

Notes on Presence of 'Other Marine Fish' in Maldives Pole-and-line Catch

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Summary

Maldives has been submitting tuna catch and effort data to IOTC since the IPTP days. The time series of disaggregated nominal catch and effort data of Maldives at IOTC starts from 1970. Recently it was noticed that 'Other Marine Fish' in the database are being wrongly attributed to catches from pole-and-line gear. The data collection system in Maldives is based on reporting of enumerated catch by the fishermen to the island offices. The Daily Reports from islands are sent to Atoll Offices and the best three islands from each Atoll are reported to the Ministry on a daily basis. The Daily Report is transcribed to a Monthly Fishery Report and sent to the Ministry and forms the basis of the nominal catch and effort database. The Monthly Fishery Report is designed to report aggregated values of catch by vessel assumed to have fished using the single method of fishing (i.e., trolling, pole-and-line or handline). However with socio-economic developments combined with opportunities for other forms of fishing (e.g., reef fishing) vessels no longer specialize in a single method of fishing and the aggregated monthly catch is no longer from single gear. Without appropriate recording forms and lack of follow up, the islands clerks have been assigning most of the catch to pole-and-line gear despite the presence of the large numbers of Group 1, Group 2 and Group 3 (i.e., reef fish) catch from other fishing methods. At present multi-day and multi-gear fishing is becoming popular. With incompatible reporting forms and recent replacement of traditional island governance system with Atoll/Island Council have system created enormous challenges of continuing the traditional form of reporting. The Ministry of Fisheries and Agriculture adopted logbook reporting system in January 2010. The traditional method of reporting will remain until full reporting coverage form logbooks are achieved. The Ministry is also undertaking a series of exercises to improve and modernize the reporting and compilation system that allows incorporating secondary data (i.e., fresh tuna purchases and exports) to derive national fisheries statistics. The exercise also involves 'cleaning' of catch and effort database. Once the data cleaning is complete Maldives will be re-submitting the revised data to the IOTC Secretariat.

Introduction

Maldives has a long history and tradition of pole-and-line tuna fishing. Organized collection of fishery data, however, started in 1959 and gradually improved and expanded since then. Initially the collection was limited to recording total tuna landings by masdhoni¹ (pole-and-line vessels). In 1966 it was expanded to include vadhudhoni² (trolling vessels) and recording numbers of tuna landed in three categories: large skipjack, small skipjack and yellowfin, and frigate and kawakawa (Anderson and Hafiz, 1996). From 1970 it was again expanded to include recording five categories separately and recording of two categories of fishing vessels: masdhonis and vadhudhonis (Anderson and Hafiz, 1996).

Essentially recording start from the enumeration of landings. Enumeration was possible because catch is shared among the crew members and the total number is always known. The vessels also conduct day trips and return home-island by evening. The daily landings are reported either in person by the boat owner /skipper or as a written note or as receipt of fish sold. The Island Offices record these on Daily Report form and report (by radio or fax) to the Atoll Offices. The Atoll Office reports to the Ministry the best three fishing islands on a daily basis. This information is used to make decision on deployment fish collector vessels operated by MIFCO³.

The Daily Reports Forms are not always sent to the Ministry, The Daily Reports Form is by the island clerks to compile the Monthly Fishing Report which is send to the Ministry, where it gets computerized and constitutes the primary data for the nominal tuna catch and effort database. The system is still in place today although it has been subjected to several modifications and addition over the years.

The fishing effort is recorded in number of day fished and the issues relating to fishing effort and its challenge for standardization of CPUE are provided in Adam (Adam, 2012). The two most important descriptions of data collection and reporting system are those of Parry and Rasheed (1995) and Anderson et al. (2003).

Maldives has been providing tuna catch and effort data to IOTC since IPTP⁴ days. Maldives provided the complete national fisheries statistics and so the Indian Ocean Tuna Commission (IOTC) inherited the data set when IPTP ceased to exist in 1996. There are a number of reports and IPTP Expert Consultation Proceedings that describe the Maldives tuna fishery which also provided summary tables of catch and effort data by vessel types (MRS, 1996). Unfortunately such detailed reports on the fishery and data collection system have been relatively few in the past 10-15 years.

