

<Research Data>

**Tree census data for a subalpine coniferous stand on a
1-ha permanent plot for the Monitoring Sites 1000 Project in
Otanomosu-daira in the Core Area of the Shiga
Highland Biosphere Reserve, central Japan**

Hideyuki IDA

Tree census data for a subalpine coniferous stand on a 1-ha permanent plot for the Monitoring Sites 1000 Project in Otanomosu-daira in the Core Area of the Shiga Highland Biosphere Reserve, central Japan. Hideyuki IDA* (Institute of Nature Education in Shiga Heights, Shinshu University. *Faculty of Education, Shinshu University, Nagano 380-8544, Japan, E-mail : pida@shinshu-u.ac.jp) *Bulletin of the Institute of Nature Education in Shiga Heights, Shinshu University* 52 : 11–14 (2015).

Nomenclature : Yonekura (supervised by Murata) (2012)

Introduction

This paper presents tree census data collected in 2014 for a 1-ha permanent plot of subalpine coniferous forest in Shiga Highland, central Japan. The forest is dominated by two conifer species, *Abies mariesii* Mast. and *Tsuga diversifolia* (Maxim.) Mast., and a deciduous broad-leaved species, *Betula ermanii* Cham. The permanent plot was established in 2005 for the Monitoring Sites 1000 Project of the Japanese Ministry of the Environment for long-term monitoring of regeneration dynamics (Ishihara et al. 2011).

Tree census and litterfall data collected in this plot from 2007–2009 were published in Ishihara et al. (2011) and Suzuki et al. (2012), respectively. The 1-ha plot includes a previous 0.4096-ha (64 × 64m) plot established by Kuroiwa and Watanabe (1997). Unfortunately, most of the ID tags placed on tree trunks ≥ 1.3 m in height by Kuroiwa and Watanabe (1997) in the previous plot have disappeared, making it difficult to accurately locate the same trunks now. Therefore, I established the 1-ha plot in 2005 over the same area as the 0.4096-ha plot. According to our preliminary report (Ikeda et al. 2008), the diameter at breast height (DBH) frequency distribution pattern showed that *A. mariesii* regenerated continuously,

although *T. diversifolia* and *B. ermanii* regenerated discontinuously. These findings are similar to Kuroiwa and Watanabe (1997).

Site description

Shiga Highland (known as Shigakogen) is located in Japan's central mountain district in Yamanouchi-machi in northeastern Nagano Prefecture. It ranges from 800–2,341m above sea level, is covered by subalpine coniferous forest and temperate deciduous forest, and includes some ponds, high moors, and raised bogs. Above 1,700m the forests are dominated by the evergreen species *A. mariesii* and *T. diversifolia*, with *B. ermanii* dominating in disturbed areas. The site was part of the Joshin'etsu-kogen National Park and is a UNESCO MAB (Man and the Biosphere Programme) Biosphere Reserve.

The mean annual temperature at the site is 3.9°C, with a maximum of 17.2°C in August and a minimum of -8.8°C in January, and annual precipitation was 1575.3mm between 1981 and 2010, according to Mesh Climate Data 2010 (Japan Meteorological Agency 2012). This region near the Japan Sea is characterized by abundant winter snowfall with snow cover typically lasting from November through the following June. Maximum snow depth reaches 2–3m annually.

This mountainous area was formed primarily by volcanic activity and is composed of Quaternary volcanic, hypabyssal, and plutonic rocks. The soil is wet humus podzolic soil, partly dry podzolic soil, and moderately moist brown forest soil with a pH of 3.8–4.5 (Takai et al. 1976).

