Columbidae	Columbidae	1	0	2	1	18
Charadriidae	Charadriidae	0	0	50	10	25
Scolopacidae/Charadriidae	Scolopacidae/Charadriidae	0	0	4000	0	10
<i>Calidris spp.</i>	Calidris	0	0	0	0	23
<i>Gallinago spp.</i>	Gallinago	19	0	18	21	10
Laridae	Laridae	0	2	0	0	3
<i>Larus spp.</i>	Larus	0	0	1	2	13
Ardeidae	Ardeidae	0	0	7	1	8
Accipitridae	Accipitridae	4	5	2	3	3
<i>Accipiter spp.</i>	Accipiter	1	3	2	6	4
<i>Alauda arvensis/gulgula</i>	Eurasian Skylark/Oriental Skylark	0	26	31	3	165
<i>Hirundo rustica/tahitica</i>	Hirundo rustica/Hirundo tahitica	0	1	0	50	9
Pycnonotidae	Pycnonotidae	4	3	4	15	2
Phylloscopidae	Phylloscopidae	6	9	11	7	18
<i>Horornis diphone/ borealis</i>	Japanese Bush Warbler/Manchurian Bush Warbler	3	3	1	1	2
Timaliidae	Timaliidae	0	10	4	2	1
<i>Garrulax taewanus/canorus</i>	Garrulax	0	14	13	11	13
Sturnidae	Sturnidae	0	27	10	4	1





Scientific Name	Common Name	2019	2020	2021	2022	2023
<i>Acridotheres</i> spp.	Acridotheres	0	4	0	14	34
Turdidae	Turdidae	73	74	106	115	132
Turdidae	Turdidae	0	47	20	11	30
Dicaeidae	Dicaeum	0	7	0	16	2
<i>Motacilla</i> spp.	Motacilla	10	10	11	19	19
<i>Anthus</i> spp.	Anthus	10	14	5	3	2
<i>Emberiza</i> spp.	Emberiza	0	26	54	67	35