¹ The word 'masdhoni' in Divehi literally means 'fish vessel' (mas = fish and dhoni= sea-going vessel). The word

²The word 'vadhudhoni' in Divehi literally means trolling vessel (vadhu = feathered lure; dhoni – sea-going vessel).

³ State-owned Maldives Industrial Fisheries Company (MIFCO) their collecting vessels based on this information

⁴ Indo-Pacific Tuna Development and Management Programme (IPTP) is the forerunner of the IOTC. Housed in NARA, Colombo, the IPTP was would up following establishment of the IOTC Secretariat in Seychelles in 1996.

Recently it was brought to attention that large number of 'Other Marine Fish' appears under the pole-and-line gear. These errors are results of cumulative effects of changes in fishing practices and inappropriate recording forms that have gone undetected for long periods. While the Ministry is aware of the deterioration of quality and accuracy of fisheries statistics, the issues was left un-attended due to the lack of adequate expertise and resources. The issue was further compounded by the rapid evolution of the fishery and the slow response to dealing with issues in data being reported form the islands.

Anderson and Hafiz (1996) provided status of data collection in the Maldives and issue in misreporting (under/over-reporting), use of conversion factors and limitations in application. Earlier reviews include that of Parry and Rasheed (1995), Mines (1992), Wright (1992) and Rasheed and Latheefa (1994).

This short Note looks at the issue of large number of the Other Marine Fish reported from the pole-and-line gear. The Note is indented as a communication to the IOTC Secretariat to alert impending revision of the Maldives catch and effort database.

Monthly Aggregation

The single most important source of data for generating Maldives' national fishery statistics is the 'Monthly Fishery Report' received from the islands. Except for 2010-2011 the Monthly Fishery Report was the primary source of information on tuna landings and therefore the basis for nominal catch effort database.

In the past compiling the Monthly Fishery Report was an easy affair. Vessels conduct day trips and land their catch to home -port. The catch was shared among the crew members and so enumeration of the total catch was a manageable and easy task.

The basic features of compiling the Monthly Fishery Report have remained the same over the years, but the process and the sources of information for the Monthly Fishery Report have changed several times (Anderson et al. 2003). These have largely been influenced by the socio-economic development of the island communities, but also increased size, efficiency and mobility of vessels and opportunities it created for selling their catch before returning to home island.

At the same time masdhonis were not restricted to conducting pole-and-line fishing only as it used to be. With growth of tourism industry reef fishing became popular and vessels were opportunistic in the type of fishing they conducted. The start of export oriented reef fisheries in the 1990s expanded this opportunity and scope of the type of fishery making reef fishing a worthwhile activity to be conducted on pole-and-line vessels especially when tuna fishing is poor (Adam et al., 1999, Shakeel, 1992). More recently the explosive growth of surface handline fishery targeting large yellowfin tuna makes data in Monthly Fishery Report extremely complicated (Adam and Jauhary, 2009)

The primary reason for the assignment of “Other Marine Fish” in the Monthly Fishery Report is that it does not allow, or the form is not designed to, recording more than one gear from each vessel. The form has the following headers and columns⁵.

1. Year
2. Month
3. Category of Vessel (tick one category): Mechanized or Non-Mechanized masdhoni (pole-and-line vessels); Mechanized or Non-Mechanized vadhudhoni (trolling vessels) / bokkura (row boats)
4. Atoll
5. Island
6. Indicate whether aggregated Godhaaa (Large Skipjack) is: [a] > 2 kg or [b] > 5kg.

The form has 20 columns, with the following fields, numbered from 7-26.

