

e-FILING REPORT COVER SHEET

REPORT NAME: Electric Service Reliability Annual Report for 2019

COMPANY NAME: Idaho Power Company

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If known, please select designation: RE (Electric) RG (Gas) RW (Water)
 RO (Other)

Report is required by: OAR 860-023-0151
 Statute
 Order
 Other

Is this report associated with a specific docket/case? No Yes
If Yes, enter docket number: RE 90

Key words:

If known, please select the PUC Section to which the report should be directed:

- Corporate Analysis and Water Regulation
- Economic and Policy Analysis
- Electric and Natural Gas Revenue Requirements
- Electric Rates and Planning
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- Utility Safety, Reliability & Security
- Administrative Hearings Division
- Consumer Services Section

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- **Any daily safety or safety incident reports or**
- **Accident reports required by ORS 654.715.**



LISA D. NORDSTROM
Lead Counsel
lnordstrom@idahopower.com

April 29, 2020

Public Utility Commission of Oregon
Filing Center
201 High Street SE, Suite 100
P.O. Box 1088
Salem, Oregon 97301

Re: Idaho Power Company's Electric Service Reliability Annual Report for the
Year 2019

Attention Filing Center:

Pursuant to OAR 860-023-0151, Idaho Power Company herewith transmits for
electronic filing its Electric Service Reliability Annual Report for the Year 2019.

If you have any substantive questions, please call Perry Van Patten at 208-388-
5944.

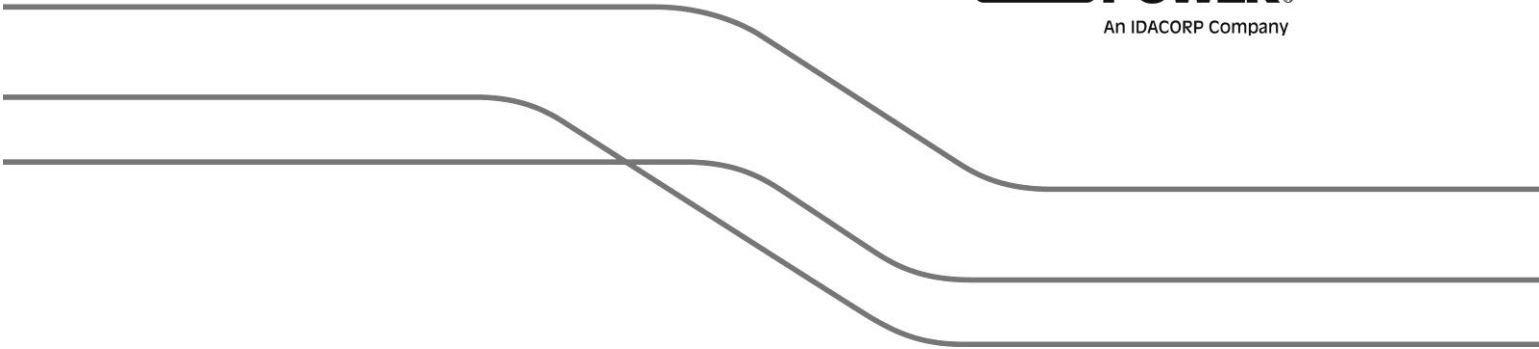
Very truly yours,

A handwritten signature in cursive script that reads "Lisa D. Nordstrom".

Lisa D. Nordstrom

LDN:kkt

Enclosure



**Idaho Power Company
2019 Electric Service
Reliability Annual Report**

May 2020
2020 Idaho Power

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EXECUTIVE SUMMARY

The information in this document presents Idaho Power's 2019 Electric Service Reliability Annual Report in accordance with OAR 860-023-0151. The report discusses the performance of Idaho Power's Oregon electric service through a narrative summary and includes several tables and figures.

At year-end 2019, Idaho Power served 19,078 customers from 63 distribution circuits served by 30 substations in the far central-eastern portion of Oregon. The composite performance of the circuits in 2019 included the following:

- 683 sustained (greater than five minutes) interruption events
- 12,128 customer interruptions
- 38,518 customer hours out
- System Average Interruption Frequency Index (SAIFI) of 0.64
- System Average Interruption Duration Index (SAIDI) of 2.02 hours
- Momentary Average Interruption Event Frequency Index (MAIFI_E) of 2.35

Idaho Power used the calculation of a threshold for major event days (MEDs) as defined in the Institute of Electrical and Electronic Engineers (IEEE) Standard 1366 and monitored its Oregon service area for MED occurrences. All the indices at the circuit and system levels in this report are shown with and without MED events for years 2015-2019. Idaho Power's 2019 threshold in Oregon for a major event day (T_{MED}) per the IEEE 1366 definition was a daily SAIDI of 14.11 minutes per customer. With the additional criterion of a daily customer average interruption duration index (CAIDI) of 5 hours (300 minutes) per OAR 860-023-0161, Idaho Power experienced 1 major event day in its Oregon service area in 2019. Idaho Power's calculated T_{MED} for 2020 in Oregon is 11.87 minutes per customer. The calculation of the T_{MED} and identification of major event days is done while considering all of Idaho Power's Oregon customers.

Compared to 2018, Idaho Power's Oregon service area SAIFI decreased by 0.32 interruptions per customer from 0.96 in 2018 to 0.64 in 2019, whether excluding or including major events. The average duration of sustained outages also decreased compared to last year; SAIDI decreased by 0.48 hours per customer from 2.49 in 2018 to 2.02 in 2019. The decrease also occurred when excluding major events, as 2019 saw a decrease of 0.78 hours per customer over 2018 (2.49 to 1.71). Finally, MAIFI_E decreased in 2019 compared to 2018 by 0.95 momentary interruption events per customer from 3.30 in 2018 to 2.35 in 2019.

The attached charts and tables show Idaho Power's Oregon system performance over the previous five years for SAIFI, SAIDI and MAIFI_E at the system and circuit level in accordance with OAR 860-023-0151 (2)(a). In addition to the reliability indices, a summary of sustained interruption causes is shown at the system level in accordance with OAR 860-023-0151 (2)(b). A table translating Idaho Power's cause categories to the cause categories listed in OAR 860-023-151 (2)(b) can be found in the Appendix. The Appendix also includes supplemental information such as substation, voltage, operating area and customers connected for each distribution circuit in accordance with OAR 860-023-0151 (2)(h). A map is also provided which shows the distribution circuits in Idaho Power's service area with Oregon customers in accordance with OAR 860-023-0151 (2)(g).

Idaho Power continues to collect detailed outage information for all sustained outage events through its Outage Management System (OMS). Historical data from the OMS is stored and circuit performance is analyzed for the prioritization of capital projects to improve reliability. Idaho Power also continues to utilize data from its Smart Grid Monitoring (SGM) system to calculate MAIFI_E as it has in past years.

Idaho Power continues to implement programs and projects to improve customer service and electric service reliability. Company programs related to electric service reliability include the annual Oregon safety inspection/reliability patrols, the line clearing and vegetation management program, the pole inspection and treatment program, and annual maintenance and capital projects that replace aging assets and improve reliability.

DEFINITIONS

CAIDI – Customer Average Interruption Duration Index; the average duration that a customer experienced per sustained outage (greater than 5 minutes).

CHO – Customer Hours Out; CMI divided by 60.

CI – Customer Interruptions; the total number of customer interruptions from sustained outages (greater than 5 minutes).

CMI – Customer Minutes of Interruption; the total number of customer minutes of interruption from sustained outages (greater than 5 minutes). This is calculated as the product of customer interruptions and outage duration in minutes.

IEEE – The Institute of Electrical and Electronic Engineers.

IEEE 1366 – The Institute of Electrical and Electronic Engineers (IEEE) Standard 1366 entitled *IEEE Guide for Electric Power Distribution Reliability Indices* (the 2012 edition), approved on May 14, 2012 by IEEE-SA Standards Board.

MAIFI_E – Momentary Average Interruption Event Frequency Index; the average number of momentary interruption events per customer (less than or equal to 5 minutes).

Major Event – An event that exceeds the reasonable design and/or operational limits of the electric power system. A major event includes at least one major event day (MED).

MED – Major Event Day; a day when the daily SAIDI exceeds a predefined threshold value.

MedEx – Major Event Day Excluded; this suffix is used after a reliability index to indicate major event days are excluded. For example, SAIFI MedEx is SAIFI excluding major event days.

Operating Area – Idaho Power’s customers in Oregon are split into two operating areas: 1) the Jordan Valley region of the reporting area served by the Canyon Operations Center in Caldwell, ID and 2) the rest of the reporting area served by the Western Operations Center in Payette, ID. Approximately 97% of Idaho Power’s customers in Oregon are within the Western operating area, while the remaining 3% of Idaho Power’s customers in Oregon are within the Canyon operating area. For information about which operating area each distribution circuit is in, refer to the Appendix.

Reporting Area – Idaho Power’s entire service area in Oregon.

SAIDI – System Average Interruption Duration Index; the average duration from all sustained outages that a customer experienced per year (greater than 5 minutes).

SAIFI – System Average Interruption Frequency Index; the average frequency of sustained outages that a customer experienced per year (greater than 5 minutes).

SGM – Smart Grid Monitor; refers to Idaho Power’s system for monitoring momentary interruption events on its distribution network.

T_{MED} – A major event day threshold value.

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SYSTEM SAIDI, SAIFI AND MAIFI_E

System SAIDI

Year	2015	2016	2017	2018	2019
SAIDI	6.18	2.88	3.69	2.49	2.02
SAIDI MedEx	3.60	2.88	3.37	2.49	1.71

Table 1 Five Years of System SAIDI

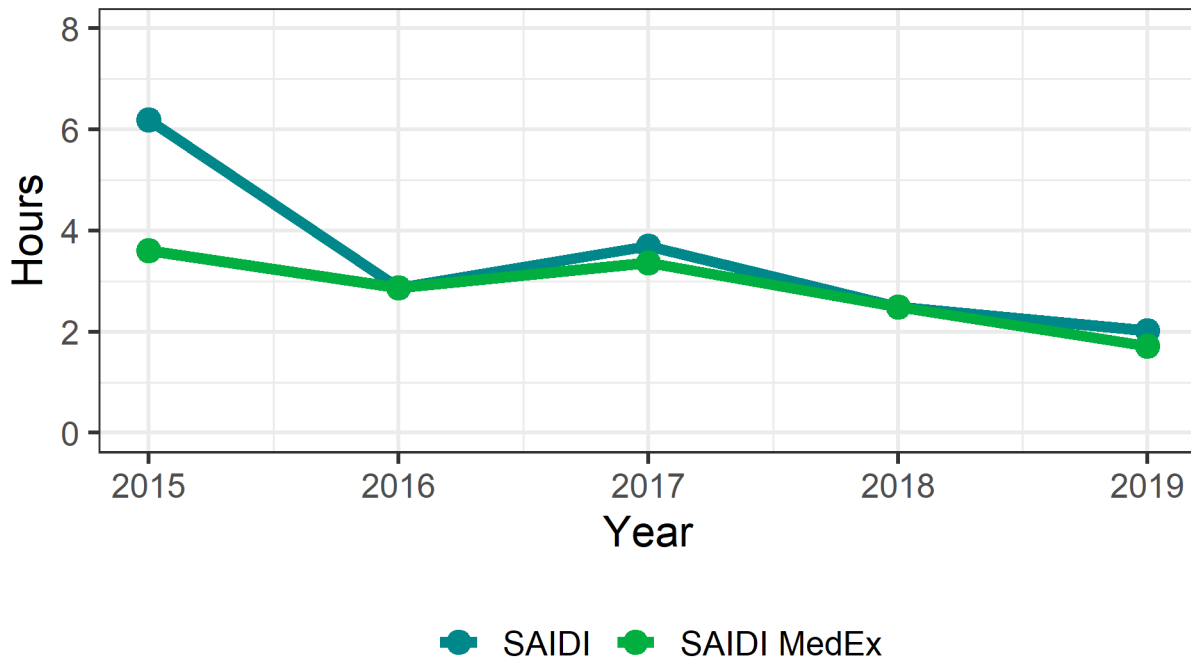


Figure 1 Five Years of System SAIDI

System SAIFI

Year	2015	2016	2017	2018	2019
SAIFI	1.95	1.05	1.23	0.96	0.64
SAIFI MedEx	1.74	1.05	1.17	0.96	0.64

Table 2 Five Years of System SAIFI

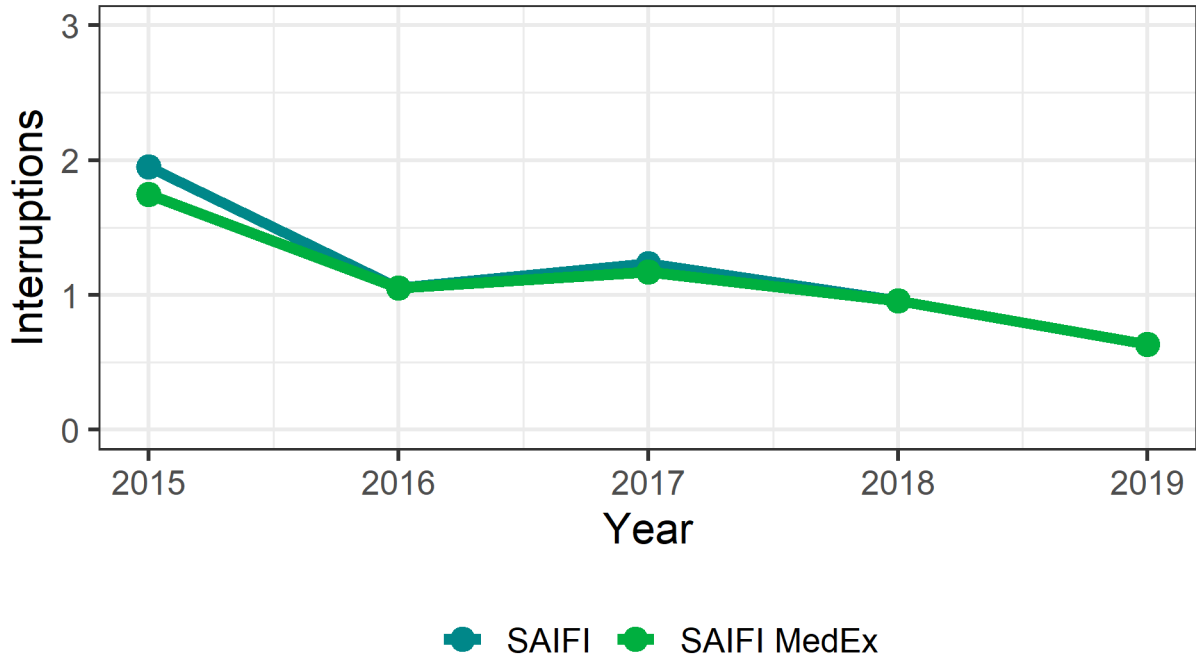


Figure 2 Five Years of System SAIFI

System MAIFI_E

Year	2015	2016	2017	2018	2019
MAIFI _E	3.86	2.83	3.82	3.30	2.35
MAIFI _E MedEx	3.72	2.83	3.77	3.30	2.35

Table 3 Five Years of System MAIFI_E

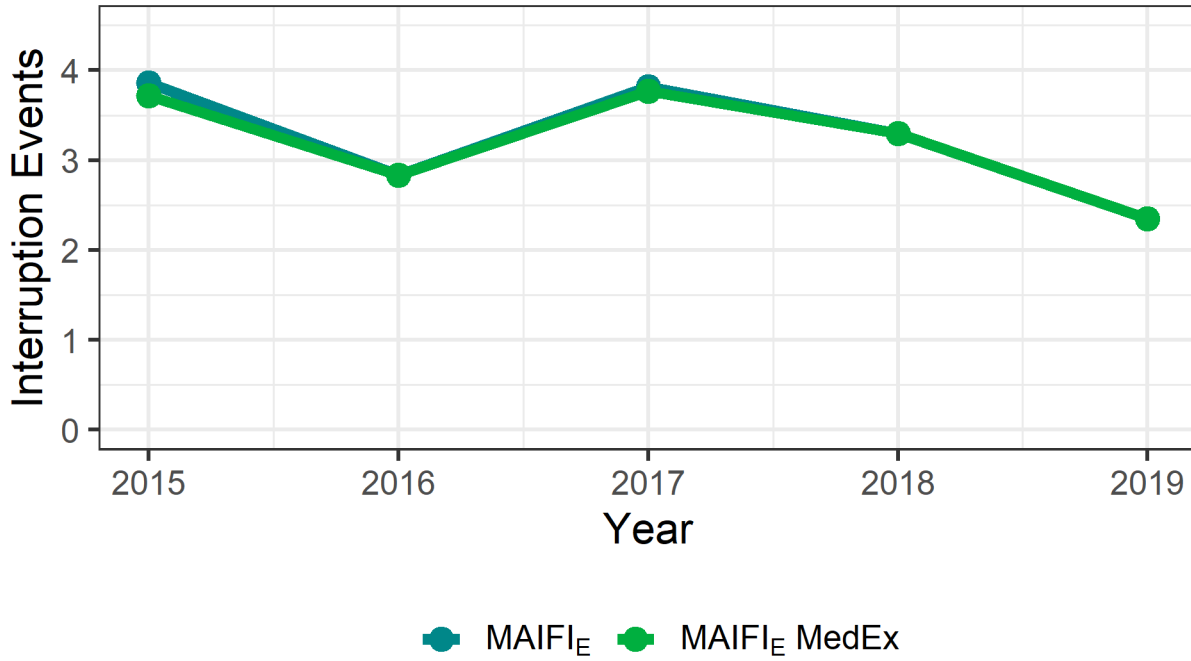


Figure 3 Five Years of System MAIFI_E

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Sustained Interruption Event Causes

Cause	Number of Sustained Interruption Events					Percent of Total Sustained Interruption Events				
	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Distribution – Equipment	151	163	277	159	172	20.2%	23.7%	27.5%	24.4%	25.2%
Distribution – Lightning	24	14	17	10	23	3.2%	2.0%	1.7%	1.5%	3.4%
Distribution – Other	40	41	63	46	46	5.3%	6.0%	6.3%	7.1%	6.7%
Distribution – Planned	140	148	114	91	119	18.7%	21.5%	11.3%	14.0%	17.4%
Distribution – Public	43	66	77	59	54	5.7%	9.6%	7.6%	9.1%	7.9%
Distribution – Unknown	90	67	97	72	62	12.0%	9.8%	9.6%	11.1%	9.1%
Distribution – Vegetation	44	28	118	79	91	5.9%	4.1%	11.7%	12.1%	13.3%
Distribution – Weather (Non-Lightning)	40	4	70	16	25	5.3%	0.6%	7.0%	2.5%	3.7%
Distribution – Wildlife	92	111	127	93	82	12.3%	16.2%	12.6%	14.3%	12.0%
Loss of Supply – Substation	23	8	11	7	3	3.1%	1.2%	1.1%	1.1%	0.4%
Loss of Supply – Transmission	61	37	36	19	6	8.2%	5.4%	3.6%	2.9%	0.9%
Total	748	687	1,007	651	683	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4 Five Years of Sustained Interruption Event Causes

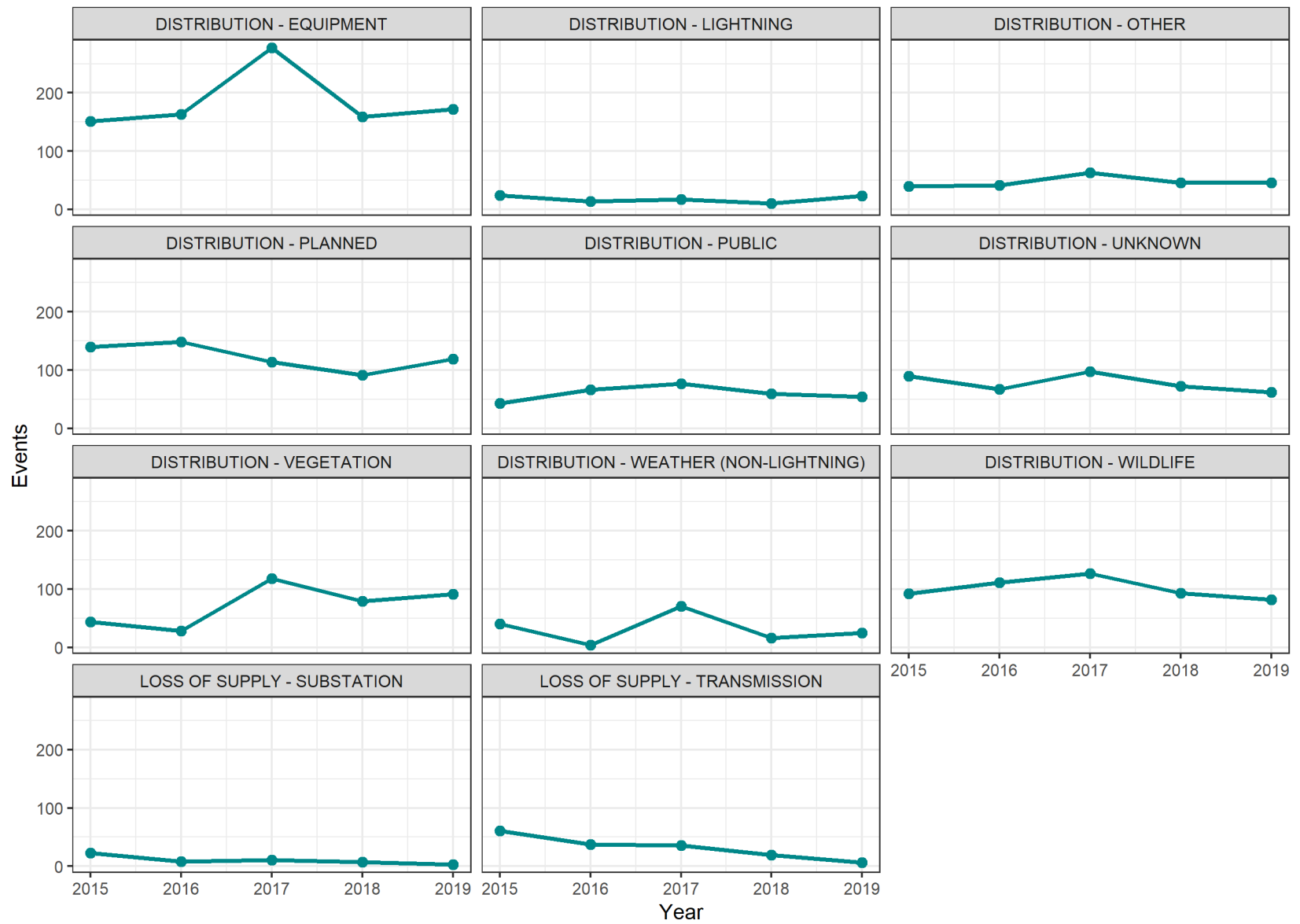


Figure 4 Five Years of Sustained Interruption Events by Cause

Cause	Events	Hours Out	Event Ranking	Hours Out Ranking
Distribution – Equipment	172	2,519	1	1
Distribution – Lightning	23	92	9	7
Distribution – Other	46	80	7	8
Distribution – Planned	119	1,561	2	2
Distribution – Public	54	155	6	6
Distribution – Unknown	62	242	5	4
Distribution – Vegetation	91	292	3	3
Distribution – Weather (non-Lightning)	25	65	8	9
Distribution – Wildlife	82	199	4	5
Loss of Supply – Substation	3	12	11	11
Loss of Supply – Transmission	6	25	10	10
Total	683	5,243		

Table 5 2019 Sustained Interruption Event Cause Ranking

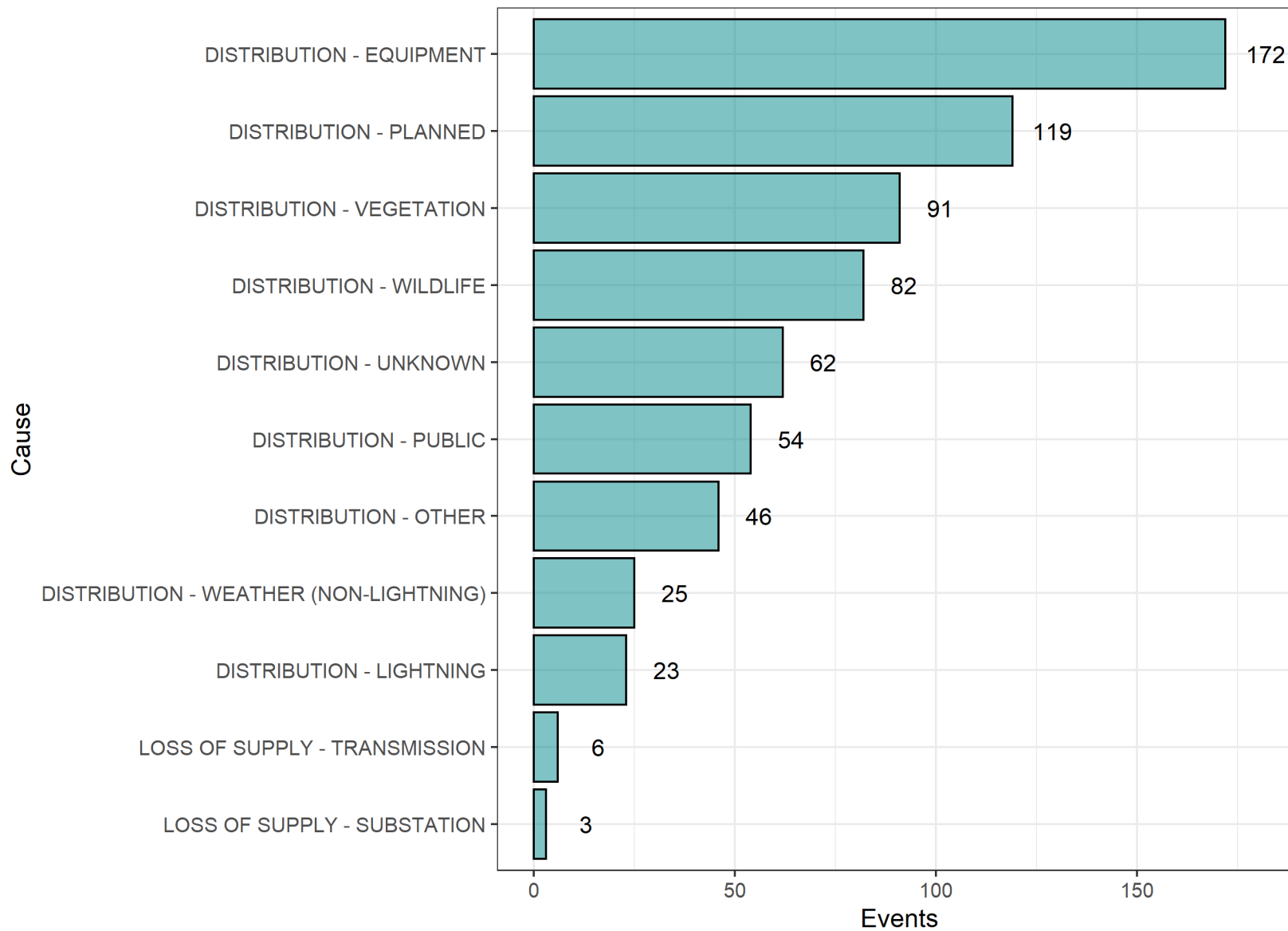


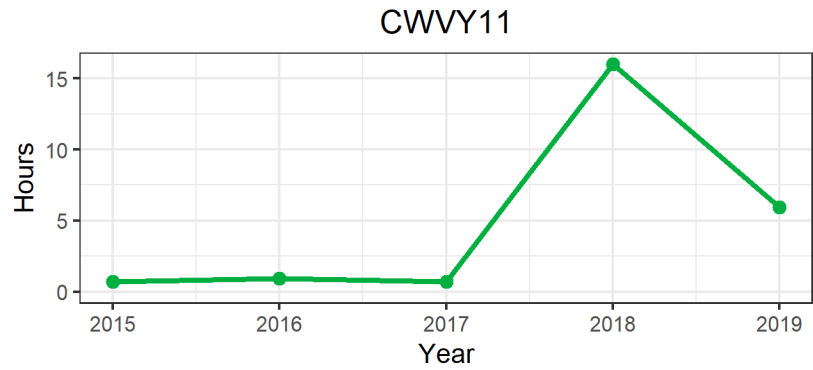
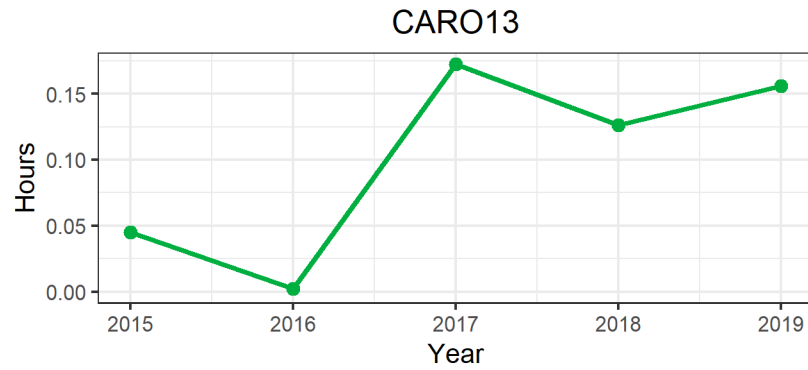
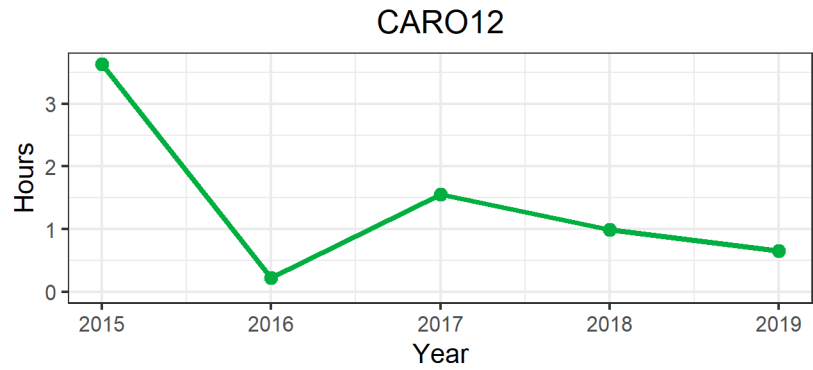
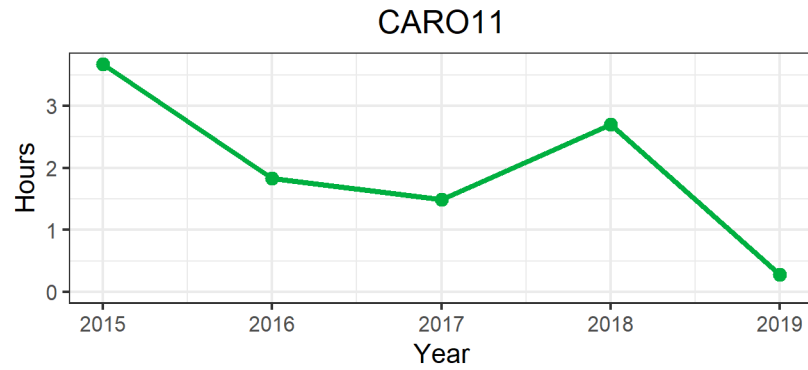
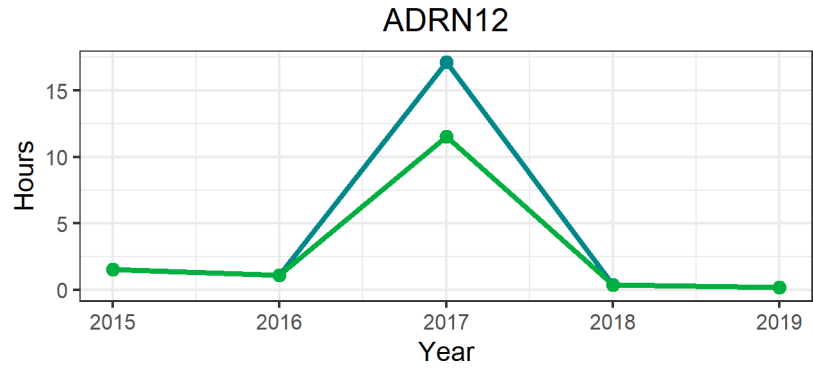
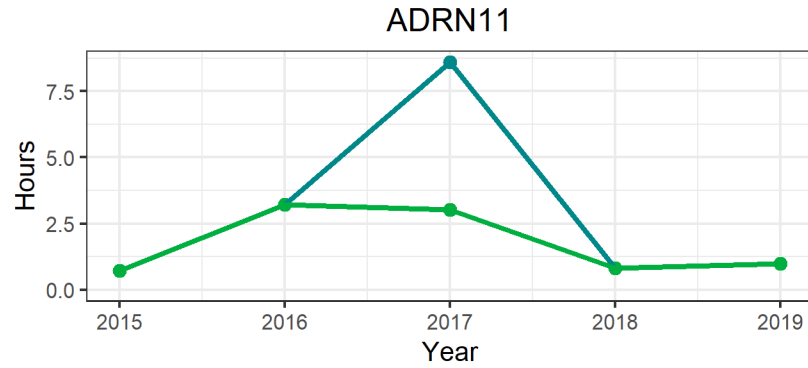
Figure 5 2019 Ranking of Sustained Interruption Event Causes