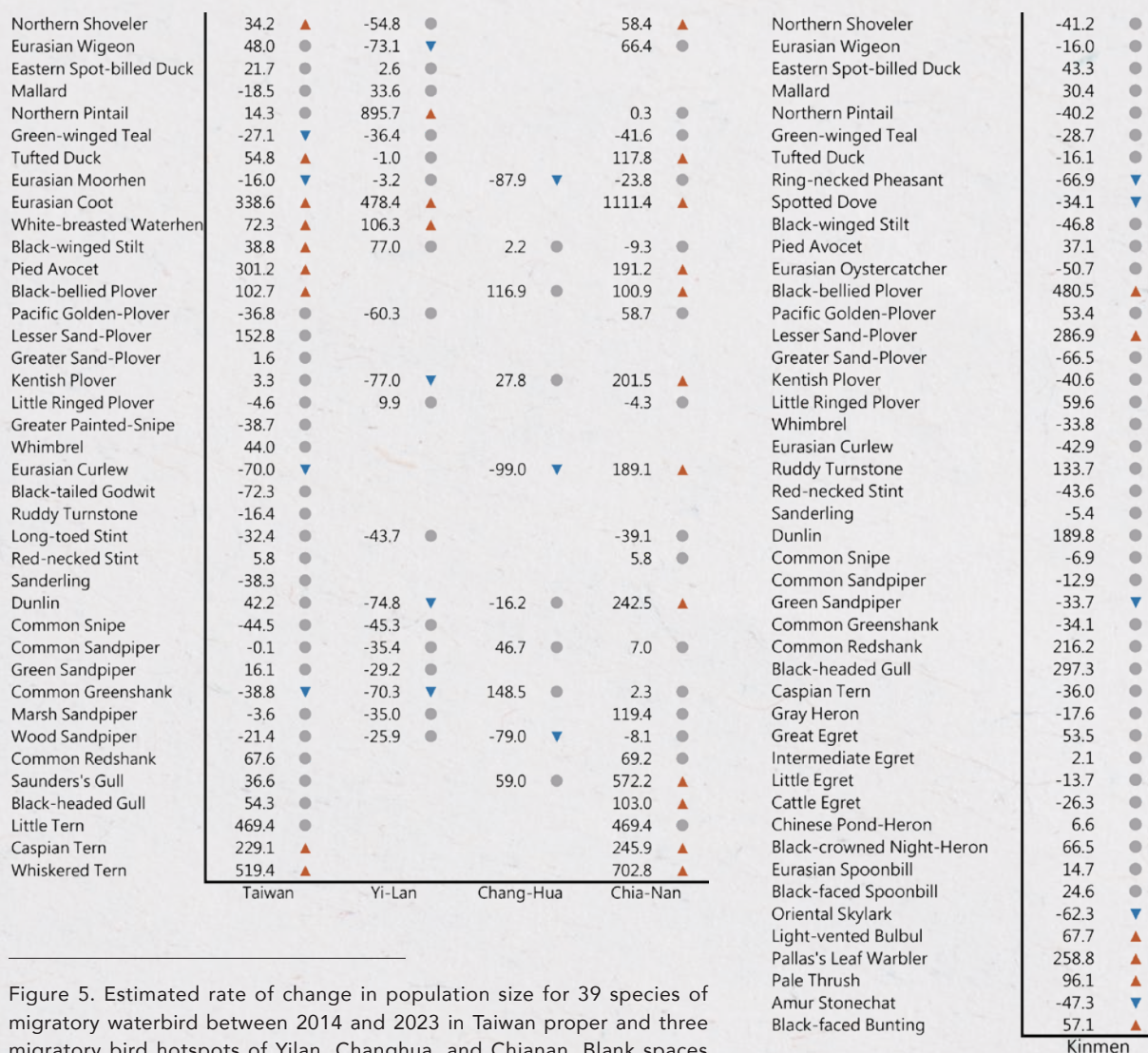


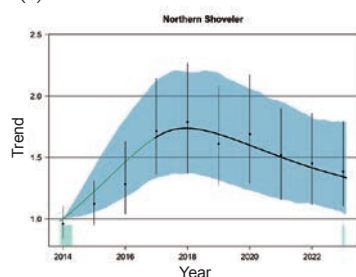
Figure 5. Estimated rate of change in population size for 39 species of migratory waterbird between 2014 and 2023 in Taiwan proper and three migratory bird hotspots of Yilan, Changhua, and Chianan. Blank spaces indicate that analysis was not possible due to an insufficient number of count records. Each 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 nonsignificant change. If a species is not included in a certain list, it means there was not sufficient data to analyze.

- ▲ Significant growth
- ▼ Significant decline
- Non-Significant change

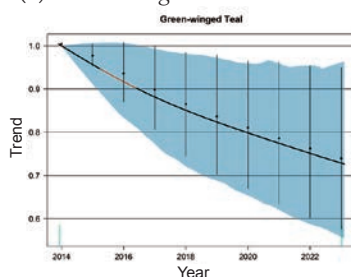
Figure 6. Estimated rate of change in population size for 46 species of migratory waterbird and other bird species between 2019 and 2023 in the migratory bird hotspot of Kinmen. Each number indicates the rate of change for each species in each area. Red triangles mean significant growth, blue triangles mean significant decline, and gray circles mean nonsignificant change. If a species is not included in a certain list, it means there was not sufficient data to analyze.

Plate 1. Population trends for waterbirds counted in Taiwan proper (excluding outlying islands) between 2014 and 2023. 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 red; for periods where there is no significant change, the trend line is in black.