7: Serial no of the row	8: Name of the Vessel Owner	9. Name & Address of Skipper	10: Signature of Skipper	11: Vessel Registry No:
12: No of units of gear	13: No of days fished	14: Large skipjack	15: Small skipjack	16: Small Yellowfin
17: Large Yellowfin	18: Dogtooth tuna	19: Kawakawa	20: Frigate	21: Sail fish
22: Sharks	23: Group #1	24: Group #2	25: Group #3	26: Reason of not going fishing, if the vessel did not go fishing

Each row of this form is a monthly record of fishing of a type of vessel. A number of issues are immediate and obvious.

1. Restriction on type of vessel: Depending on the choice of the vessel category in field #3, the user should only complete the monthly summaries for that vessel type. Assuming a single vessel is going for multiple types of fishing (using different gear) it will be impossible to capture the data on a single form.
2. Related to this is the indication of the number of units of gear used over the month. Again with single type of vessels doing more than one type of fishing it is impossible to record the gear used or indeed the accurately record the total number of gear units.
3. Field #6 is to indicate the whether the Godhaa (Large skipjack) is in the between 2 and 5 kg or above 5 kg. Without detailed daily records it will be impossible to record the different categories of skipjack being aggregated.

⁵ The headers given here are direct translation from the Monthly Fishery Report (in Divehi)

4. Groups 1 – 3 are strictly reef fish varieties. These groups are essentially ‘small’, ‘medium’ and ‘large’ sized fish and the distinction between them is subjective and very vague. Normally the Group #3 varieties are snappers, jacks, breams, job fishes, rainbow runners. Group 2 would include goatfish, small jacks, surgeonfish, scads, etc.

The island offices do not pay much attention to the Daily Fishing Report and is not forwarded to the Ministry. While it is understood that the information on the Daily Fishing Reports should be used to compile the Monthly Fishery Report it is hardly the case. The waiving of annual vessel registry fee provided that 120 days fishing is complete incentivizes to give prominence to the Monthly Fishery Report. It is believed that there is some misreporting and most frequently under-reporting.

In practice and without follow up the Monthly Fishery Report gets filled in a way that island clerks feel most comfortable. Daily Fishing Reports, even if available, are believed to be over-looked or ignored. Given the difficulty in categorizing the vessels conducting similar type of fishing and that fisherman would report their catch based on fish sale receipt, the data gets aggregated and the most common gear is assigned in the gear category. Similarly for vessels, particularly smaller vessels, which are likely to undertake other forms of fishing, the clerks assigns that all reported catch is being caught from pole-and-line, the most convenient and popular gear in the Maldives. It is interesting to note that there are instances that clerks have indicated first letter of the name of the gear along with number of days fished in parenthesis beside it in Field #12. This information will be useful for partitioning catch into other gears.

Data Processing System

A major challenge facing the Ministry in upgrading the data processing system and to keep up with the evolving fishery is the lack of relevant and adequate expertise in the Ministry. Anderson et al. (2003) provided descriptions of situation in early 2000.

The first computerized system was called FIRE (Fisheires REcording) written in dBASE III. This was replaced by FIREPlus written FoxPor 2.5 for DoS in 1994. The FIREPlus was designed with the primary aim of processing data from the traditional pole-and-line and troll fisheries. It was designed to accept individual vessel data either daily or monthly basis. Since it is normal, and as described earlier, that the most convenient way of submitting data is in monthly summaries by vessel. Nearly all data entered to FIREPlus were in the form of records from individual vessels, identified by registration number and aggregated by month. For each vessel the numbers of fish caught in each species category and the number of days fished that month is entered. Vessel types (masdhoni or vadhudhoni) and gear types can also be entered. The issue of assigning fished gear when vessels fish using more than one gear during the month was noted as a serious issue, and becoming more problematic in the recent years. In such cases, the entire catch is entered as from pole-and-line ignoring the

other gear. Simply there was no other information or no other way to easily disaggregate the monthly data.