Description of the permanent survey plot

1) Background

A 1-ha (100m×100m) permanent plot (36°42'19" N, 138°29'96"E, 1,705-m elevation; Photo 1) was established in Otanomosu-daira in 2005 as a core site (named "OT") for the Monitoring Sites 1000 Project (Ishihara et al. 2011). The plot is on a moderate slope with uneven ground in an old-growth stand dominated by *T. diversifolia* and *A. mariesii*. The forest floor is characterized by dense stands of dwarf bamboo, *Sasa kurilensis* (Rupr.) Makino et Shibata, with lichens covering rocks and fallen trees. There is no record of human disturbance. The maximum snow depth (measured using a 3-m wooden pole with aluminum pins at 10-cm intervals, modified from Takahashi (1968)) was 1.8–3m annually from 2003–2013 (Table 1).

As part of the monitoring project, a tree census is conducted each year. In addition, data are collected annually for fallen litter in litter traps, and ground insects collected in pitfall traps (see Appendix Map). The bird community in and around the plot is also surveyed annually (Kuros-

awa et al. 2013). Previous ecological studies were conducted in and around the plot from 1965 to the 1970s as part of the International Biological Program (IBP) (Kitazawa 1977). Aiba and Kurokawa (2013) measured the functional traits of tree species in the area.

2) Vegetation

T. diversifolia and *A. mariesii* are the dominant canopy species, but other species such as *B. ermanii* and *Picea jezoensis* (Siebold et Zucc.) *Carrière* var. *hondoensis* (Mayr) Rehder sometimes occur in the canopy (Table 2). *Acer tschonoskii* Maxim., *A. ukurunduense* Trautv. et C.A.Mey., *Sorbus commixta* Hedl., *Rhododendron albrechtii* Maxim., and *R. pentandrum* (Maxim.) Craven dominate the shrub layer. There are few herbaceous species, but *Cornus canadensis* L., *Streptopus streptopoides* (Ledeb.) Frye et Rigg subsp. *japonicus* (Maxim.) Utech et Kawano, and *Arachniodes mutica* (Franch. et Sav.) Ohwi are most common. A dense undergrowth of the bamboo *Sasa kurilensis* covers part of the stand.

3) Tree census data

Since 2005, all living trunks in the plot with a girth at breast height (GBH; measured at 130cm high) ≥ 15 cm have been tagged with aluminum ID tags (numbered B0001–B0710 in 2014), and the species and location shown as coordinates (x, y) recorded (see Appendix Map). During each autumn (September–November) since 2006 newly recruited trees were tagged and survival and GBH were recorded for existing trees. Species composition, basal area, density, and diameter at breast height (DBH; GBH/π) of all living trunks (≥ 5 -cm DBH) in the 1-ha plot in 2014 are shown in Table 1 and the Appendix Table. Trunks < 5 -cm DBH are omitted here. In total, eight woody species were recorded in the plot.

Acknowledgments

I thank Kaichi Harada, Kazuko Iura and students of Shinshu University for their assistance with this research. The Wagoukai Foundation Office and Hokushin District Forest Office granted permits to survey the plot. This work was part of the Japanese Ministry of the Environment's

Table 1. Maximum snow depth (cm) from winter 2003–2004 to winter 2013–2014 in the survey plot in Otanomosu-daira.

Year (Winter period)	Maximum snow depth (cm)
2003–2004	180
2004–2005	>290
2005–2006	>290
2006–2007	No data
2007–2008	210
2008–2009	190
2009–2010	180
2010–2011	190
2011–2012	190
2012–2013	180
2013–2014	250

Monitoring Sites 1000 Project.