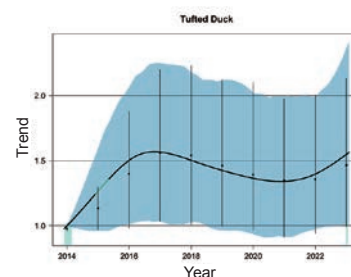
(a) Northern Shoveler



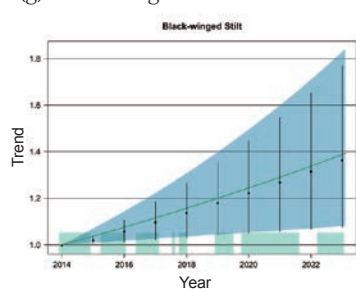
(b) Green-winged Teal



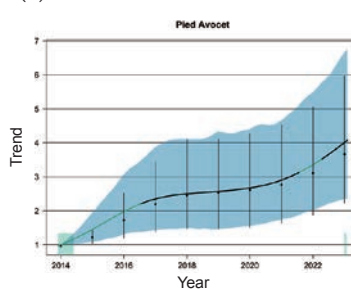
(c) Tufted Duck



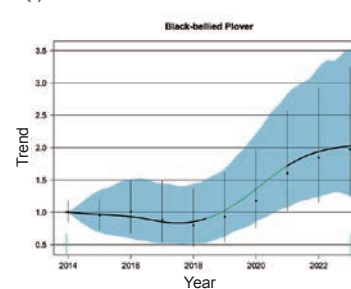
(g) Black-winged Stilt



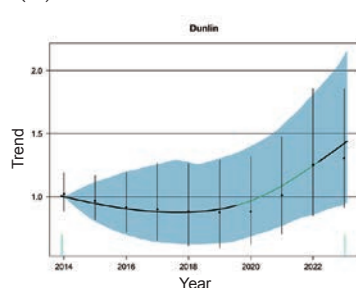
(h) Pied Avocet



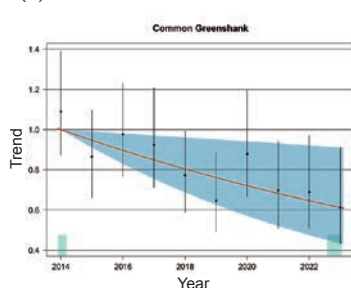
(i) Black-bellied Plover



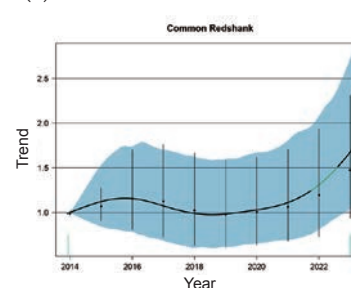
(m) Dunlin



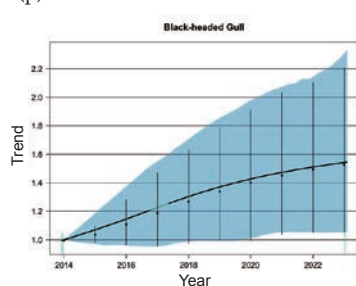
(n) Common Greenshank



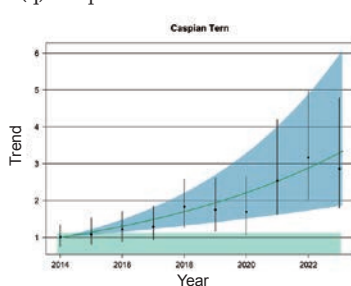
(o) Common Redshank



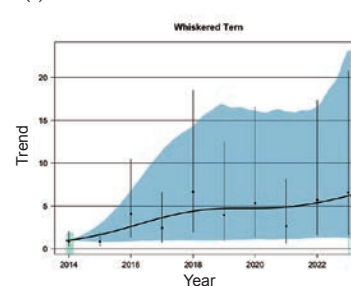
(p) Black-headed Gull



(q) Caspian Tern



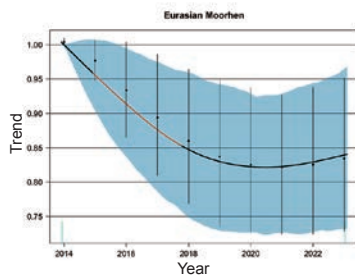
(r) Whiskered Tern



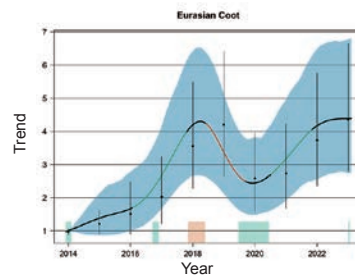


line is in orange. Periods where the curvature is significantly positive or negative are marked on the x axis by green and orange rectangles, respectively.

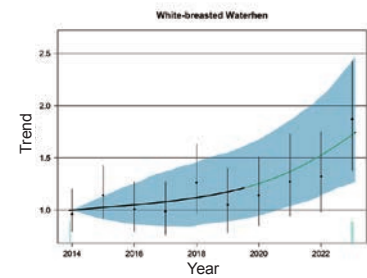
(d) Eurasian Moorhen



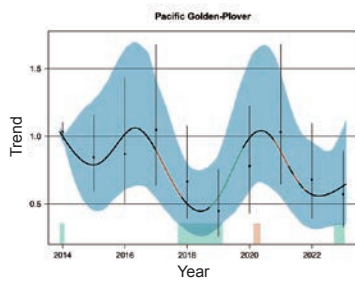
(e) Eurasian Coot



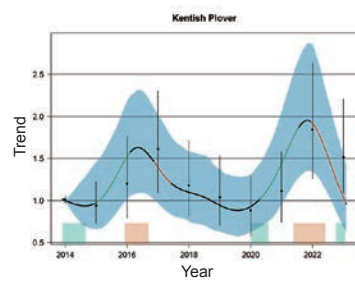
(f) White-breasted Waterhen



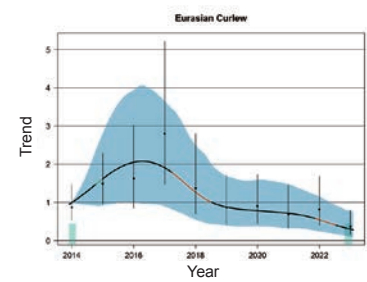
(j) Pacific Golden-Plover



(k) Kentish Plover



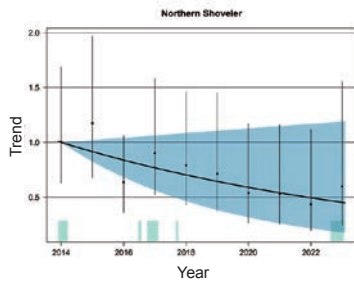
(l) Eurasian Curlew



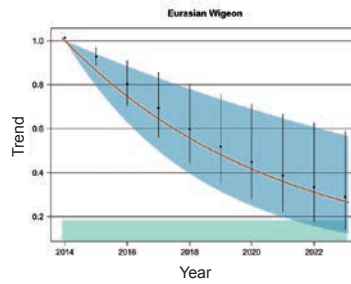


The Yilan Plain has always been an important wintering hotspot for waterbirds. Last year's analysis showed significant declines for many waterbird species. This year, four species—Kentish Plover (*Charadrius alexandrinus*), Common