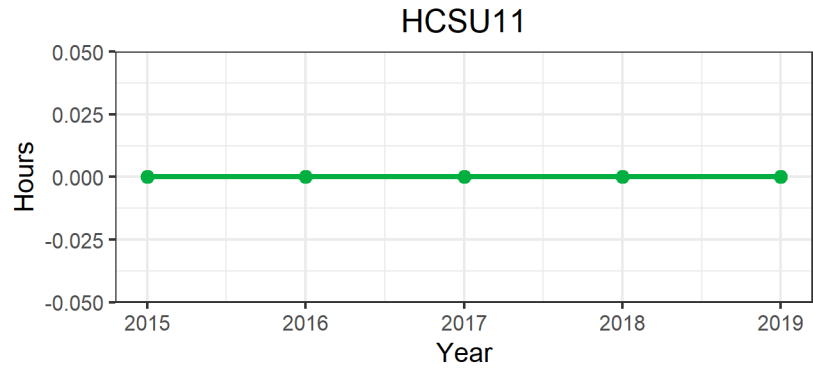
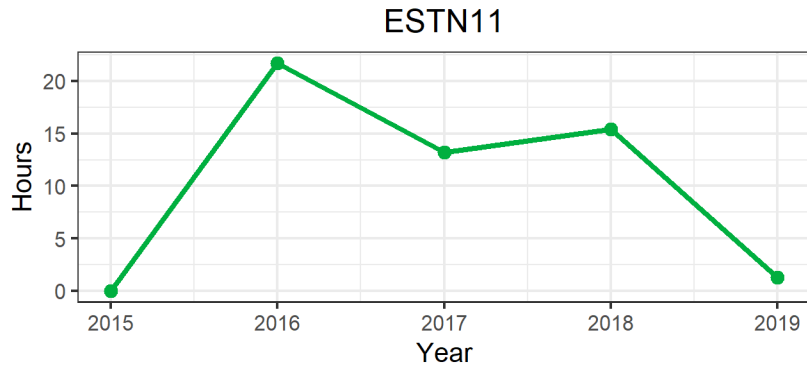
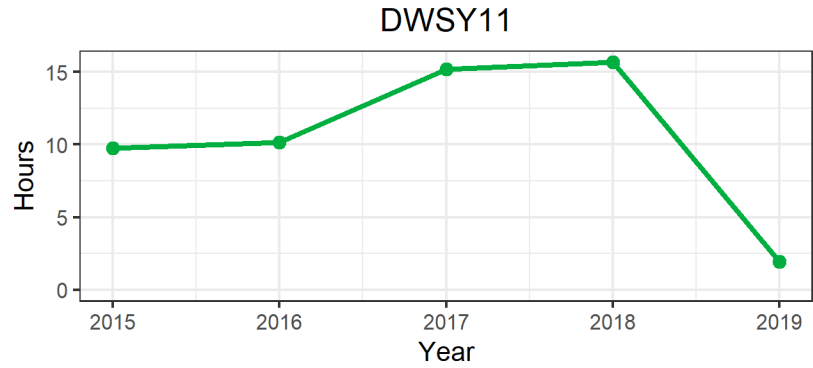
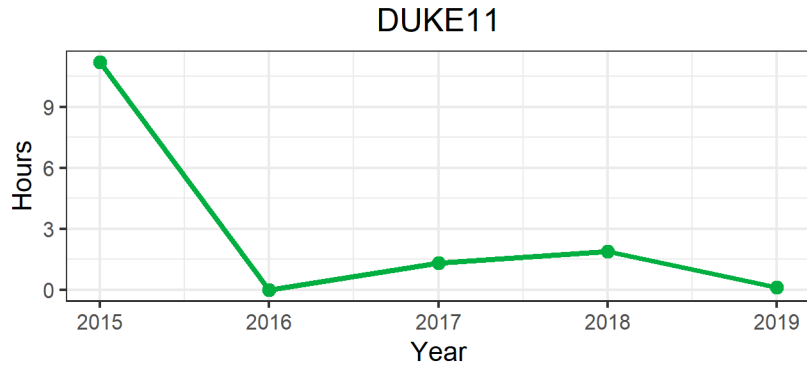
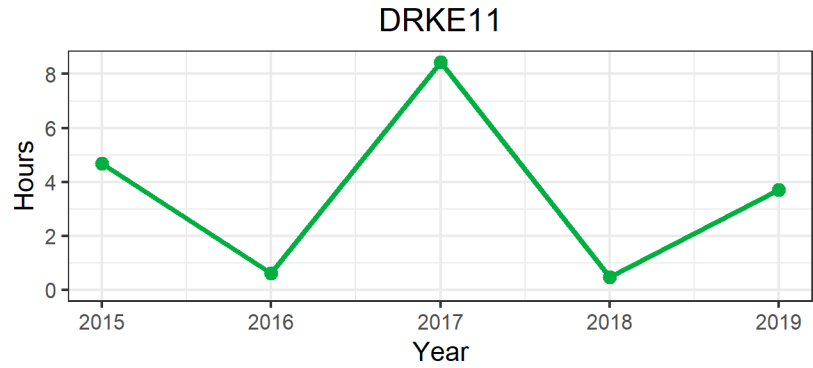
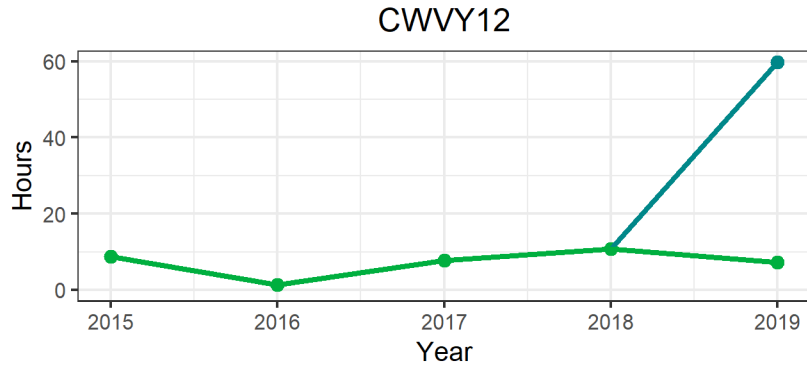
CIRCUIT SAIDI, SAIFI AND MAIFI_E

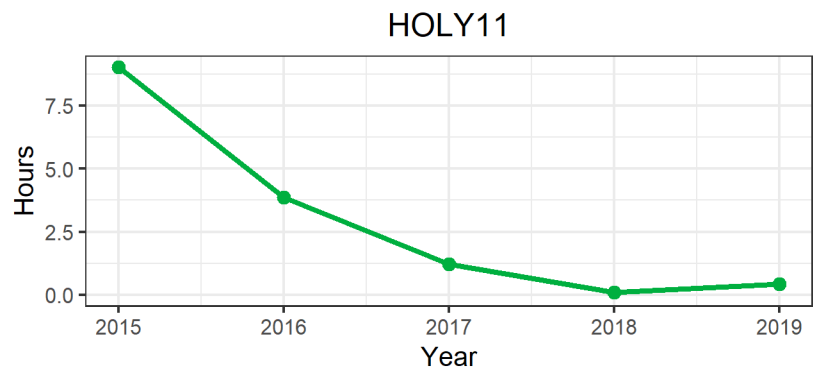
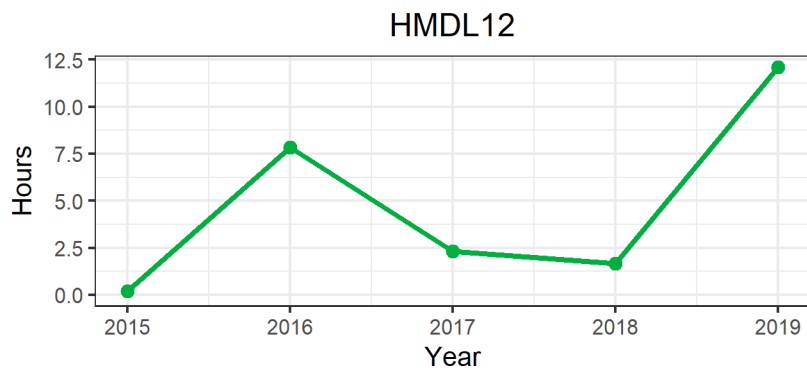
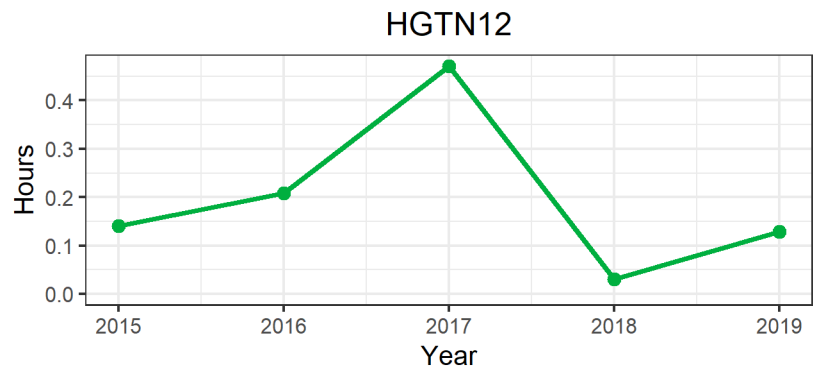
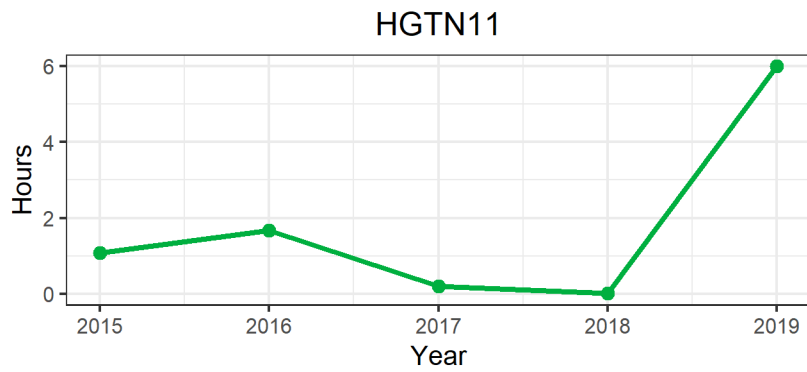
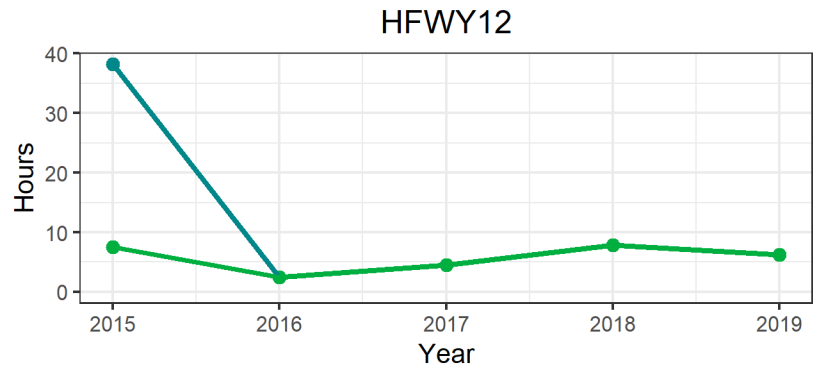
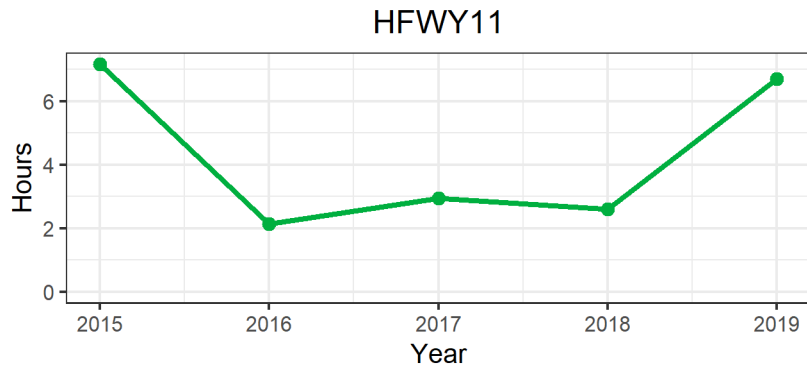
Five Years of Circuit SAIDI

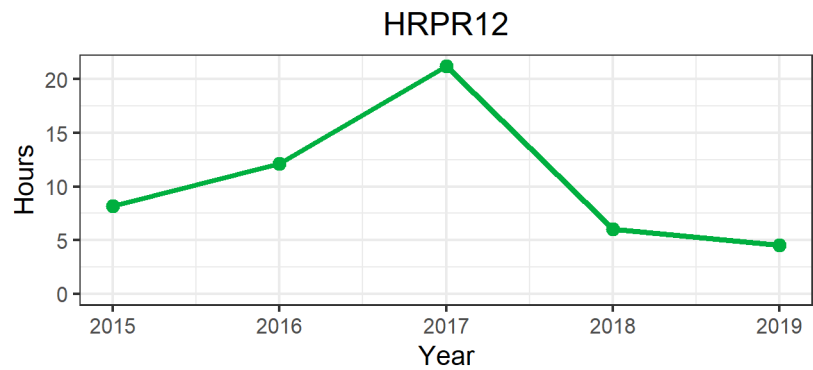
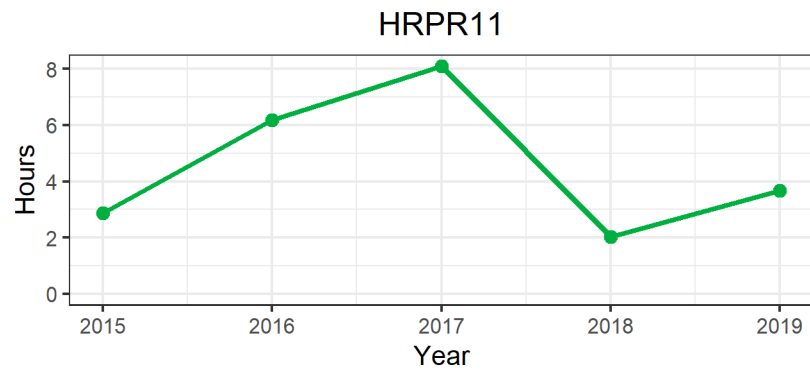
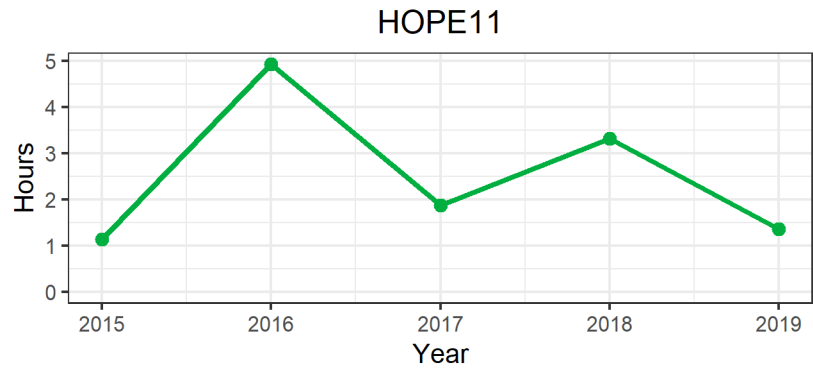
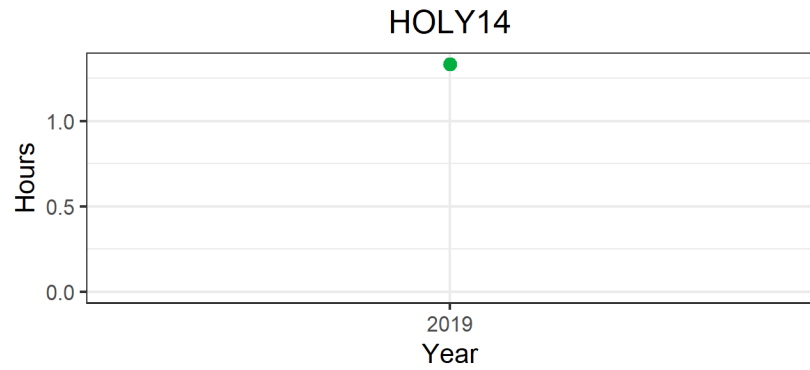
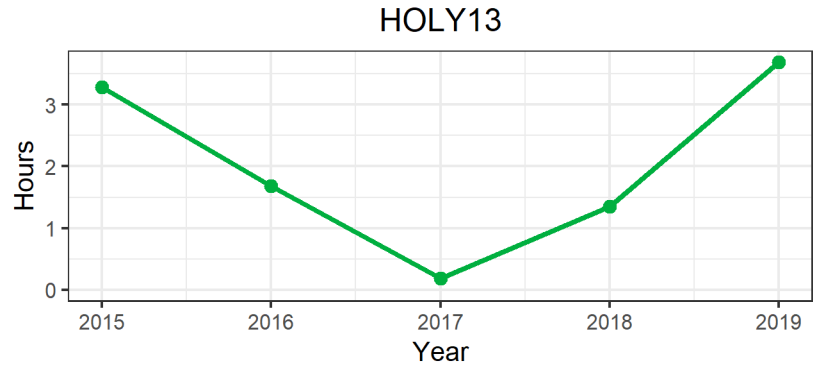
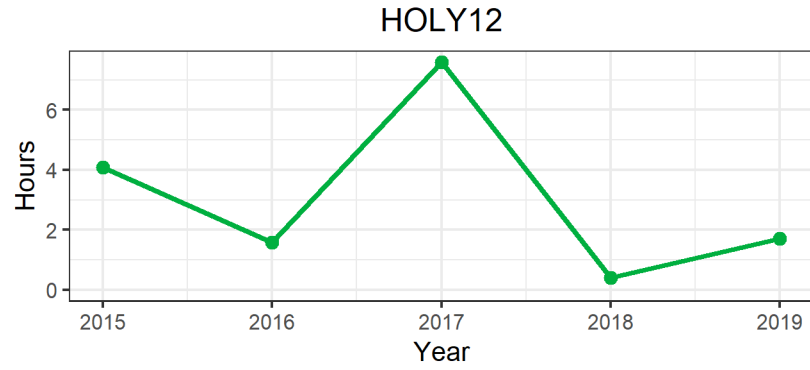
Circuit	2015	2016	2017	2018	2019	2019 MedEx
ADRN11	0.73	3.22	8.60	0.83	0.99	0.99
ADRN12	1.52	1.12	17.14	0.41	0.19	0.19
CARO11	3.67	1.83	1.49	2.70	0.28	0.28
CARO12	3.63	0.23	1.56	0.99	0.65	0.65
CARO13	0.05	0.00	0.17	0.13	0.16	0.16
CWVY11	0.70	0.95	0.74	16.00	5.93	5.93
CWVY12	8.68	1.26	7.78	10.77	59.83	7.22
DRKE11	4.68	0.61	8.44	0.48	3.70	3.70
DUKE11	11.21	0.00	1.34	1.90	0.11	0.11
DWSY11	9.74	10.16	15.18	15.68	1.94	1.94
ESTN11	0.00	21.72	13.21	15.40	1.27	1.27
HCSU11	0.00	0.00	0.00	0.00	0.00	0.00
HFVY11	7.17	2.14	2.94	2.60	6.70	6.70
HFVY12	38.25	2.42	4.50	7.87	6.20	6.20
HGTN11	1.08	1.66	0.21	0.01	6.00	6.00
HGTN12	0.14	0.21	0.47	0.03	0.13	0.13
HMDL12	0.21	7.82	2.32	1.67	12.11	12.11
HOLY11	9.03	3.85	1.23	0.09	0.43	0.43
HOLY12	4.09	1.58	7.60	0.41	1.72	1.72
HOLY13	3.29	1.68	0.19	1.35	3.69	3.69
HOLY14	NA	NA	NA	NA	1.33	1.33
HOPE11	1.13	4.93	1.87	3.32	1.36	1.36
HRPR11	2.88	6.18	8.10	2.03	3.66	3.66
HRPR12	8.20	12.11	21.23	6.02	4.54	4.54
JMSN11	3.17	0.82	0.60	2.24	6.41	6.41
JMSN12	4.07	1.35	2.07	1.10	1.18	1.18
JNTA11	5.92	8.95	6.65	3.93	1.31	1.31
JNTA12	11.28	12.95	7.56	4.73	1.33	1.33
JNVY11	67.85	35.11	11.30	2.59	0.17	0.17
JNVY12	71.83	7.75	10.75	1.70	0.10	0.10
JNVY31	86.67	24.13	14.50	3.37	6.40	6.40
LIME11	5.65	3.84	27.62	5.65	1.47	1.47
MRBT41	0.29	0.67	11.96	2.78	2.61	2.61
MRBT42	0.40	0.29	1.54	2.65	1.78	1.78
NYSA11	2.59	0.89	0.37	0.21	3.23	3.23
NYSA12	1.31	13.97	6.95	1.87	1.12	1.12
NYSA13	0.23	6.68	0.27	0.22	0.77	0.77
NYSA14	0.11	3.65	0.12	0.22	1.21	1.21
OBPR11	0.00	0.00	0.00	0.00	0.00	0.00
OIDA11	0.26	0.94	1.12	0.78	1.73	1.73
OIDA12	1.92	0.70	2.80	0.00	5.58	5.58
ONTO14	0.06	0.42	0.54	0.00	0.04	0.04
ONTO18	0.26	0.21	0.12	1.48	0.55	0.55
ONTO19	3.15	0.40	0.69	2.05	0.59	0.59
ONTO20	0.23	1.05	0.64	0.51	0.63	0.63
ONTO23	0.11	0.52	4.07	0.28	0.00	0.00
ONTO24	3.46	0.46	5.23	11.00	2.13	2.13
ONTO25	0.25	0.13	0.37	0.12	1.50	1.50
OYDM11	0.00	0.00	3.48	0.28	2.97	2.97
PNCK11	7.45	12.71	0.26	0.69	1.38	1.38
PNCK12	5.63	6.73	3.17	0.00	0.00	0.00
PRMA12	3.45	13.68	7.22	5.04	0.23	0.23
PRMA42	4.75	3.59	12.84	7.15	0.89	0.89
RKVL11	129.17	9.57	4.61	1.29	0.30	0.30
UNTY11	2.15	34.95	27.58	12.35	0.30	0.30
UNTY12	7.45	3.44	17.21	11.57	0.81	0.81
VALE11	3.82	0.17	1.09	0.92	0.33	0.33
VALE12	0.00	0.00	1.07	0.15	0.00	0.00
VALE13	1.06	0.52	3.68	0.69	0.34	0.34
VALE14	13.76	0.11	2.93	6.49	0.31	0.31
VALE15	3.49	4.94	1.82	2.72	0.26	0.26
WESR13	0.93	0.29	3.21	1.89	1.37	1.37
WESR14	2.81	0.85	12.55	6.98	1.62	1.62

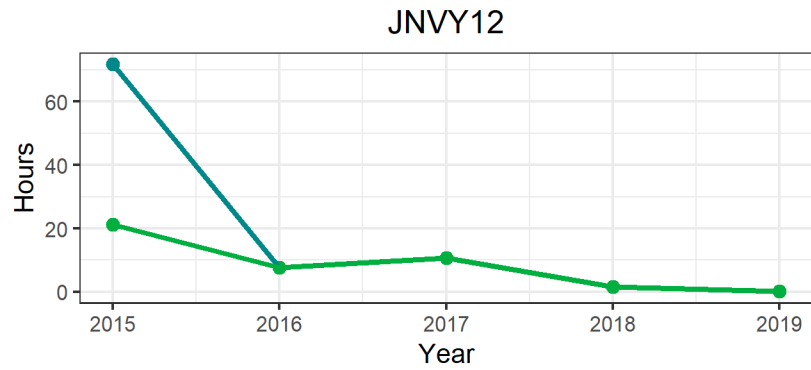
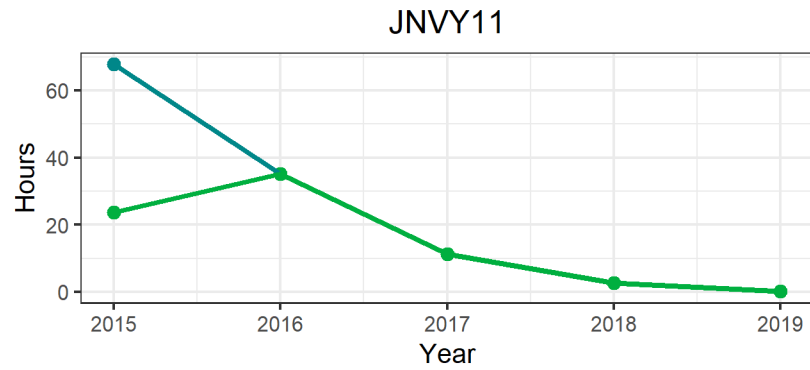
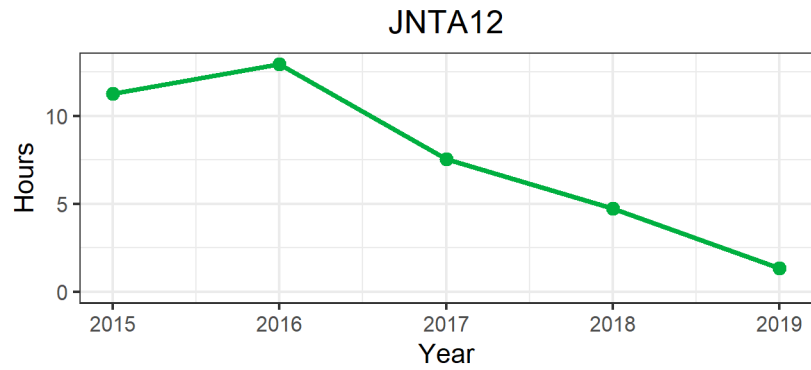
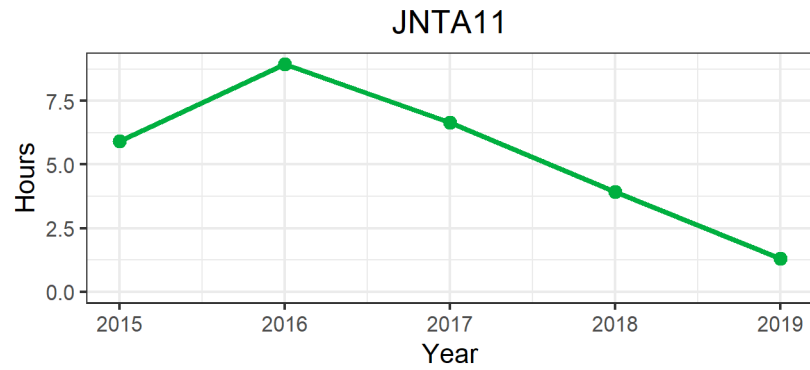
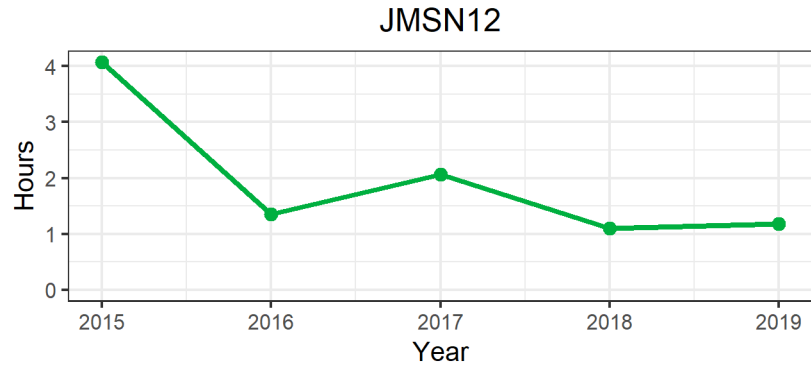
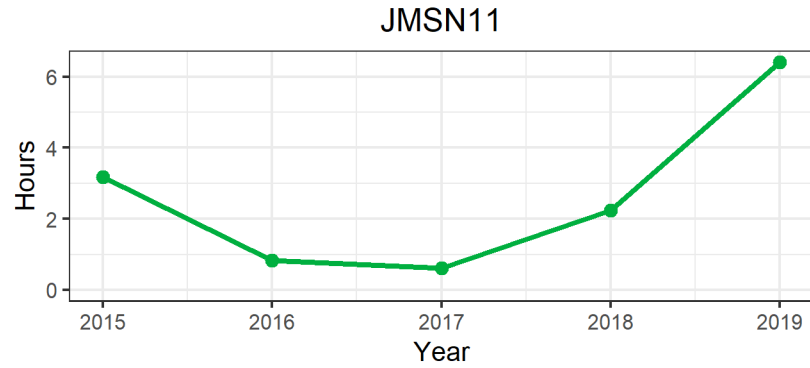
Table 6 Five Years of Circuit SAIDI



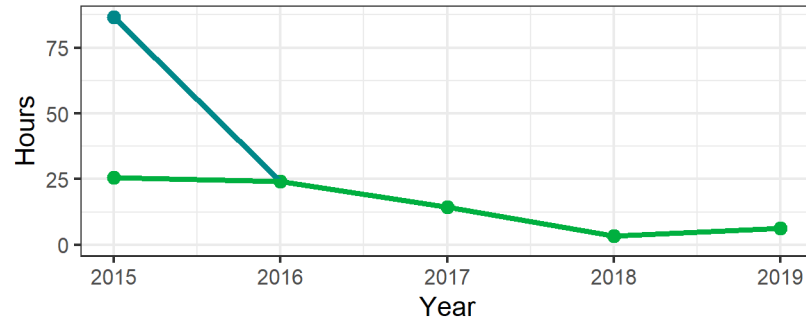




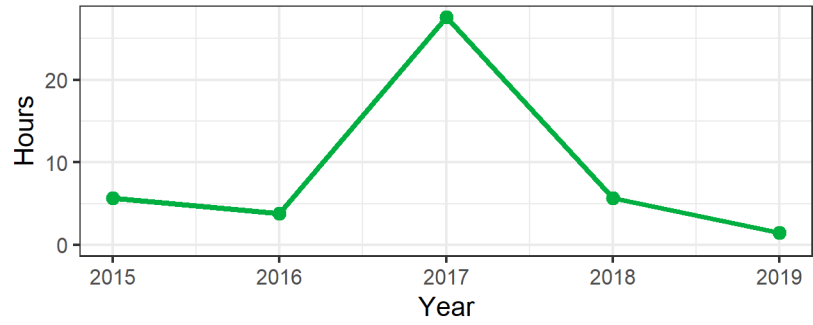




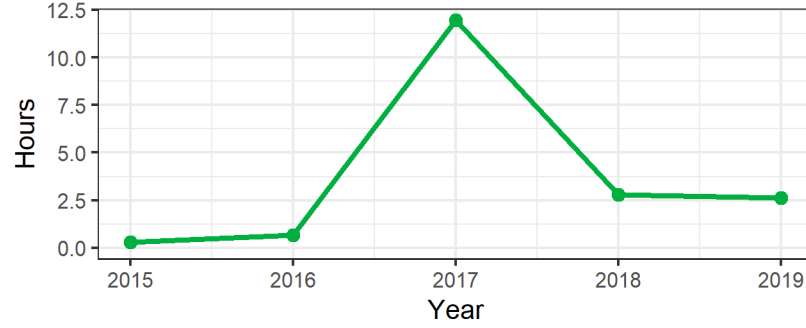
JNVY31



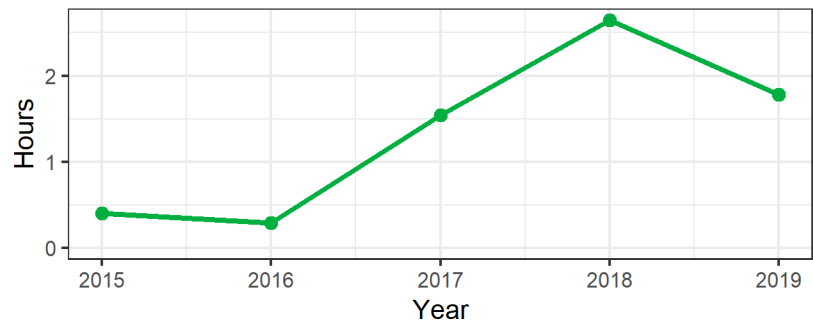
LIME11



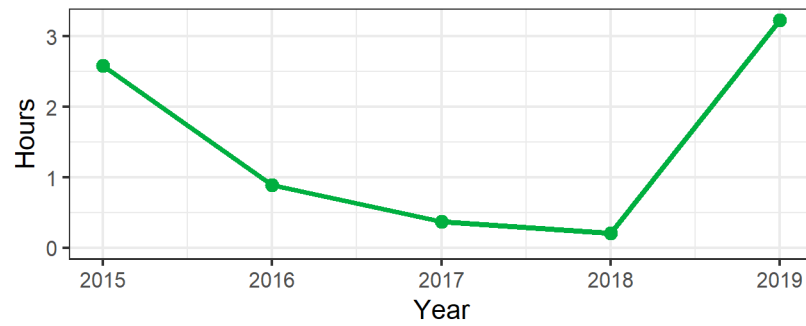
MRBT41



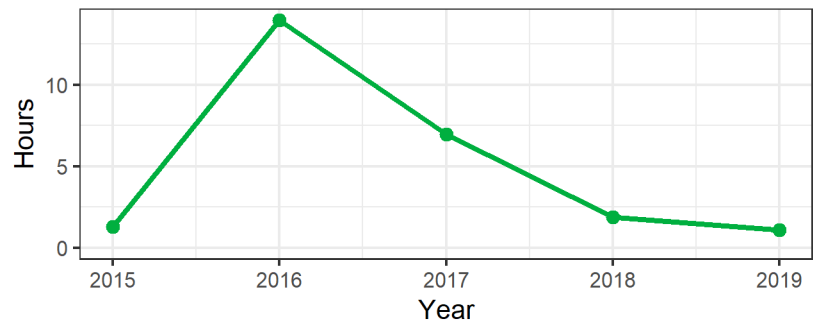
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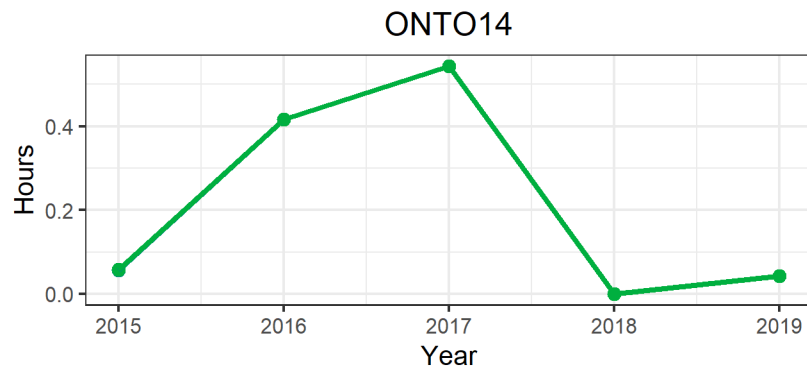
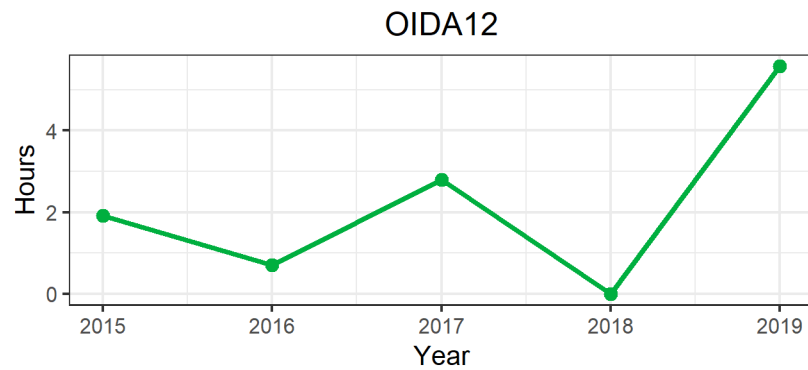
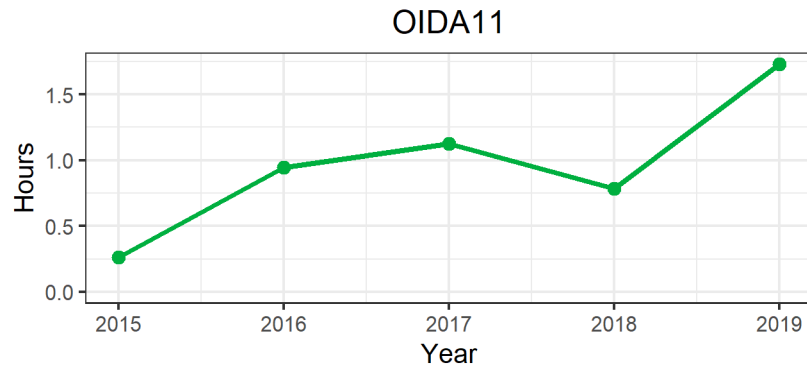
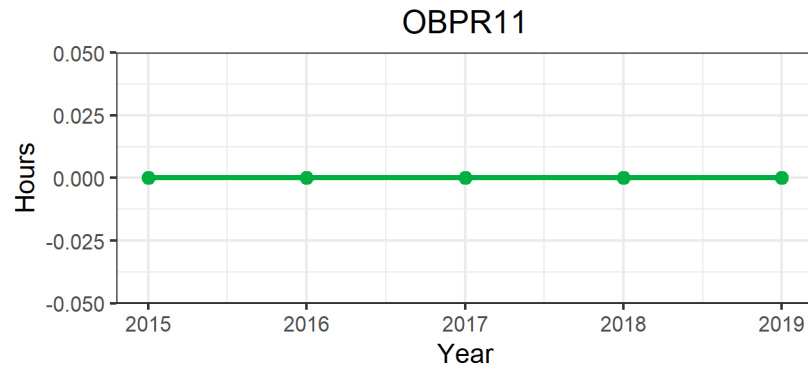
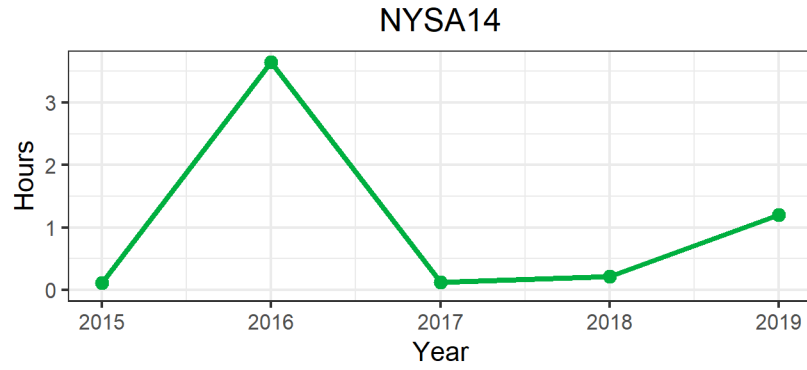
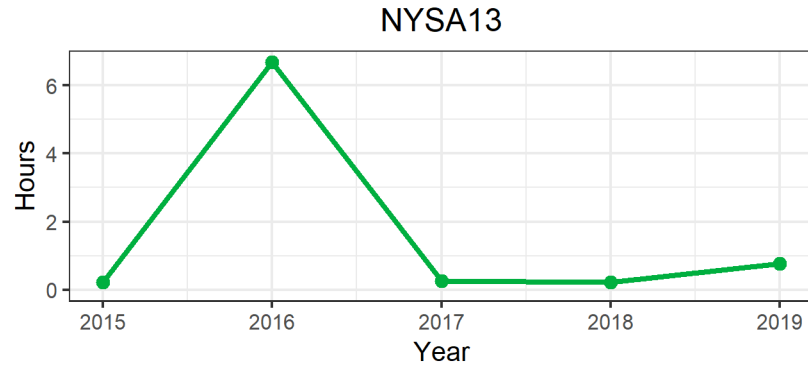