References

- Aiba M, Kurokawa H (2013) Functional traits of tree species in Shiga highlands. *Bulletin of the Institute of Nature Education in Shiga Heights, Shinshu University* 50 : 25-28
- Ikeda K, Takahashi K, Ida H (2008) Long-term monitoring of regeneration dynamics of a subalpine coniferous forest in Shiga Heights, central Japan. *Bulletin of the Institute of Nature Education in Shiga Heights, Shinshu University* 45 : 7-8
- Ishihara MI, Suzuki SN, Nakamura M, Enoki T, Fujiwara A, Hiura T, Homma K, Hoshino D, Hoshizaki K, Ida H, Ishida K, Itoh A, Kaneko T, Kubota K, Kuraji K, Kuramoto S, Makita A, Masaki T, Namikawa K, Niiyama K, Noguchi M, Nomiya H, Ohkubo T, Saito S, Sakai T, Sakimoto M, Sakio H, Shibano H, Sugita H, Suzuki M, Takashima A, Tanaka N, Tashiro N, Tokuchi N, Yoshida T, Yoshida Y (2011) Forest stand structure, composition, and dynamics in 34 sites over Japan. *Ecological Research* 26 : 1007-1008
- Japan Meteorological Agency (2012) Mesh Climate Data 2010
- Kitazawa Y (1977) Ecosystem analysis of the subalpine coniferous forest of Shigayama IBP area, Central Japan. JIBP Synthesis No.15
- Kuroiwa Y, Watanabe R (1997) Forest structure of a subalpine coniferous forest at Otanomousutaira, Sihgakogen. *Bulletin of the Institute of Nature Education in Shiga Heights, Shinshu University* 34 : 11-22
- Kurosawa K, Ueta M, Saito K (2013) Song activity study of forest birds in Otanomosu plateau, Nagano Pref. : a base for long-term monitoring. *Bulletin of the Institute of Nature Education in Shiga Heights, Shinshu University* 50 : 7-11
- Suzuki SN, Ishihara MI, Nakamura M, Abe S, Hiura T, Homma K, Higa M, Hoshino D, Hoshizaki K, Ida H, Ishida K, Kawanishi M, Kobayashi K, Kuraji K, Kuramoto S, Masaki T, Niiyama K, Noguchi M, Nomiya H, Saito S, Sakai T, Sakimoto M, Sakio H, Sato T, Shibano H, Shibata M, Suzuki M, Takashima A, Tanaka H, Takagi M, Tashiro N, Tokuchi N, Yoshida T, Yoshida Y (2012) Nation-wide litter fall data from 21 forests of the Monitoring Sites 1000 Project in Japan. *Ecological Research* 27 : 989-990
- Takahashi K (1968) On the Snow Scale for Measuring Maximum Snow Depth. *Journal of the Japanese Society of Snow and Ice* 30 : 111-114
- Takai Y, Kanazawa S, Asami T, Takeshima S, Kawashima N (1976) Characteristics of soil organic matter and soil respiration in subalpine coniferous forest of Mt. Shigayama (Part 1): On soil types and chemical properties of soil (in Japanese). *Japanese Journal of Soil Science and Plant Nutrition* 47 : 33-38
- Yonekura K (supervised by Murata J) (2012) An enumeration of the vascular plants of Japan. Hokuryukan, Tokyo

Table 1. Species composition, basal area (BA), density, and summary of diameter at breast height (DBH) for all living trunks (≥ 5 -cm DBH) in the 1-ha permanent plot for the Monitoring Sites 1000 Project in Otanomosu-daira in 2014.

Species	Family	Basal area (BA)		Density		Diameter at breast height (DBH : cm)				Abb.	和名
		m ² /ha	%	No./ha	%	mean	\pm SD	Max.	Min.		
<i>Tsuga diversifolia</i> (Maxim.) Mast.	Pinaceae	35.17	65.32	283	45.14	35.9	\pm 0.10	76.9	5.3	Td	コマツガ
<i>Abies mariesii</i> Mast.	Pinaceae	8.62	16.00	260	41.47	17.1	\pm 0.04	55.6	5.1	Am	オオシラビソ
<i>Betula ermanii</i> Cham.	Betulaceae	8.52	15.82	66	10.53	39.4	\pm 0.06	63.9	17.3	Be	ダケカンバ
<i>Picea jezoensis</i> (Siebold et Zucc.) Carrière	Pinaceae	1.39	2.59	13	2.07	34.7	\pm 0.07	54.0	12.7	Pj	トウヒ
var. <i>hondoensis</i> (Mayr) Rehder											
<i>Betula corylifolia</i> Regel et Maxim.	Betulaceae	0.09	0.17	1	0.16	33.8		33.8	33.8	Bc	ネコシデ
<i>Acer ukurunduense</i> Trautv. et C.A.Mey.	Sapindaceae	0.02	0.05	2	0.32	12.5	\pm 0.00	12.7	12.4	Au	オガラバナ
<i>Acer ischonokii</i> Maxim.	Sapindaceae	0.02	0.03	1	0.16	15.4		15.4	15.4	At	ミネカエデ
<i>Sorbus commixta</i> Hedl.	Rosaceae	0.01	0.02	1	0.16	11.1		11.1	11.1	Sc	ナナカマド
Total		53.85	100.0	627	100.0	28.3	\pm 0.09	76.9	5.1		