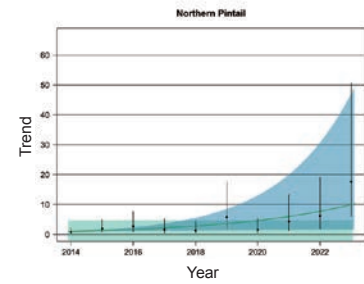
(a) Northern Shoveler



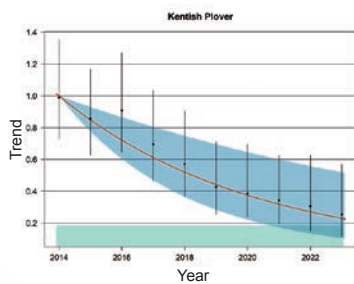
(b) Eurasian Wigeon



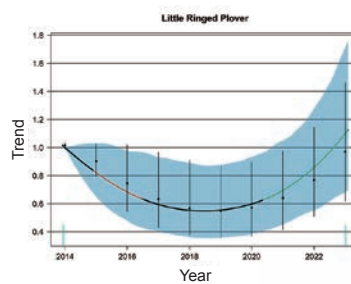
(c) Northern Pintail



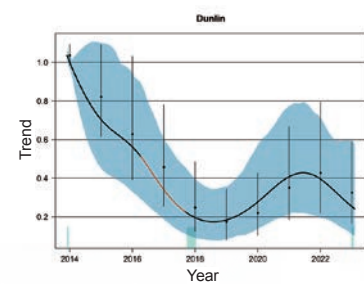
(g) Kentish Plover



(h) Little Ringed Plover



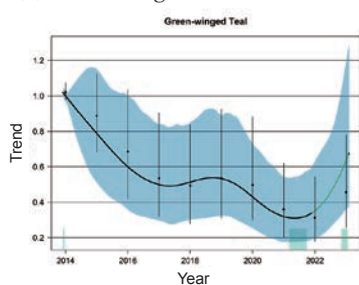
(i) Dunlin



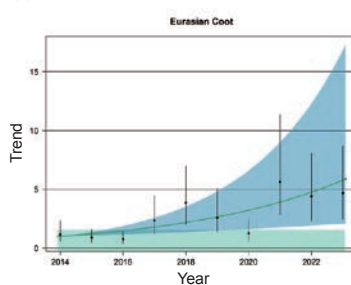


Greenshank (*Tringa nebularia*), Northern Shoveler (*Spatula clypeata*), and Dunlin (*Calidris alpina*)—showed significant declines. However, numbers for Green-winged Teal (*Anas crecca*) showed an increase this year after a previous decline.

