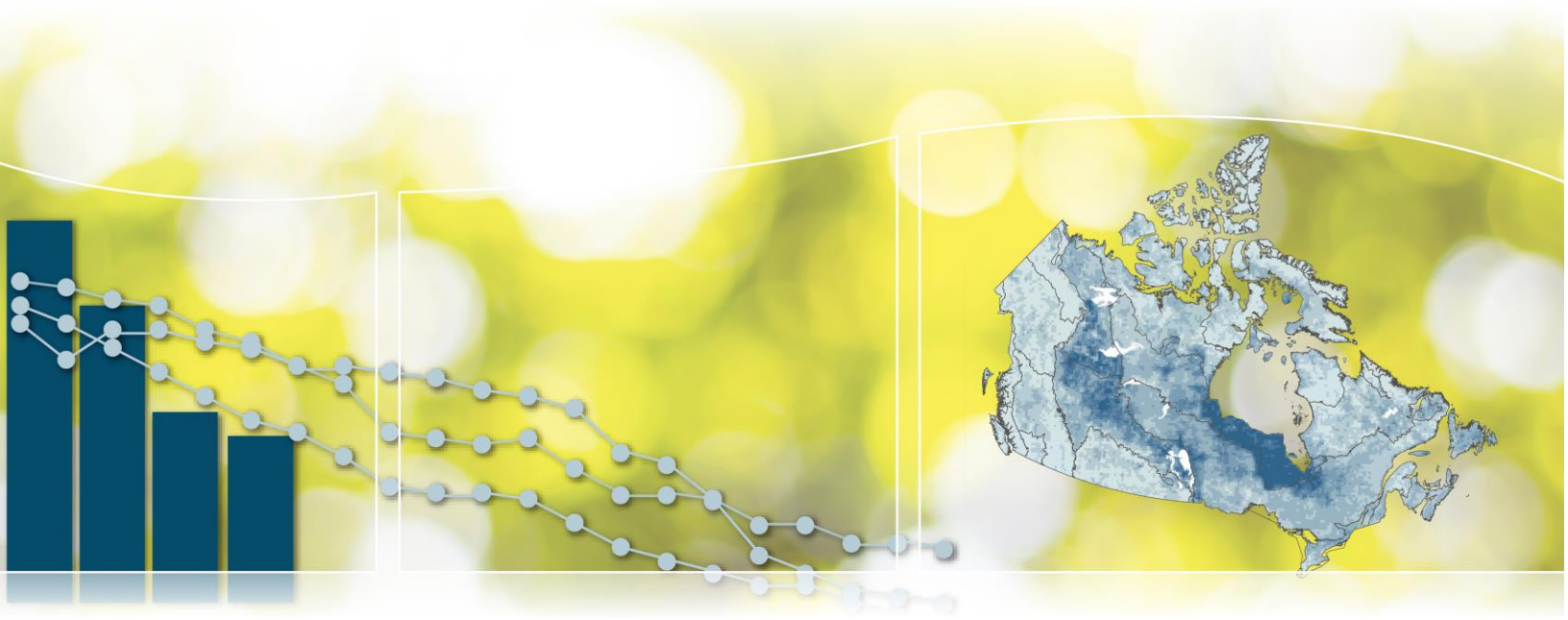
Environment and Climate Change Canada
Environnement et Changement climatique Canada

Canadian Environmental Sustainability Indicators

Canadian species index



Canada

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Canadian species index

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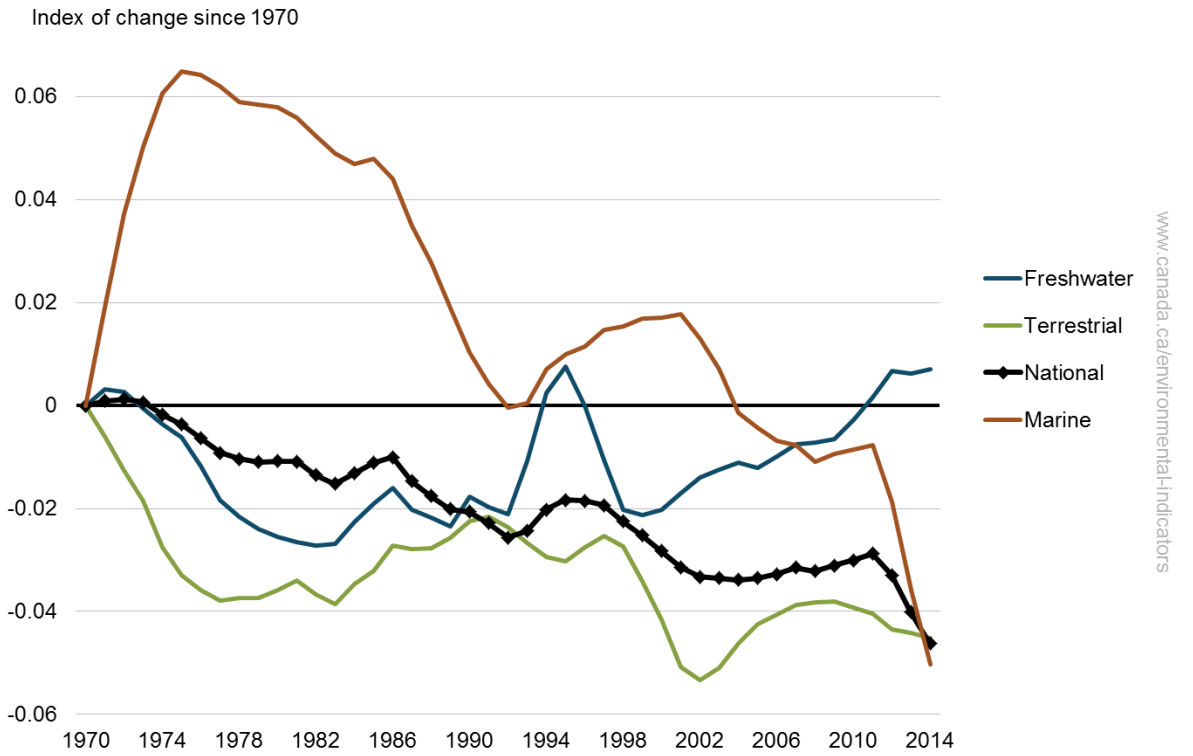
Canadian Species index