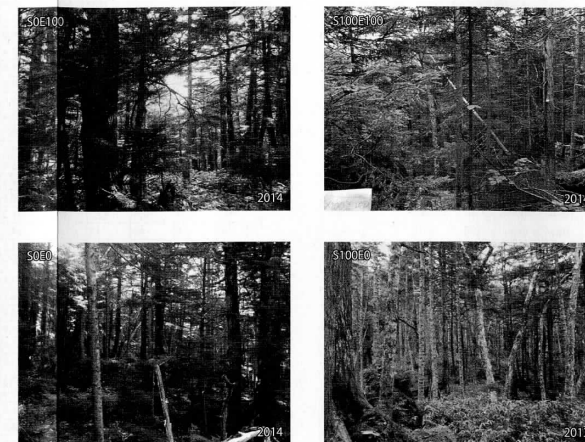
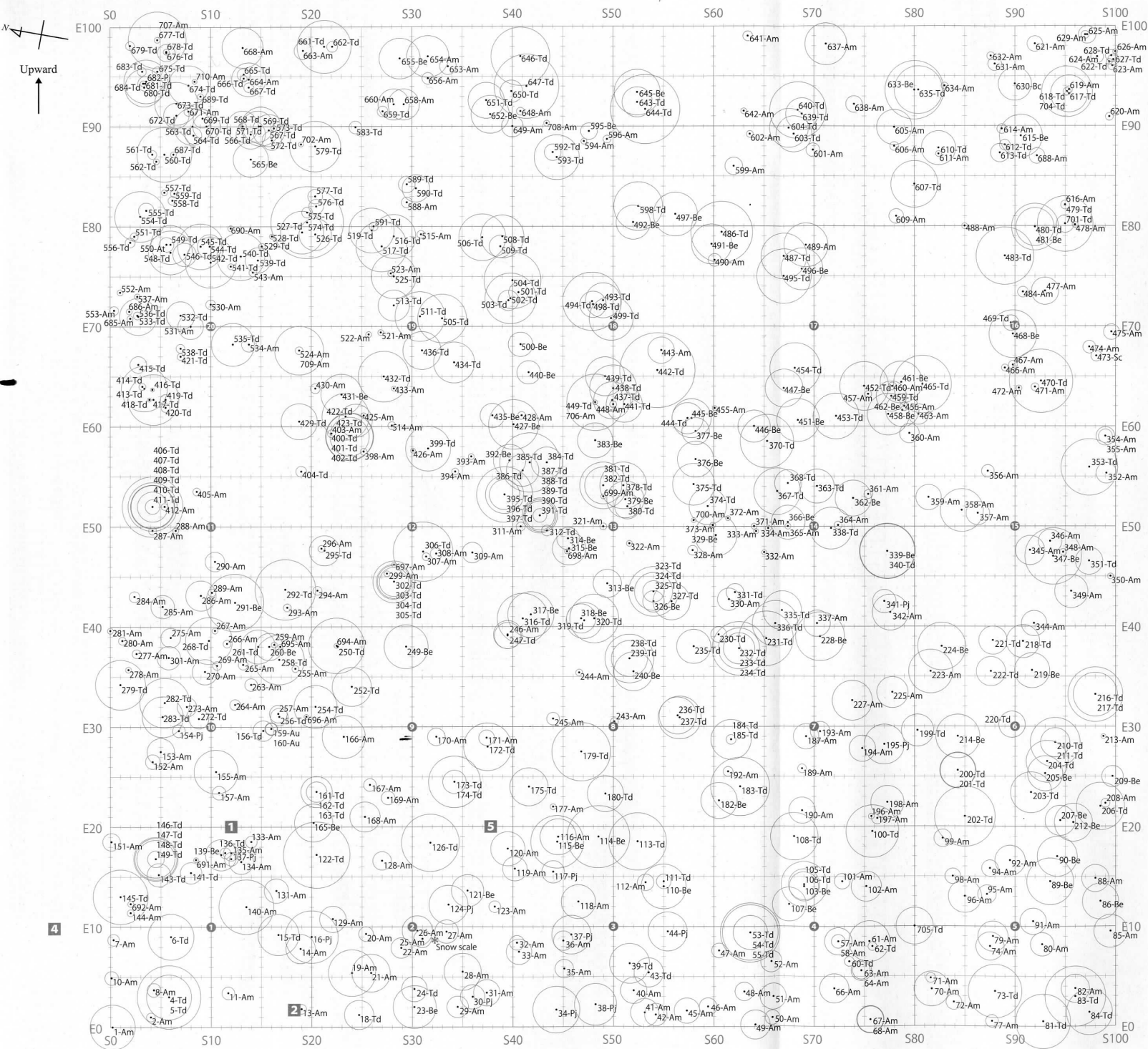