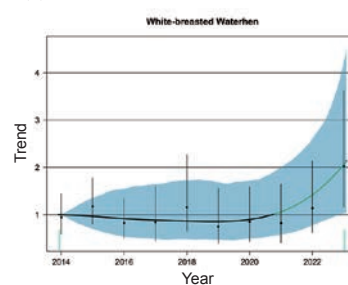
(d) Green-winged Teal



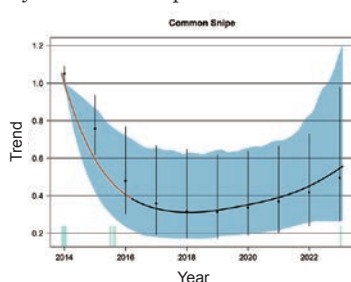
(e) Eurasian Coot



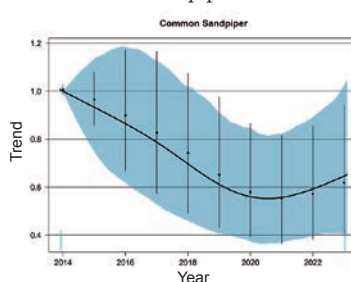
(f) White-breasted Waterhen



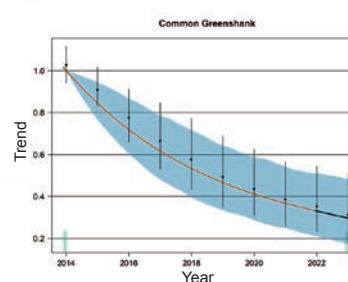
(j) Common Snipe



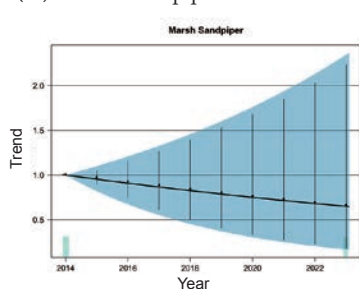
(k) Common Sandpiper



(l) Common Greenshank



(m) Marsh Sandpiper



(n) Wood Sandpiper

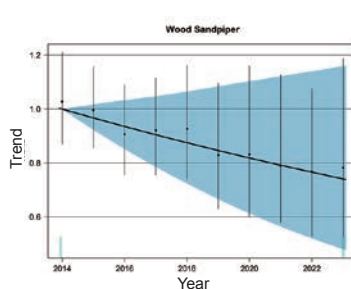
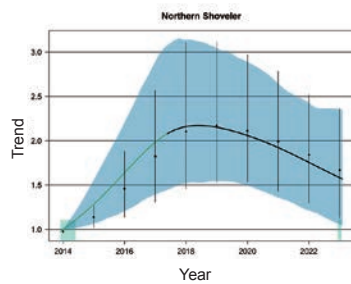


Plate 2. Population trends for waterbirds counted in the Yilan Plain between 2014 and 2023. For periods where there is a significant increase, the trend line is in green; for periods where there is a significant decrease, the trend line is in orange. Periods where the curvature is significantly positive or negative are marked on the x axis by green and orange rectangles, respectively.

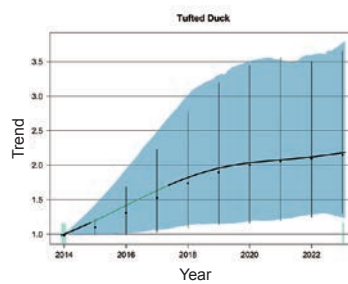


The Chianan Coast, which includes the Budai Salt Pan Wetlands in Chiayi County as well as the Sicao Wetlands and Chiku Wetlands in Tainan City, is also an extremely important wintering ground for migratory waterbirds. As of 2023, many waterbird species have shown significantly increasing numbers here. However,

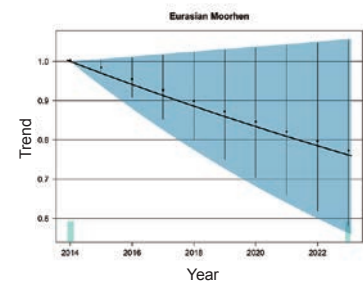
(a) Northern Shoveler



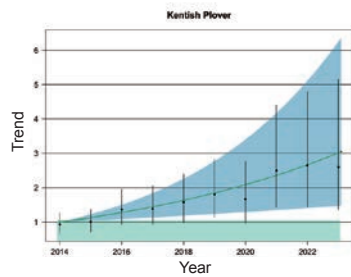
(b) Tufted Duck



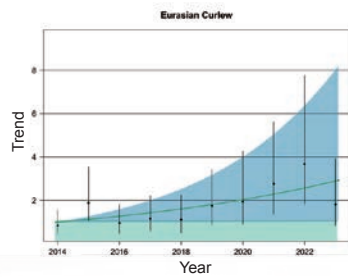
(c) Eurasian Moorhen



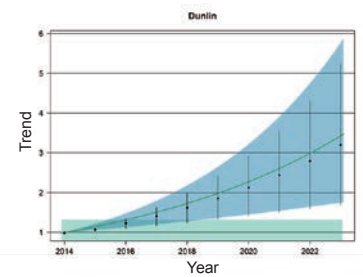
(g) Kentish Plover



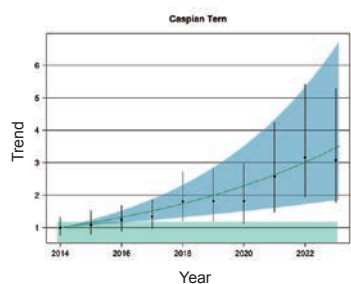
(h) Eurasian Curlew



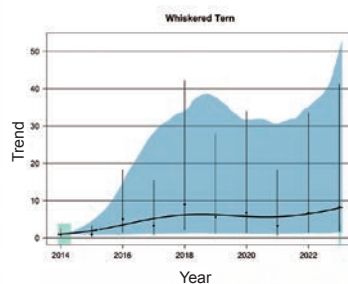
(i) Dunlin



(m) Caspian Tern



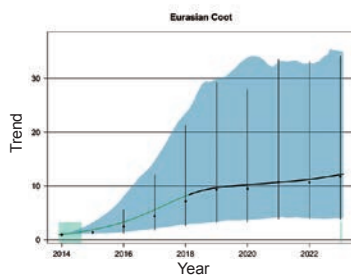
(n) Whiskered Tern



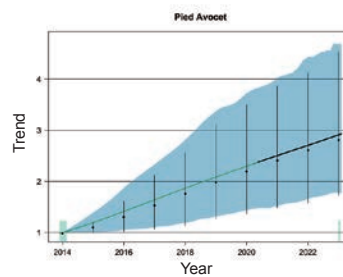


that has not been the case for the Eurasian Moorhen (*Gallinula chloropus*), whose numbers continue to decline. Although it has not reached statistical significance yet, it still warrants continued monitoring.