FIREPlus was designed with routines that can convert numbers of catch weight using user-specified conversion factors. A table format hard-coded in the software allows conversion factors to be specified for each species category by month and by atoll. However, in practice only a single conversion factor is used for each species that ignores variability of average weights. The issues of conversion factors were highlighted in earlier reports (e.g., Parry and Rasheed, 1995; Anderson and Hafiz, 1996, Anderson et al., 2003)

FIREPlus is also designed so that additional modules dealing with non-standard types of fishery information can be added. However, with the technical difficulties it proved to be inflexible with demands on data processing that is required. To meet this, a series of ad hoc Excel spread sheet database are maintained (Anderson et al., 2003). Also more difficult and intractable issue is linking of the FIREPlus data directly to the Fishing Vessel Registry, which is maintained by a different section of the Ministry. This is compounded by the problem lack of data validation enforced during data entry that results in uniquely matching records in the catch effort database with that of fishing vessel registry.

In order deal with these issues a new database was developed in 2004, called the Statistical Database Management System (SDMS). This was written in Visual Basic and developed with a view for future web enabling. SDMS was modular with flexibility to add new routines for non-standard data. Unfortunately without the technical expertise on its use, the similar challenges were faced.

The Logbook Recording System

The opening up of government control on fresh fish export had major impact on fishery development and faced further challenges to the data collection system. The change in policy facilitated the start of a handline fishery targeting yellowfin exclusively for export market. Switching for handline fishing of pole-and-line vessels only required iceboxes and handline gear. As a result large number of vessels switched to handline fishing. This change was more visible in the last 4-5 years following the perceived decline of skipjack catches. More recently some of these vessel fish do pole-and-line fishing as well as handline fishing on single trips lasting several days.

These developments further complicated the already over-burdened data collection system. A more recent development is the change of atoll governance structure. The traditional Island / Atoll Chief system was replaced by Island/Atoll Councilors consisting of elected officials. A large proportion of Monthly Fish reports were not received in 2010 and 2011, which for the time required to estimating the catches from secondary data – the fish collection, export data and logbook data.

The Ministry has introduced logbook system in January 2010 and to accommodate logbook data entry a new web-enabled integrated data collection system is being implemented. A scaled down version is currently in use, but the full system is expected to be complete by middle of 2013.

Re-Allocating the ‘Other Marine Fish’ Catch

It is obvious that records of Other Marine Fish assigned to pole-and-line gear are not really caught from pole-and-line. These are large varieties of reef fish most caught from drift hand line and bottom or drop handline. The question remains to figure out objective ways to partition to their constituent components from the aggregated monthly values and this is where additional work is now required.

The Ministry is also in the process of completely re-designing the logbooks. These new logbooks will take into consideration of the IOTC’s Minimum Data Requirements as the per Resolution passed in 2012. A fresh thinking is now required to overhaul the data collection system.

Conclusions and Main Observations

The reason for occurrence of relatively large quantities of the Other Marine Fish from pole-and-line catch is multiple and is associated with several factors. These, not in any order of importance, are:

1. Generalization of the previously specialized vessels: Masdhoni (pole-and-line vessel) previously used exclusively for pole-and-line fishing conducts multiple types of fishing. When catch is aggregated over the month, and the primary sources of that aggregation is fish sales receipts it is difficult to disaggregate the catch
2. Lack of importance attached to completing the Daily Report Form: Although completion of Daily Catch Report form is required this information is difficult to obtain on a timely basis (due to increase mobility of the vessels). This became increasing apparently in the recent years and arrangement of providing the Daily Report to Minister has to be suspended.
3. Outdated data form: The monthly fishery report form is not suited for present situation of multi-day and multi-gear fishery. There is no way of accommodating for instances on the case of more than gear or conducting more than one type of fishing in a month by single vessel.
4. Lack of follow-up from the Ministry: It is difficult to settle that the large number of the non-tuna is getting end being recorded in pole-and-line gear and go unnoticed for long time. Lack of adequate technical expertise and poor documentation of the recording process went this unnoticed.

5. Further work on the database is required on possible ways of re-assignment of such catches to more appropriate gear.

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Monthly Fishery Report

There is no information of GEAR!!!