Animal wildlife is highly valued by Canadians and is one of the most visible and well-studied aspects of biodiversity. The Canadian species index shows whether monitored species tend to have increasing or decreasing population sizes. This, in turn, provides an integrated measure of the condition of our environment.

Key results

- Between 1970 and 2014, vertebrate populations have, on average, declined by about 10%.
- Freshwater species trends varied over time and by 2014 showed little net change.
- Terrestrial species have declined on average, and by 2014 were about 10% below the 1970 baseline, mainly due to declines in mammal populations.
- Marine species generally increased in the 1970s and then declined. Trends vary among groups of species. The two largest species groups are fish, which showed a downward trend after 1975, and birds, which generally increased. Short-term trends should be interpreted with caution.

Figure 1. Canadian species index, 1970 to 2014 (1970 = 0)



Data for Figure 1

Note: Trends are calculated based on the proportional change in population size for monitored vertebrate species. All species are weighted equally, such that a species that doubled in population would be balanced out by a species that declined by half. Results are plotted on a ratio (logarithmic) scale; 0.06 represents about a 15% increase from the baseline and -0.06 represents about a 13% decline.
Source: Zoological Society of London, 2017.

The freshwater trend is a balance between increases in waterfowl, which have benefitted from initiatives such as the North American Waterfowl Management Plan, and generally declining population trends of other freshwater species.

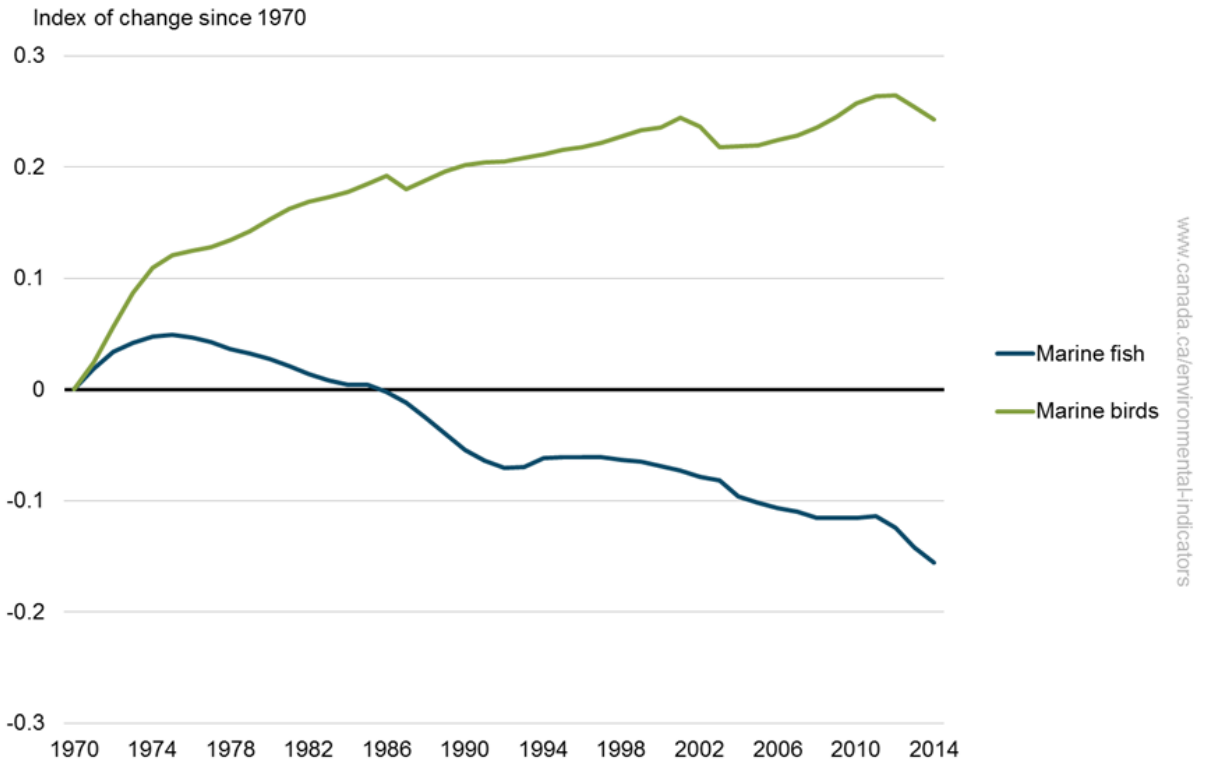
The sharp decrease in marine species after 2011 occurred when birds, mammals and fish were all declining at the same time. This short-term trend should be interpreted with caution.