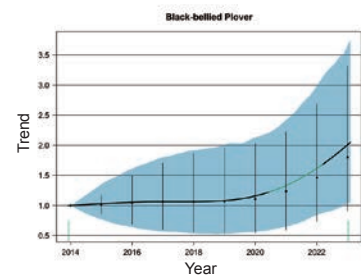
(d) Eurasian Coot



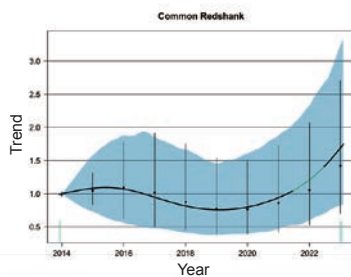
(e) Pied Avocet



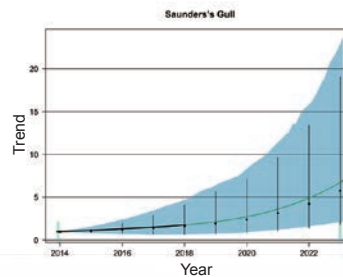
(f) Black-bellied Plover



(j) Common Redshank



(k) Saunders's Gull



(l) Black-headed Gull

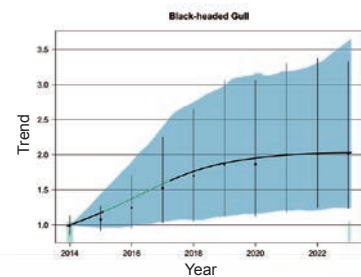
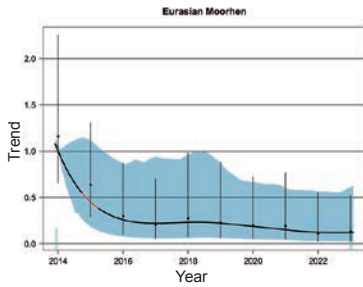


Plate 3. Population trends for waterbirds counted along the Chianan Coast between 2014 and 2023. For periods where there is a significant increase, the trend line is in green; for periods where there is a significant decrease, the trend line is in orange. Periods where the curvature is significantly positive or negative are marked on the x axis by green and orange rectangles, respectively.

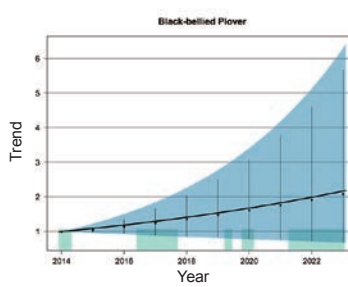


The Changhua Coast, with its extensive mudflats, is an extremely important habitat in terms of waterbird conservation. This year, population numbers for Sanderling (*Calidris alba*) showed an increase after a past decline, while numbers for Eurasian Curlew (*Numenius arquata*) and Wood Sandpiper (*Tringa glareola*) significantly decreased.