Photo 1. The inside of the four corners (four coordinates) of the 1-ha permanent plot.

List of woody species

Abbreviations	Scientific name	Japanese name
Am	<i>Abies mariesii</i>	OH-SHIRABISO
At	<i>Acer tschonoskii</i>	MINE-KAEDE
Au	<i>Acer ukurunduense</i>	OGARA-BANA
Bc	<i>Betula corylifolia</i>	NEKO-SHIDE
Be	<i>Betula ermanii</i>	DAKE-KAMBA
Pj	<i>Picea jezoensis</i> var. <i>hondoensis</i>	TOUHI
Sc	<i>Sorbus commixta</i>	NANA-KAMADO
Td	<i>Tsuga diversifolia</i>	KOME-TSUGA

① ~ ②③ Litter traps

① ~ ④ Pitfall trap quadrates

Appendix Map. The 1-ha permanent plot for the Monitoring Sites 1000 Project in Otanomosu-daira in 2014, showing the location of trunks ("•" labeled trunk ID) of all living individuals with a trunk diameter at breast height 130 cm (DBH) ≥ 5 cm. Size of circles (○) indicates the relative size of DBH. The raw data for girth at breast height (GBH) are shown in the appendix table on the back.

Appendix Table. Tree census data for all living trunks (≥ 15 cm in girth at 130 cm; GBH) in a 1-ha permanent plot for the Monitoring Sites 1000 Project in Otanomosu-daira in 2014. The location of each trunk is shown in the Appendix Map.