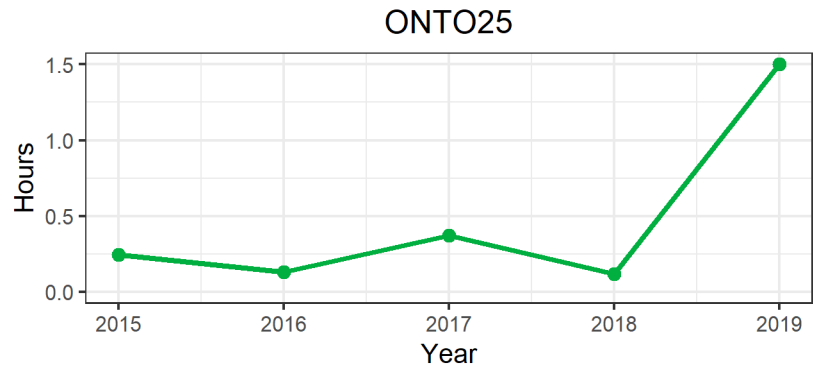
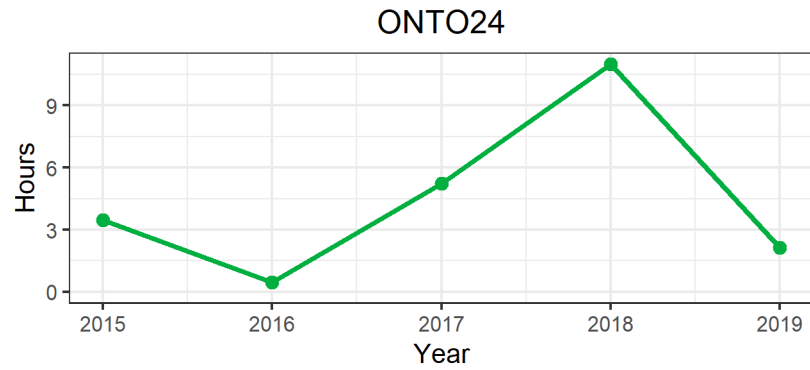
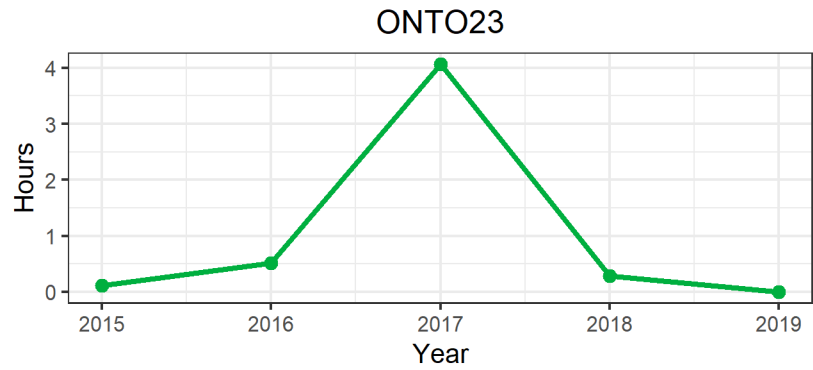
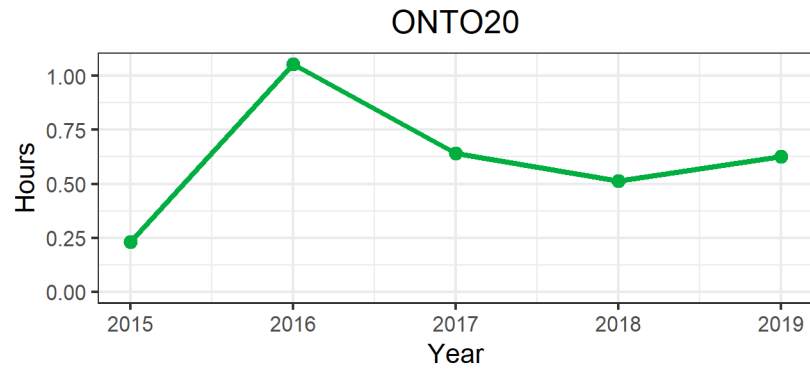
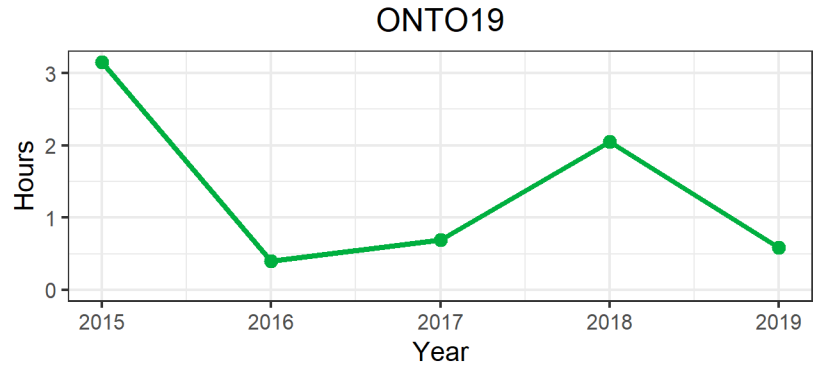
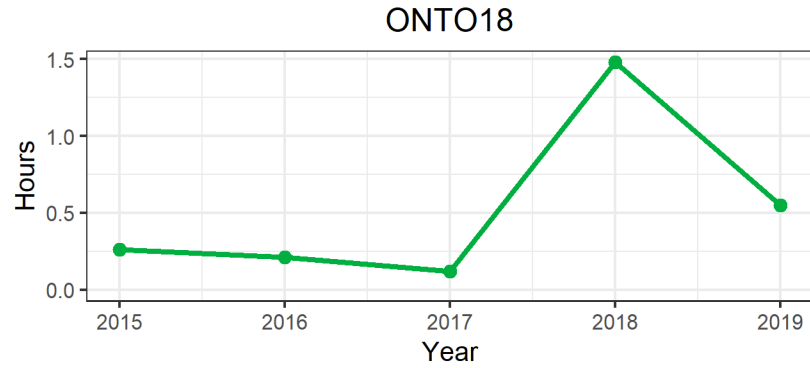
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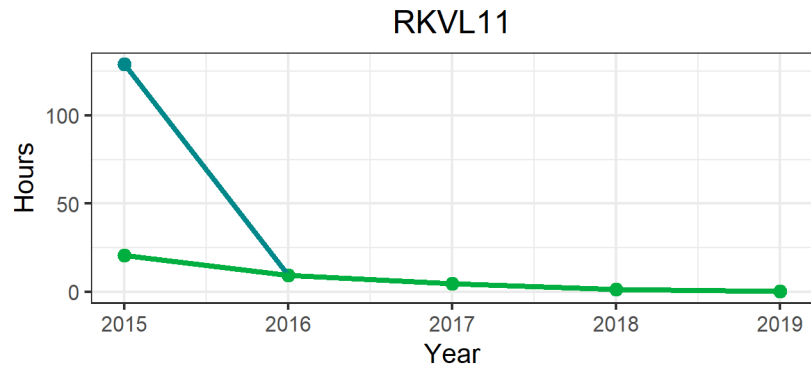
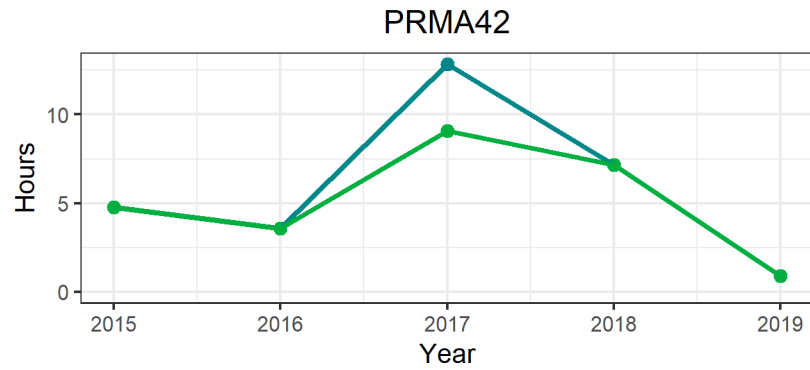
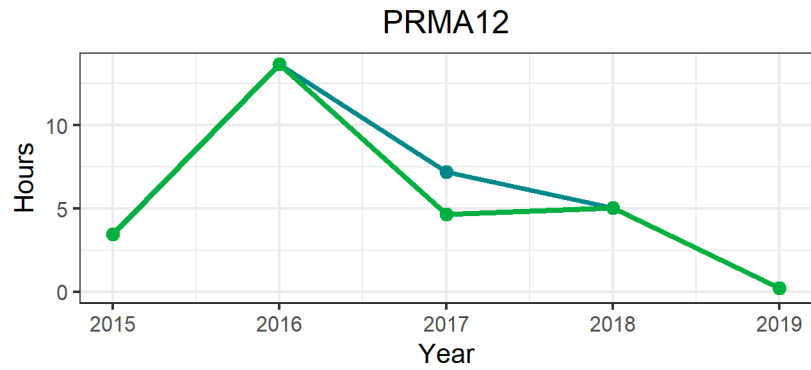
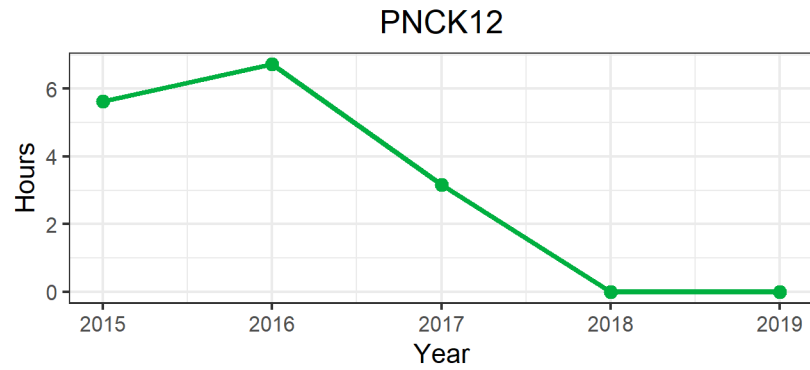
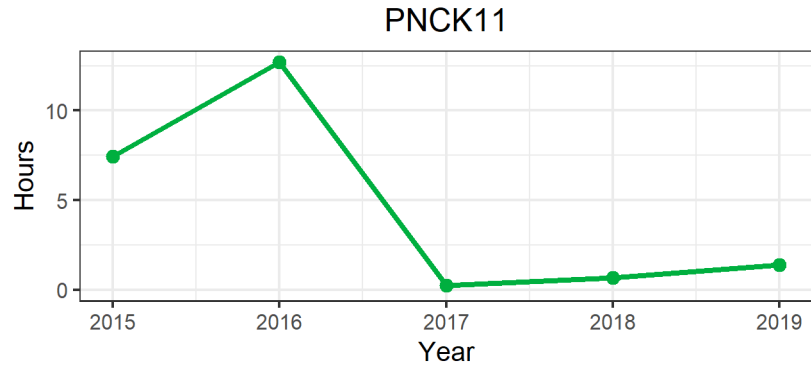
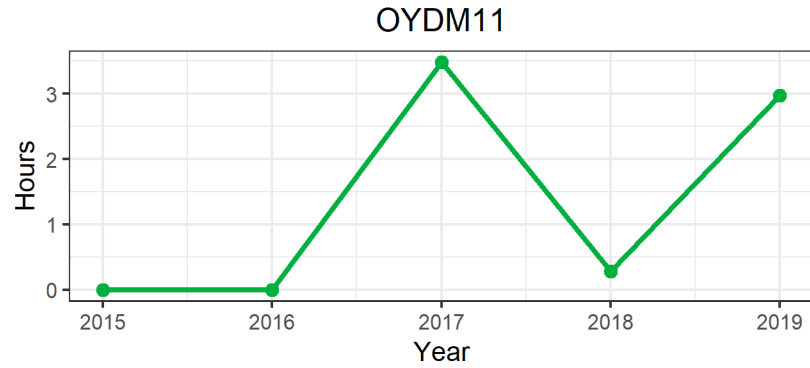


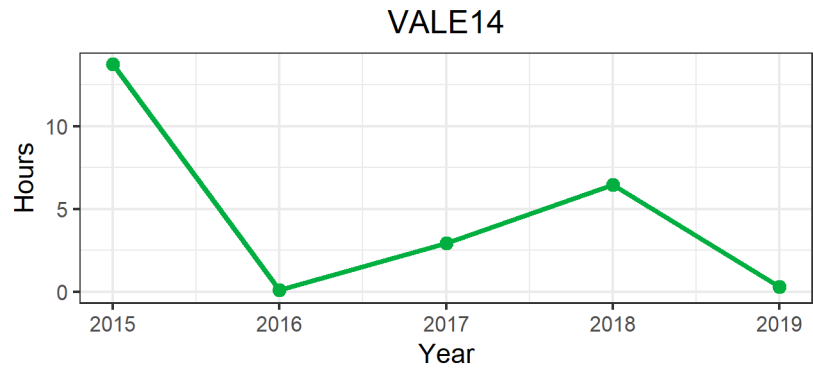
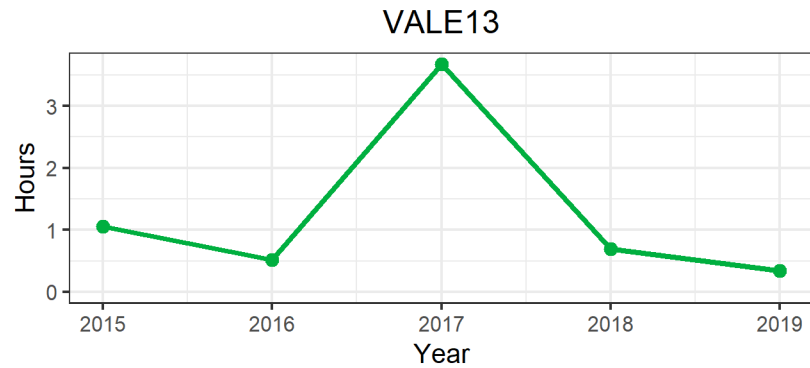
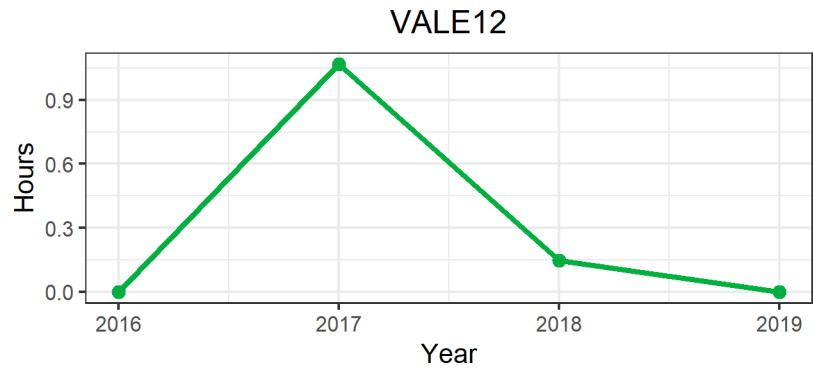
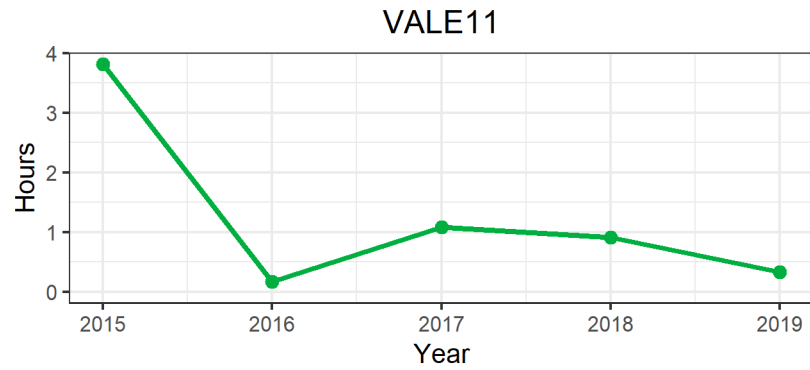
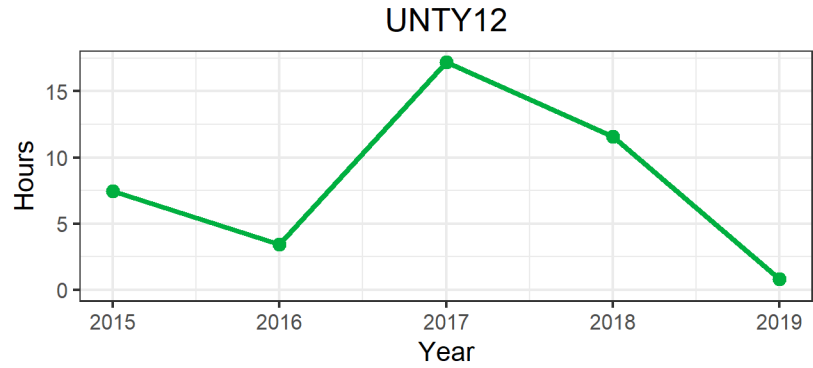
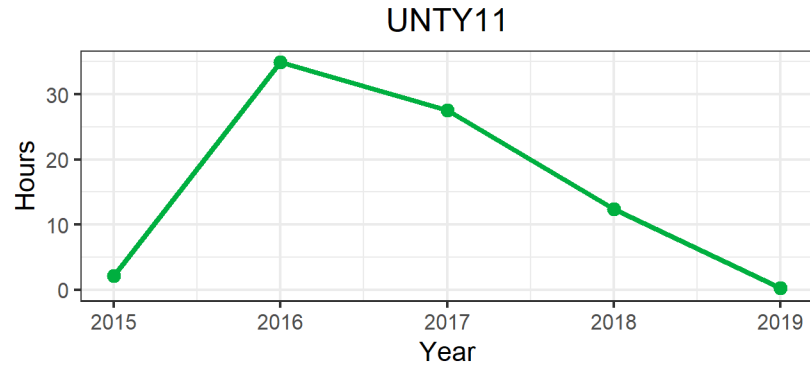
NYSA12











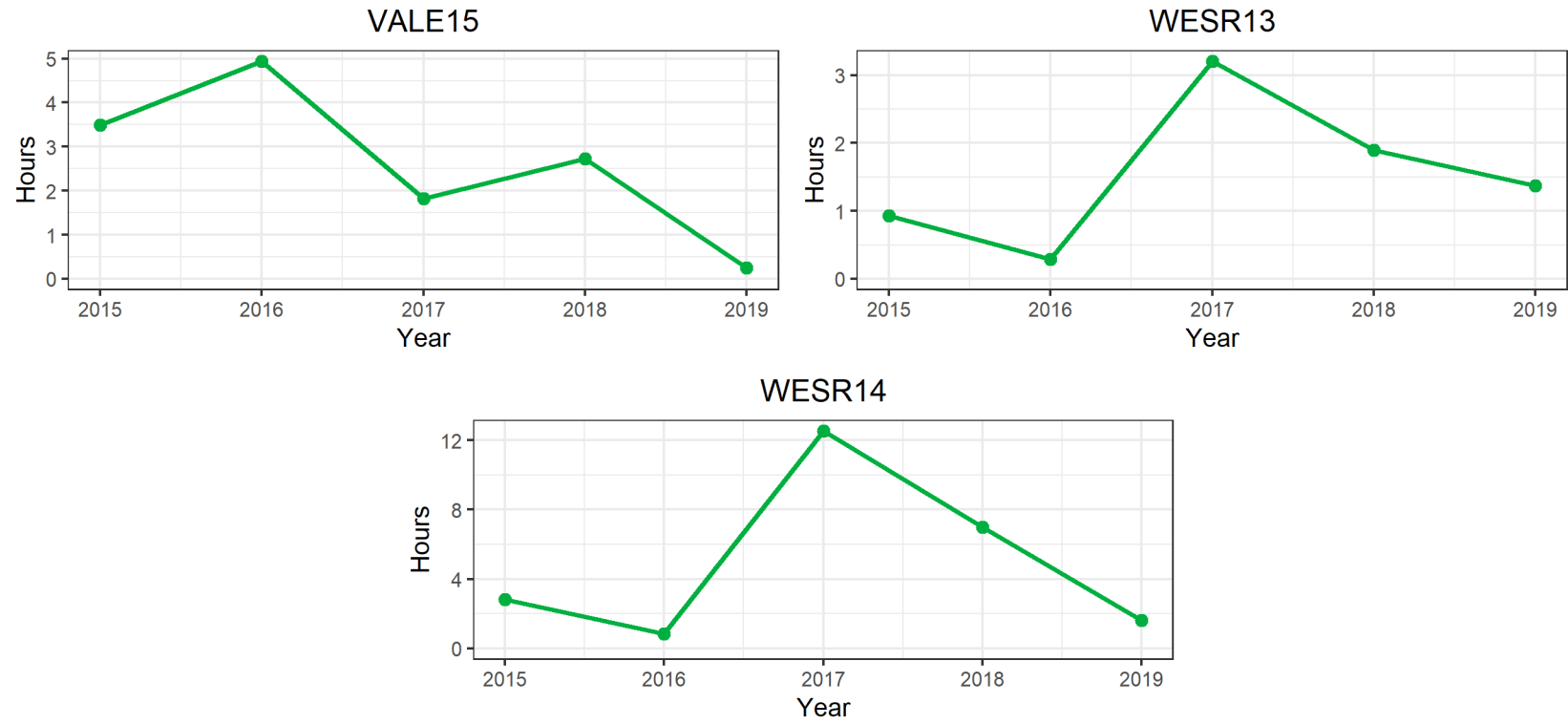
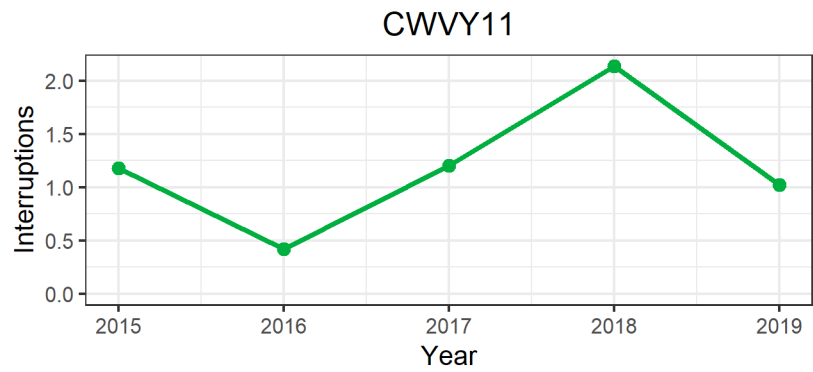
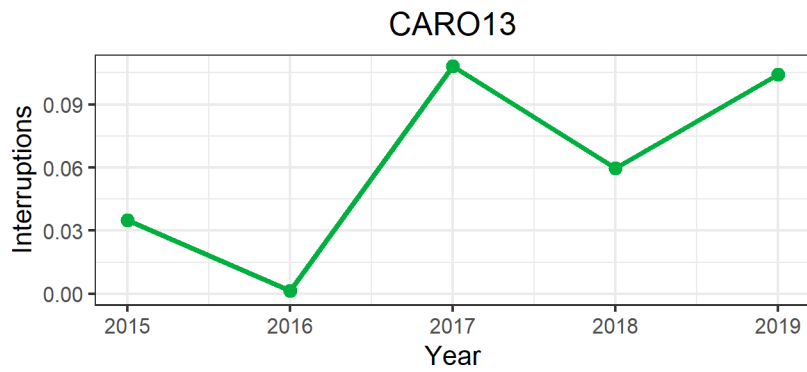
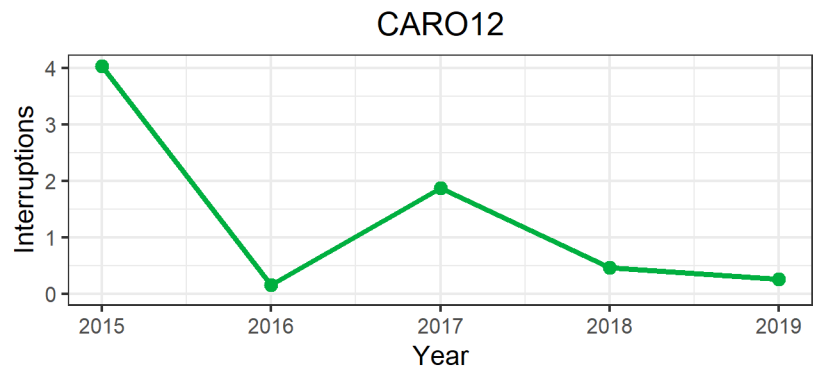
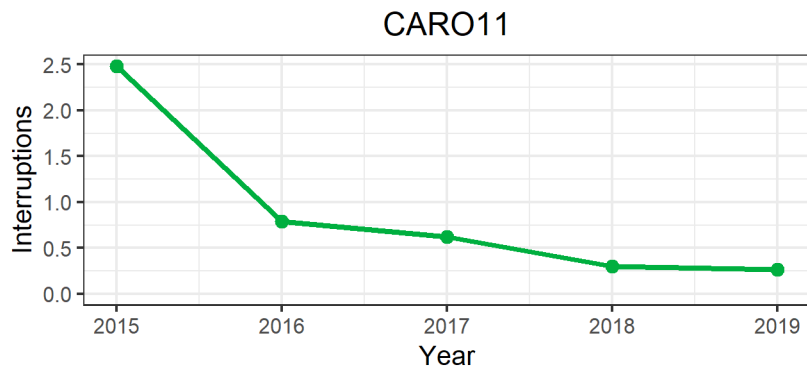
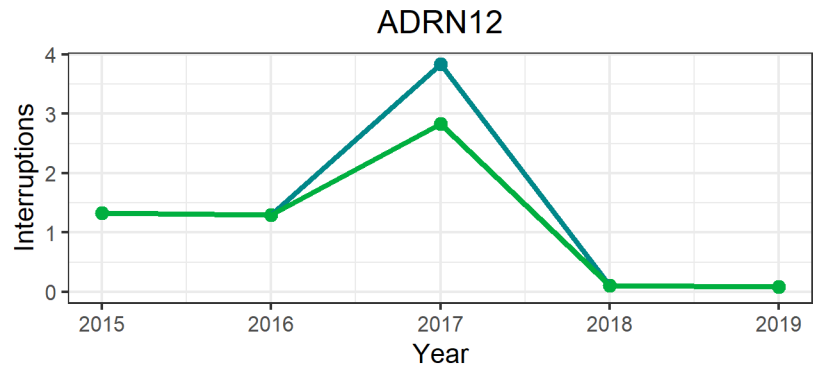
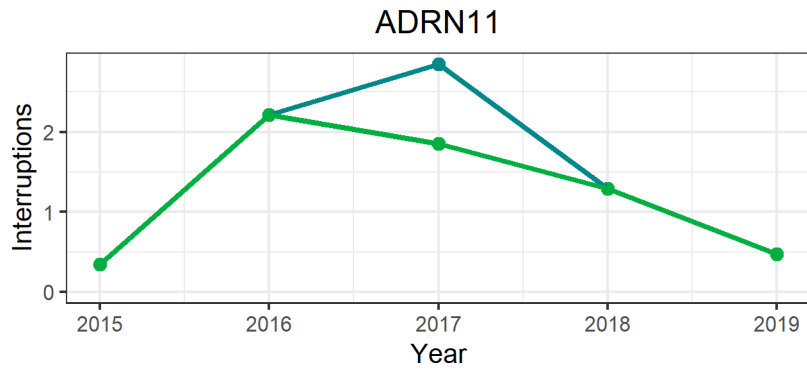


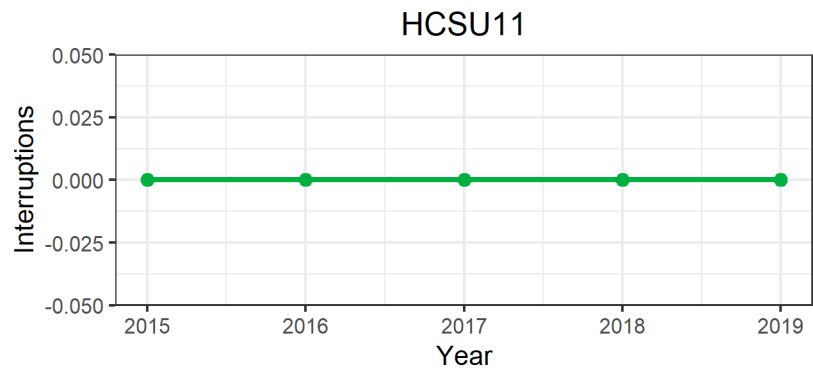
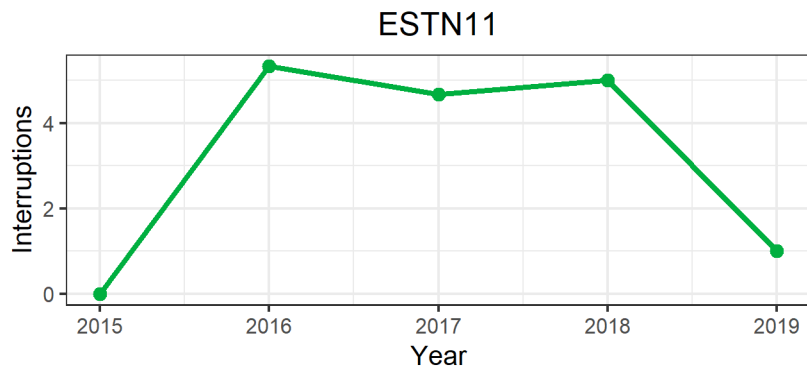
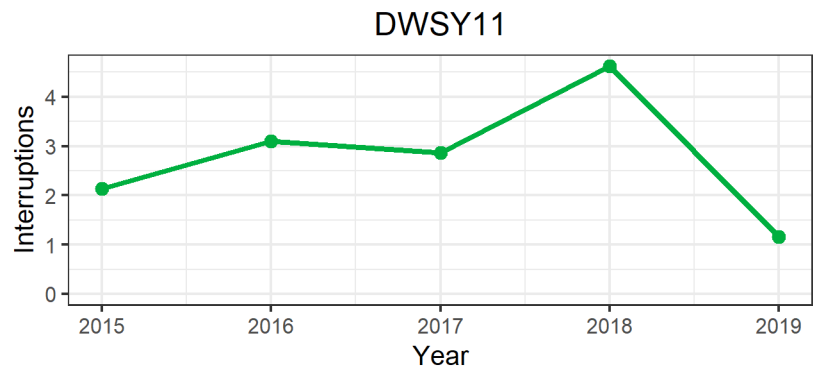
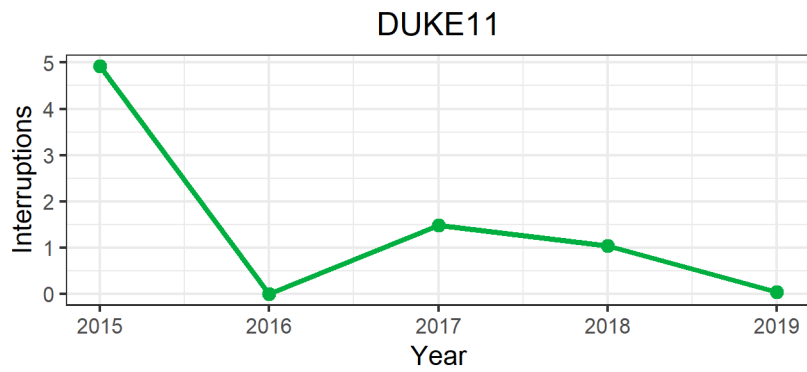
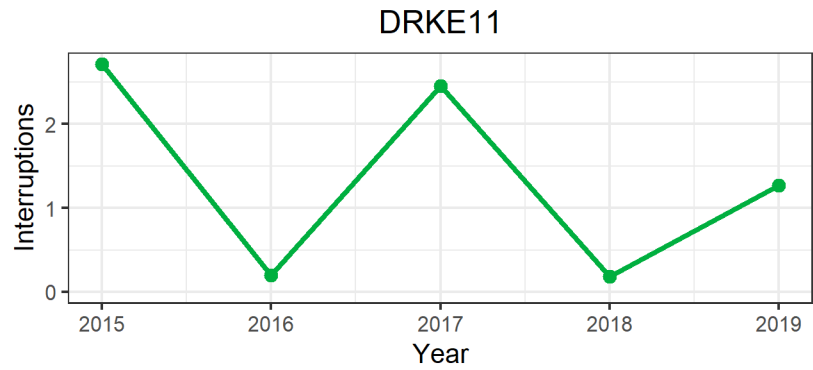
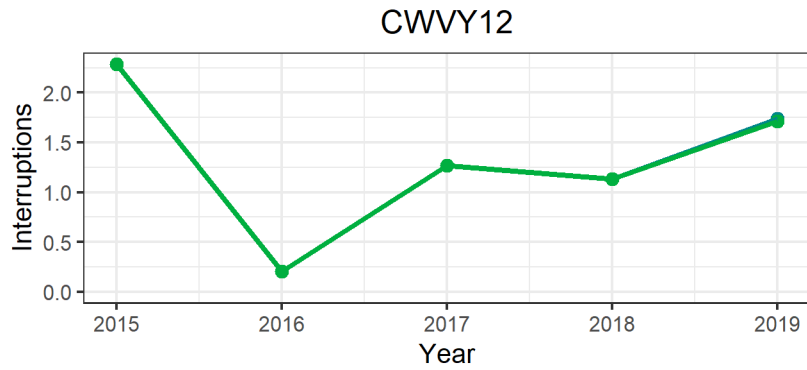
Figure 6 Five Years of Circuit SAIDI