The national trend is the average of the trends for all vertebrates; that is, it is the average rate of change across species. Data are not available for all species, and existing data do not always cover the geographic range of each species or the whole time period. The index should be interpreted keeping these limitations in mind.

Bird and mammal species are well represented. Many fish species are included, but the proportion of fish species included is low because in Canada there are more species of fish than there are species of all other vertebrates combined.

Although averaging the trends of many species provides an overall picture, it is important to look for smaller-scale patterns that may have been masked. For example, if we consider taxonomic groups within the marine index, quite different patterns can be seen for birds and fish. By 2014, the marine bird index had increased to an average of 175% of the 1970 levels, while the fish index had declined to around 70% of the 1970 levels.[1]

Figure 2. Canadian species index for marine birds and fish, 1970 to 2014 (1970 = 0)



Data for Figure 2

[1] Marine mammal populations are also mainly increasing, but because very few mammal species are included, trends are uncertain and have not been included in the figure.

Note: Trends are calculated based on the proportional change in population size for monitored vertebrate species in the selected groups. Results are plotted on a ratio (logarithmic) scale.
Source: Zoological Society of London, 2017.

In addition to reflecting environmental trends, indices may reflect changes in data availability. This complicates the interpretation of short-term patterns. For example, a rapid change in the freshwater index beginning in 1992 occurred at a time when data availability increased. Changes in the trajectory may be due to genuine environmental change or may occur because species with diverging patterns have been added to the index. Often, these effects are both present.

The Canadian species index is broadly similar to the Living Planet Index. At the global scale, the Living Planet Index shows a strong decline in vertebrate populations in terrestrial, marine and, especially, freshwater biomes. The Living Planet Index for Canada (2017) uses the same methods as the Canadian Species Index and reports different sub-indices.

About the indicator

What the indicator measures

The Canadian species index represents the average proportional change in the sizes of Canadian vertebrate species' populations. The index is a "trend of trends", rather than a measure of changes in the total number of animals: each species, whether it is common or rare, has the same effect on the index. The index reports general trends rather than progress towards desired levels. The national index contains data for 900 of the nearly 2000 native vertebrate species in Canada.

Why this indicator is important

Animal wildlife populations depend on the availability of suitable habitat. This indicator shows trends in animal populations and is a good proxy measure of overall trends in biodiversity and ecosystem health. This indicator also supports the measurement of progress towards the following 2016–2019 Federal Sustainable Development Strategy long-term goal: All species have healthy and viable populations.

Related indicators

Species at risk population trends follows changes in the population size and distribution of species at risk that are managed under the Species at Risk Act.

Status of wild species in Canada reports extinction risks across a broad set of species.

Trends in Canada's migratory bird populations tracks population size changes in birds that migrate different distances.

Data sources and methods

Data sources

Data on changes in the size of vertebrate populations are gathered from a variety of sources and collated in the Living Planet Database by the Zoological Society of London. Sources include the peer-reviewed scientific literature, government reports, and reliable online databases. Examples of important sources for Canada include the North American Breeding Bird Survey and the Fisheries and Oceans Canada Library.

More information

Data include counts of individuals, as well as proxy measurements such as indices of abundance, spawning density, or detection rates of individuals. Each record is also tagged with geographical and ecological information to allow for further analysis. Together, these records form the data set used to calculate the index.

At least some information for 900 (50%) of the 1 794 regularly occurring native vertebrate species[2] found in Canada has been captured in the data set. Birds are the best represented species group.

The index has been calculated for the period 1970 to 2014, the time period where sufficient data exist for credible estimates.

Methods

The trend in the population size of each species is estimated using all the information available for that particular species. This may include just one measurement, or a combination of measurements from different populations of the same species. These trends are averaged across all species to generate the Canadian species index.

More information

Data collection and tagging

For use in the index, the time series drawn from Canadian data contained in the Zoological Society of London database must meet all of the following criteria:

- contain data for at least 2 points in time since 1970
- have been collected for a defined population using comparable methods across years
- use units of population size or a reliable proxy, such as spawning biomass or density
- have a referenced and traceable source

Each time series is referred to as a "population" although they may not be populations in the biological sense of the term.

Population data have been gathered from the literature and by performing online searches and by contacting experts. Birds have been monitored at the national level for decades and high-quality data are readily available for this species group. Fewer data are available for other species groups. To help address the imbalance in the data available for the different species groups, targeted searches were carried out for under-represented groups. Searches were also conducted to locate data for under-represented regions.