Tag ID (B-)	Individual ID (B-)	Coordinate (m)		Species	GBH (cm)
		x[S]	y[E]		
1	1	0.2	0	Am	145.0
2	2	4	1	Am	38.1
4	3	5.8	3	Td	143.8
5	3	5.8	3	Td	205.6
6	6	6	9	Td	148.6
7	7	0.3	8.7	Am	36.2
8	8	4.3	3.7	Am	22.8
10	10	0.1	4.9	Am	45.0
11	11	11.7	3.4	Am	42.4
13	13	19	1.8	Am	32.3
14	14	18.9	7.8	Am	92.9
15	15	16.7	9.2	Td	130.4
16	16	20	9	Pj	169.8
18	18	24.7	1.2	Td	94.5
19	19	24	5.4	Am	150.8
20	20	25.4	9.3	Am	47.4
21	21	25.9	5.4	Am	121.2
22	22	28.9	7.9	Am	67.0
23	23	30.2	2	Be	136.9
24	24	30.2	3.8	Td	81.2
25	25	31	8.8	Am	57.3
26	26	30.5	9.6	Am	98.8
27	27	33.4	9.5	Am	76.3
28	28	35	5.5	Am	119.0
29	29	34.5	2	Am	70.0
30	30	36	3	Pj	77.4
31	31	37.4	3.4	Am	85.4
32	32	40.4	8.4	Am	46.5
33	33	40.6	7.5	Am	80.8
34	34	44.3	1.7	Pj	151.5
35	35	45.1	5.8	Am	59.7
36	36	45	8.6	Am	62.6
37	37	45.8	9.2	Pj	125.7
38	38	48.2	2.2	Pj	136.5
39	39	51.6	6.3	Td	130.2
40	40	52	3.6	Am	86.0
41	41	53.1	1.4	Am	90.3
42	42	54.2	1.2	Am	72.0
43	43	53.5	5.4	Td	95.5
44	44	55.4	9.5	Pj	125.3
45	45	57.3	1.6	Am	80.8
46	46	59.4	2	Am	57.2
47	47	60.5	7.6	Am	46.1
48	48	63	3.5	Am	59.5
49	49	64.1	0.2	Am	92.9
50	50	65.8	0.9	Am	48.6
51	51	65.9	3	Am	86.0
52	52	65.7	6.5	Am	70.2
53	53	63.6	9.4	Td	191.0
54	53	63.6	9.4	Td	178.5
55	53	63.6	9.4	Td	108.8
57	57	72.4	8.5	Am	45.0
58	57	72.4	8.5	Am	86.9
59	59	73.5	6.5	Td	20.6
60	60	73.5	6.5	Td	31.4
61	61	75.5	8.5	Am	130.4
62	62	75.8	8	Td	27.6
63	63	74.7	5.6	Am	55.1
64	63	74.7	5.6	Am	64.9
66	66	72	3.8	Am	95.8
67	67	75.6	0.7	Am	85.3
68	67	75.6	0.7	Am	86.5
70	70	81.7	3.7	Am	113.8
71	71	81.6	4.8	Am	39.0
72	72	83.9	2.4	Am	40.4
73	73	88	3.5	Td	171.8
74	74	87.5	8	Am	92.1
77	77	87.7	0.5	Am	42.3
79	79	87.8	9	Am	96.2
80	80	92.7	8.2	Am	74.1
81	81	92.8	0.5	Td	174.9
82	82	96	3.8	Am	92.4
83	83	96	3	Td	194.1
84	84	97.4	1.4	Td	146.5
85	85	99.5	9.5	Am	107.5
86	86	98.5	12.5	Be	115.4
88	88	98	14.8	Am	89.3