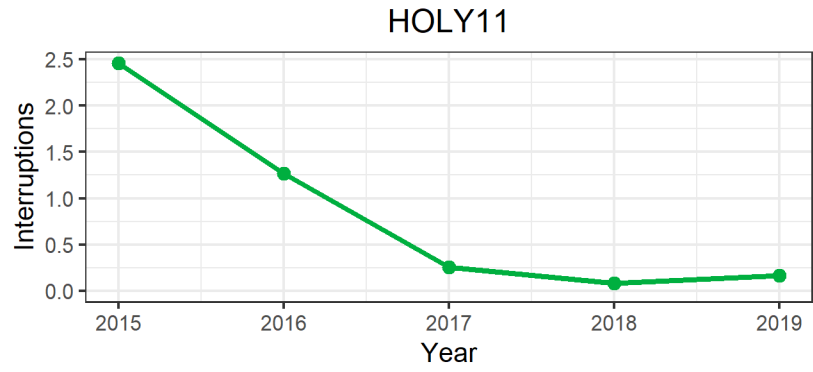
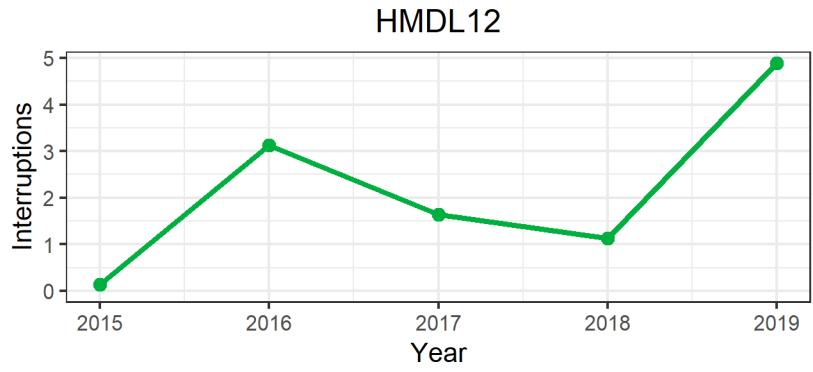
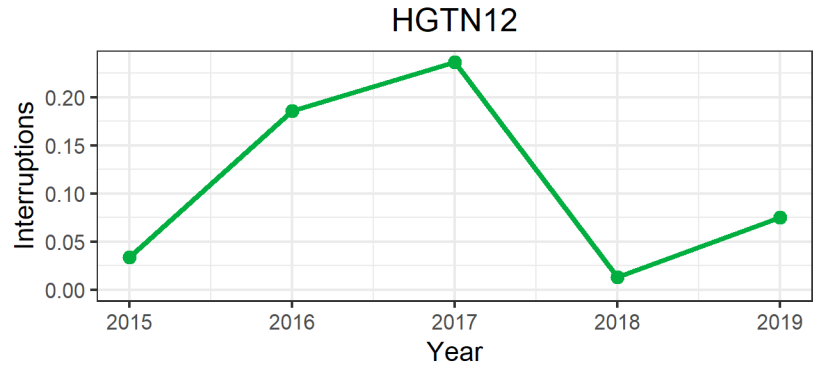
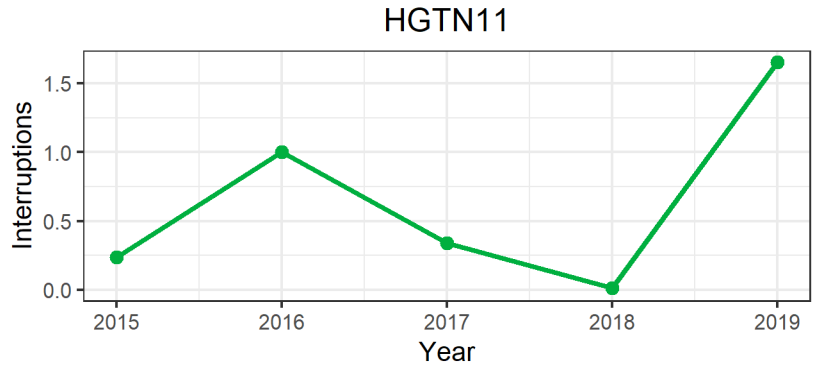
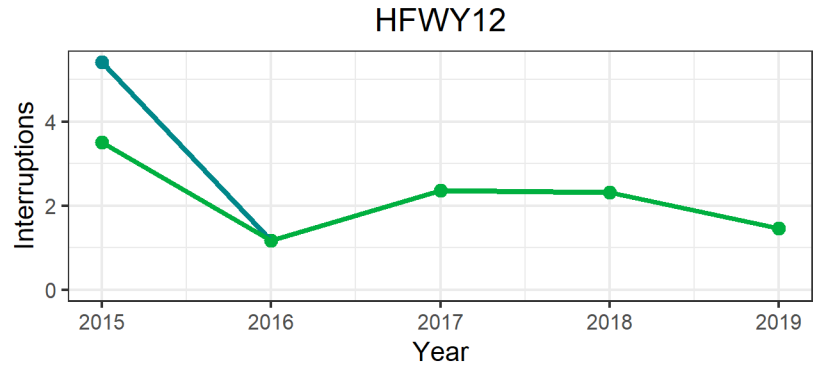
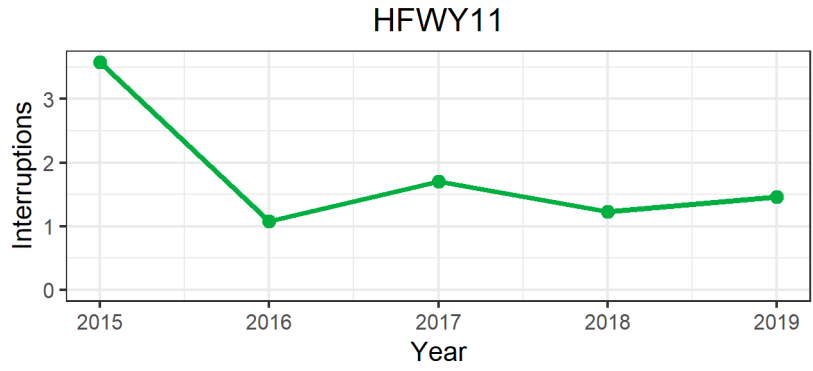
Five Years of Circuit SAIFI

Circuit	2015	2016	2017	2018	2019	2019 MedEx
ADRN11	0.34	2.21	2.85	1.29	0.48	0.48
ADRN12	1.33	1.29	3.84	0.11	0.08	0.08
CARO11	2.48	0.79	0.62	0.30	0.27	0.27
CARO12	4.03	0.16	1.87	0.46	0.26	0.26
CARO13	0.04	0.00	0.11	0.06	0.10	0.10
CWVY11	1.18	0.42	1.20	2.14	1.02	1.02
CWVY12	2.29	0.20	1.27	1.13	1.74	1.71
DRKE11	2.72	0.20	2.46	0.18	1.27	1.27
DUKE11	4.93	0.00	1.48	1.04	0.04	0.04
DWSY11	2.13	3.10	2.87	4.63	1.16	1.16
ESTN11	0.00	5.33	4.67	5.00	1.00	1.00
HCSU11	0.00	0.00	0.00	0.00	0.00	0.00
HFVY11	3.58	1.08	1.71	1.23	1.46	1.46
HFVY12	5.42	1.17	2.36	2.32	1.46	1.46
HGTN11	0.24	1.00	0.34	0.01	1.65	1.65
HGTN12	0.03	0.19	0.24	0.01	0.08	0.08
HMDL12	0.13	3.13	1.64	1.13	4.89	4.89
HOLY11	2.46	1.27	0.26	0.08	0.17	0.17
HOLY12	2.38	1.18	1.43	0.24	1.10	1.10
HOLY13	1.66	1.09	0.11	1.37	0.30	0.30
HOLY14	NA	NA	NA	NA	1.20	1.20
HOPE11	0.45	3.19	1.28	1.57	1.05	1.05
HRPR11	1.22	1.53	1.49	1.10	1.47	1.47
HRPR12	2.46	3.34	3.21	1.04	1.91	1.91
JMSN11	2.01	0.36	0.37	1.23	0.34	0.34
JMSN12	2.16	0.33	1.16	1.07	0.33	0.33
JNTA11	2.30	3.33	1.00	2.03	1.02	1.02
JNTA12	2.13	3.96	1.23	2.24	1.02	1.02
JNVY11	16.77	3.25	2.26	1.11	0.20	0.20
JNVY12	21.36	2.00	2.26	1.16	0.05	0.05
JNVY31	12.96	6.09	3.66	3.01	0.86	0.86
LIME11	2.31	0.77	2.44	1.46	0.53	0.53
MRBT41	0.13	0.50	1.22	2.15	1.59	1.59
MRBT42	0.11	0.22	1.00	3.00	1.55	1.55
NYSA11	2.75	1.36	0.19	0.18	1.44	1.44
NYSA12	0.68	4.42	3.21	1.33	1.24	1.24
NYSA13	0.15	2.36	0.16	0.15	0.34	0.34
NYSA14	0.08	1.47	0.05	0.14	1.29	1.29
OBPR11	0.00	0.00	0.00	0.00	0.00	0.00
OIDA11	0.10	0.24	0.74	0.29	1.15	1.15
OIDA12	2.00	1.00	2.00	0.00	2.00	2.00
ONTO14	0.03	1.00	1.09	0.00	0.06	0.06
ONTO18	0.17	0.12	0.06	1.12	0.30	0.30
ONTO19	1.60	0.14	0.29	1.22	0.31	0.31
ONTO20	0.19	1.22	0.17	0.32	0.35	0.35
ONTO23	0.15	0.13	2.17	0.21	0.00	0.00
ONTO24	2.61	0.44	1.69	2.85	1.39	1.39
ONTO25	0.16	0.19	0.13	0.17	1.08	1.08
OYDM11	0.00	0.00	0.93	0.13	0.93	0.93
PNCK11	3.63	2.91	0.96	0.25	0.35	0.35
PNCK12	4.00	1.00	1.00	0.00	0.00	0.00
PRMA12	2.00	8.00	3.00	2.33	1.00	1.00
PRMA42	3.37	1.66	4.60	2.64	0.30	0.30
RKVL11	9.25	2.52	2.25	1.00	0.03	0.03
UNTY11	1.39	1.17	6.21	2.15	0.16	0.16
UNTY12	2.07	0.90	6.81	2.06	0.21	0.21
VALE11	1.16	0.10	1.59	0.74	0.14	0.14
VALE12	0.00	0.00	0.50	0.14	0.00	0.00
VALE13	0.83	0.23	1.18	0.33	0.18	0.18
VALE14	5.62	0.05	0.91	1.59	0.12	0.12
VALE15	1.33	2.84	1.37	1.69	0.12	0.12
WESR13	0.29	0.19	2.34	1.08	0.78	0.78
WESR14	2.61	0.43	3.23	3.73	1.23	1.23

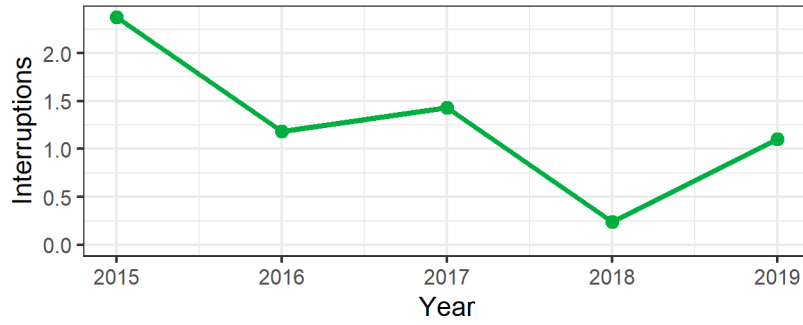
Table 7 Five Years of Circuit SAIFI



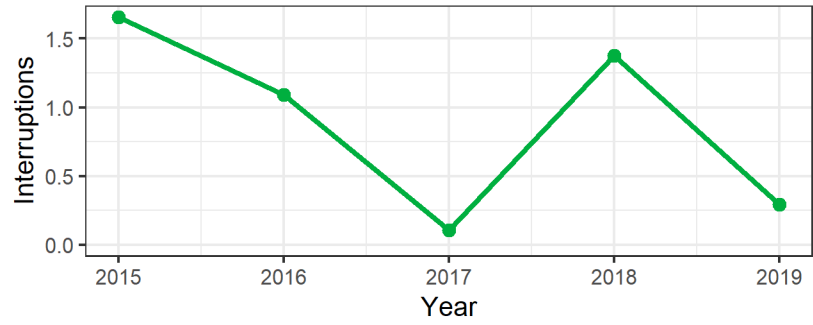




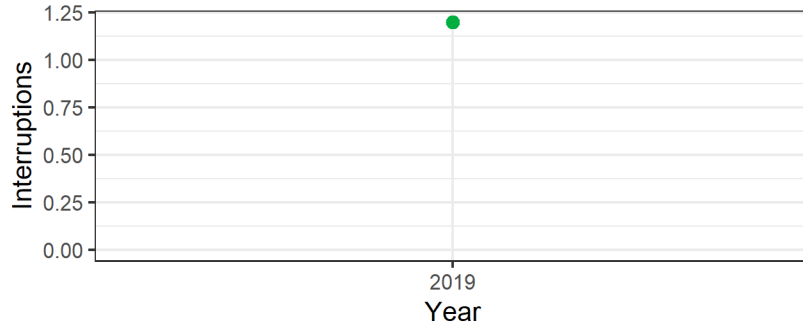
HOLY12



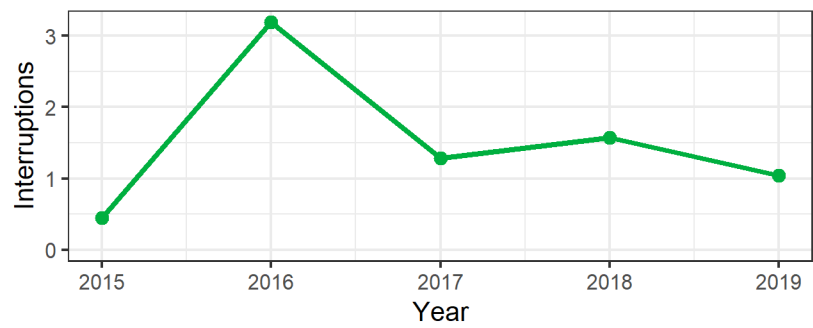
HOLY13



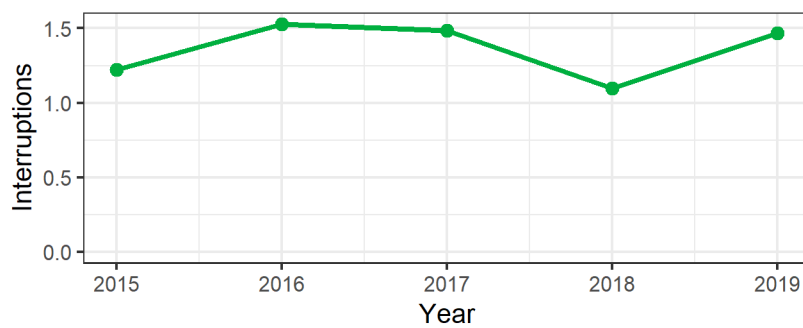
HOLY14



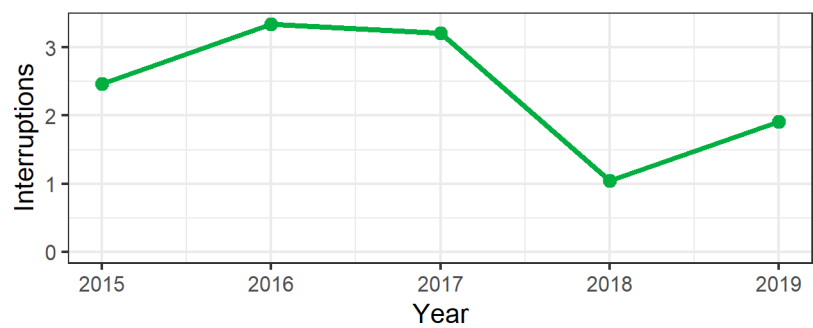
HOPE11

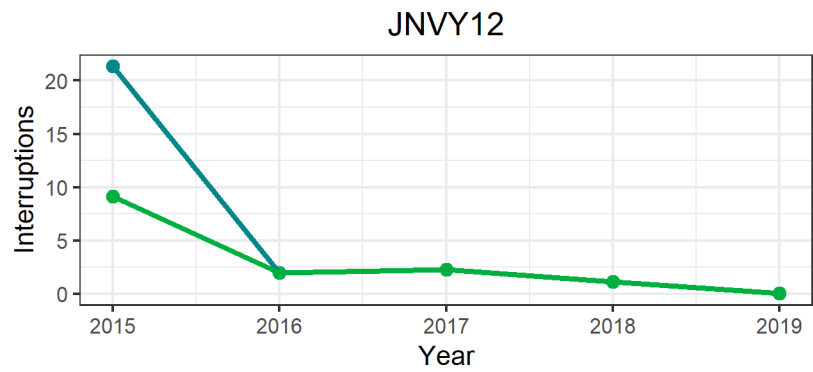
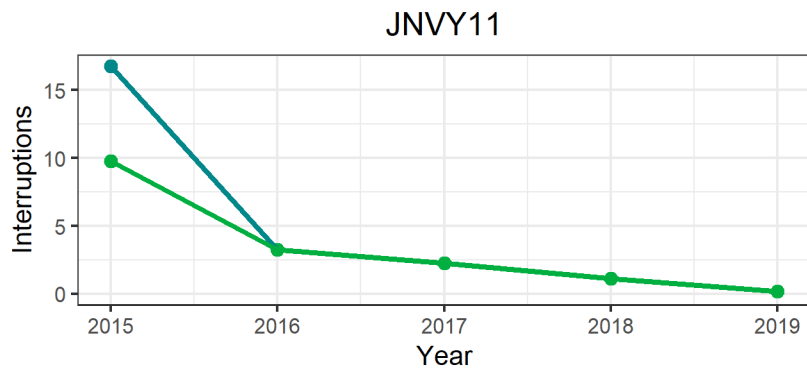
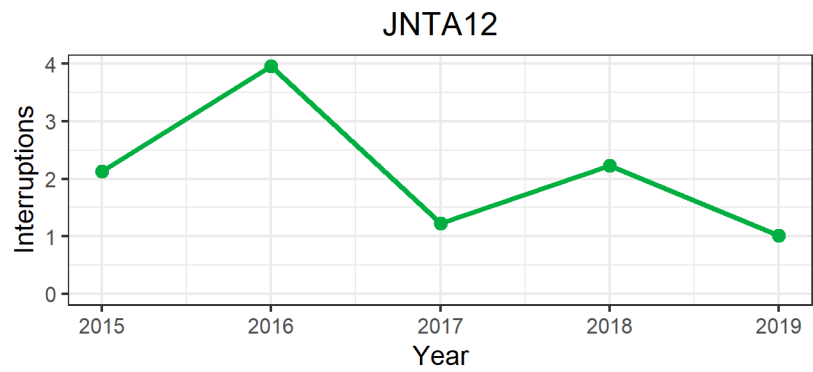
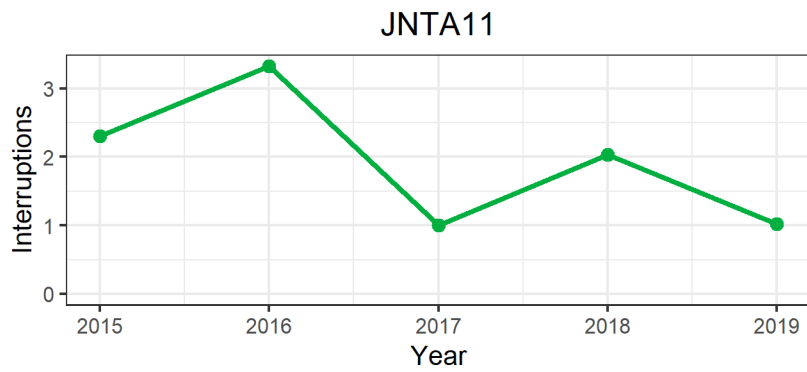
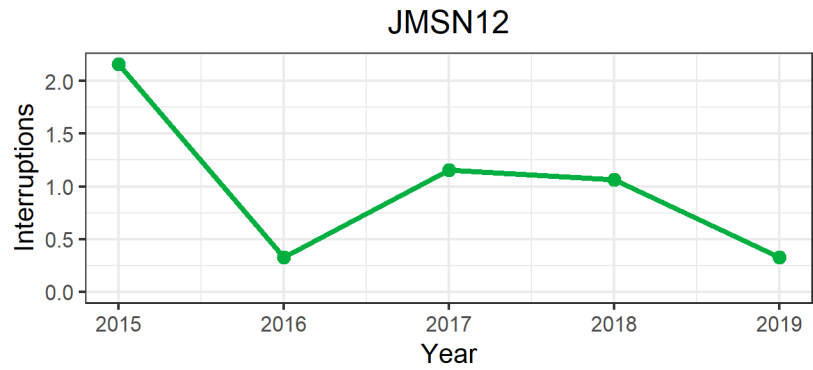
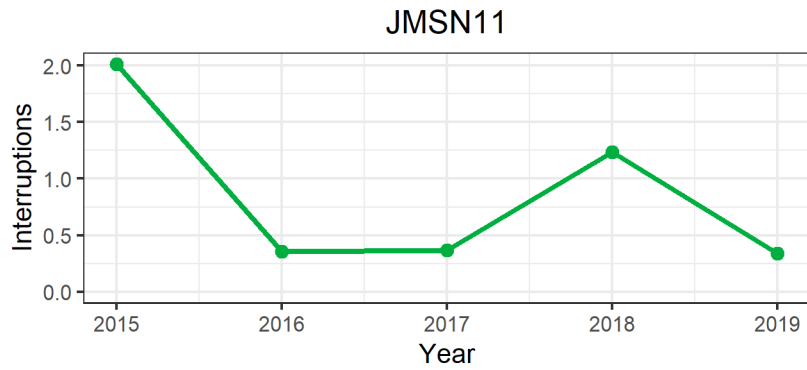


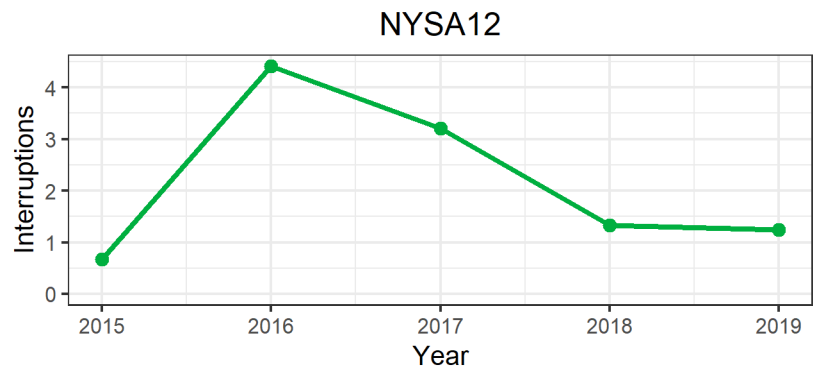
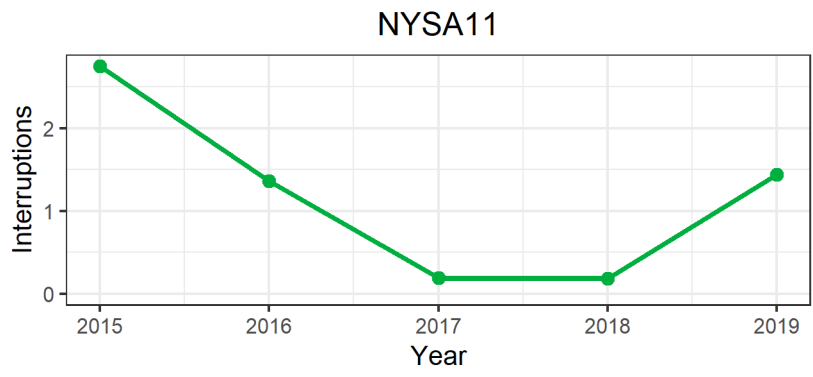
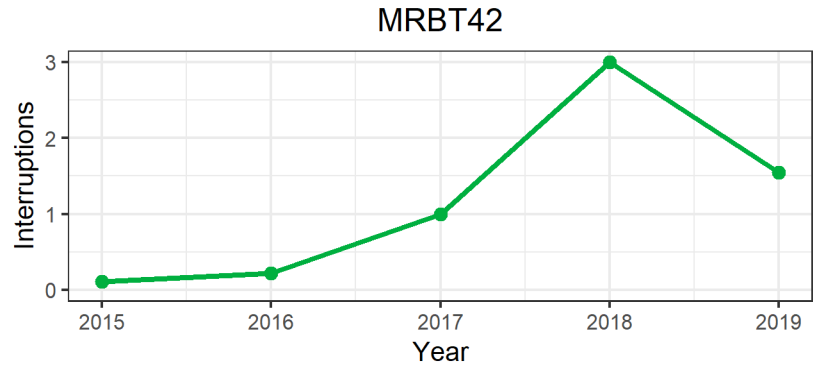
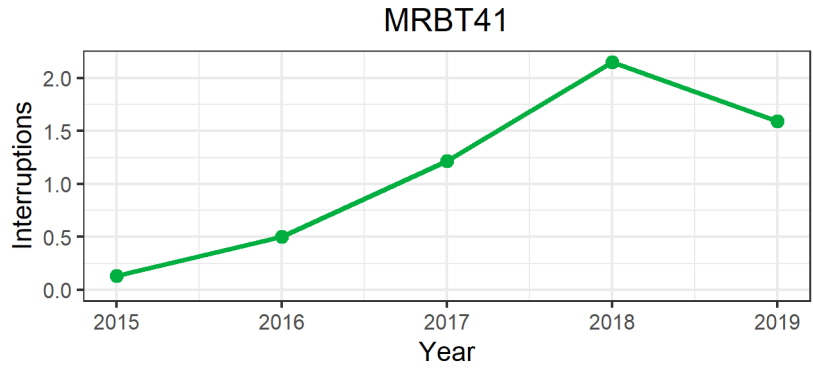
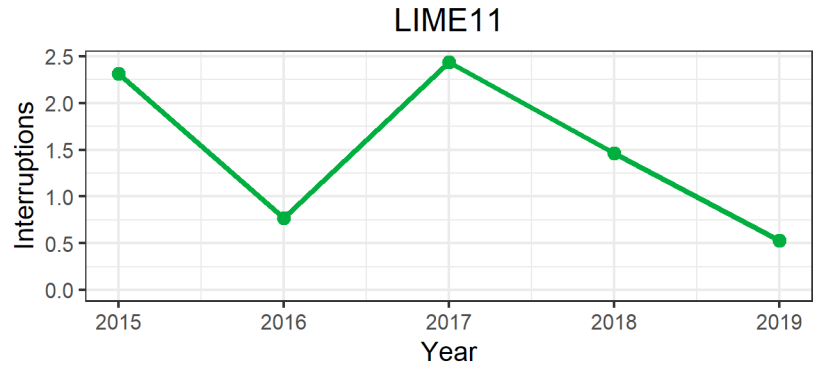
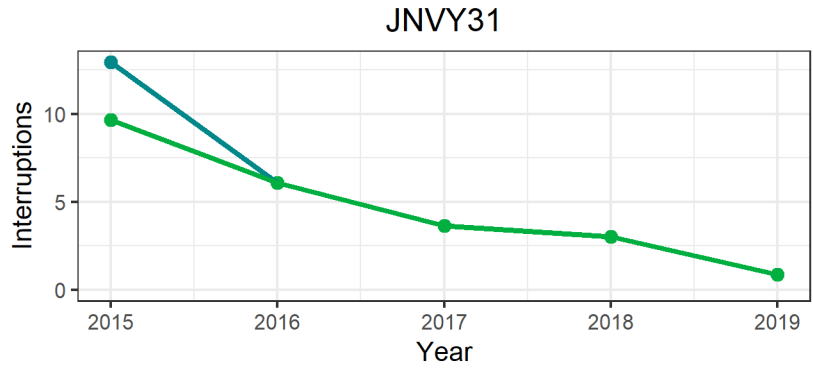
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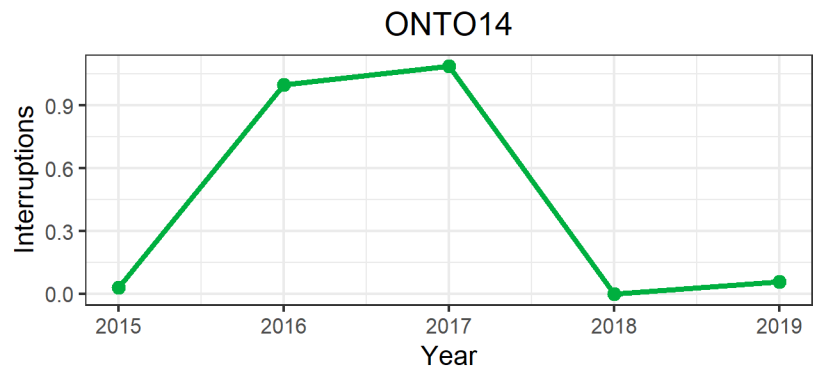
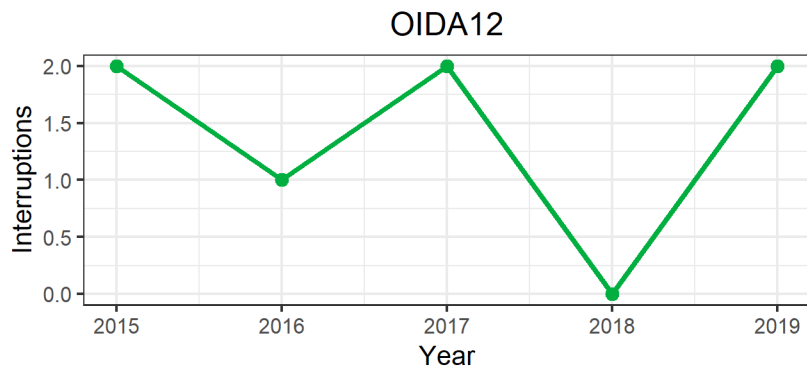
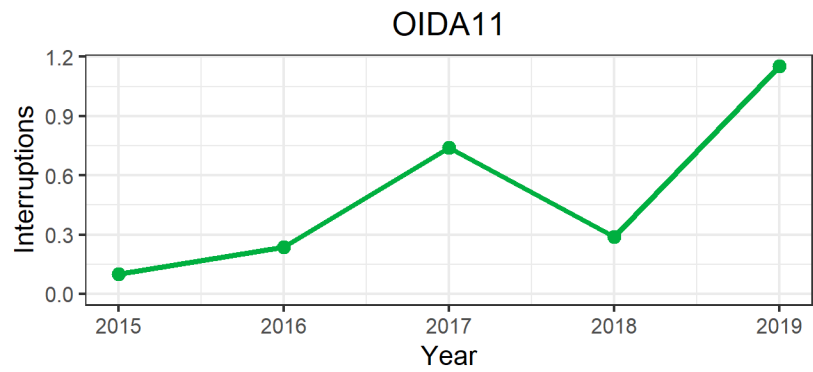
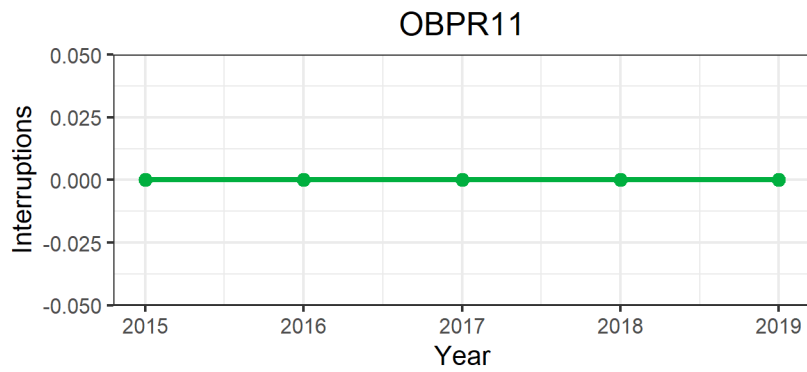
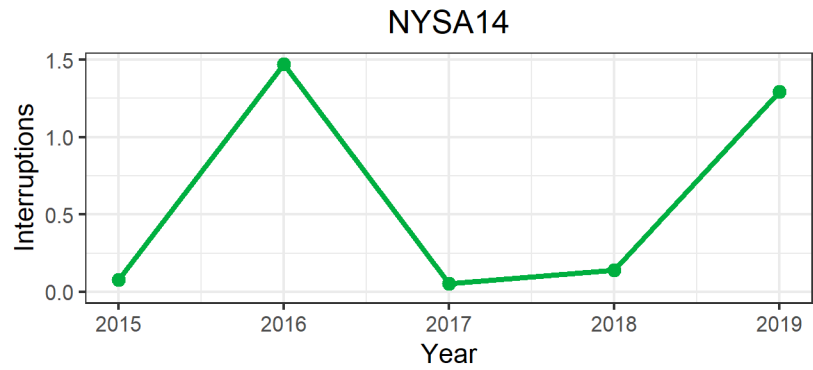
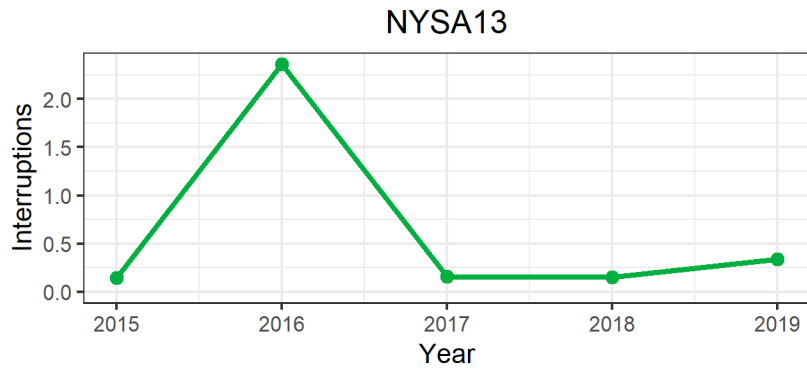