[2] Data derived from Canadian Endangered Species Conservation Council (2016) Wild Species 2015: The General Status of Species in Canada, National General Status Working Group.

Each record is tagged with contextual information such as geographical region, species group, and habitat type, for example. Data tags allow a subset of the database to be extracted for targeted analysis. Information for these tags is drawn from the original data source if possible; however, additional reference material is also used. Species that occur in more than one ecosystem type (terrestrial, freshwater or marine) are tagged as belonging to the ecosystem in which they were observed and on which they rely for at least part of their life cycle. For example, a time series containing counts of salmon spawning in rivers would be considered freshwater, while one containing observations at sea would be considered marine.

Preprocessing

Species selection

Data for the overall index were restricted to vertebrate species that regularly occur in Canada. Classification was based on Wild Species 2005 and 2010 reports. Species assessed as "invasive" or "accidental" were excluded.

Increasing population sizes are generally interpreted as a sign of environmental improvement. However, a few bird species are known to have a population size that is above acceptable bounds (see Population status of Canada's migratory birds), and for these species, an increase in population is a negative outcome. Three species, Snow Goose (both subspecies), Ross's Goose and Canada Goose,[3] have been excluded from the index for this reason.

In a few cases (6 time series, 3 species),[4] data could not be clearly assigned to a particular species because of changes in taxonomy, and therefore these time series were excluded.

Population modelling

For each population, a record of abundance over years is created. Modelling is used to reduce the effect of random variations and measurement noise. For time series containing at least 6 data points, trends were modelled using Generalised Additive Modelling. For shorter time series, and for any series that could not be modelled with Generalised Additive Modelling, a linear regression model was used. For time series with only 2 data values, this is equivalent to a straight line connecting the 2 points. Time series are not extrapolated beyond the start and end date of observations.

In some years and for some time series, a zero value has been recorded. In a few cases, this may be due to a local extinction, but more often, it is because animals are not observed. A failure to observe animals may be because there are few animals to observe, which is a genuine signal of low numbers. It could also mean the animals were simply not detected. This might happen, for example, if unusual weather conditions made movement patterns unpredictable, in which case a zero would represent a missing value. For the purposes of the indicator, zeros have been treated as missing values, resulting in a conservative estimate of change.

Calculation of the index

Trends within a time series

For each time series, proportional change d_t is calculated for each year for which data exist, as follows:

[3] These species' scientific names are Chen caerulescens, Chen rossii, and Branta canadensis.

[4] Troglodytes pacificus is not recognized by the taxonomic authority used; Dendragapus obscurus and Haematopus ater have recently been split into subspecies and the data cannot be clearly assigned to one of the new species.

$d_t = \log_{10}(N_t / N_{(t-1)})$

where:

N_t = modelled population size estimate in year t

$N_{(t-1)}$ = modelled population size estimate in year t-1

Index calculation

- For species with more than one time series, the average proportional change (lambda, λ) is calculated for each year across all time series (including all subspecies) for that species. Formally, for species i in year t:

$$\lambda_{i,t} = \frac{1}{m}\sum_{j=1}^{m} d_{i,j,t}$$

where:

$\lambda_{i,t}$ = average proportional change for species i in year t

$d_{i,j,t}$ = proportional change for time series j, for species i in year t

m = number of time series for species i in year t

For a species with only one time series, $\lambda_{i,t} = d_{i,t}$

- The overall annual change is calculated as the average lambda across all species with data for that time step. In other words, the index for 2014 is the average λ_i for all species with population estimates in 2013 and 2014. Species are weighted equally, regardless of data availability.
- The index for a particular year is the sum of annual changes since 1970.