1: Year -----
2: Month -----

A type of vessel may conduct fishing more than one gear or target more than one fishery

3: Mechanized / Sail masdhoni
Mechanized / Sail Vadhu Dhoni, Bokku

Attempt at helping to assess the correct conversion factor..

But it will be very difficult to indicate this on the form!!

4: Atoll -----
5: Island -----

6: Godhaa Between 2 and 5 kg
Godhaa > 5 kg

Serial	Vessel Owner	Name & Address of Skipper	Signature of Skipper	Vessel Registry	No. of Units of Fishing Gear	No. of Days gone fishing	Large Skipjack	Small Skipjack	Yellowfin (small)	Yellowfin (large)	Dogtooth tuna	Kawakawa	Frigate tuna	Sailfish	Group 1	Group 2	Group 3	Reason for not going fish (see back)	
1	Naseer	Ahmed/Add	xxx	999-123-P	50	10	234	23	12	0	0	0							

Clerks at the island office often have indicated the first letter of the gear with no of units employed!!

Catches by species by Vessel Type [Maldives Nominal Database [uncleaned, September 2012]

Year	Vessel	ssk	lsk	yft	kaw	frg	dot	oth
1970	BBN	23,339	4,261	2,363	266	1,665	57	817
1971	BBN	21,120	6,887	1,432	242	1,709	39	562
1972	BBN	13,056	4,422	2,569	278	1,803	36	508
1973	BBN	17,925	1,622	6,981	631	3,864	62	881
1974	BBN	20,138	2,391	5,123	436	3,482	51	735
1979	BBN	1,381	193	899	108	275	37	523
1980	BBN	1,035	280	578	120	131	31	440
1981	BBN	544	26	334	137	89	38	550
1982	BBN	187	24	205	198	51	24	343
1983	BBN	106	23	140	110	88	11	157
1984	BBN	80	53	66	48	40	6	164
1985	BBN	75	80	60	80	25	13	178
1986	BBN	74	97	28	24	15	5	94
1987	BBN	48	100	22	7	12	9	35
1988	BBN	240	178	40	34	92	2	51

Vessel	ssk	lsk	yft	kaw	frg	dot	oth	
1975	BBMN	12,704	2,219	4,652	162	2,336	43	610
1976	BBMN	12,953	5,634	5,360	216	1,515	62	880
1977	BBMN	10,499	3,166	5,057	185	1,779	64	908
1978	BBMN	9,671	3,491	3,941	154	919	180	2,567
1979	BBM	10,806	4,875	3,629	92	628	40	573
1980	BBM	11,877	8,979	3,895	222	685	81	1,156
1981	BBM	14,228	4,849	5,479	329	730	138	1,971
1982	BBM	11,429	3,636	4,419	777	1,105	223	3,188
1983	BBM	12,447	6,703	7,692	1,015	1,897	161	2,300
1984	BBM	20,079	12,116	8,526	749	1,690	295	2,565
1985	BBM	22,519	19,497	7,192	871	1,257	95	2,536
1986	BBM	25,282	19,630	6,388	547	824	77	2,171
1987	BBM	24,043	18,423	7,670	495	957	441	1,366
1988	BBM	29,707	28,091	6,216	573	1,331	32	1,806

Vessel	ssk	lsk	yft	kaw	frg	dot	oth	
1970	TROL	554	80	252	442	149	125	1,785
1971	TROL	373	109	178	278	99	55	787
1972	TROL	284	57	180	377	109	79	1,125
1973	TROL	413	39	320	565	112	74	1,053
1974	TROL	399	22	344	477	121	90	1,291
1975	TROL	249	19	348	294	98	86	1,233
1976	TROL	432	45	499	882	182	150	2,137
1977	TROL	271	33	429	889	167	193	2,752
1978	TROL	247	24	454	735	130	269	3,836
1979	TROL	304	28	732	635	172	162	2,321
1980	TROL	421	57	714	889	192	193	2,753
1981	TROL	394	20	668	1,008	195	270	3,865
1982	TROL	172	12	287	1,209	146	262	3,749
1983	TROL	143	56	313	1,250	222	171	2,449
1984	TROL	293	46	261	733	199	74	2,467
1985	TROL	194	84	199	1,388	338	66	3,927
1986	TROL	167	219	149	669	211	54	2,199
1987	TROL	227	67	219	914	207	61	1,952
1988	TROL	233	79	270	634	197	49	1,328