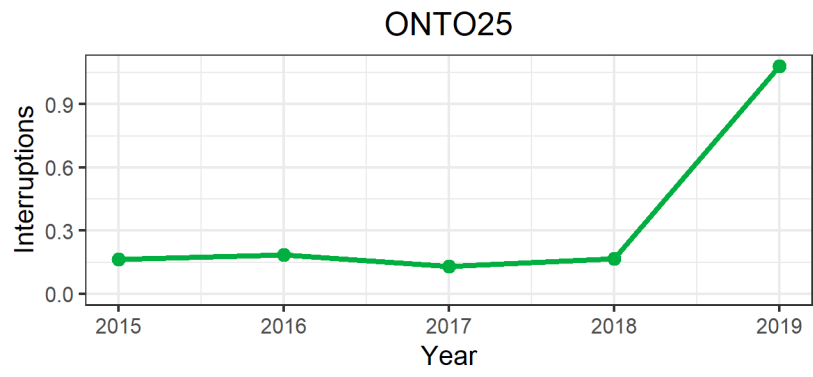
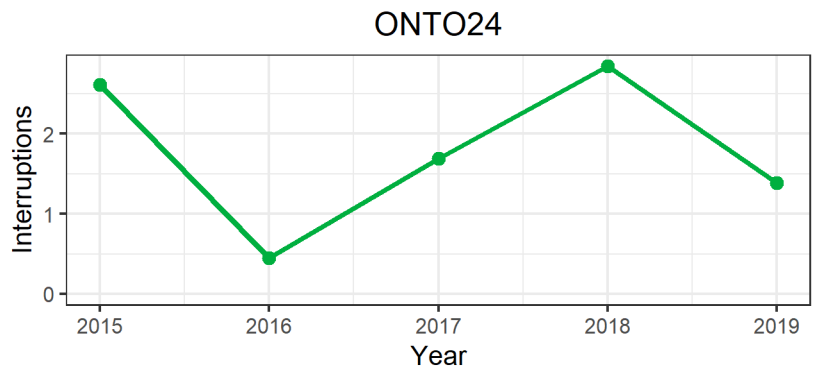
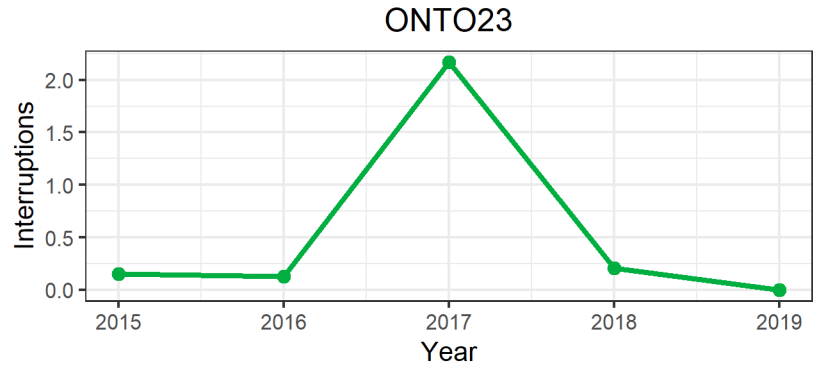
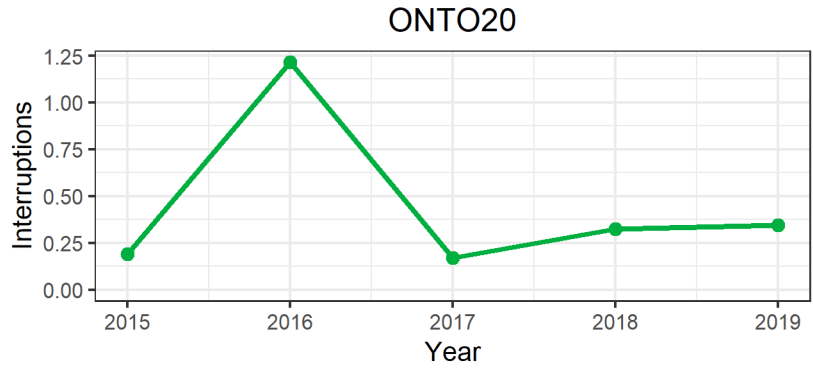
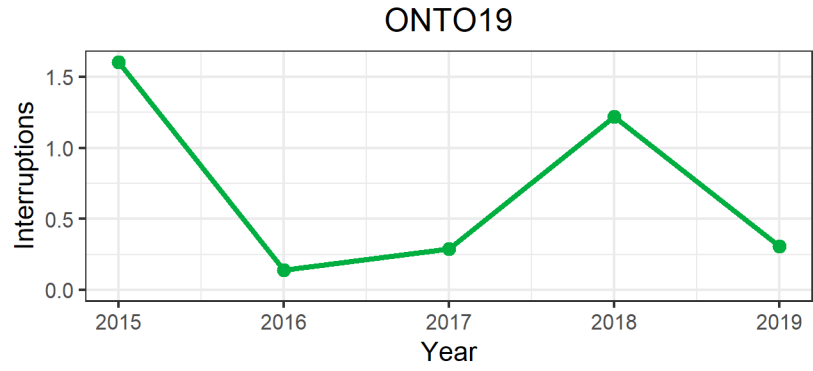
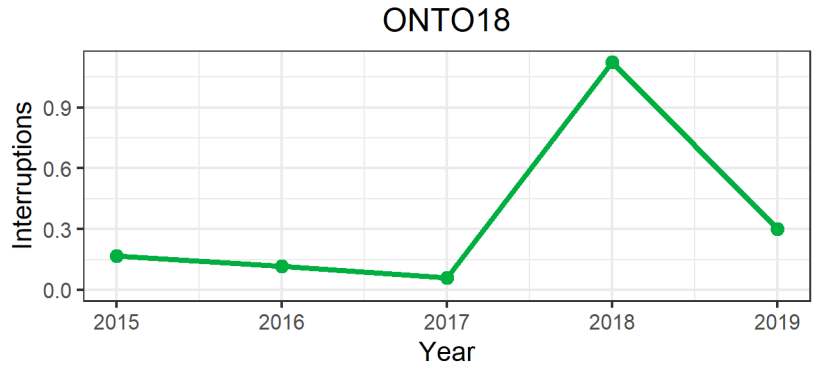
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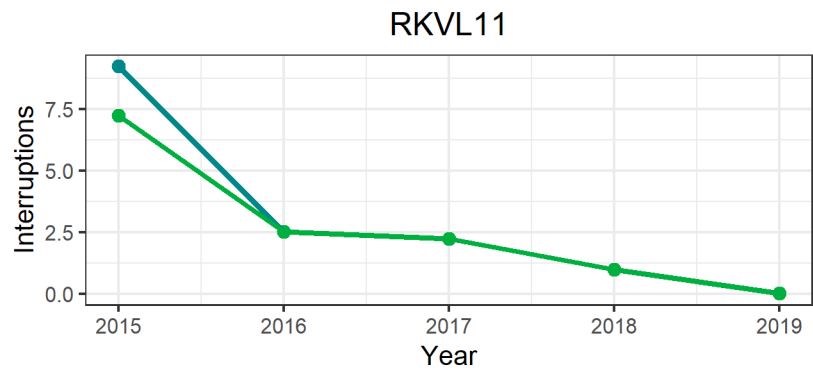
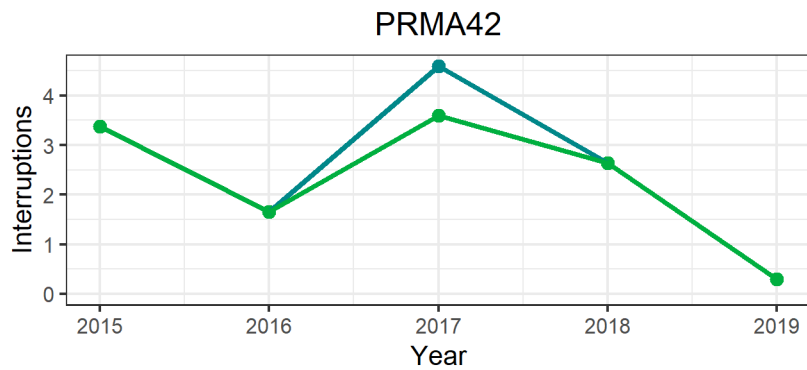
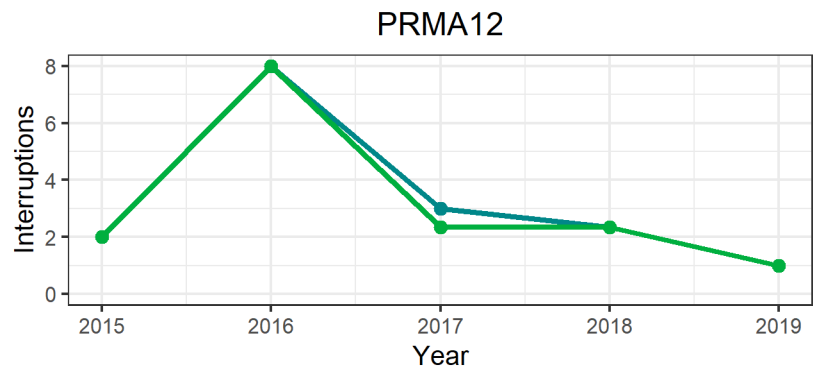
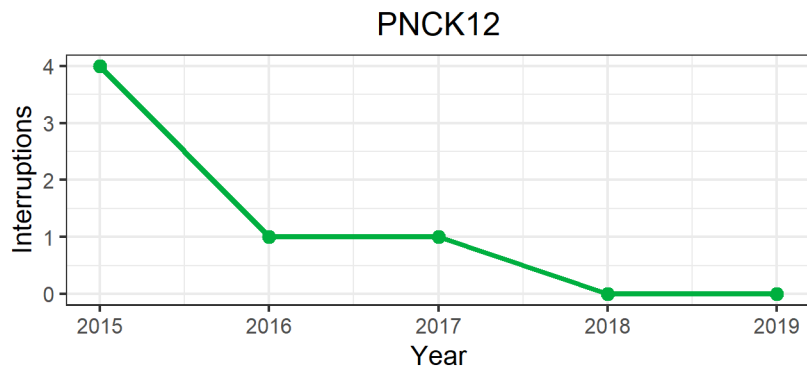
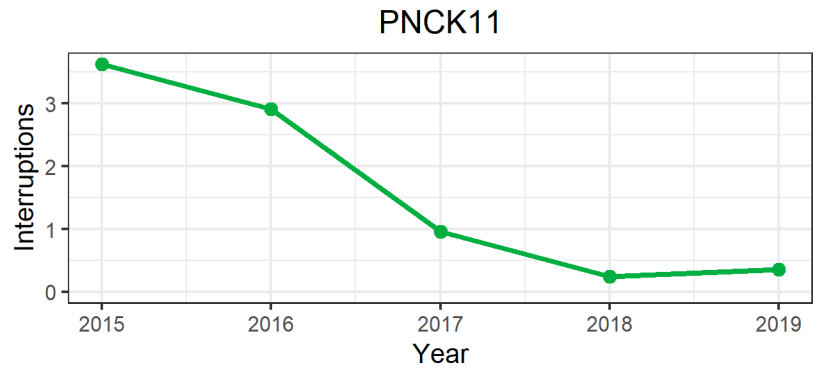
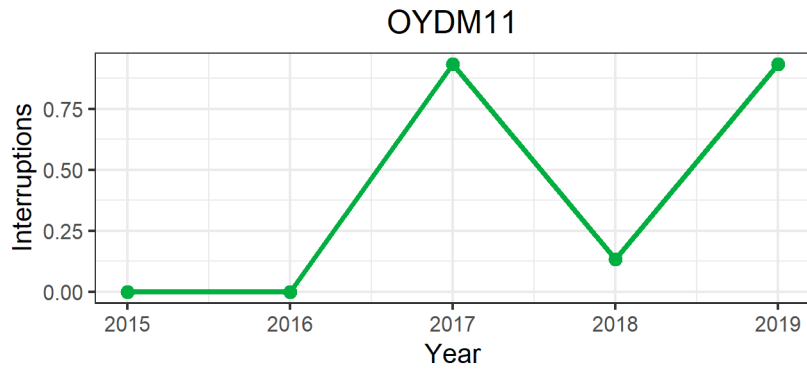


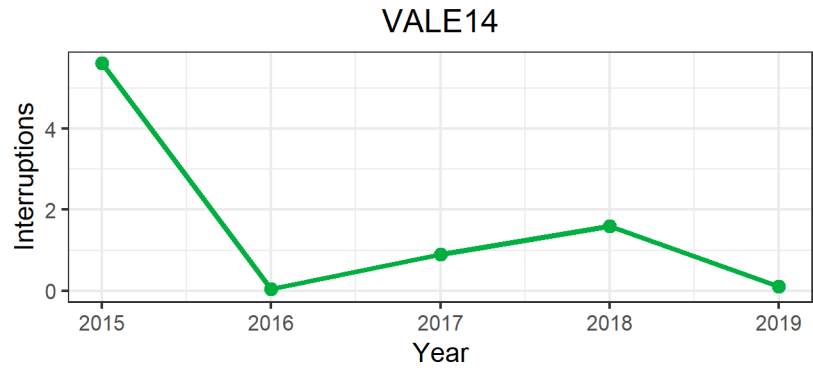
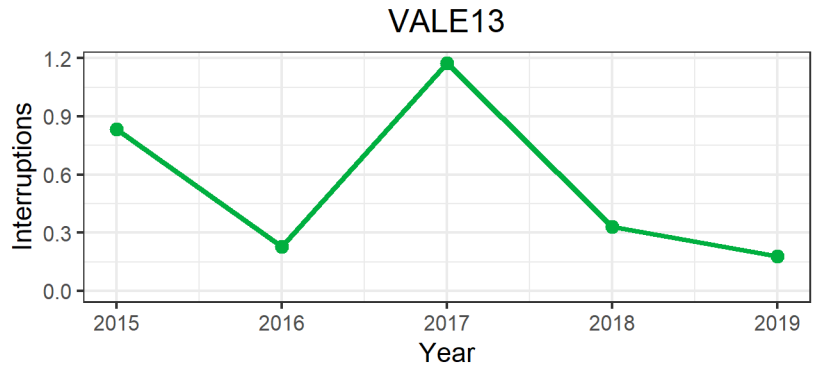
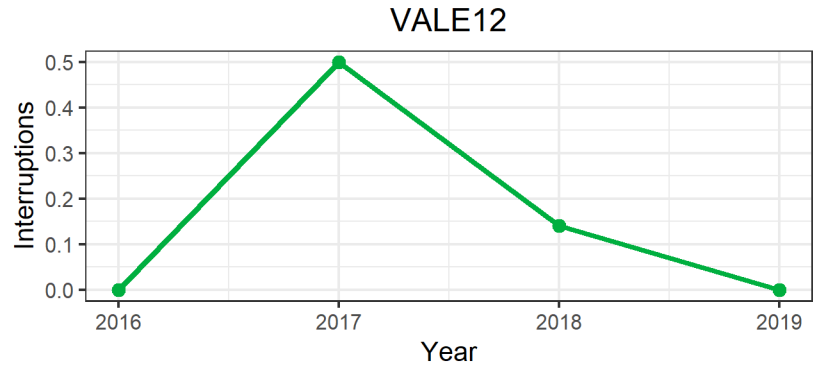
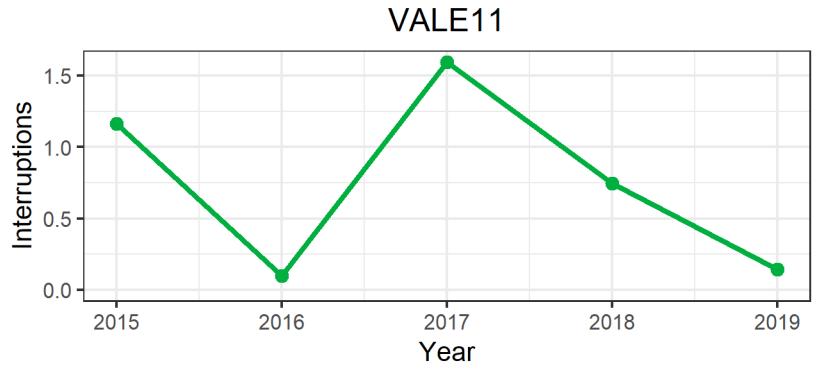
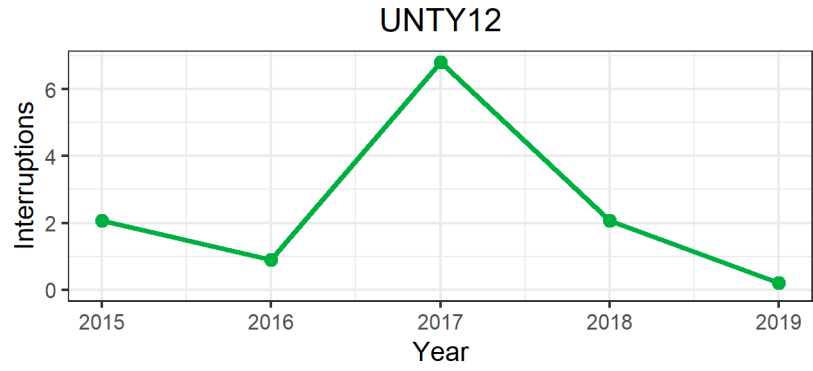
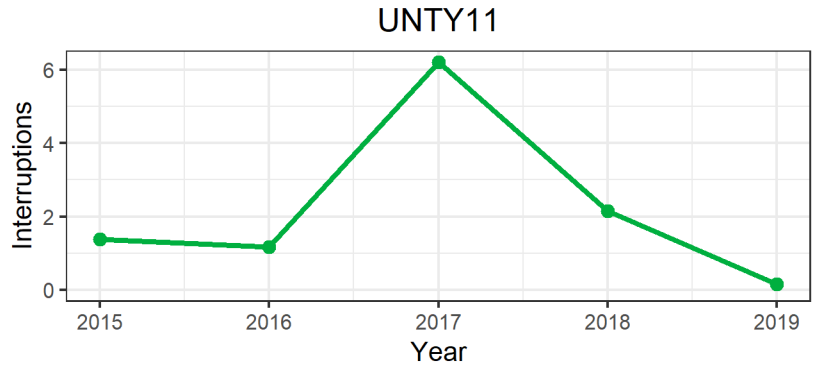












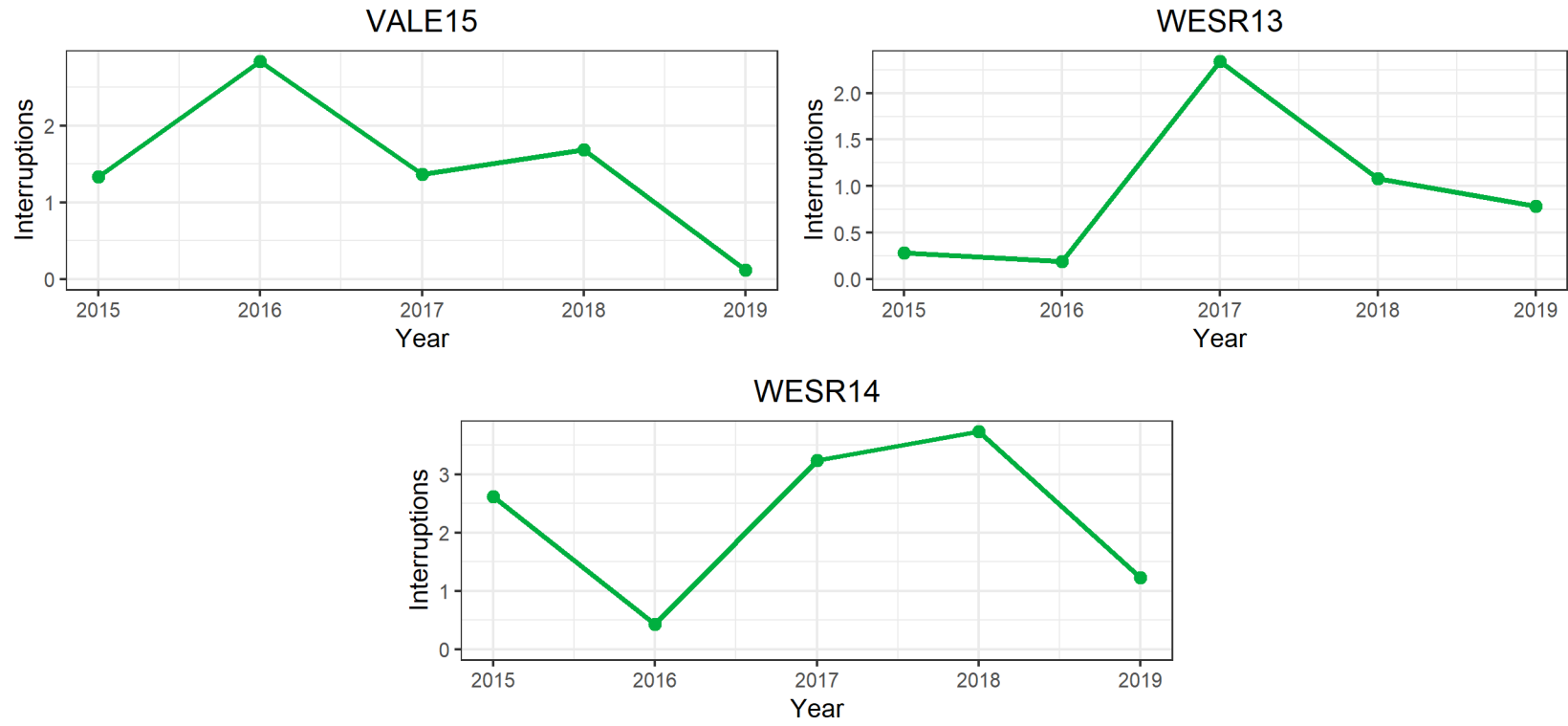
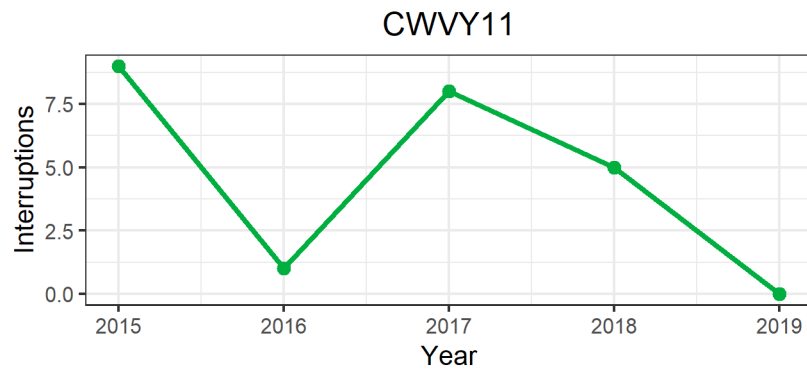
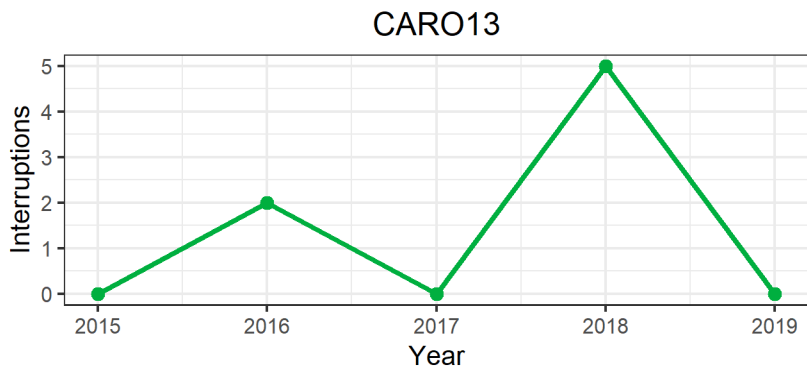
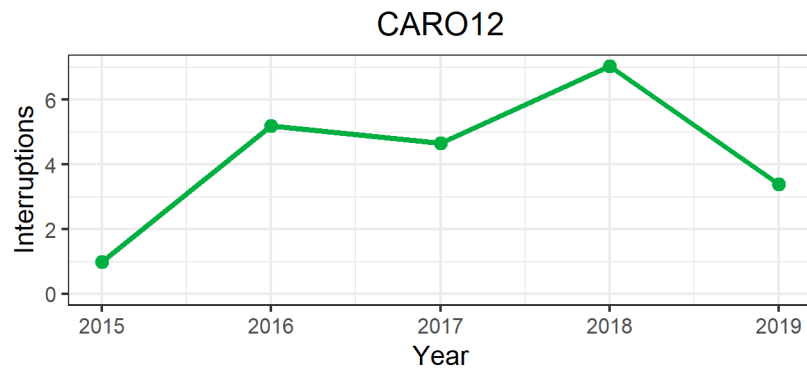
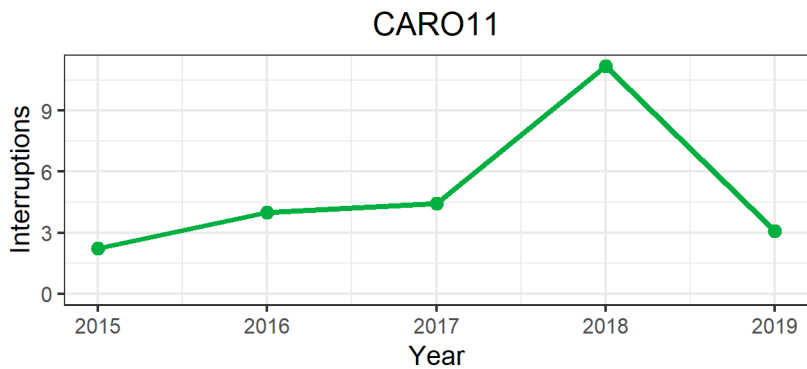
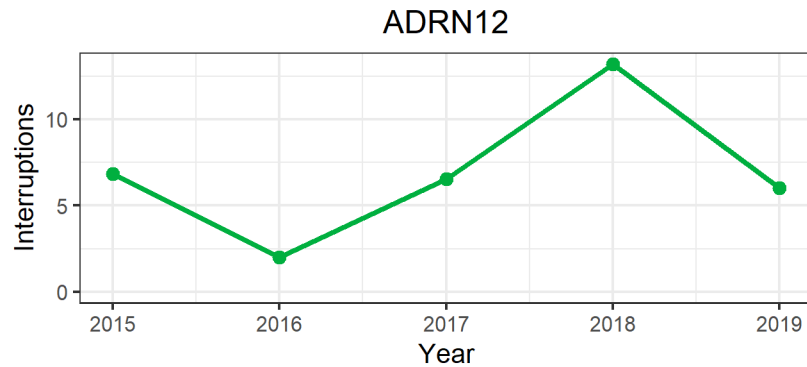
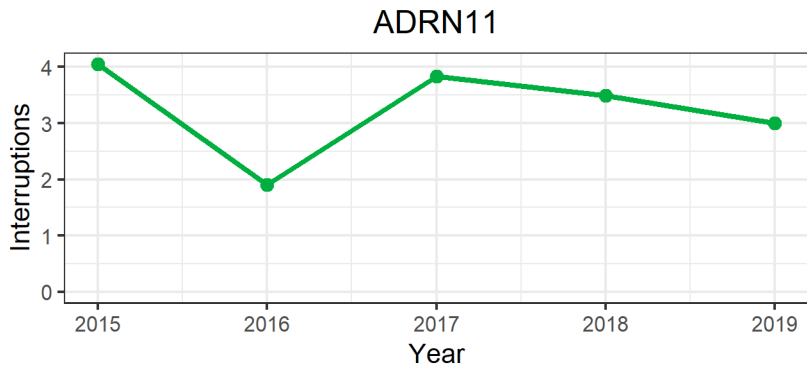


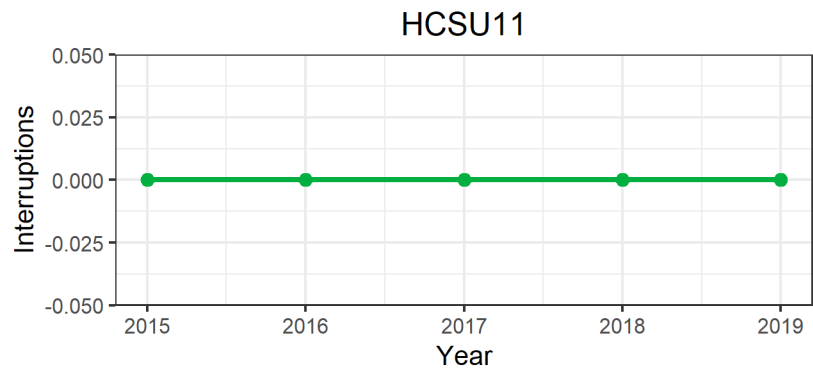
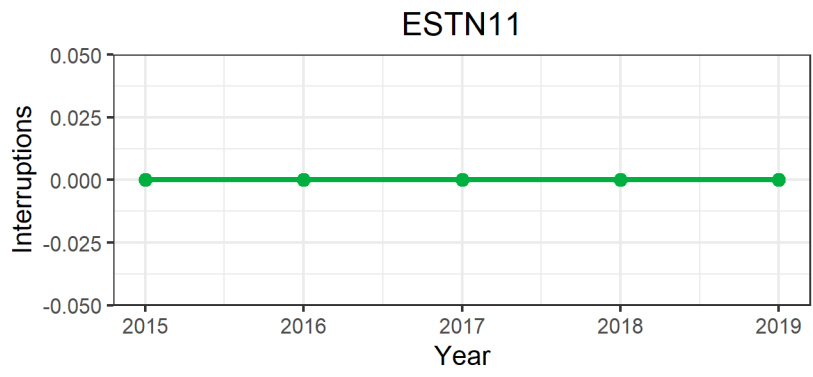
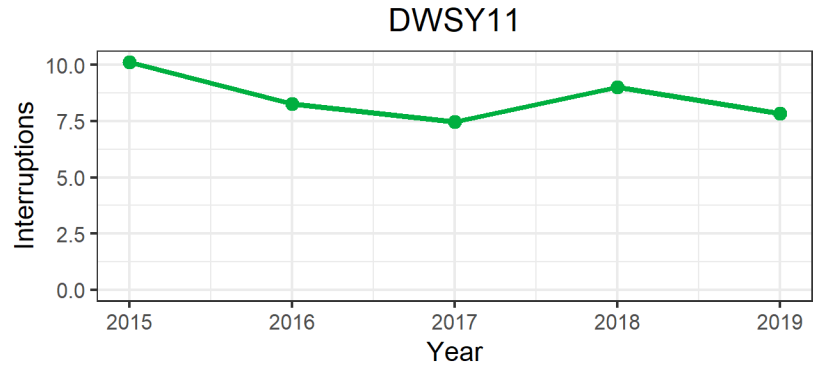
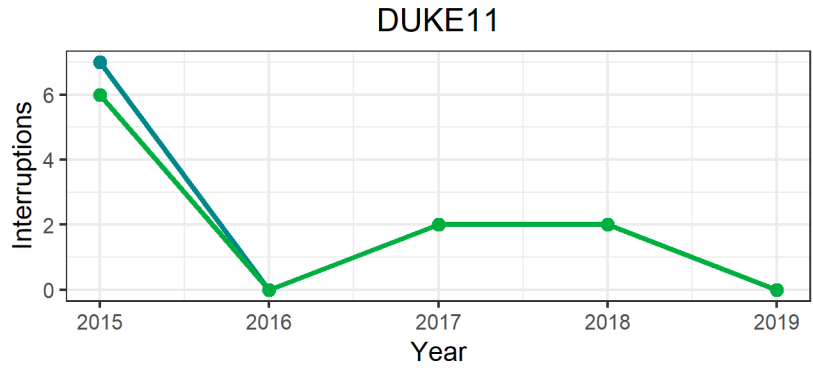
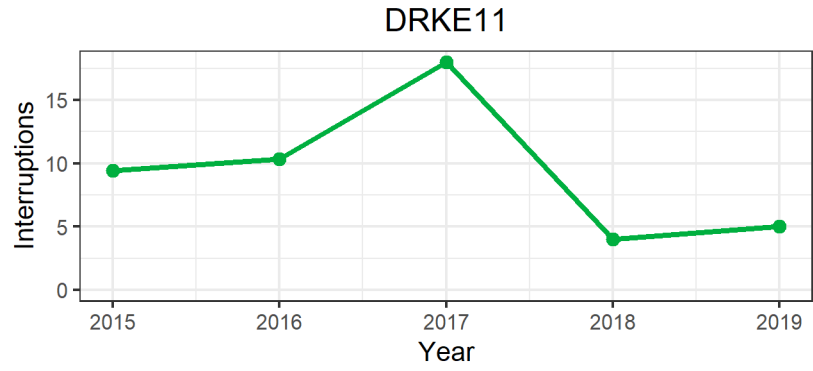
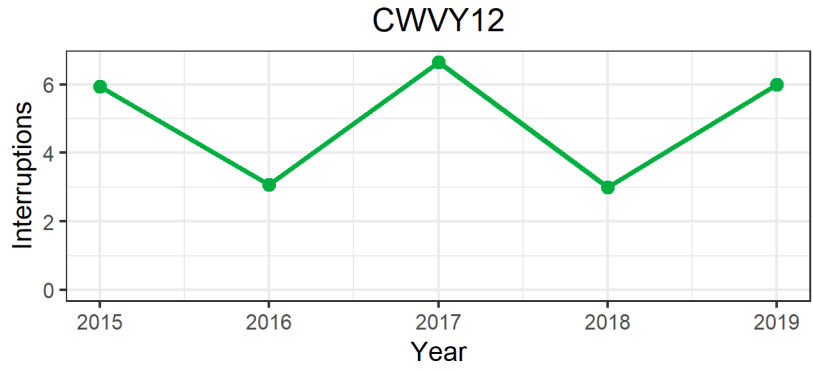
Figure 7 Five Years of Circuit SAIFI