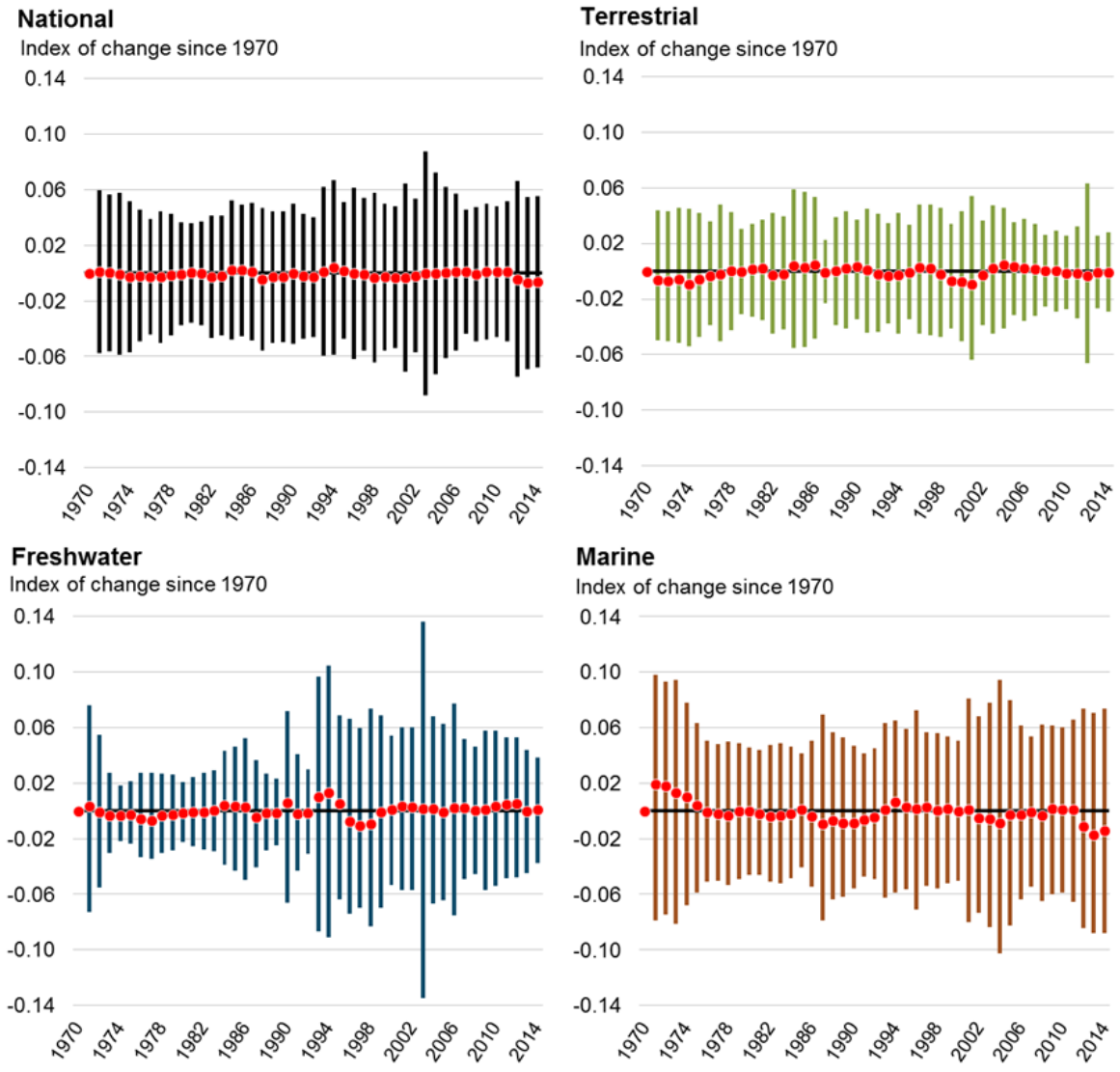
Percentage changes are calculated by taking the antilog of the index.

Sub-indices are calculated using the same methodology, but for a selected subset of species.

Assessment of uncertainty

The degree of variability within the species-level lambdas for a given year provides an indication of whether trends are similar across the species included in the index. A narrow interval means that most species are changing by similar proportions, while a wide interval means that there is a wide range of patterns. Because indexed species are not a random or representative selection of the species in the environment, this can only be a partial assessment of uncertainty. The uncertainty due to a non-representative sample of species cannot be measured.

Figure 3. Distribution of species-level lambda values, 1970 to 2014



Data for Figure 3

Note: The dots show the average annual lambda across all species; vertical bars show the standard deviation of average annual lambda across all species.
Source: Zoological Society of London, 2017.

Caveats and limitations

The Canadian species index has been developed from the Living Planet Index, originally conceived by the World Wildlife Fund and now developed in partnership with the Zoological Society of London. The index is based on a peer-reviewed method[5] that can integrate many types of population measurements. The methodology for the Canadian species index has been improved and revised, and results should not be directly compared to the Living Planet Index.

[5] Collen B et al. (2009) Monitoring Change in Vertebrate Abundance: the Living Planet Index. Conservation Biology: 23(2): 317-327.

The index uses previously collected data, and is therefore biased towards certain species. These include species that are easy to observe, species that are managed for human use or for conservation and species with aesthetic appeal. Birds are well represented, but most other vertebrate groups are not. Some species are represented by data that come from a local study involving a small part of the total population. While there is considerable uncertainty in the trends for these species, combining data for many species leads to more interpretable results.

More information

The index is descriptive. Because the underlying data have been collected for other purposes, the set of species contained in the index has unknown sampling biases. For this reason, it does not meet the requirement for randomized sampling that is necessary for traditional statistical hypothesis testing, and changes in the index cannot be said to be statistically significant. Trends in the index do provide an indication of trends in the environment, and can be used to identify where additional analysis or information is required.

Averaging trends across all populations within each species can obscure important variability between subspecies, varieties, or geographic regions. Averaging trends across species may also obscure important information. Analysis of different parts of the data set can help uncover these patterns.

Population size measurements always include some uncertainty, because not every individual animal can be found and counted at every sampling interval. The effect of uncertainty in measurement cannot be separated from genuine changes in population sizes. Random variability may lead to a few more or less individuals being counted. If this variability leads to a large proportional change, as is the case when the average number of individuals found is small, the resulting uncertainty in the index can be large. However, measurement uncertainty does average out over longer time series and over species. For this reason, interpretation of small subsets of data must be done with an understanding of the context of the biology of the species that are included and the strengths and weaknesses of the monitoring protocols.