89	89	93.5	14.5	Be	149.7
90	90	94.2	17	Be	129.3
91	91	91.8	10.5	Am	85.0
92	92	89.5	16.6	Am	97.6
94	94	87.5	15.8	Am	53.5
95	95	87.2	13.2	Am	59.0
96	96	85	13	Am	105.4
98	98	83.8	15	Am	49.0
99	99	82.8	18.8	Am	58.0
705	705	80	10	Td	119.6
100	100	75.8	19.5	Td	168.4
101	101	72.8	14.5	Am	50.7
102	102	75.2	14	Am	98.5
103	103	69	14	Be	95.0
105	105	69	14.2	Td	148.3
106	105	69	14.2	Td	99.8
107	107	67.5	12.2	Be	111.2
108	108	68	19	Td	154.1
110	110	55	14	Be	143.2
111	111	55	14.5	Td	45.7
112	112	53.2	14.4	Am	53.4
113	113	52.4	18.5	Td	186.1
114	114	48.5	19	Be	200.9
115	115	44.4	18.5	Be	168.9
116	116	44.5	19	Am	115.0
117	117	44	15.5	Pj	73.0
118	118	46.5	12.5	Am	109.5
119	119	40.2	15.8	Am	77.9
120	120	39.5	17.8	Am	111.0
121	121	35.5	13.6	Be	104.8
123	123	38.2	12	Am	36.3
124	124	33.6	12.2	Pj	126.4
126	126	31.8	18.4	Td	184.3
122	122	20.5	17.2	Td	214.4
128	128	27	16.6	Am	59.1
129	129	22.1	10.8	Am	85.0
131	131	16.5	13.6	Am	77.7
133	133	14	18.5	Am	38.1
134	134	13	16.5	Am	80.0
135	135	12	17.4	Am	51.5
136	136	11.4	17.4	Td	35.7
137	137	12	16.8	Pj	43.8
139	139	11	17.2	Be	99.0
140	140	13.5	12	Am	174.7
141	141	8	15.4	Td	68.4
143	143	4.8	15.2	Td	74.0
144	144	2	11.4	Am	21.0
145	145	1	13	Td	175.5
146	146	4.5	16.8	Td	121.3
147	146	4.5	16.8	Td	141.9
148	146	4.5	16.8	Td	53.0
149	146	4.5	16.8	Td	136.5
151	151	0.1	18.5	Am	55.5
691	691	8.5	16.7	Am	15.6
692	692	2	12.3	Am	18.9
152	152	4.2	26.5	Am	48.0
153	153	5	27.5	Am	89.5
154	154	6.8	29.6	Pj	40.0
155	155	10.5	25.5	Am	142.9
156	156	15.2	29.6	Td	66.0
157	157	10.8	23.4	Am	43.9
159	159	16	29.8	Am	39.0
160	159	16	29.8	Am	39.8
161	161	20.5	23.5	Td	66.0
162	161	20.5	23.5	Td	99.8
163	161	20.5	23.5	Td	200.0
165	165	20.2	20.4	Be	123.0
166	166	23.2	29	Am	139.6
167	167	25.8	24.2	Am	40.0
168	168	25.3	21	Am	98.9
169	169	27.6	22.9	Am	45.2
170	170	32.4	29	Am	57.0
171	171	37.4	28.9	Am	51.0
172	172	37.5	28	Td	152.4
173	173	34.2	24.5	Td	167.1
174	173	34.2	24.5	Td	74.2
175	175	41.6	24	Td	121.1
177	177	44	22	Am	18.5
179	179	46.8	27.5	Td	189.8
180	180	49.2	23.3	Td	115.5
182	182	60.5	22.6	Be	115.0
183	183	62.6	24	Td	188.0
184	184	61.7	28.7	Td	128.3
185	184	61.7	28.7	Td	30.0
187	187	69.2	29	Am	80.4
189	189	68.8	25.8	Am	28.7
190	190	68.8	21.6	Am	83.4
192	192	61.4	25.5	Am	30.0
193	193	70.6	29.5	Am	62.9
194	194	74.8	27.8	Am	86.0
195	195	77	28.2	Pj	129.2
196	196	75.7	21	Am	18.9
197	197	76.3	20.8	Am	38.9
198	198	77.3	22.4	Am	107.9
199	199	80.3	29.6	Td	104.0