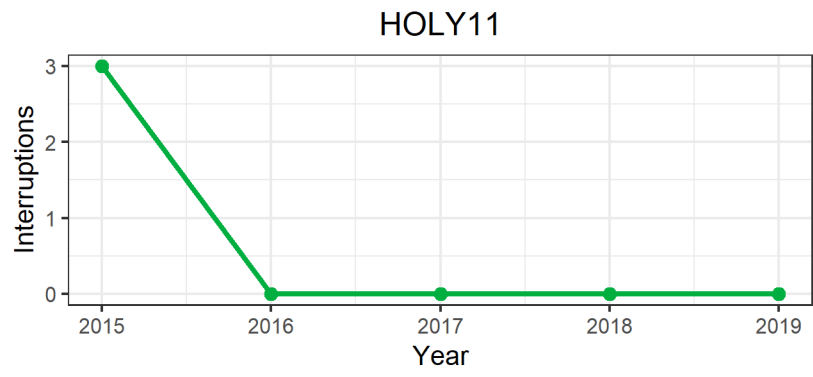
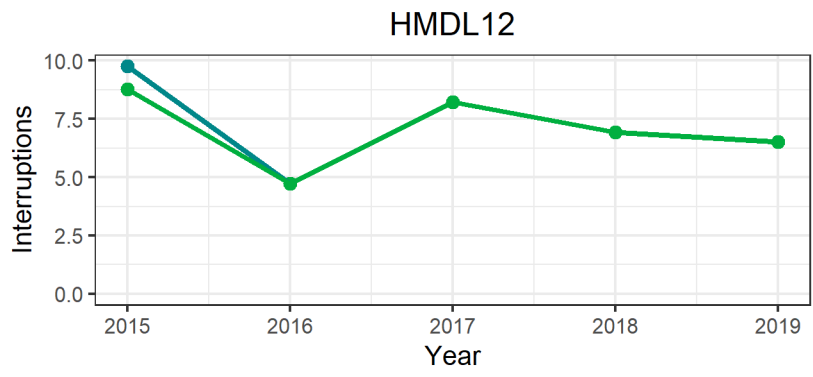
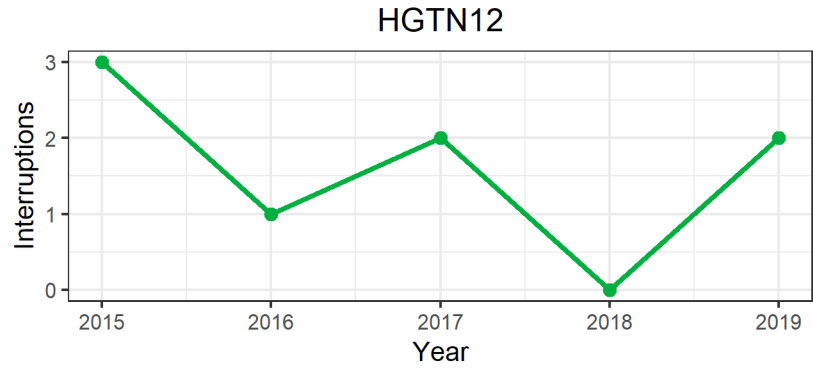
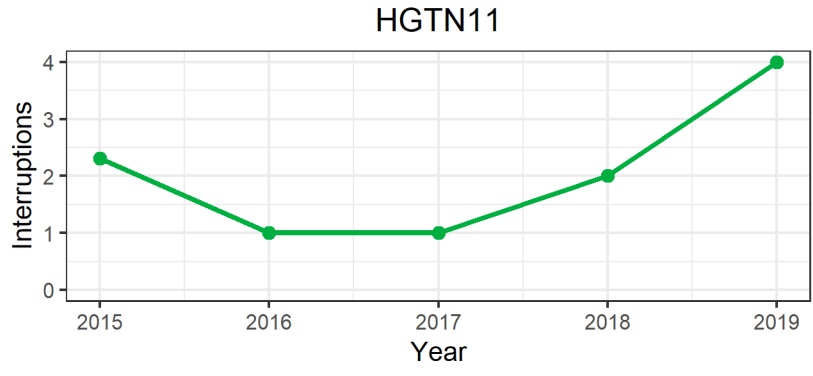
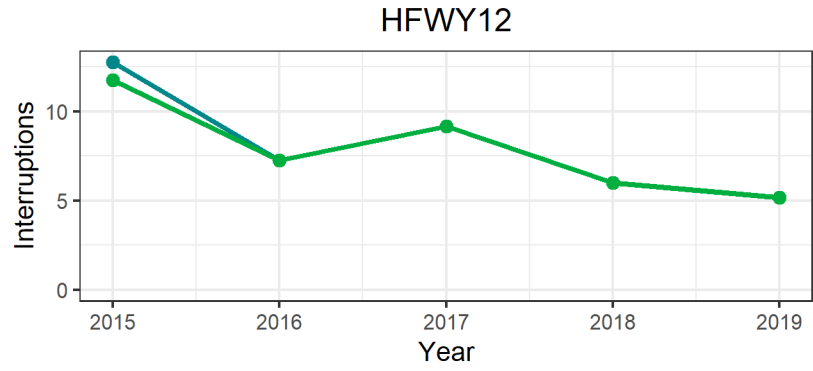
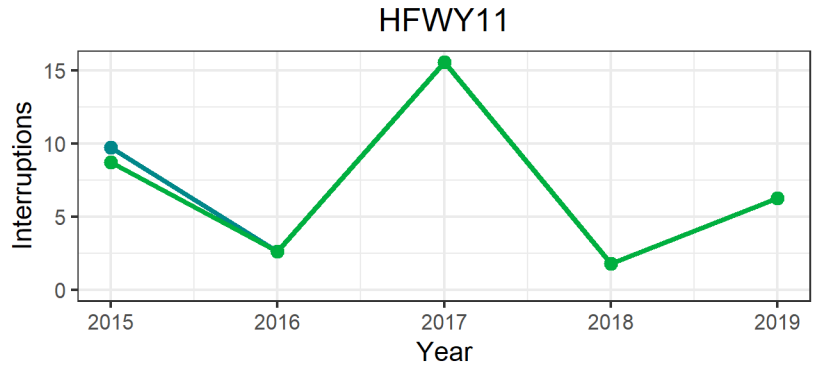
Five Years of Circuit MAIFI_E

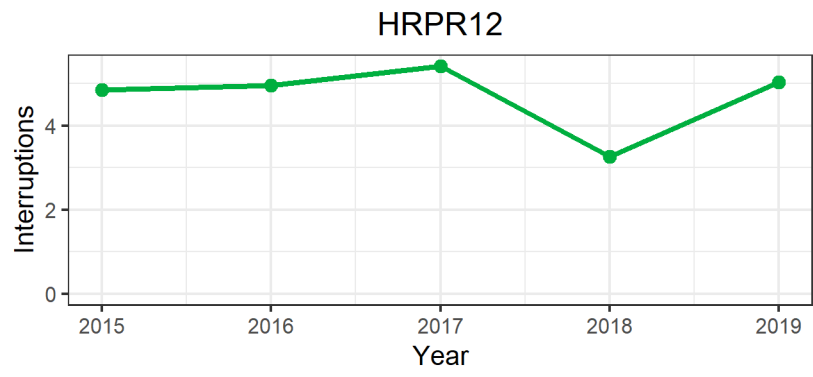
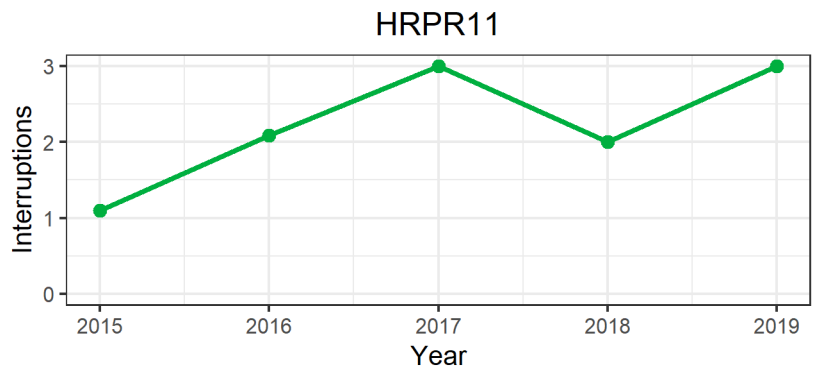
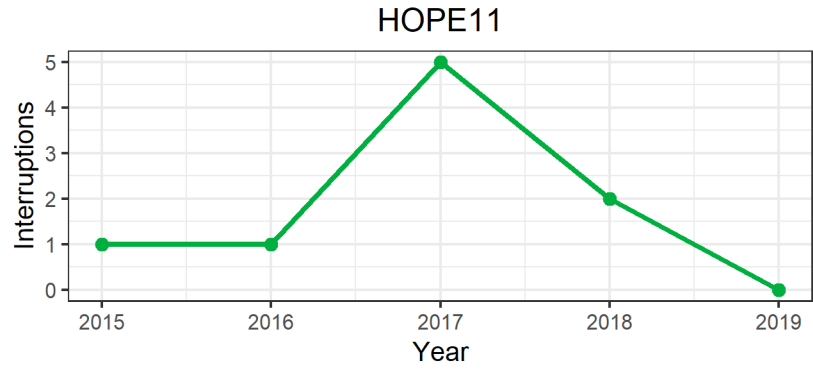
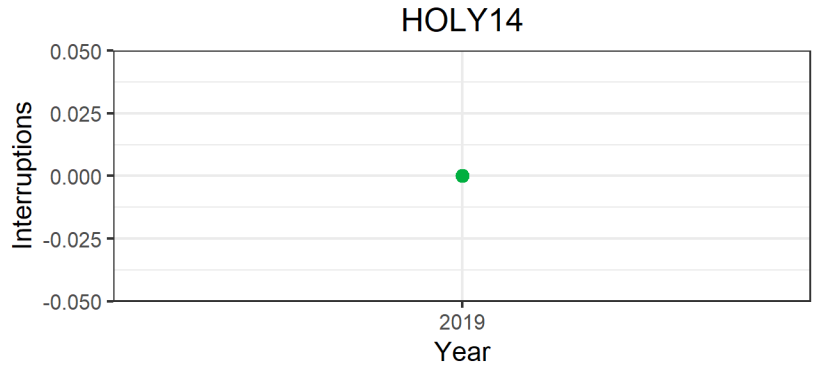
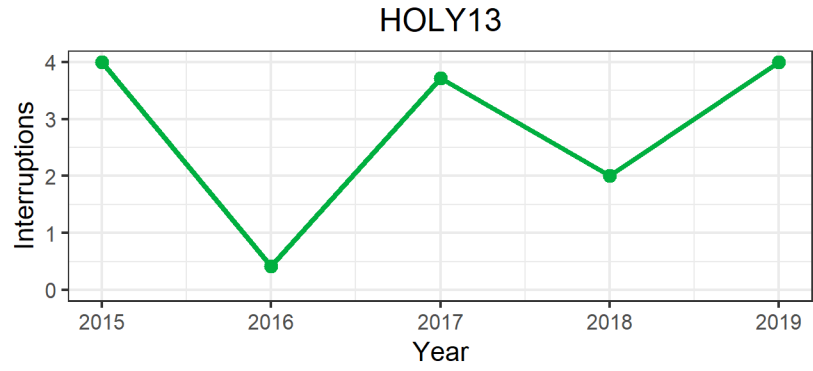
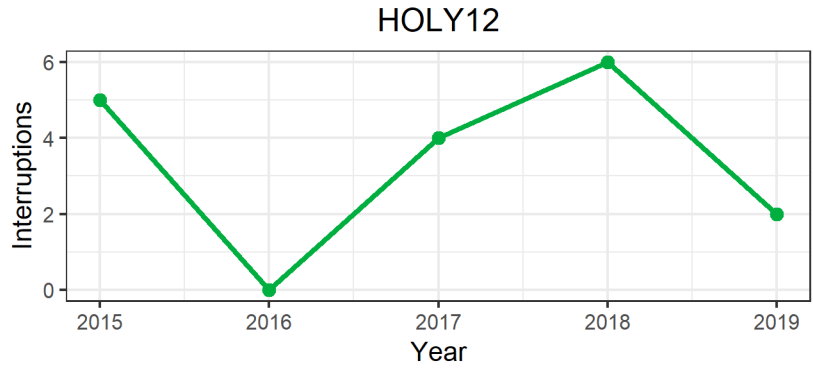
Circuit	2015	2016	2017	2018	2019	2019 MedEx
ADRN11	4.05	1.91	3.84	3.50	3.00	3.00
ADRN12	6.84	2.00	6.55	13.20	6.00	6.00
CARO11	2.23	4.01	4.42	11.18	3.10	3.10
CARO12	1.00	5.19	4.66	7.04	3.38	3.38
CARO13	0.00	2.00	0.00	5.00	0.00	0.00
CWVY11	9.00	1.00	8.00	5.00	0.00	0.00
CWVY12	5.94	3.06	6.65	3.00	6.00	6.00
DRKE11	9.42	10.33	18.00	4.00	5.00	5.00
DUKE11	7.00	0.00	2.00	2.00	0.00	0.00
DWSY11	10.13	8.27	7.47	9.00	7.85	7.85
ESTN11	0.00	0.00	0.00	0.00	0.00	0.00
HCSU11	0.00	0.00	0.00	0.00	0.00	0.00
HFVY11	9.74	2.64	15.57	1.79	6.29	6.29
HFVY12	12.77	7.25	9.15	6.00	5.17	5.17
HGTN11	2.31	1.00	1.00	2.00	4.00	4.00
HGTN12	3.00	1.00	2.00	0.00	2.00	2.00
HMDL12	9.76	4.72	8.23	6.92	6.52	6.52
HOLY11	3.00	0.00	0.00	0.00	0.00	0.00
HOLY12	5.00	0.00	4.00	6.00	2.00	2.00
HOLY13	4.00	0.42	3.72	2.00	4.00	4.00
HOLY14	NA	NA	NA	NA	0.00	0.00
HOPE11	1.00	1.00	5.00	2.00	0.00	0.00
HRPR11	1.10	2.09	3.00	2.00	3.00	3.00
HRPR12	4.86	4.96	5.42	3.27	5.03	5.03
JMSN11	0.00	0.00	1.11	0.70	0.94	0.94
JMSN12	6.00	3.00	9.67	7.00	7.00	7.00
JNTA11	9.00	9.00	12.00	9.00	9.00	9.00
JNTA12	9.76	9.25	14.13	9.63	10.00	10.00
JNVY11	12.70	3.66	6.32	6.00	7.00	7.00
JNVY12	7.00	4.00	5.00	2.00	3.00	3.00
JNVY31	7.81	9.28	10.12	7.24	5.00	5.00
LIME11	3.45	1.00	2.19	2.00	2.00	2.00
MRBT41	1.00	0.00	1.00	1.00	1.00	1.00
MRBT42	0.00	0.00	0.00	1.00	1.00	1.00
NYSA11	1.00	1.00	0.00	2.00	1.00	1.00
NYSA12	1.48	5.42	7.15	1.95	0.00	0.00
NYSA13	0.00	0.00	1.26	1.09	1.00	1.00
NYSA14	0.00	1.00	1.35	0.00	1.00	1.00
OBPR11	0.00	0.00	0.00	0.00	0.00	0.00
OIDA11	2.94	4.23	2.00	0.00	0.00	0.00
OIDA12	0.00	0.00	0.00	0.00	0.00	0.00
ONTO14	0.00	1.00	1.00	1.00	1.00	1.00
ONTO18	3.00	0.00	2.00	3.00	4.00	4.00
ONTO19	1.50	1.36	0.00	1.72	1.72	1.72
ONTO20	0.00	0.00	0.00	0.00	2.00	2.00
ONTO23	1.00	2.00	7.00	0.00	0.00	0.00
ONTO24	1.32	0.94	3.28	0.00	0.00	0.00
ONTO25	1.00	0.00	3.00	0.00	0.00	0.00
OYDM11	0.00	0.00	0.00	0.00	0.00	0.00
PNCK11	12.17	3.00	4.00	4.00	4.00	4.00
PNCK12	0.00	0.00	0.00	0.00	0.00	0.00
PRMA12	2.00	3.00	5.00	1.00	0.00	0.00
PRMA42	6.32	4.76	12.23	9.74	6.24	6.24
RKVL11	6.00	6.00	6.00	5.00	6.00	6.00
UNTY11	6.00	1.00	15.00	8.00	7.00	7.00
UNTY12	6.73	1.22	14.85	0.00	0.00	0.00
VALE11	1.00	4.17	4.55	2.86	1.00	1.00
VALE12	0.00	0.00	0.00	0.00	0.00	0.00
VALE13	1.88	4.90	3.73	0.00	0.91	0.91
VALE14	12.62	1.07	2.61	2.00	0.00	0.00
VALE15	2.37	4.51	2.76	2.25	0.00	0.00
WESR13	0.84	0.00	0.27	0.74	4.26	4.26
WESR14	0.00	0.00	2.90	6.00	3.00	3.00

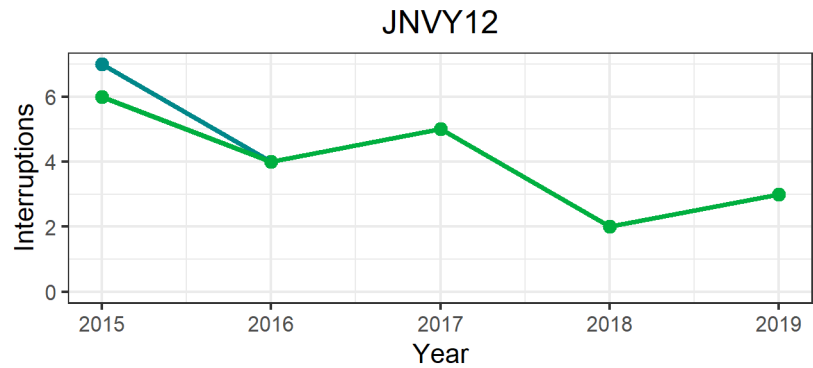
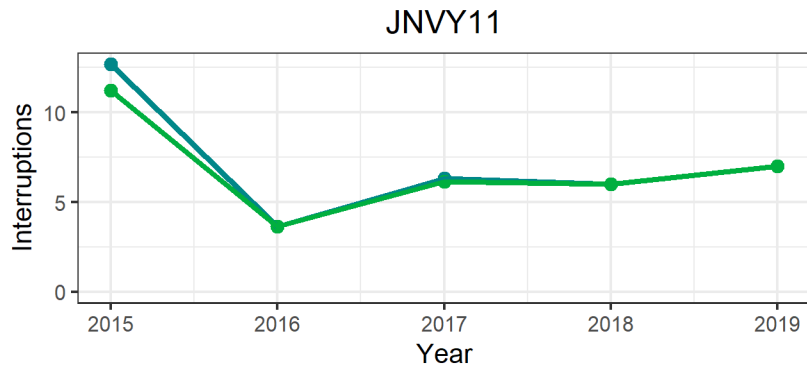
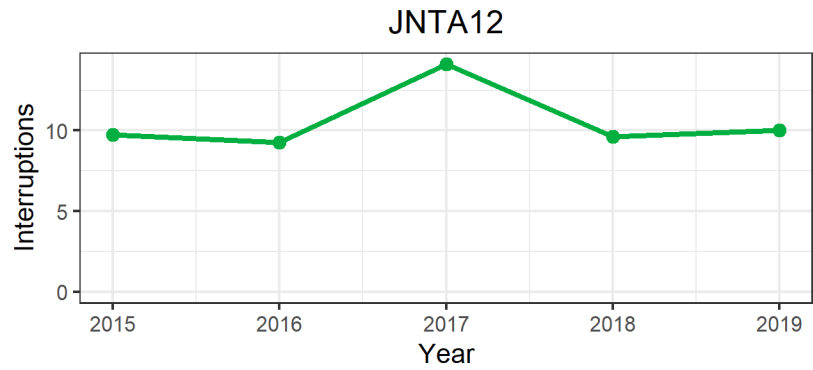
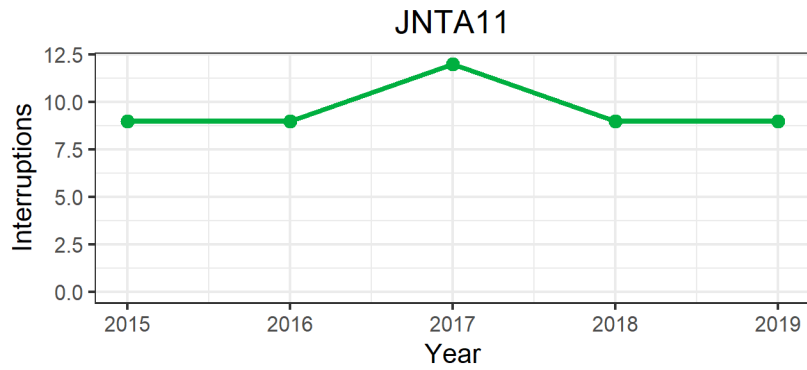
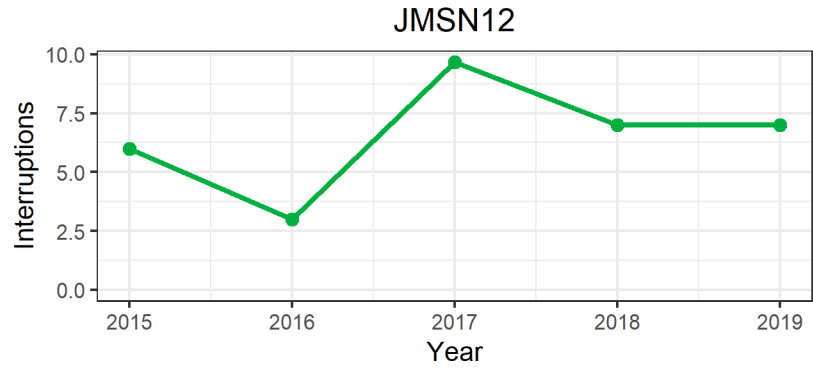
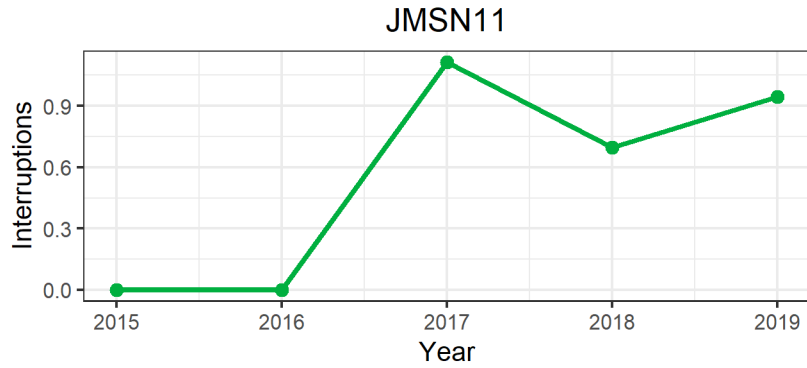
Table 8 Five Years of Circuit MAIFI_E

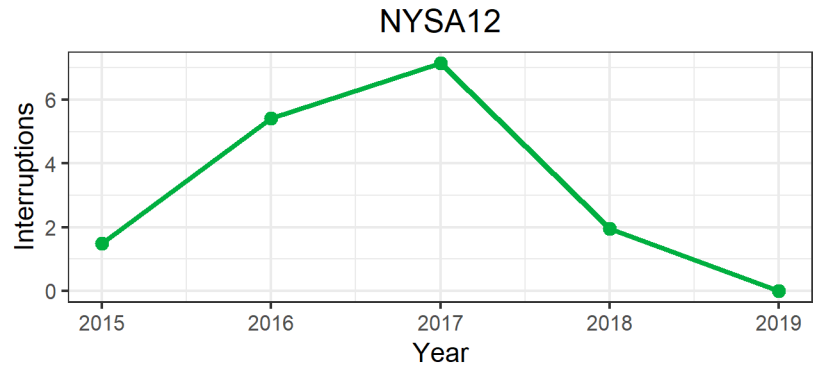
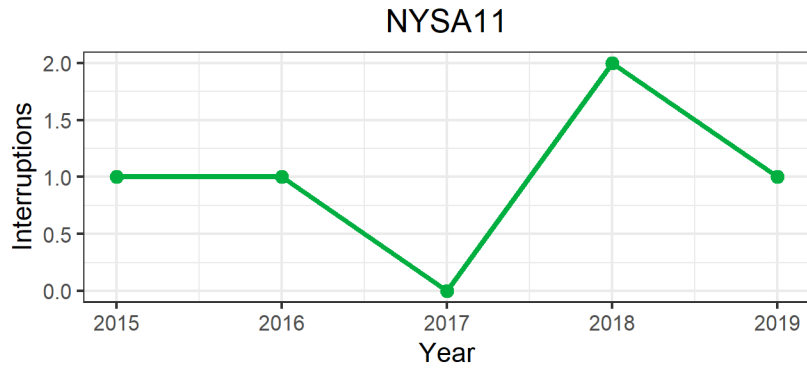
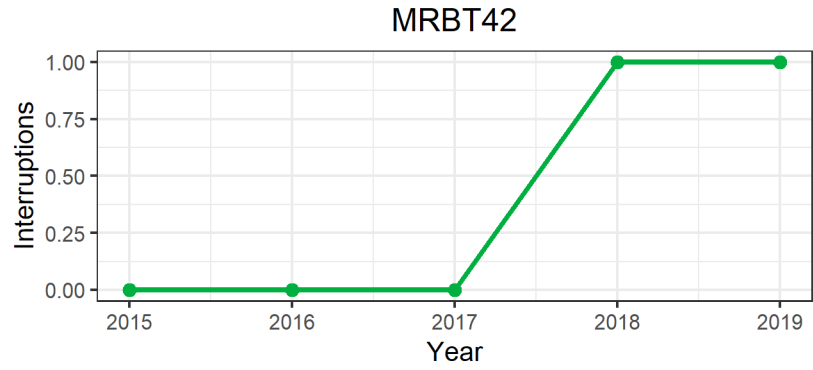
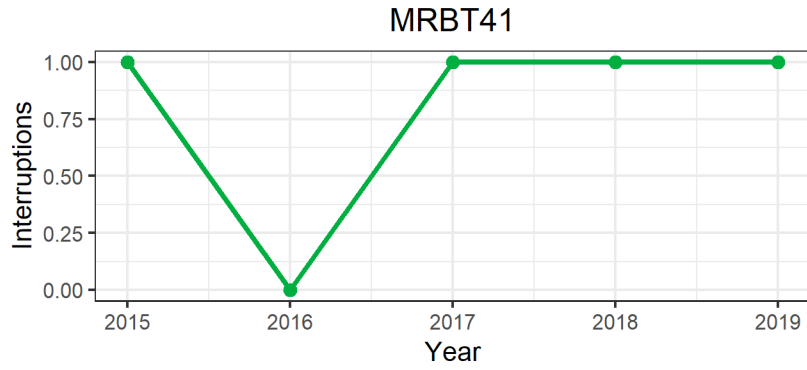
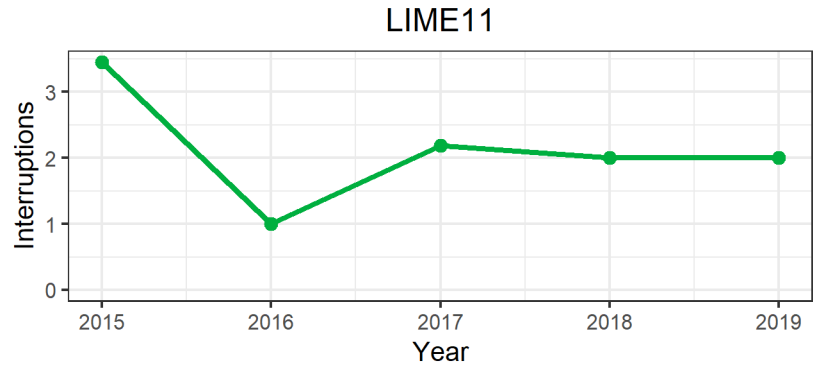
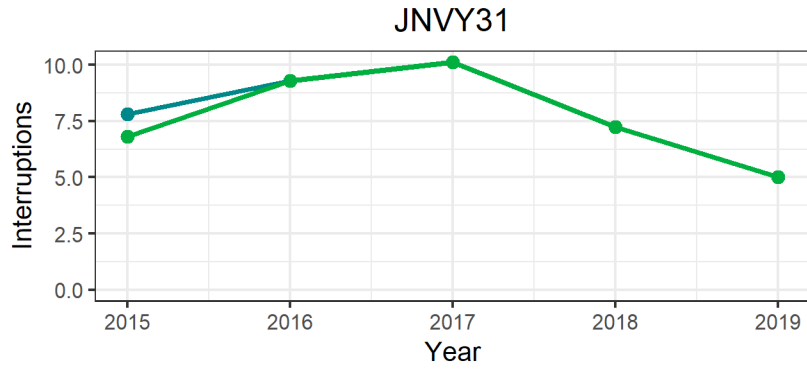


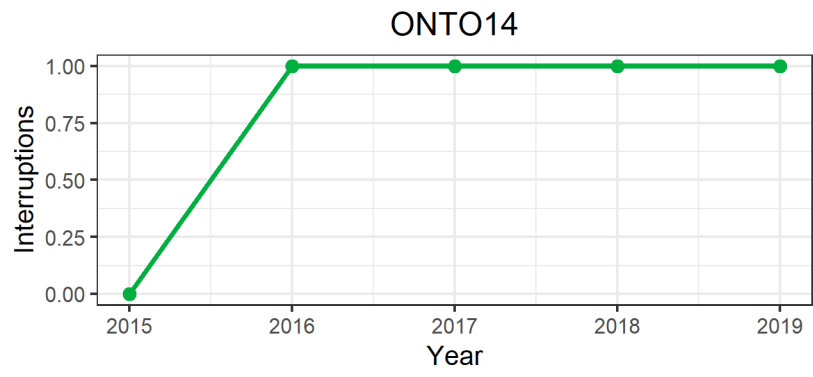
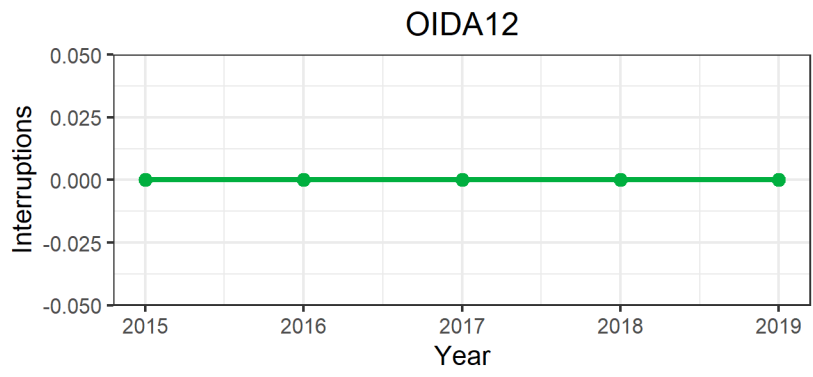
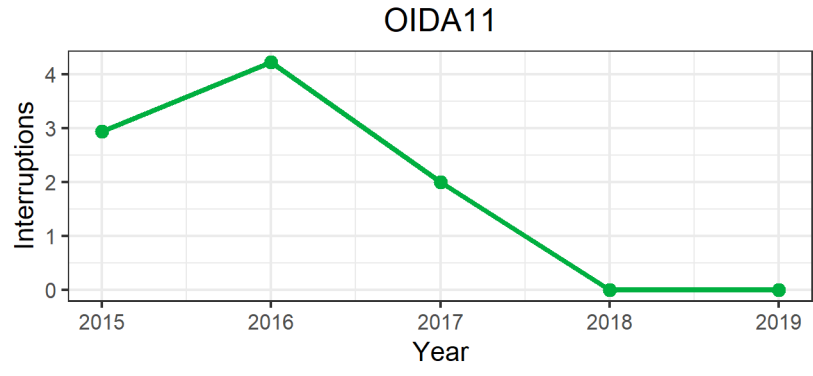
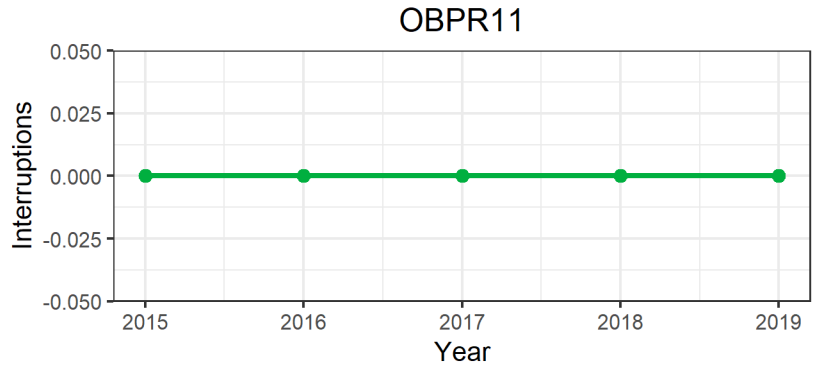
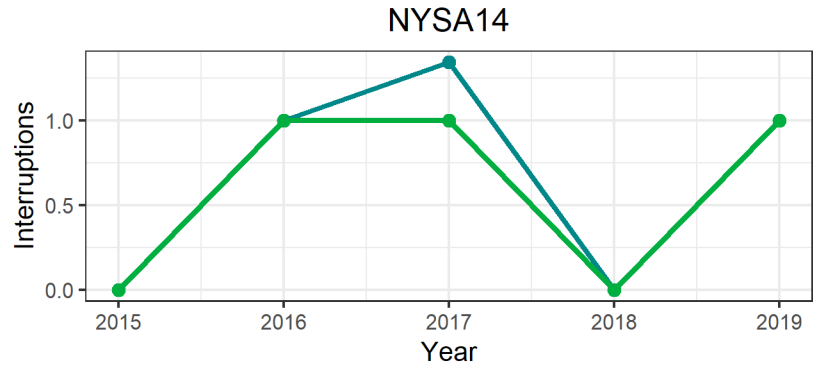
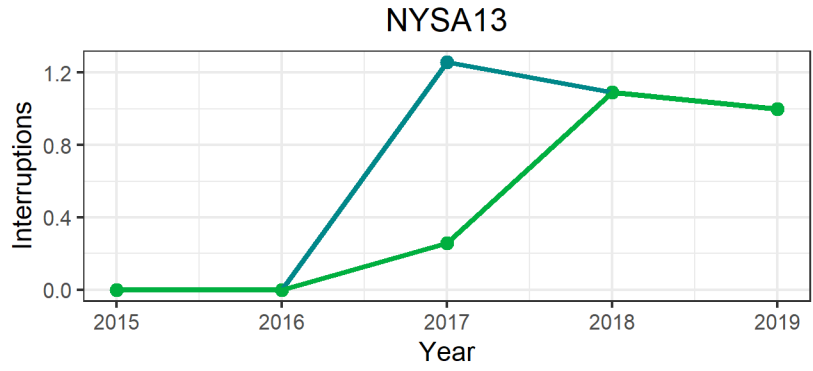