Only vertebrate species are included in the index, because they are the only group with sufficient population-level data. Invertebrates and plants tend to be monitored using area of occurrence, a type of data not readily integrated into the index.

Resources

References

Canadian Endangered Species Conservation Council (2006) Wild Species 2005: The General Status of Species in Canada. National General Status Working Group. Retrieved in August 2017.

Canadian Endangered Species Conservation Council (2011) Wild Species 2010: The General Status of Species in Canada. National General Status Working Group. Retrieved in August 2017.

Canadian Endangered Species Conservation Council (2017) Wild Species 2015: The General Status of Species in Canada. National General Status Working Group. Retrieved in August 2017.

Collen B et al. (2009) Monitoring Change in Vertebrate Abundance: the Living Planet Index. Conservation Biology 23(2): 317-327.

Related information

Arctic Species Trend Index (ASTI)

Living Planet Index for Canada

Living Planet Report 2016

Annex

Annex A. Data tables for the figures presented in this document

Table A.1. Data for Figure 1. Canadian species index, 1970 to 2014 (1970 = 0)

Year	National index	Terrestrial index	Freshwater index	Marine index	Number of species
1970	0	0	0	0	419
1971	0.00093	-0.00609	0.00321	0.01907	430
1972	0.00124	-0.01269	0.00263	0.03726	429
1973	0.00069	-0.01856	-0.00054	0.05026	449
1974	-0.00182	-0.02760	-0.00360	0.06060	459
1975	-0.00365	-0.03297	-0.00612	0.06494	472
1976	-0.00636	-0.03590	-0.01177	0.06416	459
1977	-0.00921	-0.03789	-0.01842	0.06196	465
1978	-0.01035	-0.03735	-0.02158	0.05888	461
1979	-0.01095	-0.03743	-0.02394	0.05846	465
1980	-0.01078	-0.03590	-0.02552	0.05800	473
1981	-0.01086	-0.03392	-0.02657	0.05581	474
1982	-0.01348	-0.03677	-0.02721	0.05226	476
1983	-0.01521	-0.03859	-0.02691	0.04902	494
1984	-0.01315	-0.03473	-0.02257	0.04684	512
1985	-0.01113	-0.03212	-0.01911	0.04792	520
1986	-0.01000	-0.02723	-0.01602	0.04402	511
1987	-0.01469	-0.02786	-0.02032	0.03478	536
1988	-0.01756	-0.02763	-0.02181	0.02769	501
1989	-0.02016	-0.02562	-0.02351	0.01890	533
1990	-0.02060	-0.02246	-0.01766	0.01033	515
1991	-0.02287	-0.02168	-0.01976	0.00414	542
1992	-0.02567	-0.02372	-0.02107	-0.00043	537

Year	National index	Terrestrial index	Freshwater index	Marine index	Number of species
1993	-0.02438	-0.02677	-0.01081	0.00040	576
1994	-0.02018	-0.02948	0.00249	0.00697	563
1995	-0.01837	-0.03023	0.00751	0.00986	586
1996	-0.01855	-0.02748	-0.00010	0.01151	559
1997	-0.01933	-0.02542	-0.01064	0.01463	548
1998	-0.02246	-0.02730	-0.02024	0.01529	574
1999	-0.02519	-0.03414	-0.02130	0.01691	552
2000	-0.02825	-0.04157	-0.02032	0.01699	573
2001	-0.03143	-0.05075	-0.01697	0.01782	557
2002	-0.03322	-0.05331	-0.01398	0.01295	585
2003	-0.03352	-0.05102	-0.01251	0.00699	626
2004	-0.03383	-0.04624	-0.01107	-0.00150	634
2005	-0.03353	-0.04249	-0.01212	-0.00429	674
2006	-0.03274	-0.04052	-0.00988	-0.00682	621
2007	-0.03152	-0.03877	-0.00757	-0.00777	643
2008	-0.03216	-0.03823	-0.00727	-0.01092	608
2009	-0.03107	-0.03810	-0.00646	-0.00944	609
2010	-0.03002	-0.03928	-0.00279	-0.00851	601
2011	-0.02877	-0.04039	0.00163	-0.00776	605
2012	-0.03295	-0.04343	0.00667	-0.01869	589
2013	-0.04010	-0.04415	0.00619	-0.03581	527
2014	-0.04623	-0.04512	0.00705	-0.05023	542

Note: Trends are calculated based on the proportional change in population size for monitored vertebrate species. All species are weighted equally, such that a species that doubled in population would be balanced out by a species that declined by half. Results are plotted on a ratio (logarithmic) scale; 0.06 represents about a 15% increase from the baseline and -0.06 represents about a 13% decline.
Source: Zoological Society of London, 2017.