200	200	84.3	25.6	Td	117.5
201	200	84.3	25.6	Td	112.2
202	202	85	21	Td	193.3
214	214	84.3	29	Be	141.5
203	203	91.6	23.4	Td	131.1
204	204	93.2	26.5	Td	134.5
205	205	93	25.3	Be	111.7
206	206	98.5	22	Td	153.0
207	207	94.5	20.6	Be	98.5
208	208	99	22.3	Am	28.7
209	209	99.7	25	Be	69.9
210	210	94	28.4	Td	161.0
211	210	94	28.4	Td	94.6
212	212	95.8	20.4	Be	124.0
213	213	98.8	29	Am	16.5
216	216	98	33.2	Td	142.0
217	216	98	33.2	Td	175.1
218	218	90.8	38.5	Td	106.9
219	219	91.7	35.6	Be	113.6
220	220	89.7	30.2	Td	84.5
221	221	87.8	38.6	Td	91.8
222	222	87.6	35.5	Td	93.7
223	223	81.6	35.5	Am	142.0
224	224	82.7	38	Be	155.5
225	225	77.8	33.4	Am	99.3
227	227	73.8	32.6	Am	130.0
228	228	70.6	39	Be	157.7
230	229	70.4	39.2	Td	51.7
231	231	65.2	38.8	Td	176.7
232	232	62.5	37.8	Td	172.0
233	232	62.5	37.8	Td	133.4
234	232	62.5	37.8	Td	99.2
235	235	58	38	Td	110.3
236	236	56.4	31.1	Td	119.7
237	237	56.6	30.9	Td	137.9
238	238	51.6	36.8	Td	116.4
239	238	51.6	36.8	Td	156.9
240	240	52	35.5	Be	125.0
243	243	50.1	30.5	Am	23.6
244	244	46.6	35.4	Am	21.2
245	245	44	30.8	Am	39.6
246	246	39.5	39.2	Am	92.3
247	247	39.5	39.1	Td	85.6
249	249	29.4	38	Be	140.0
250	250	22.6	38	Td	180.4
252	252	24	34	Td	125.0
254	254	20.4	32	Td	137.9
694	694	22.5	38.1	Am	15.5
255	255	18.4	35.8	Am	20.9
256	256	16.8	31	Td	56.8
257	257	16.7	31.3	Am	57.8
258	258	16.8	36.7	Td	159.5
259	259	16.3	38.2	Am	19.0
260	260	15.8	38	Be	89.5
261	261	14.7	38	Td	108.7
263	263	14	34.2	Am	41.9
264	264	12.4	32.2	Am	35.9
265	265	13.2	36.2	Am	32.0
266	266	11.6	38.3	Am	25.4
267	267	10.4	39.6	Am	19.7
269	269	10.6	36.1	Am	27.7
695	695	16.9	38	Am	16.7
696	696	19.5	31	Am	16.5
268	268	9.8	38	Td	150.5
270	270	9.4	35.5	Am	80.9
272	272	8.8	30.8	Td	63.4
273	273	7.6	32	Am	62.0
275	275	6	38.9	Am	64.0
277	277	2.6	37.3	Am	28.1
278	278	1.8	35.7	Am	19.0
279	279	1	34.2	Td	161.4
280	280	1.2	38.6	Am	24.2
281	281	0	39.6	Am	19.0
282	282	5.4	32.4	Td	159.6
283	283	5.2	31	Td	131.3
301	301	5.8	36.9	Am	74.0
284	284	2.4	43	Am	33.0
285	285	5.2	42	Am	74.0
286	286	9	43.1	Am	96.3
287	287	4.2	49.6	Am	24.7
288	288	6.5	49.6	Am	19.9
289	289	10.1	43.4	Am	24.4
290	290	10.4	46.5	Am	62.6
291	291	12.4	42.4	Be	86.7
292	292	17.4	43.7	Td	195.0
293	293	17.6	41.9	Am	24.6
294	294	20.6	43.6	Am	29.1
295	295	21.3	47.6	Td	96.5
296	296	21	47.8	Am	22.6
299	299	27.5	45.3	Am	17.8
302	302	28.2	44.5	Td	133.8
303	302	28.2	44.5	Td	94.7
304	302	28.2	44.5	Td	106.0
305	302	28.2	44.5	Td	112.3
697	697	28.2	46.2	Am	16.7