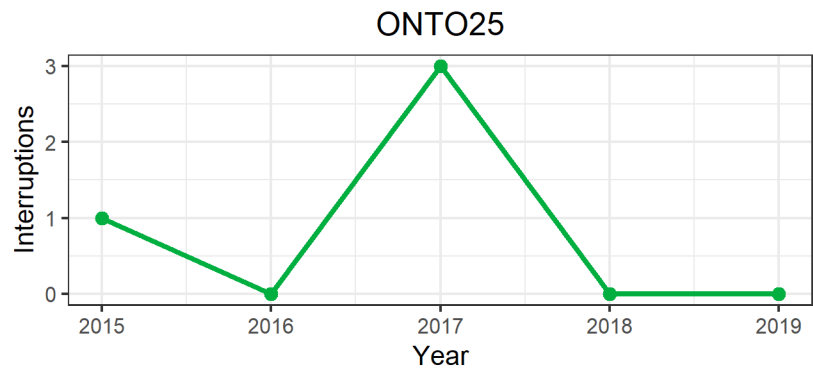
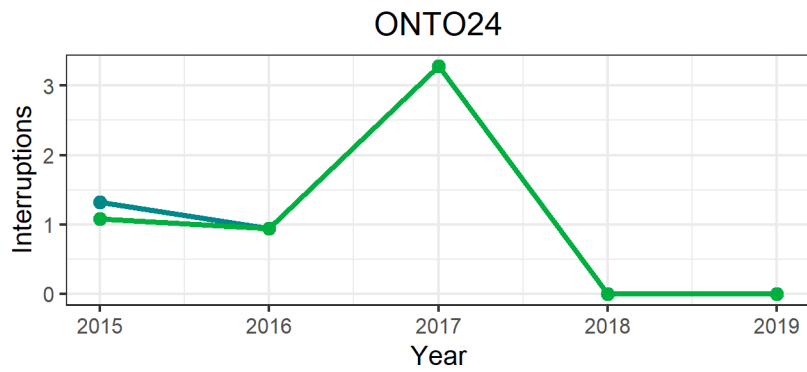
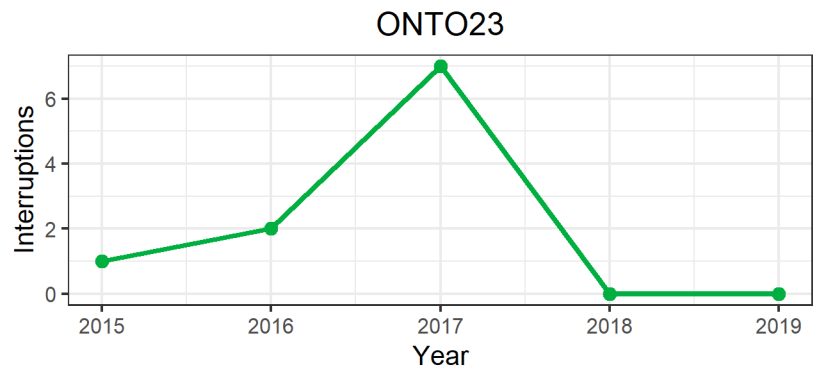
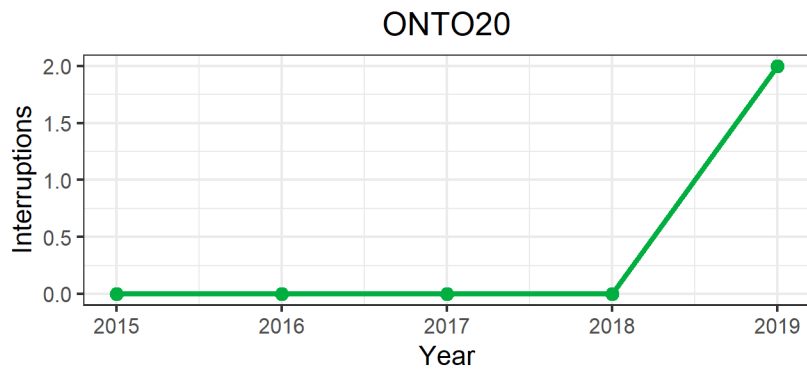
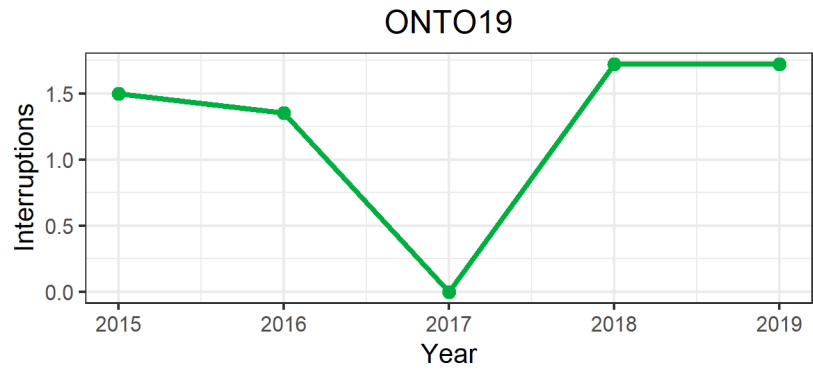
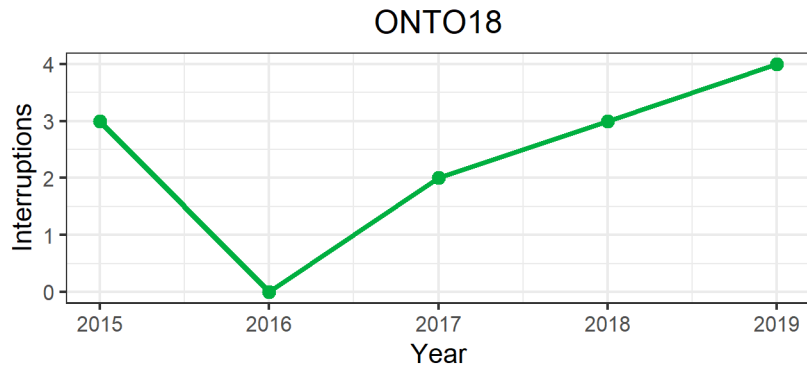


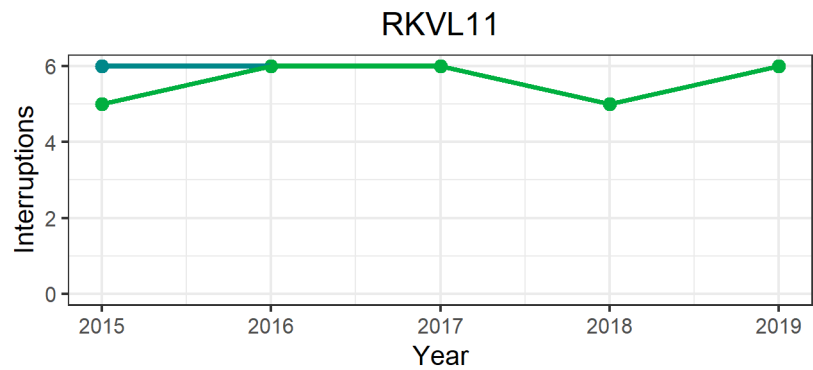
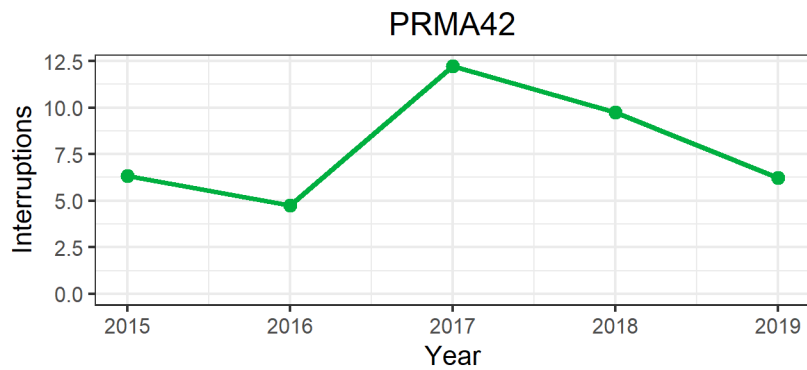
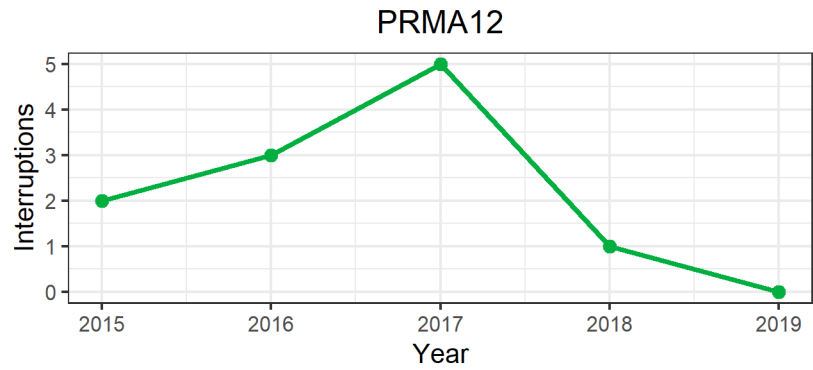
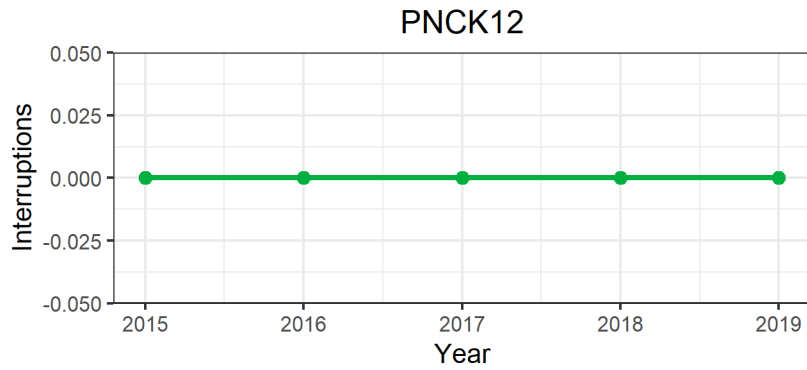
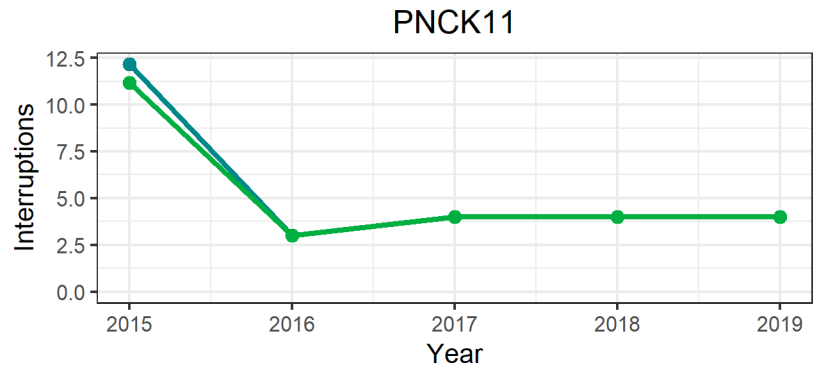
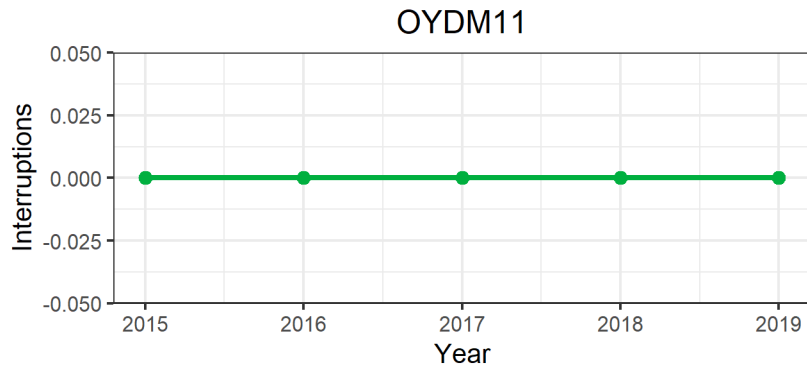


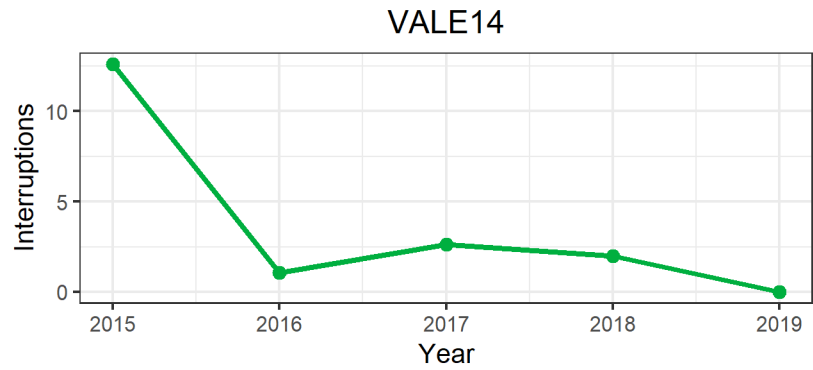
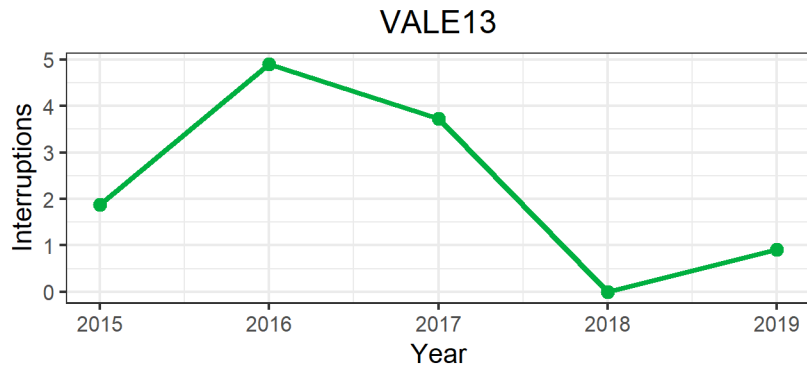
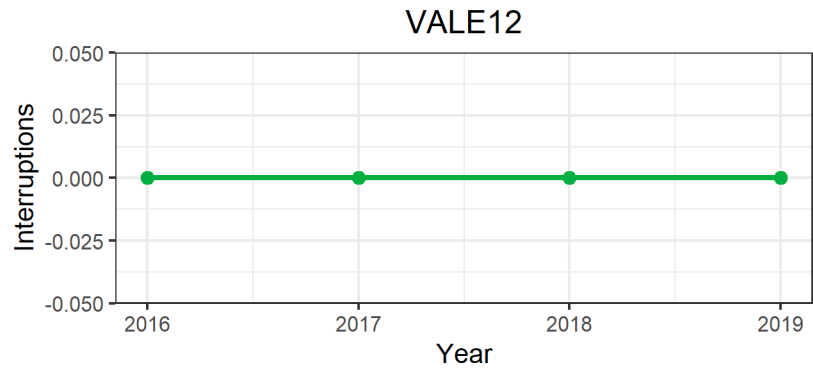
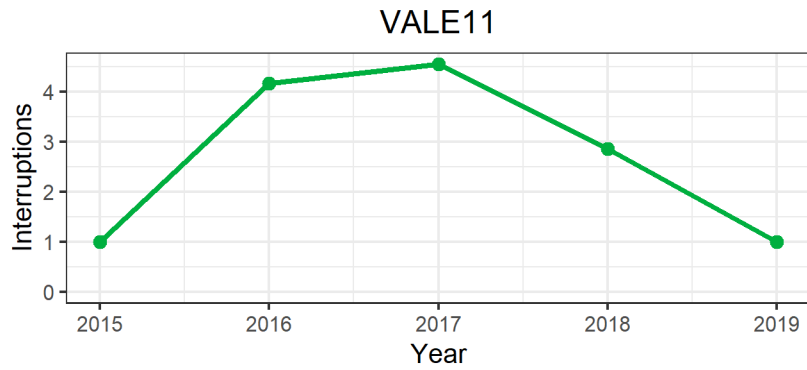
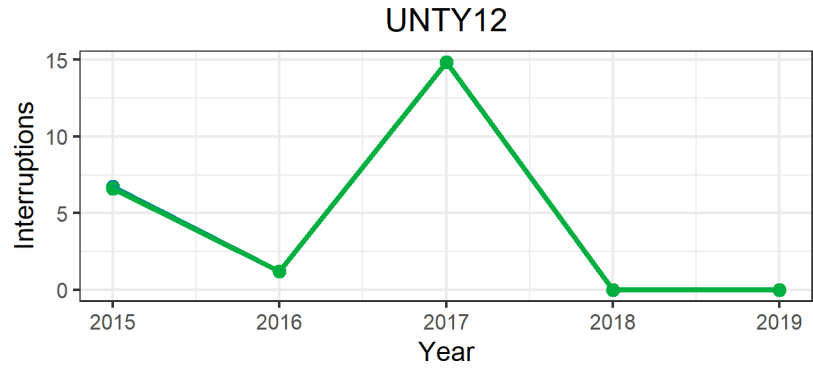
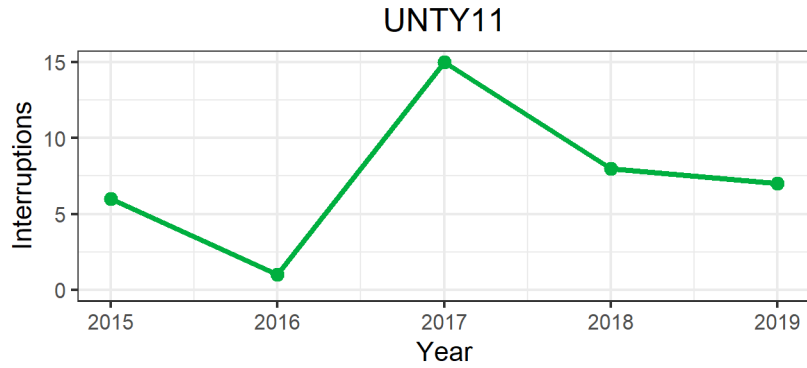












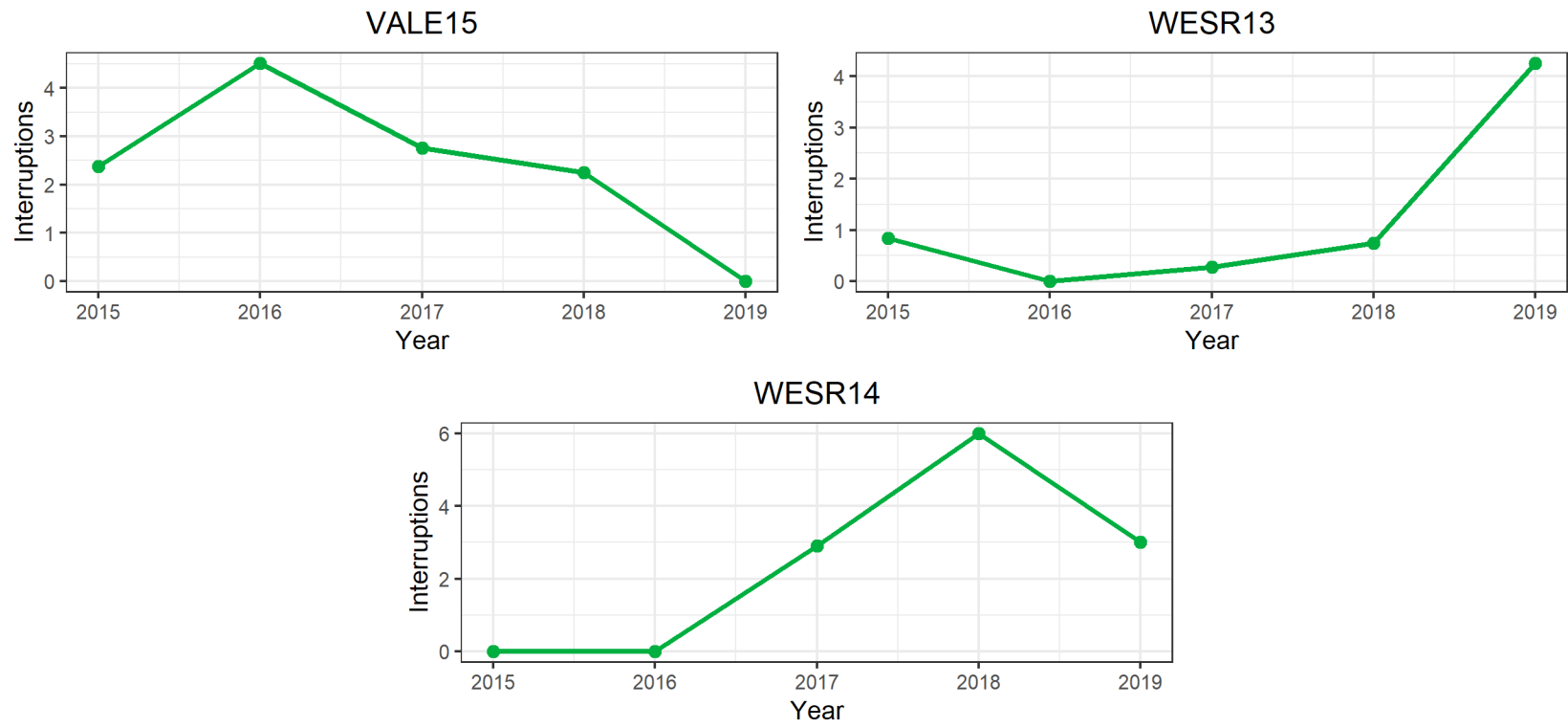


Figure 8 Five Years of Circuit MAIFI_E

2019 Descending Indices by Circuit

Circuit	SAIDI	SAIDI MedEx	Circuit	SAIFI	SAIFI MedEx	Circuit	MAIFLe	MAIFLe MedEx
CWVY12	59.83	7.22	HMDL12	4.89	4.89	JNTA12	10.00	10.00
HMDL12	12.11	12.11	OIDA12	2.00	2.00	JNTA11	9.00	9.00
HFVY11	6.70	6.70	HRPR12	1.91	1.91	DWSY11	7.85	7.85
JMSN11	6.41	6.41	CWVY12	1.74	1.71	JMSN12	7.00	7.00
JNVY31	6.40	6.40	HGTN11	1.65	1.65	JNVY11	7.00	7.00
HFVY12	6.20	6.20	MRBT41	1.59	1.59	UNTY11	7.00	7.00
HGTN11	6.00	6.00	MRBT42	1.55	1.55	HMDL12	6.52	6.52
CWVY11	5.93	5.93	HRPR11	1.47	1.47	HFVY11	6.29	6.29
OIDA12	5.58	5.58	HFVY11	1.46	1.46	PRMA42	6.24	6.24
HRPR12	4.54	4.54	HFVY12	1.46	1.46	ADRN12	6.00	6.00
DRKE11	3.70	3.70	NYSA11	1.44	1.44	CWVY12	6.00	6.00
HOLY13	3.69	3.69	ONTO24	1.39	1.39	RKVL11	6.00	6.00
HRPR11	3.66	3.66	NYSA14	1.29	1.29	HFVY12	5.17	5.17
NYSA11	3.23	3.23	DRKE11	1.27	1.27	HRPR12	5.03	5.03
OYDM11	2.97	2.97	NYSA12	1.24	1.24	DRKE11	5.00	5.00
MRBT41	2.61	2.61	WESR14	1.23	1.23	JNVY31	5.00	5.00
ONTO24	2.13	2.13	HOLY14	1.20	1.20	WESR13	4.26	4.26
DWSY11	1.94	1.94	DWSY11	1.16	1.16	HGTN11	4.00	4.00
MRBT42	1.78	1.78	OIDA11	1.15	1.15	HOLY13	4.00	4.00
OIDA11	1.73	1.73	HOLY12	1.10	1.10	ONTO18	4.00	4.00
HOLY12	1.72	1.72	ONTO25	1.08	1.08	PNCK11	4.00	4.00
WESR14	1.62	1.62	HOPE11	1.05	1.05	CARO12	3.38	3.38
ONTO25	1.50	1.50	CWVY11	1.02	1.02	CARO11	3.10	3.10
LIME11	1.47	1.47	JNTA12	1.02	1.02	ADRN11	3.00	3.00
PNCK11	1.38	1.38	JNTA11	1.02	1.02	HRPR11	3.00	3.00
WESR13	1.37	1.37	ESTN11	1.00	1.00	JNVY12	3.00	3.00
HOPE11	1.36	1.36	PRMA12	1.00	1.00	WESR14	3.00	3.00
HOLY14	1.33	1.33	OYDM11	0.93	0.93	HGTN12	2.00	2.00
JNTA12	1.33	1.33	JNVY31	0.86	0.86	HOLY12	2.00	2.00
JNTA11	1.31	1.31	WESR13	0.78	0.78	LIME11	2.00	2.00
ESTN11	1.27	1.27	LIME11	0.53	0.53	ONTO20	2.00	2.00
NYSA14	1.21	1.21	ADRN11	0.48	0.48	ONTO19	1.72	1.72
JMSN12	1.18	1.18	PNCK11	0.35	0.35	MRBT41	1.00	1.00
NYSA12	1.12	1.12	ONTO20	0.35	0.35	MRBT42	1.00	1.00
ADRN11	0.99	0.99	JMSN11	0.34	0.34	NYSA11	1.00	1.00
PRMA42	0.89	0.89	NYSA13	0.34	0.34	NYSA13	1.00	1.00
UNTY12	0.81	0.81	JMSN12	0.33	0.33	NYSA14	1.00	1.00
NYSA13	0.77	0.77	ONTO19	0.31	0.31	ONTO14	1.00	1.00
CARO12	0.65	0.65	ONTO18	0.30	0.30	VALE11	1.00	1.00
ONTO20	0.63	0.63	PRMA42	0.30	0.30	JMSN11	0.94	0.94
ONTO19	0.59	0.59	HOLY13	0.30	0.30	VALE13	0.91	0.91
ONTO18	0.55	0.55	CARO11	0.27	0.27	CARO13	0.00	0.00
HOLY11	0.43	0.43	CARO12	0.26	0.26	CWVY11	0.00	0.00
VALE13	0.34	0.34	UNTY12	0.21	0.21	DUKE11	0.00	0.00
VALE11	0.33	0.33	JNVY11	0.20	0.20	ESTN11	0.00	0.00
VALE14	0.31	0.31	VALE13	0.18	0.18	HCSU11	0.00	0.00
UNTY11	0.30	0.30	HOLY11	0.17	0.17	HOLY11	0.00	0.00
RKVL11	0.30	0.30	UNTY11	0.16	0.16	HOLY14	0.00	0.00
CARO11	0.28	0.28	VALE11	0.14	0.14	HOPE11	0.00	0.00
VALE15	0.26	0.26	VALE15	0.12	0.12	NYSA12	0.00	0.00
PRMA12	0.23	0.23	VALE14	0.12	0.12	OBPR11	0.00	0.00
ADRN12	0.19	0.19	CARO13	0.10	0.10	OIDA11	0.00	0.00
JNVY11	0.17	0.17	ADRN12	0.08	0.08	OIDA12	0.00	0.00
CARO13	0.16	0.16	HGTN12	0.08	0.08	ONTO23	0.00	0.00
HGTN12	0.13	0.13	ONTO14	0.06	0.06	ONTO24	0.00	0.00
DUKE11	0.11	0.11	JNVY12	0.05	0.05	ONTO25	0.00	0.00
JNVY12	0.10	0.10	DUKE11	0.04	0.04	OYDM11	0.00	0.00
ONTO14	0.04	0.04	RKVL11	0.03	0.03	PNCK12	0.00	0.00
HCSU11	0.00	0.00	HCSU11	0.00	0.00	PRMA12	0.00	0.00
OBPR11	0.00	0.00	OBPR11	0.00	0.00	UNTY12	0.00	0.00
ONTO23	0.00	0.00	ONTO23	0.00	0.00	VALE12	0.00	0.00
PNCK12	0.00	0.00	PNCK12	0.00	0.00	VALE14	0.00	0.00
VALE12	0.00	0.00	VALE12	0.00	0.00	VALE15	0.00	0.00