Vessel	ssk	lsk	yft	kaw	frg	dot	oth	
1984	HAND	0.79	0.81	0.93	12.61	3.18	2.48	137.05
1985	HAND	1.81	0.70	1.91	14.28	1.01	2.69	82.72
1986	HAND	2.83	0.69	1.40	8.34	1.17	1.25	54.79
1987	HAND	1.02	0.12	2.33	14.57	1.43	0.52	49.75
1988	HAND	1.168	0.75	2.91	7.964	1.585	0.912	20.253

Catches by species by gear [Maldives Nominal Database [uncleaned, September 2012]]

	ssk	lsk	yft	kaw	frg	dot	oth	
1989 PL	30,412	27,396	5,831	563	1,928	50	-	-
1990 PL	27,906	31,286	5,065	943	2,698	166	-	-
1991 PL	31,484	26,841	7,512	819	2,269	112	-	-
1992 PL	32,905	24,306	8,355	1,261	3,102	236	-	-
1993 PL	38,259	19,719	9,780	1,651	4,978	229	-	-
1994 PL	47,405	21,331	12,889	1,713	3,746	187	-	-
1995 PL	42,129	27,768	12,241	1,715	3,667	81	-	-
1996 PL	47,322	18,852	9,905	2,596	6,073	185	-	-
1997 PL	43,232	24,857	10,881	1,478	2,301	257	-	-
1998 PL	51,578	26,209	13,599	2,223	3,829	309	9,765	-
1999 PL	57,334	34,963	13,564	1,234	3,117	159	6,050	-
2000 PL	47,875	30,898	10,591	1,378	3,683	158	11,754	-
2001 PL	62,113	24,693	12,029	1,731	3,673	409	10,151	-
2002 PL	73,412	40,507	17,452	1,808	3,879	694	10,922	-
2003 PL	62,040	45,481	17,184	1,931	4,134	692	11,888	-
2004 PL	60,723	43,827	15,441	1,802	3,286	435	11,865	-
2005 PL	68,257	62,059	16,036	1,996	4,541	192	11,680	-
2006 PL	58,102	79,434	13,586	1,238	3,197	36	9,244	-
2007 PL	48,961	47,326	14,193	1,846	3,511	185	8,507	-

	ssk	lsk	yft	kaw	frg	dot	oth	
1989 HL	0	2	1	13	5	0	-	-
1990 HL	3	1	0	-	-	-	-	-
1991 HL	0	-	0	3	1	0	-	-
1992 HL	0	-	0	10	2	0	-	-
1993 HL	0	0	0	2	1	0	-	-
1994 HL	0	-	1	5	1	2	-	-
1995 HL	-	-	-	-	-	-	-	-
1996 HL	8	5	6	48	19	39	-	-
1997 HL	1	0	2	8	2	1	-	-
1998 HL	93	9	31	426	78	13	539	-
1999 HL	7	0	7	56	29	2	202	-
2000 HL	2	0	10	65	25	2	177	-
2001 HL	3	0	109	71	25	1	160	-
2002 HL	10	4	117	52	11	1	73	-
2003 HL	4	4	183	132	32	21	602	-
2004 HL	28	0	189	43	15	9	513	-
2005 HL	281	144	3,563	153	141	118	2,773	-
2006 HL	365	252	5,318	313	252	395	5,817	-
2007 HL	559	199	6,504	574	188	278	4,327	-