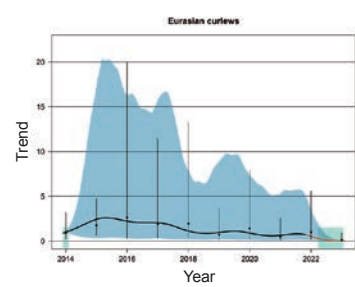
(a) Eurasian Moorhen



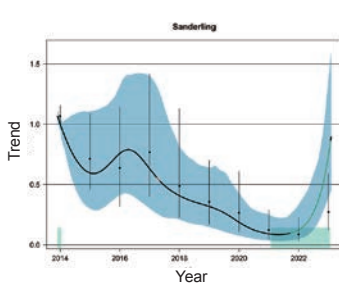
(b) Black-bellied Plover



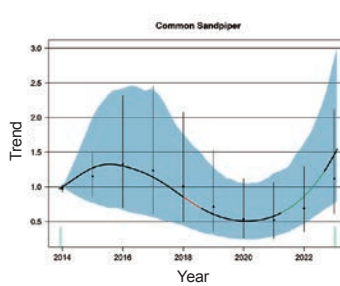
(c) Eurasian Curlew



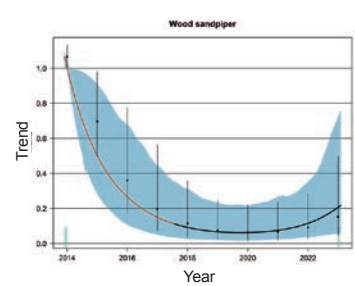
(d) Sanderling



(e) Common Sandpiper



(f) Wood Sandpiper



(g) Saunders's Gull

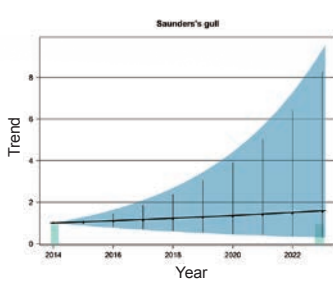


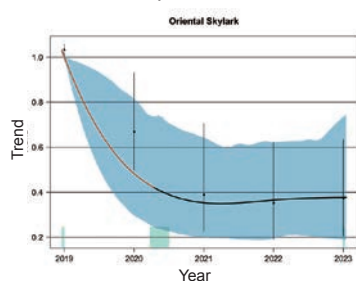
Plate 4. Population trends for waterbirds counted along the Changhua Coast between 2014 and 2023. For periods where there is a significant increase, the trend line is in green; for periods where there is a significant decrease, the trend line is in orange. Periods where the curvature is significantly positive or negative are marked on the x axis by green and orange rectangles, respectively.



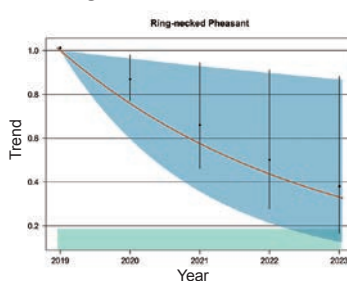


The Taiwan NYBC has only taken place in the Kinmen Islands since 2019, so there were only five years of data to review. Results showed a significant decline for Ring-necked Pheasant (*Phasianus colchicus*) and Oriental Skylark (*Alauda arvensis*). Meanwhile, population numbers for the Common Kingfisher (*Alcedo atthis*), White-throated Kingfisher (*Halcyon smyrnensis*) and Pied Kingfisher (*Ceryle rudis*) all showed declines, although they were not yet statistically significant. On a positive note, numbers for Light-vented Bulbul (*Pycnonotus sinensis*), Pallas's Leaf Warbler (*Phylloscopus proregulus*), Pale Thrush (*Turdus pallidus*), and Black-faced Bunting (*Emberiza spodocephala*) all increased significantly.