Table 9 2019 Descending Indices by Circuit

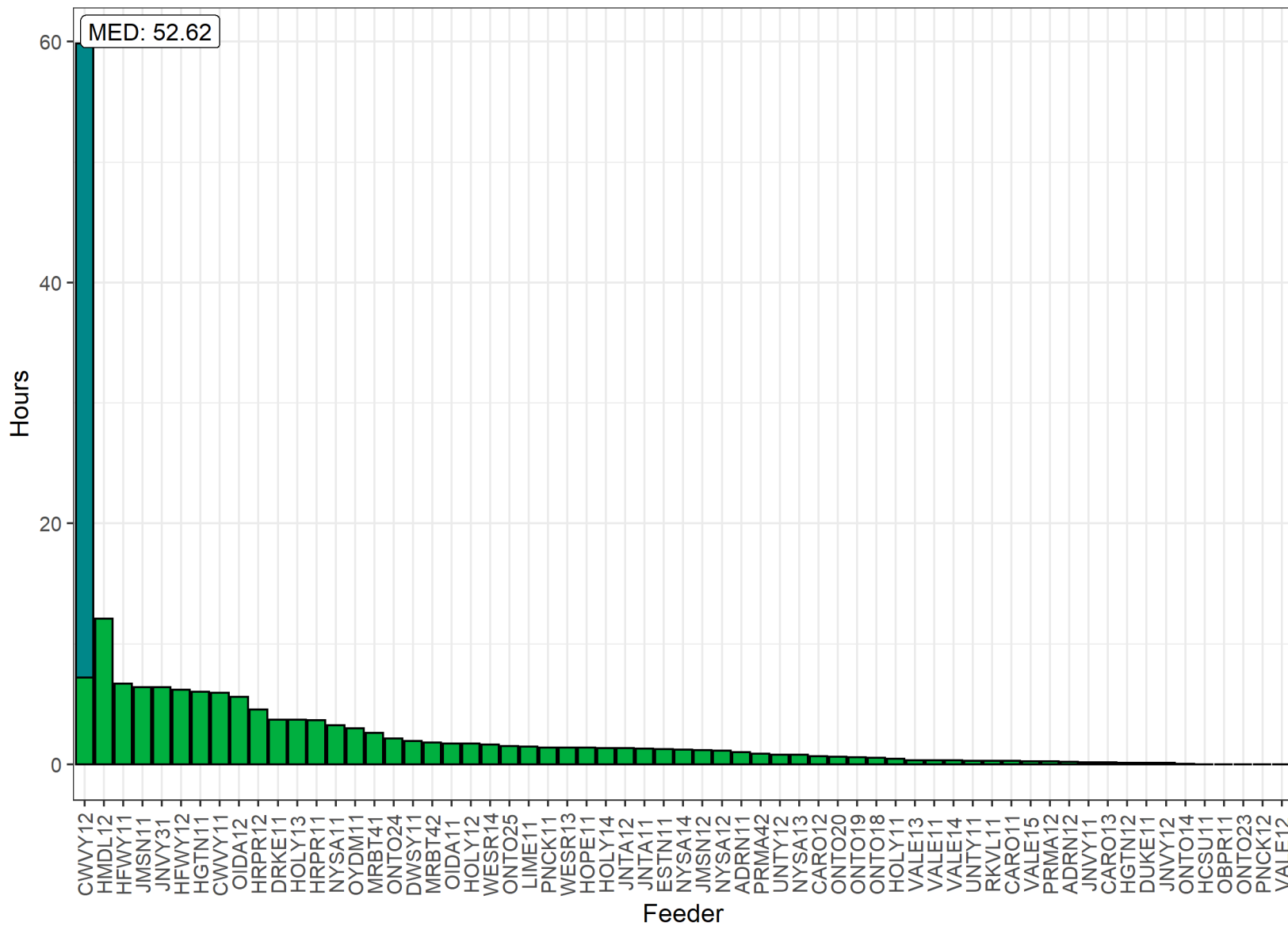


Figure 9 2019 Descending SAIDI by Circuit

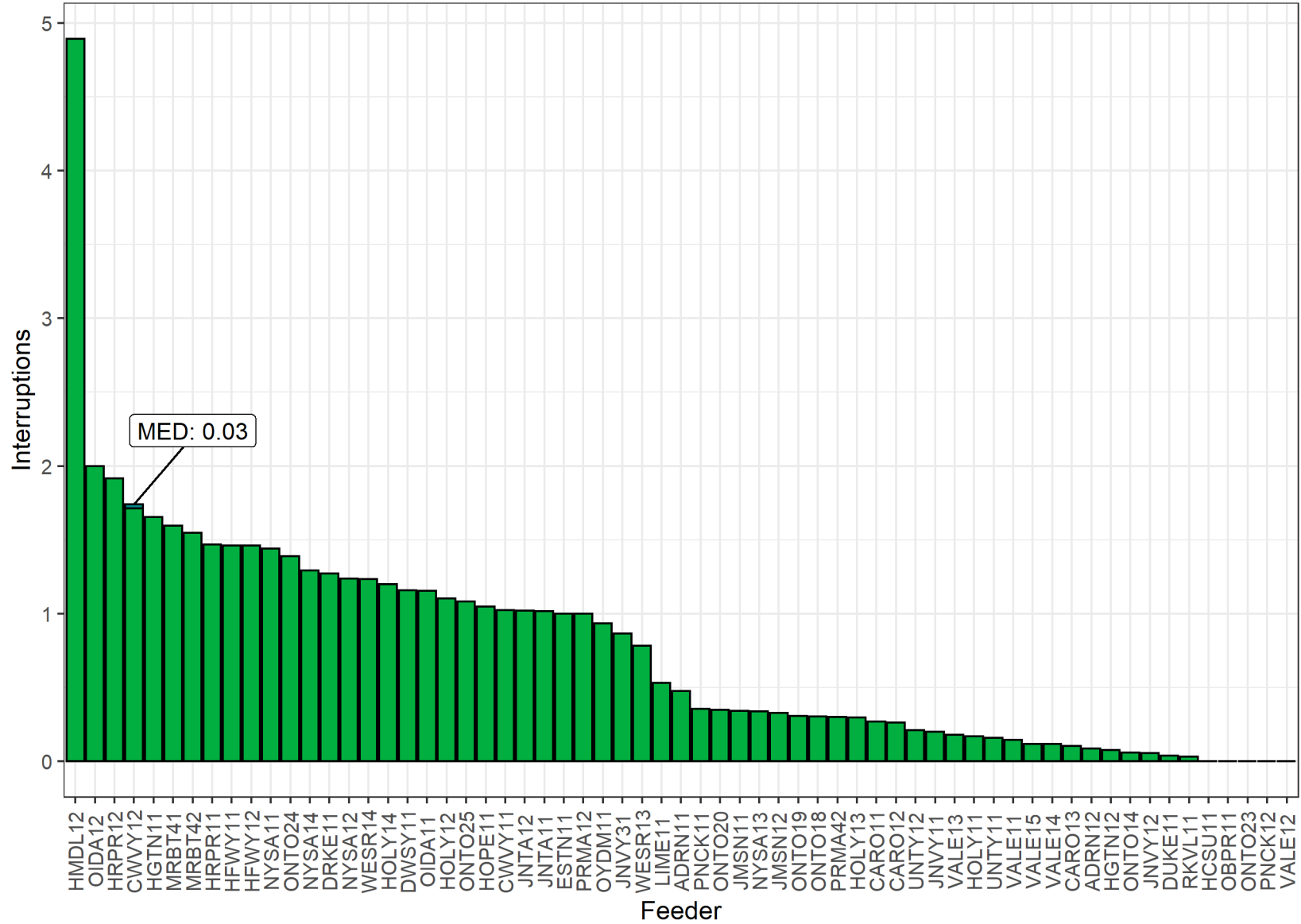


Figure 10 2019 Descending SAIFI by Circuit

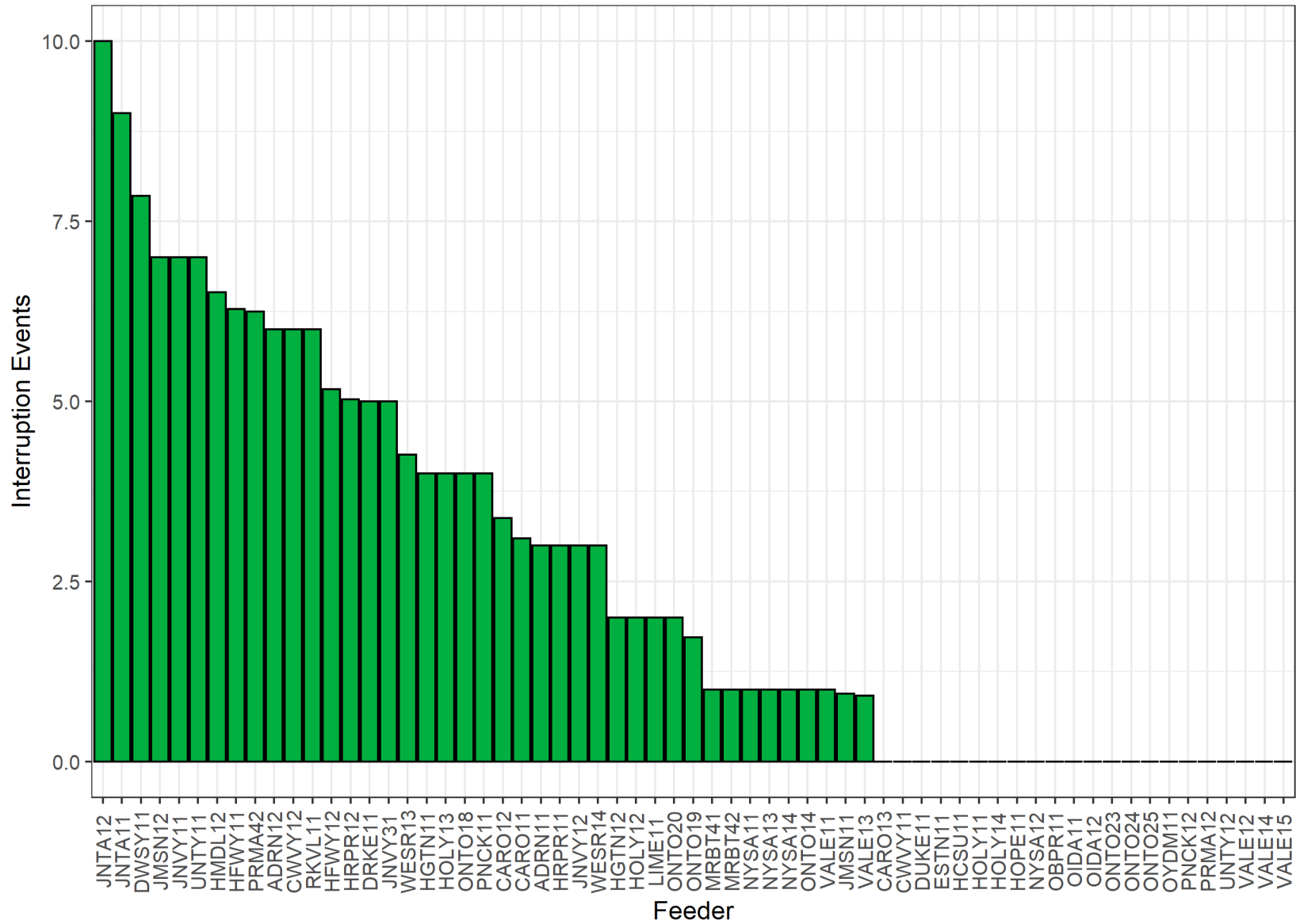


Figure 11 2019 Descending MAIFIE by Circuit

APPENDIX

Circuit Reference Information

Circuit	Substation	Operating Area	Voltage (kV)	Customers*
ADRN11	Adrian	Western	12.5	400
ADRN12	Adrian	Western	12.5	602
CARO11	Cairo	Western	12.5	1,223
CARO12	Cairo	Western	12.5	92
CARO13	Cairo	Western	12.5	739
CWVY11	Cow Valley	Western	12.5	42
CWVY12	Cow Valley	Western	12.5	111
DRKE11	Durkee	Western	12.5	163
DUKE11	Duke	Western	12.5	26
DWSY11	Drewsey	Western	12.5	183
ESTN11	Easton	Western	12.5	3
HCSU11	Hells Canyon	Western	12.5	2
HFVY11	Halfway	Western	12.5	766
HFVY12	Halfway	Western	12.5	544
HGTN11	Huntington	Western	12.5	84
HGTN12	Huntington	Western	12.5	306
HMDL12	Homedale	Canyon	12.5	149
HOLY11	Holly	Western	12.5	186
HOLY12	Holly	Western	12.5	78
HOLY13	Holly	Western	12.5	166
HOLY14	Holly	Western	12.5	5
HOPE11	Hope	Western	12.5	151
HRPR11	Harper	Western	12.5	105
HRPR12	Harper	Western	12.5	186
JMSN11	Jamieson	Western	12.5	394
JMSN12	Jamieson	Western	12.5	241
JNTA11	Juntura	Western	12.5	61
JNTA12	Juntura	Western	12.5	51
JNVY11	Jordan Valley	Canyon	12.5	90
JNVY12	Jordan Valley	Canyon	12.5	114
JNVY31	Jordan Valley	Canyon	25	303
LIME11	Lime	Western	12.5	117
MRBT41	Malheur Butte	Western	34.5	32
MRBT42	Malheur Butte	Western	34.5	11
NYSA11	Nyssa	Western	12.5	850
NYSA12	Nyssa	Western	12.5	329
NYSA13	Nyssa	Western	12.5	743
NYSA14	Nyssa	Western	12.5	247
OBPR11	Oxbow	Western	12.5	1
OIDA11	Ore-Ida	Western	12.5	660
OIDA12	Ore-Ida	Western	12.5	1
ONTO14	Ontario	Western	12.5	35
ONTO18	Ontario	Western	12.5	854
ONTO19	Ontario	Western	12.5	1,826
ONTO20	Ontario	Western	12.5	1,213
ONTO23	Ontario	Western	12.5	48
ONTO24	Ontario	Western	12.5	697
ONTO25	Ontario	Western	12.5	491
OYDM11	Owyhee Dam	Western	12.5	15
PNCK11	Pine Creek	Western	12.5	93
PNCK12	Pine Creek	Western	12.5	2
PRMA12	Parma	Western	12.5	3
PRMA42	Parma	Western	34.5	190
RKVL11	Rockville	Canyon	12.5	32
UNTY11	Unity	Western	12.5	146
UNTY12	Unity	Western	12.5	237
VALE11	Vale	Western	12.5	1,029
VALE12	Vale	Western	12.5	54
VALE13	Vale	Western	12.5	560
VALE14	Vale	Western	12.5	307
VALE15	Vale	Western	12.5	466
WESR13	Weiser	Western	12.5	193
WESR14	Weiser	Western	12.5	30

Table 10 Circuit Reference Information

*Some circuits have customers in Idaho and Oregon. The counts are for Oregon customers only as of 12/31/2019.

Five Years of System Pole and Trench Miles

Year	Overhead (OH) Pole Miles	Underground (UG) Trench Miles	Distribution All Miles	Transmission Line (Structure/Pole) Miles*	Percent OH / UG
2019	2,113.6	100.8	2,214.4	757.3	95%/5%
2018	2,113.0	99.9	2,212.9	757.0	95%/5%
2017	2,114.5	98.9	2,213.5	759.4	96%/4%
2016	2,131.4	97.9	2,229.3	760.3	96%/4%
2015	2,118.9	95.4	2,214.3	759.8	96%/4%

Table 11 Five Years of System Pole and Trench Miles

*Transmission line miles include some lines that do not directly serve customer load.

2019 Major Event Day System Summary

Date	Cause	Customers	CMI	CI	SAIDI (Minutes)	SAIFI	CAIDI (Minutes)
5/6/2019	Mechanical Failure	19,020	350,421	3	18.42	0.00	116,807.00

Table 12 2019 MED System Summary

2019 Major Event Day Feeder Summary

Date	Feeder	Customers	CMI	CI	SAIDI (Minutes)	SAIFI	CAIDI (Minutes)
5/6/2019	CWVY12	109	350,421	3	3,214.87	0.03	116,807.00

Table 13 2019 MED Feeder Summary

Five Years of Major Event Days

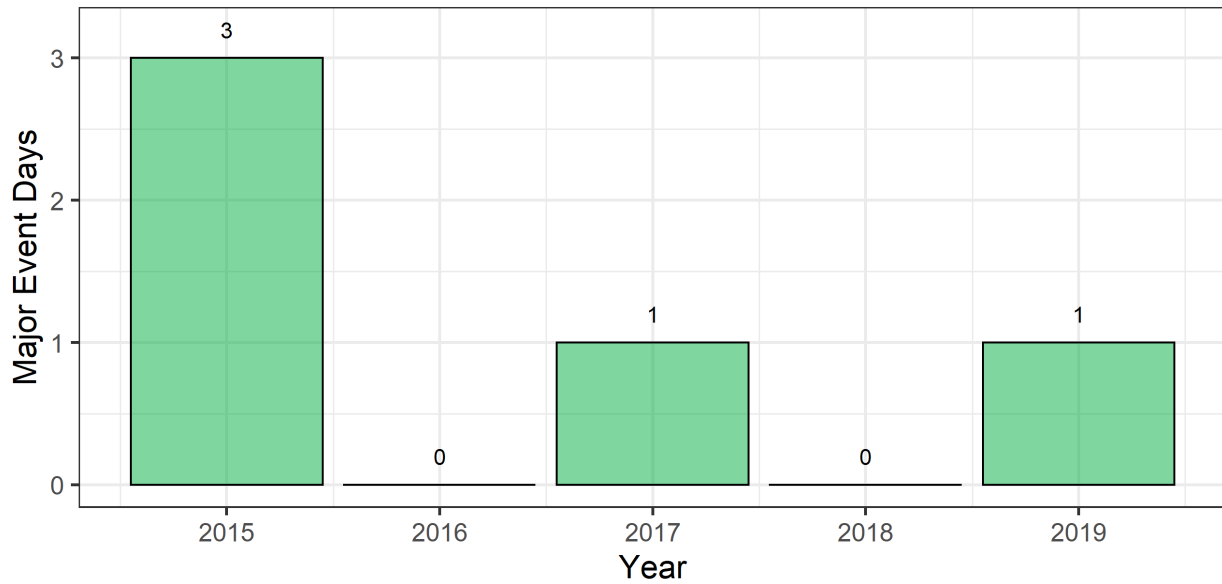


Figure 12 Five Years of MEDs

Cause Category Translation

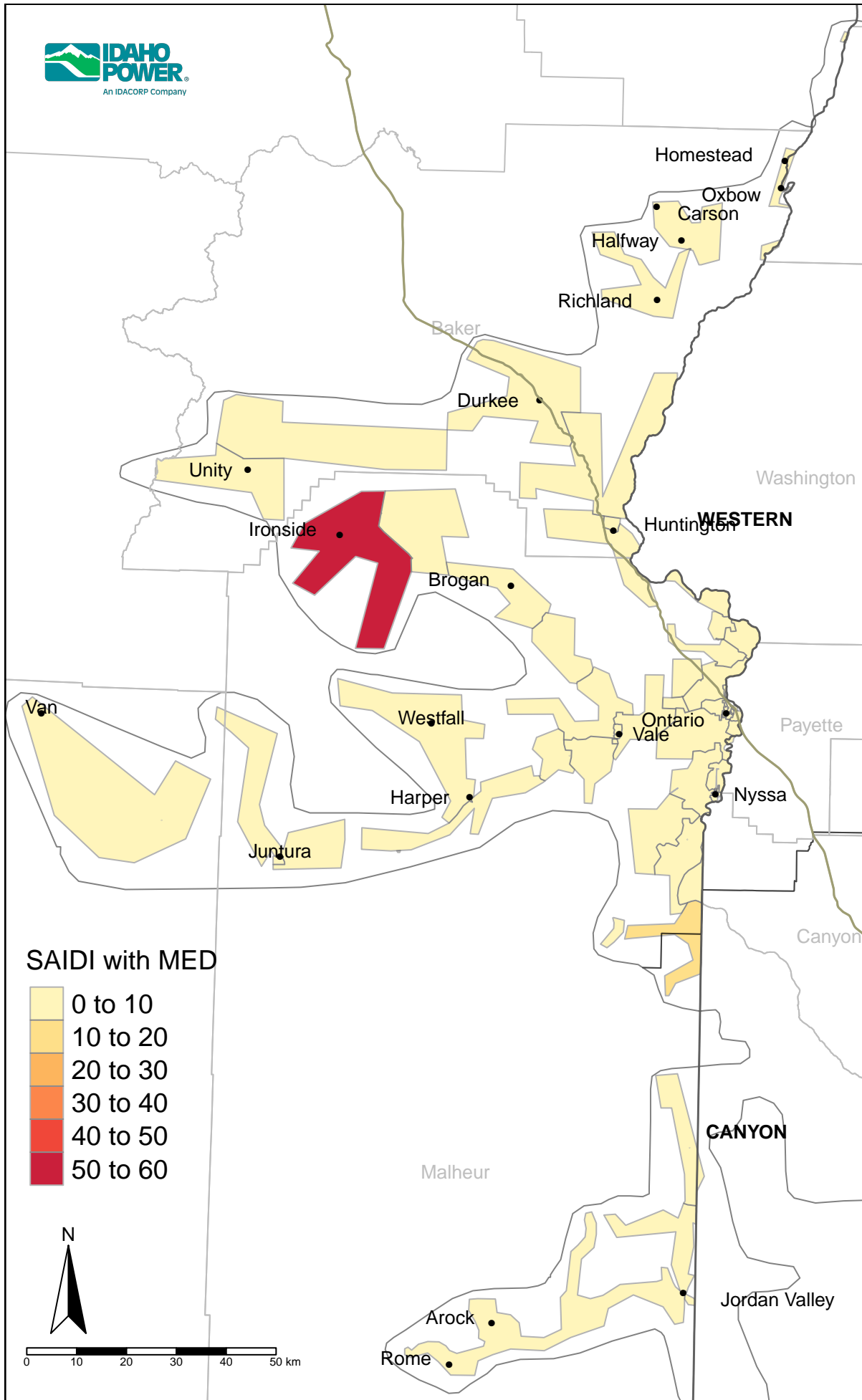
Idaho Power Cause	OAR 860-023-0151 (2)(b) Cause
Loss of Supply – Transmission*	Loss of Supply – Transmission
Loss of Supply – Station*	Loss of Supply – Substation
Corrosion/Rot	Distribution – Equipment
Electrical Failure	Distribution – Equipment
Loose Hardware	Distribution – Equipment
Mechanical Failure	Distribution – Equipment
Improper Installation	Distribution – Equipment
Contamination	Distribution – Equipment
Lightning	Distribution – Lightning
Other IPC Circuit	Distribution – Other
Other (Define in Comments)	Distribution – Other
Safety Precaution	Distribution – Other
Utility Operating Error	Distribution – Other
Planned Maintenance	Distribution – Planned
Structures (Signs, Buildings)	Distribution – Public
Construction/Dig-in	Distribution – Public
Foreign Object (Pipe, Kite, Tree Trim)	Distribution – Public
Vandalism	Distribution – Public
Vehicle Collision	Distribution – Public
Momentary (Tripping)	Distribution – Unknown
Unknown	Distribution – Unknown
Tree/Vegetation	Distribution – Vegetation
Loading/Unloading (Snow, Ice)	Distribution – Weather (Non-Lightning)
Unstable Earth	Distribution – Weather (Non-Lightning)
Load Shed/Transfer	Distribution – Weather (Non-Lightning)
Wildland/Building Fire	Distribution – Weather (Non-Lightning)
Overload/Cold Load	Distribution – Weather (Non-Lightning)
Bird – NonRaptor	Distribution – Wildlife
Bird – Raptor	Distribution – Wildlife
Large Animal (Livestock)	Distribution – Wildlife
Small Animal	Distribution – Wildlife

Table 14 Cause Category Translation

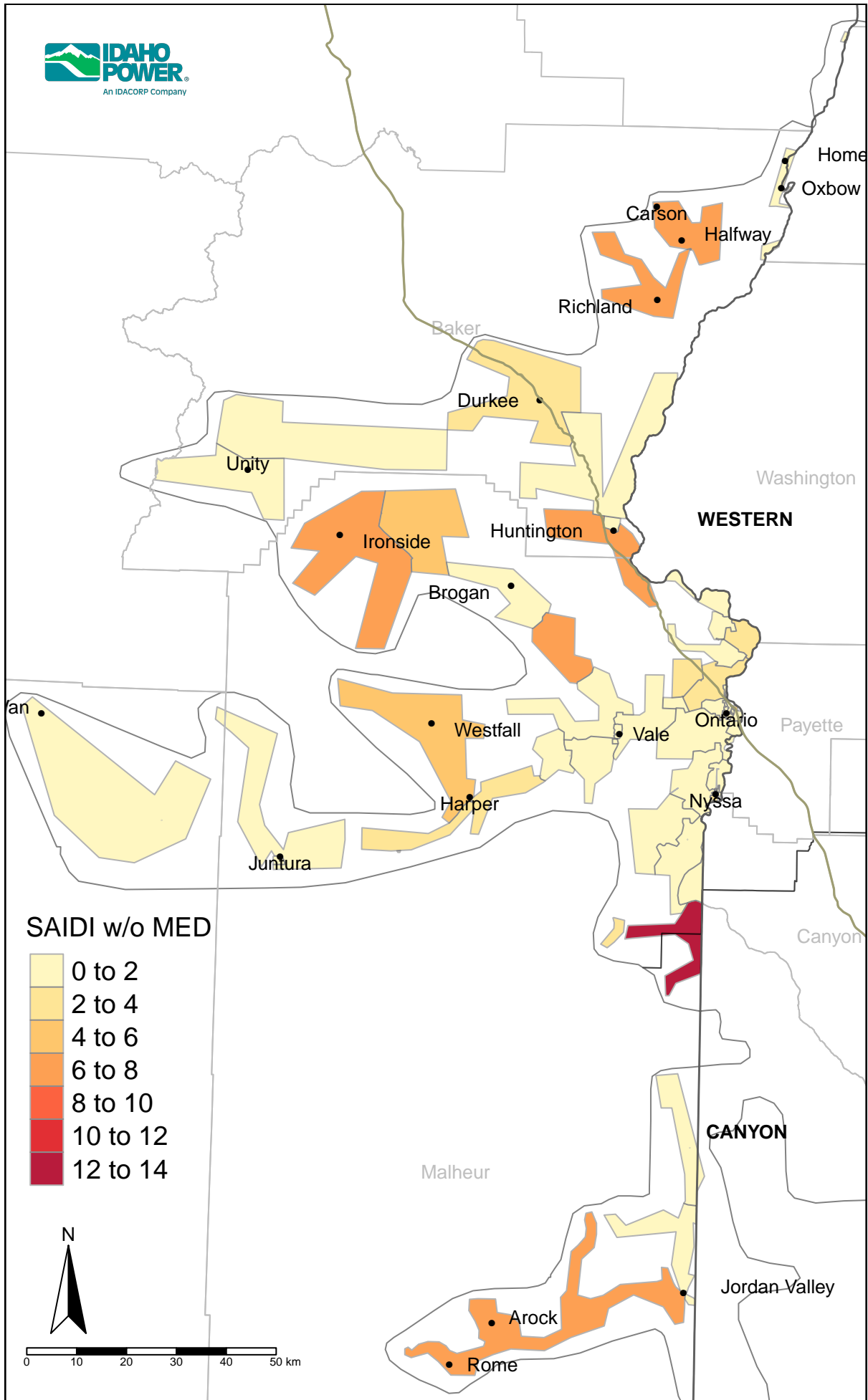
*These are also identified from the Idaho Power SYSTEM field. This field has values for “Transmission”, “Substation”, “Distribution Primary OH”, “Distribution Primary UG”, “Secondary/Service OH” and “Secondary/Service UG”. So, “Loss of Supply – Transmission” in this report includes events where the CAUSE field was “Loss of Supply – Transmission” **or** the SYSTEM field was “Transmission”, and “Loss of Supply – Substation” includes events where the CAUSE field was “Loss of Supply – Station” **or** the SYSTEM field was “Substation”.

MAPS

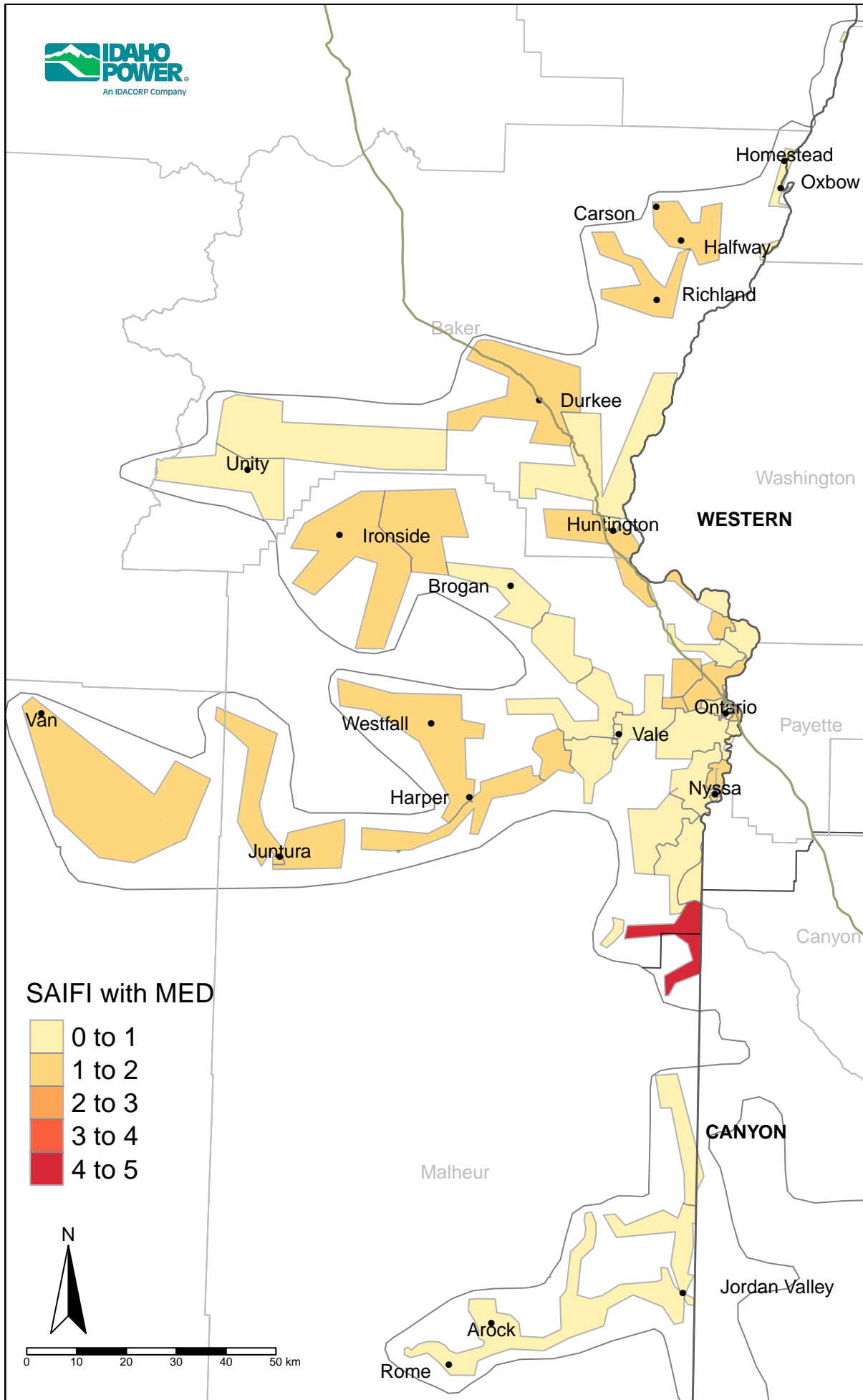
2019 SAIDI with MED Oregon Area



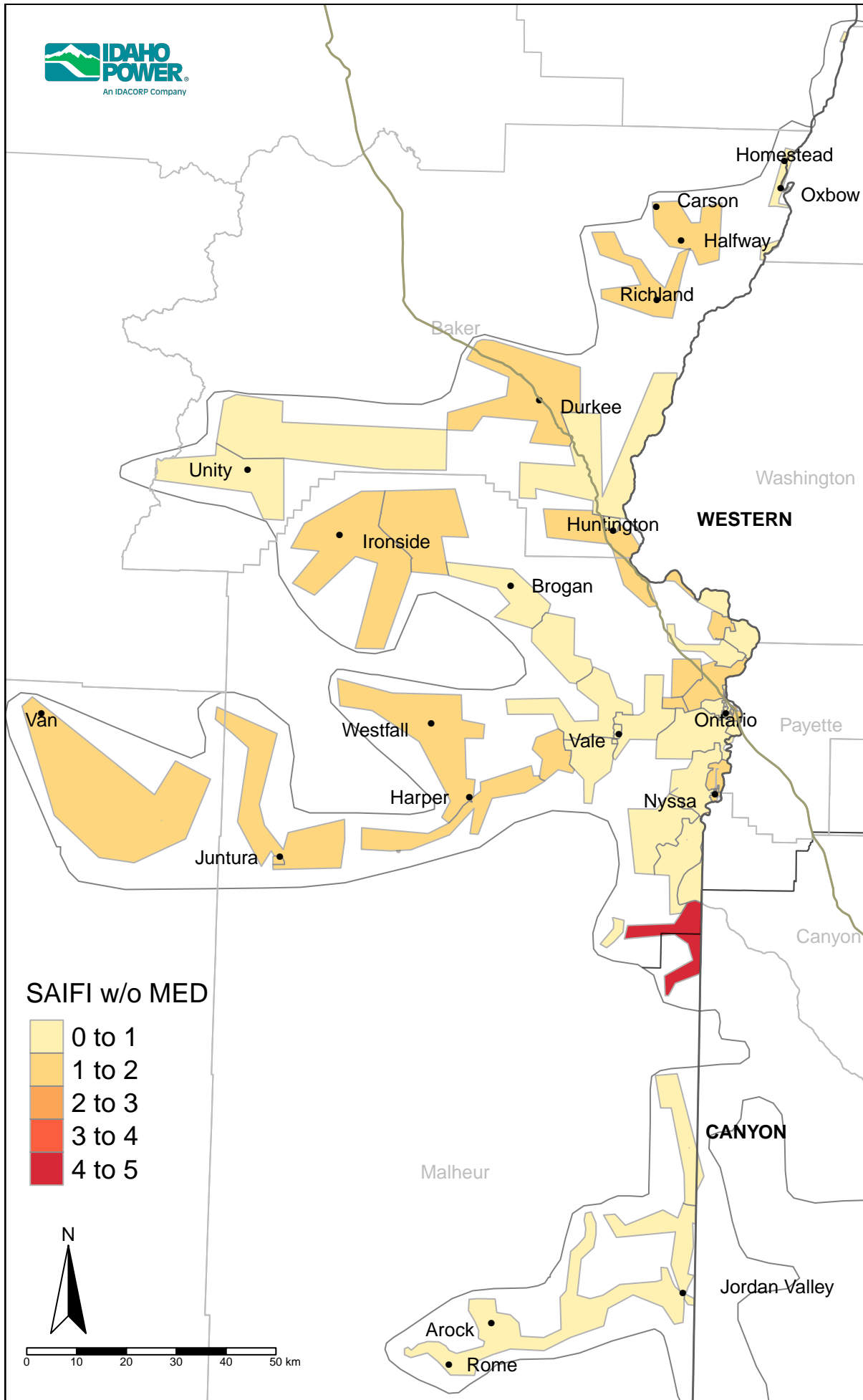
2019 SAIDI w/o MED Oregon Area



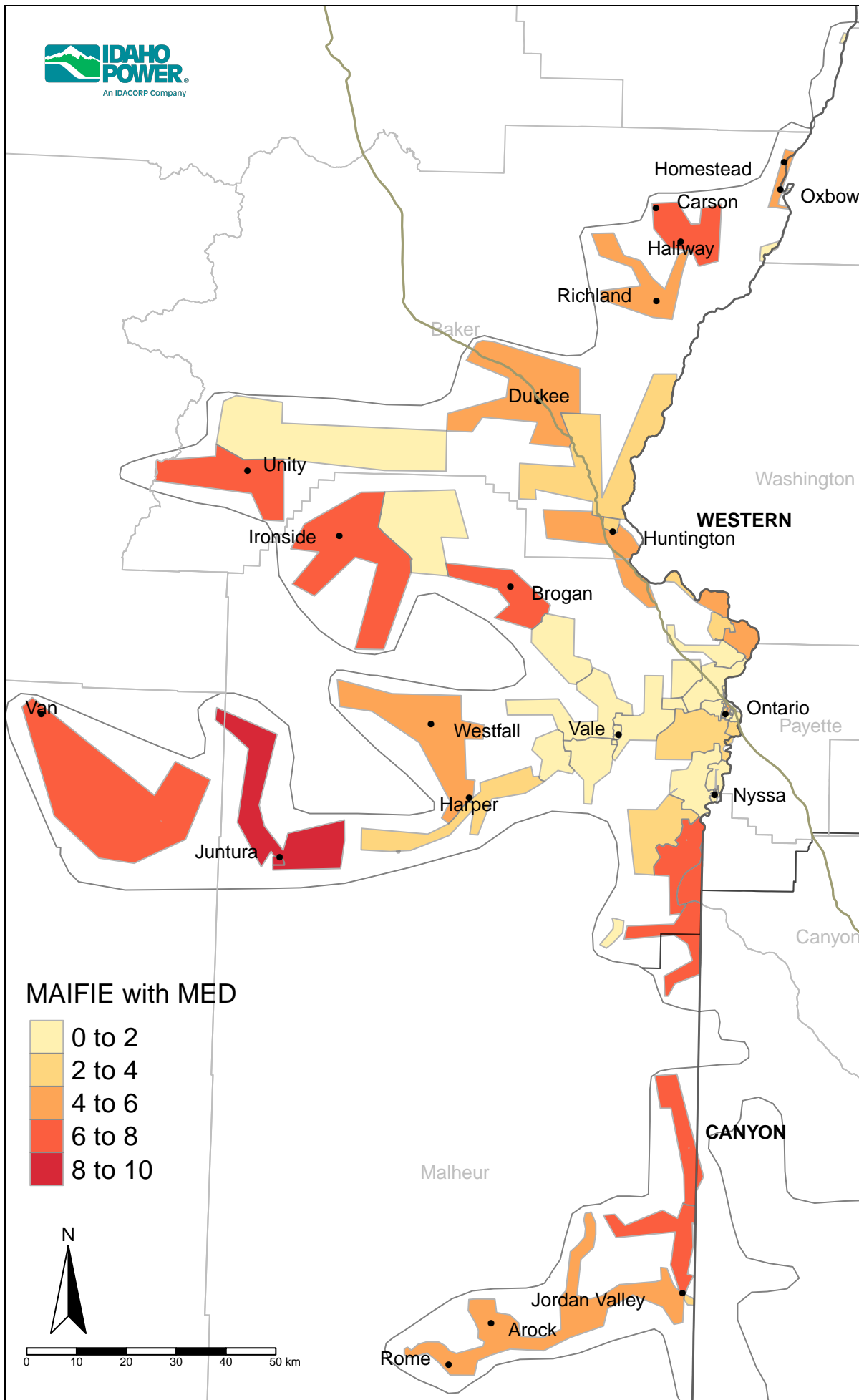
2019 SAIFI with MED Oregon Area



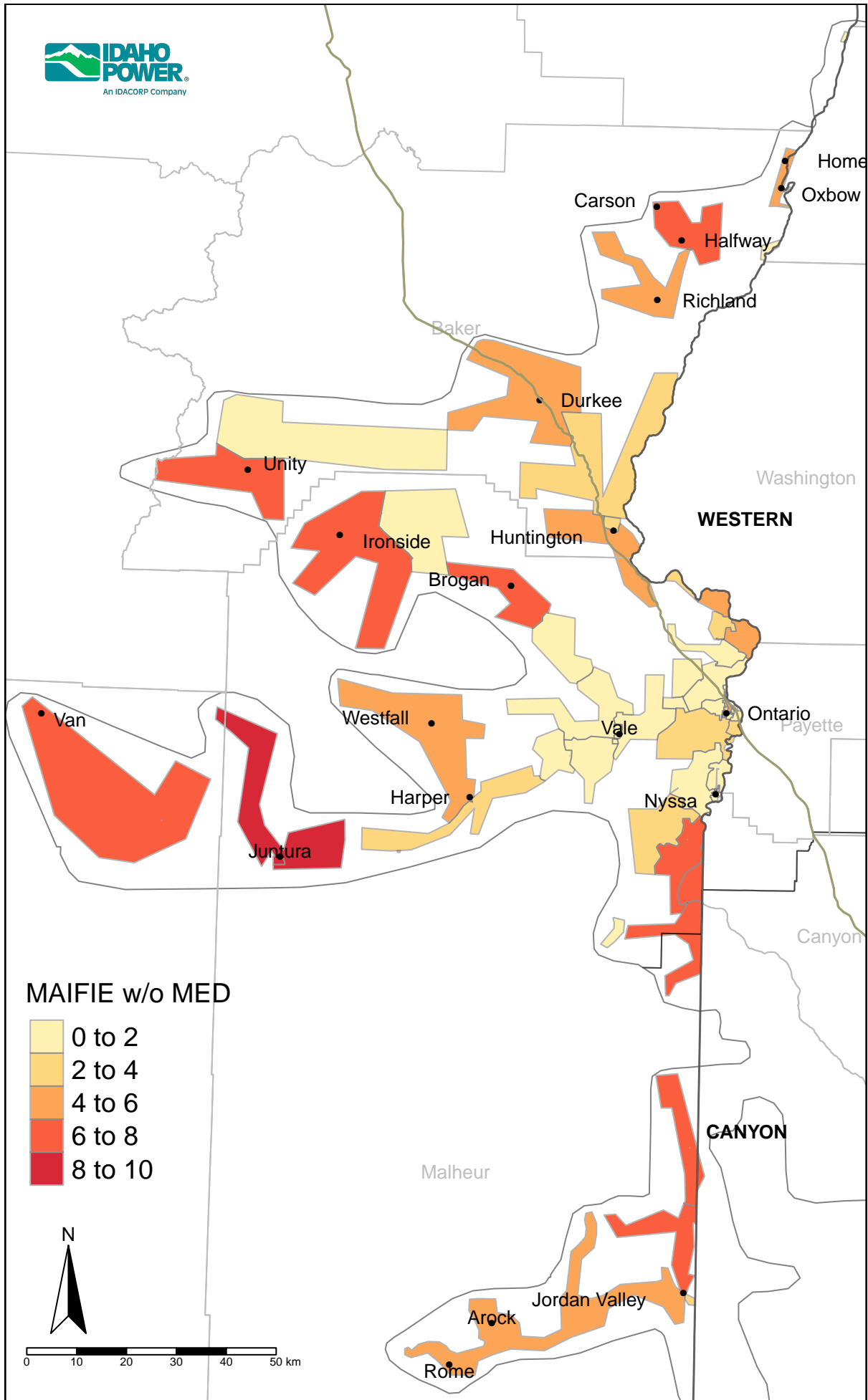
2019 SAIFI w/o MED Oregon Area



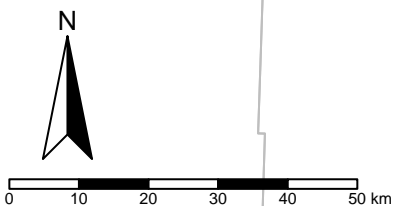
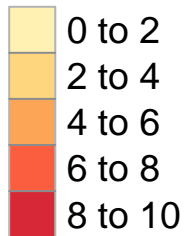
2019 MAIFIE with MED Oregon Area



2019 MAIFIE w/o MED Oregon Area



MAIFIE w/o MED



2019 Customers Oregon Area