Table A.2. Data for Figure 2. Canadian species index for marine birds and fish, 1970 to 2014 (1970 = 0)

Year	Marine bird index	Number of bird species	Marine fish index	Number of fish species	Marine mammal index	Number of mammal species
1970	0	21	0	75	0	4
1971	0.02444	21	0.01851	81	0.00134	4
1972	0.05690	21	0.03398	72	0.00903	5
1973	0.08686	25	0.04189	83	0.03648	7
1974	0.10989	25	0.04768	96	0.06181	5
1975	0.12075	33	0.04970	84	0.07442	5
1976	0.12448	26	0.04699	91	0.07927	5
1977	0.12824	28	0.04276	89	0.07855	9
1978	0.13413	25	0.03632	97	0.08008	7
1979	0.14270	25	0.03211	100	0.09165	5
1980	0.15287	26	0.02758	100	0.10138	5
1981	0.16245	26	0.02110	102	0.10781	4
1982	0.16899	26	0.01397	108	0.10988	7
1983	0.17333	26	0.00824	113	0.10892	4
1984	0.17812	25	0.00427	134	0.10311	7
1985	0.18497	36	0.00452	115	0.09585	7
1986	0.19212	26	-0.00236	117	0.09177	6
1987	0.18009	27	-0.01204	144	0.10061	8
1988	0.18806	27	-0.02512	111	0.12005	14
1989	0.19610	27	-0.04016	136	0.12824	13
1990	0.20194	26	-0.05422	108	0.13579	13
1991	0.20438	26	-0.06407	139	0.14210	9
1992	0.20550	26	-0.07063	111	0.14155	12
1993	0.20805	27	-0.06980	140	0.13850	14
1994	0.21195	26	-0.06150	118	0.13675	15

Year	Marine bird index	Number of bird species	Marine fish index	Number of fish species	Marine mammal index	Number of mammal species
1995	0.21528	37	-0.06031	114	0.14819	13
1996	0.21801	26	-0.06090	113	0.16128	14
1997	0.22221	27	-0.06053	88	0.17911	15
1998	0.22739	26	-0.06283	120	0.18842	16
1999	0.23352	29	-0.06459	90	0.20235	16
2000	0.23558	31	-0.06872	114	0.21202	13
2001	0.24462	32	-0.07240	90	0.21024	15
2002	0.23661	31	-0.07821	111	0.20881	12
2003	0.21803	31	-0.08145	155	0.20874	13
2004	0.21902	32	-0.09585	166	0.22693	15
2005	0.21988	42	-0.10174	188	0.24276	14
2006	0.22429	29	-0.10682	176	0.26004	12
2007	0.22811	32	-0.10986	206	0.27931	13
2008	0.23537	35	-0.11533	178	0.28614	11
2009	0.24543	33	-0.11505	178	0.28665	13
2010	0.25752	32	-0.11510	176	0.27883	16
2011	0.26376	32	-0.11344	180	0.25689	14
2012	0.26463	29	-0.12374	176	0.19777	7
2013	0.25400	18	-0.14142	169	0.18168	8
2014	0.24326	18	-0.15545	176	0.14216	6

Note: Trends are calculated based on the proportional change in population size for monitored vertebrate species in the selected groups. Results are plotted on a ratio (logarithmic) scale.
Source: Zoological Society of London, 2017.

Table A.3. Data for Figure 3. Distribution of species-level lambda values, 1970 to 2014

Year	National index, average lambda	National index, standard deviation	National index, number of species	Terrestrial index, average lambda	Terrestrial index, standard deviation	Terrestrial index, number of species	Freshwater index, average lambda	Freshwater index, standard deviation	Freshwater index, number of species	Marine index, average lambda	Marine index, standard deviation	Marine index, number of species
1970	n/a	n/a	419	n/a	n/a	237	n/a	n/a	83	n/a	n/a	100
1971	0.000933	0.058524	430	-0.00609	0.04992	242	0.003209	0.072907	84	0.019068	0.078881	106
1972	0.00031	0.056476	429	-0.0066	0.050108	245	-0.00057	0.055298	87	0.018189	0.0746	98
1973	-0.00056	0.058232	449	-0.00587	0.051287	249	-0.00317	0.03053	86	0.013006	0.081197	115
1974	-0.0025	0.054278	459	-0.00904	0.053918	250	-0.00306	0.021661	84	0.01034	0.067792	126
1975	-0.00184	0.047345	472	-0.00537	0.047116	254	-0.00252	0.023655	97	0.004336	0.058898	122
1976	-0.0027	0.041464	459	-0.00293	0.038787	247	-0.00565	0.033131	91	-0.00078	0.051049	122
1977	-0.00285	0.047247	465	-0.00199	0.050388	249	-0.00665	0.034253	91	-0.0022	0.050348	126
1978	-0.00115	0.043653	461	0.000548	0.042319	245	-0.00316	0.030211	88	-0.00308	0.05315	129
1979	-0.00059	0.036872	465	-7.97E-05	0.030584	247	-0.00236	0.028524	89	-0.00042	0.048866	130
1980	0.000172	0.035672	473	0.001522	0.032618	249	-0.00158	0.022597	94	-0.00046	0.045895	131
1981	-0.00008	0.037185	474	0.001982	0.035328	249	-0.00106	0.025227	94	-0.00219	0.045993	132
1982	-0.00263	0.044215	476	-0.00285	0.044869	245	-0.00063	0.028074	91	-0.00355	0.051117	141
1983	-0.00173	0.043117	494	-0.00182	0.041594	254	0.000294	0.029095	98	-0.00324	0.052176	143
1984	0.002064	0.050115	512	0.003865	0.055055	249	0.004346	0.03902	98	-0.00218	0.048426	166
1985	0.002018	0.04743	520	0.002604	0.05464	258	0.003454	0.042823	105	0.001086	0.040589	158