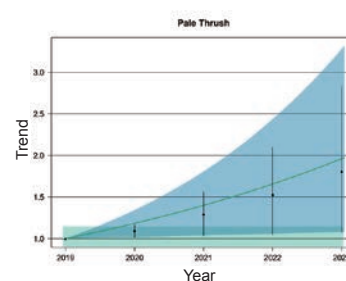
(a) Oriental Skylark



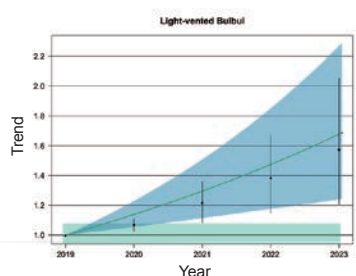
(b) Ring-necked Pheasant



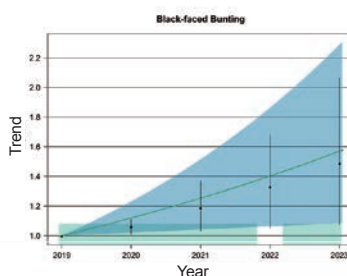
(c) Pale Thrush



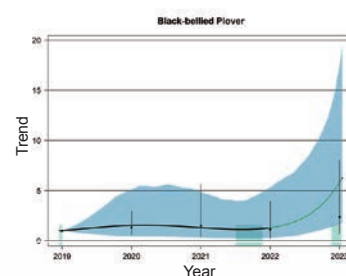
(d) Light-vented Bulbul



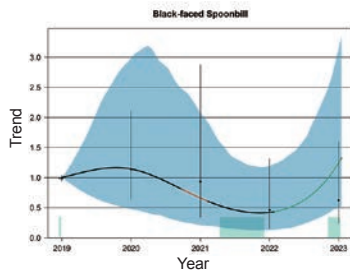
(e) Black-faced Bunting



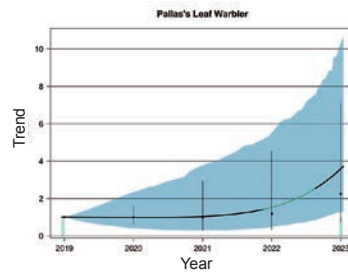
(f) Black-bellied Plover



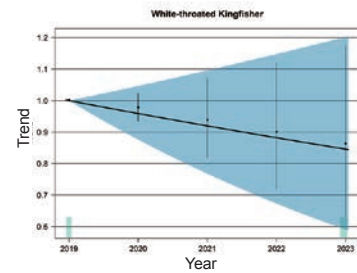
(g) Black-faced Spoonbill



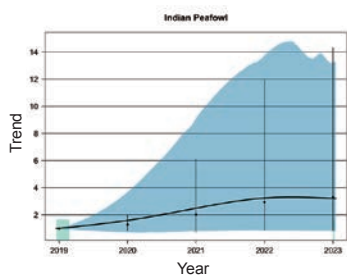
(h) Pallas's Leaf Warbler



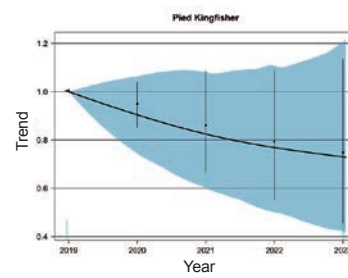
(i) White-throated Kingfisher



(j) Indian Peafowl



(k) Pied Kingfisher



(l) Common Kingfisher

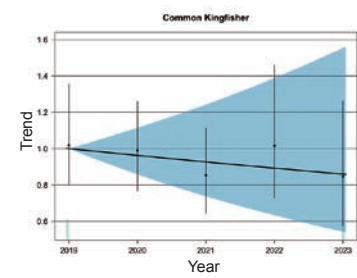


Plate 5. Population trends for waterbirds counted in the Kinmen Islands between 2019 and 2023. For periods where there is a significant increase, the trend line is in green; for periods where there is a significant decrease, the trend line is in orange. Periods where the curvature is significantly positive or negative are marked on the x axis by green and orange rectangles, respectively.

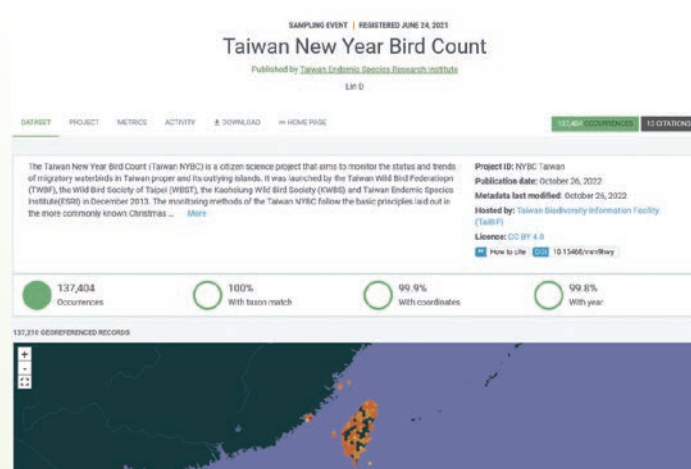


Open Data

All Taiwan NYBC data is open to the public and can be found at the 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.)



NYBC data@ GBIF



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 10th 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 2023 Annual Report

— The First Decade Milestone

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 TBRI concerning the legal status of any country, territory, or area, or concerning the delineation of borders or boundaries.



Issuers	Chang Jui-lin (張瑞麟), Yang Jia-dong (楊嘉棟)
Authors	Tsai Chih-yi (蔡芷怡), Chao Jung (趙容), Scott Pursner (潘森識), Allen Lyu (呂翊維), Lin Kun-hai (林昆海), Chiang Kung-kuo (蔣功國), Lin Ruey-shing (林瑞興), Lin Da-li (林大利)
English Editor	Scott Pursner (潘森識)
Publishers	The Taiwan Wild Bird Federation 2F, No. 3, Lane 50, Tacheng St, Datong District, Taipei City 103005 +886-2-2556-2012-16 Taiwan Biodiversity Research Institute, Ministry of Agriculture 1, Ming-Shen East Rd, Jiji, Nantou 552005 Taiwan +886-49-276-1331-252
Illustrators	Tamako Diary (玉子日記@Facebook) 、Daylily
Organizers	Taiwan Wild Bird Federation, Wild Bird Society of Taipei, Kaohsiung Wild Bird Society, Taiwan Biodiversity Research Institute, Ministry of Agriculture
Design	Daju Paper Products Enterprise (大居紙器企業社)
Publication Date	December 2024
Price	\$200 NTD (free pdf available at http://nybc.tw)
ISBN	978-626-7454-76-3
GPN	1011301413





Taiwan Wild Bird Federation
 Wild Bird Society of Taipei
 Kaohsiung Wild Bird Society
 Endemic Species Research Institute
 The State of Taiwan's Birds Partnership