	ssk	lsk	yft	kaw	frg	dot	oth	
1989 TR	238	85	245	736	205	53	-	-
1990 TR	382	321	213	938	310	114	-	-
1991 TR	485	81	198	838	305	119	-	-
1992 TR	683	270	278	1,169	275	100	-	-
1993 TR	537	216	325	1,873	468	397	-	-
1994 TR	372	80	220	907	257	191	-	-
1995 TR	347	128	263	976	270	357	-	-
1996 TR	224	75	107	1,028	351	398	-	-
1997 TR	584	336	167	585	177	229	-	-
1998 TR	399	108	533	961	298	148	3,497	-
1999 TR	428	156	697	401	252	265	4,155	-
2000 TR	513	388	1,582	453	275	291	4,662	-
2001 TR	1,004	223	1,678	340	269	236	4,739	-
2002 TR	1,023	244	1,357	368	263	93	3,490	-
2003 TR	201	88	1,004	340	160	33	2,013	-
2004 TR	3,008	2,116	6,071	411	302	145	3,561	-
2005 TR	810	273	1,744	387	249	156	4,496	-
2006 TR	157	75	840	121	83	81	1,608	-
2007 TR	172	122	722	352	103	34	1,884	-

	ssk	lsk	yft	kaw	frg	dot	oth	
1989 LL		7	3	5	8	6	4	-
1990 LL		0	-	0	1	1	0	-
1991 LL		-	-	0	0	0	-	-
1992 LL		4	0	2	2	1	0	-
1993 LL		5	1	1	41	2	1	-
1994 LL		0	-	0	31	0	0	-
1995 LL		-	0	0	3	1	0	-
1996 LL		14	0	5	115	40	2	-
1997 LL		4	0	2	12	5	0	-
1998 LL		11	0	5	10	1	0	85
1999 LL		-	-	-	0	0	-	1
2000 LL		-	-	1	1	0	-	46
2001 LL		1	0	81	2	1	0	122
2002 LL		11	2	67	1	0	1	85
2003 LL		4	1	31	0	0	0	113
2004 LL		6	2	2,494	2	2	2	434
2005 LL		1	1	3,002	1	1	1	301
2006 LL		5	4	3,116	1	0	0	253
2007 LL		1	1	2,920	19	1	2	390

	ssk	lsk	yft	kaw	frg	dot	oth	
1989 MI		0	-	0	1	0	0	-
1990 MI		0	0	0	7	3	0	-
1991 MI		0	1	1	13	4	3	-
1992 MI		0	0	0	1	5	-	-
1993 MI		-	-	-	-	-	-	-
1994 MI		208	14	16	0	15	8	-
1995 MI		-	-	-	-	-	-	-
1996 MI		-	-	-	-	-	-	-
1997 MI		-	-	-	-	-	-	-
1998 MI		-	-	-	-	8	-	56
1999 MI		1	-	0	1	0	0	18
2000 MI		-	-	-	-	0	-	16
2001 MI		-	-	-	2	1	0	30
2002 MI		-	-	-	2	1	0	32
2003 MI		-	-	-	0	0	-	81
2004 MI		-	-	-	-	0	-	34
2005 MI		34	-	29	80	69	-	34
2006 MI		5	1	1	0	0	-	1
2007 MI		-	-	0	0	7	-	1

	ssk	lsk	yft	kaw	frg	dot	oth	
1989 FN		0	0	0	2	1	-	-
1990 FN		0	-	1	2	1	-	-
1991 FN		5	0	0	3	3	-	-
1992 FN		3	9	0	7	3	0	-
1993 FN		3	-	2	2	6	0	-
1994 FN		3	-	1	0	-	0	-
1995 FN		-	-	-	-	-	-	-
1996 FN		1	1	1	2	1	1	-
1997 FN		0	-	0	6	4	2	-
1998 FN		2	0	2	4	4	0	288
1999 FN		-	-	-	0	3	0	196
2000 FN		3	2	0	0	8	-	580
2001 FN		6	-	1	4	13	0	319
2002 FN		163	9	22	10	25	0	636
2003 FN		494	12	231	3	31	0	442
2004 FN		34	13	160	33	34	24	1,068
2005 FN		91	46	125	85	55	76	1,780
2006 FN		58	1	17	-	-	-	176
2007 FN		-	-	1	-	-	-	231