Year	National index, average lambda	National index, standard deviation	National index, number of species	Terrestrial index, average lambda	Terrestrial index, standard deviation	Terrestrial index, number of species	Freshwater index, average lambda	Freshwater index, standard deviation	Freshwater index, number of species	Marine index, average lambda	Marine index, standard deviation	Marine index, number of species
1986	0.001132	0.049571	511	0.004888	0.048414	256	0.003095	0.049498	108	-0.0039	0.0544	149
1987	-0.00469	0.051398	536	-0.00063	0.023069	256	-0.0043	0.040624	102	-0.00923	0.078878	179
1988	-0.00287	0.047221	501	0.000233	0.038886	248	-0.00149	0.028555	103	-0.0071	0.063753	152
1989	-0.0026	0.047341	533	0.002006	0.041261	254	-0.00169	0.024964	104	-0.00879	0.06162	176
1990	-0.00043	0.050438	515	0.003161	0.034226	264	0.005843	0.066078	105	-0.00857	0.0556	147
1991	-0.00227	0.045203	542	0.000782	0.044405	266	-0.0021	0.042925	103	-0.00618	0.047396	174
1992	-0.0028	0.043322	537	-0.00204	0.043405	264	-0.00131	0.031176	125	-0.00457	0.049378	149
1993	0.001288	0.060552	576	-0.00305	0.037638	269	0.010261	0.086692	128	0.000827	0.062261	181
1994	0.004199	0.062742	563	-0.00271	0.044753	271	0.013306	0.091117	134	0.00657	0.058641	159
1995	0.001811	0.049341	586	-0.00075	0.034239	280	0.005018	0.06388	143	0.002892	0.056369	164
1996	-0.00018	0.061408	559	0.002745	0.04511	271	-0.00761	0.073933	136	0.001649	0.070776	153
1997	-0.00078	0.055231	548	0.002065	0.045912	281	-0.01055	0.069966	138	0.003118	0.053735	130
1998	-0.00312	0.060931	574	-0.00188	0.047419	275	-0.0096	0.083413	138	0.000662	0.055578	162
1999	-0.00273	0.052758	552	-0.00684	0.040958	281	-0.00107	0.069933	136	0.001614	0.051927	136
2000	-0.00306	0.051086	573	-0.00743	0.050475	280	0.000983	0.053296	134	8.55E-05	0.050373	159
2001	-0.00318	0.067504	557	-0.00918	0.063524	279	0.003348	0.05719	141	0.000824	0.080258	138
2002	-0.00179	0.055315	585	-0.00256	0.038883	275	0.002989	0.05726	155	-0.00487	0.073208	155

Year	National index, average lambda	National index, standard deviation	National index, number of species	Terrestrial index, average lambda	Terrestrial index, standard deviation	Terrestrial index, number of species	Freshwater index, average lambda	Freshwater index, standard deviation	Freshwater index, number of species	Marine index, average lambda	Marine index, standard deviation	Marine index, number of species
2003	-0.00029	0.08784	626	0.002291	0.045101	269	0.001474	0.134962	159	-0.00596	0.083864	200
2004	-0.00032	0.07264	634	0.004778	0.041182	271	0.001434	0.066574	151	-0.00849	0.102688	214
2005	0.000304	0.061717	674	0.003752	0.031508	273	-0.00105	0.063999	160	-0.00279	0.082323	245
2006	0.00079	0.056466	621	0.001969	0.035861	263	0.002243	0.075059	144	-0.00253	0.063818	218
2007	0.00122	0.044739	643	0.001749	0.0323	262	0.002306	0.049205	137	-0.00095	0.054711	251
2008	-0.00064	0.048199	608	0.000535	0.025482	251	0.000303	0.045761	138	-0.00314	0.065009	224
2009	0.001092	0.049121	609	0.00013	0.029182	251	0.000814	0.057078	139	0.001478	0.060182	224
2010	0.001049	0.047328	601	-0.00118	0.027069	250	0.003667	0.054047	132	0.000931	0.05905	224
2011	0.001247	0.05044	605	-0.00111	0.033687	248	0.004425	0.048627	137	0.000747	0.065224	226
2012	-0.00418	0.070602	589	-0.00304	0.066169	245	0.00504	0.047651	135	-0.01093	0.084366	212
2013	-0.00715	0.061849	527	-0.00072	0.026604	232	-0.00049	0.04459	105	-0.01712	0.087764	195
2014	-0.00613	0.061709	542	-0.00097	0.029333	232	0.000863	0.037377	114	-0.01442	0.088115	200

Note: n/a = not applicable.
Source: Zoological Society of London, 2017.

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