

Joint Red Snapper and Grouper-Tilefish Individual Fishing Quota Programs Review



May 2021 SSC

Review Requirements

- NMFS Guidance for Conducting Reviews of Catch Share Programs (April 2017)
 - Requirement to review program within the first 5 years and then every 5-7 years afterwards
 - Review evaluates progress in meeting goals and objectives
 - Requires that specific elements of the program be analyzed



Gulf IFQ Introduction

- Red Snapper Individual Fishing Quota Program (RS-IFQ)
 - Reef Fish Amendment 26
 - Established January 1, 2007
- Grouper-Tilefish IFQ (GT-IFQ)
 - Reef Fish Amendment 29
 - Established January, 1, 2010
- Second review for both programs
 - Covers 2012-2018 time period

Program Goals and Objectives

Rationalize effort, eliminate derby fishing, and reduce overcapacity of the fishing fleet to achieve and maintain optimum yield. Anticipated benefits include:

- Increased market stability (RS- and GT-IFQ)
- Eliminate of season or quota closures (RS- and GT-IFQ)
- Increased flexibility for fishing (RS-IFQ)
- Improved safety at sea (RS- and GT-IFQ)
- Improved profitability of commercial fishermen (GT-IFQ)
- Reduce discards (RS-IFQ)
- Cost-effective & enforceable management (RS- and GT-IFQ)
- Balance social, economic, and biologic aspects (RS- and GT-IFQ)

IFQ Share vs Allocation

Share

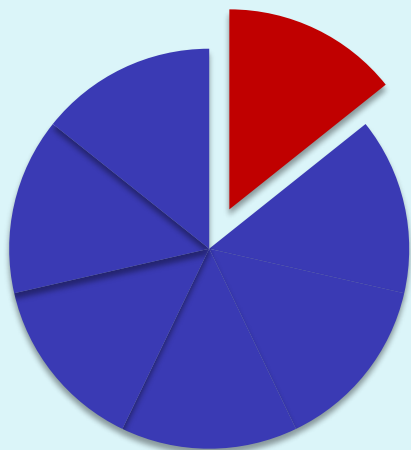
- A percentage of the commercial quota
- All shares sum to 100% per share category

Allocation

- Annual pounds distributed to shareholders based on share percentage in the account and the quota
- Used to account for harvest of species
- Expires at the end of the year

Share vs Allocation

$$\text{Share (\%)} \times \text{Quota (lb)} = \text{Allocation (lb)}$$

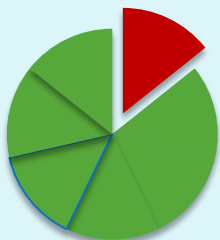


Share: 1.0%

Quota = 3.0 mp

Allocation = 30,000 lbs

If the quota decreases to 1.0 mp



Share: 1.0%

Quota = 1.0 mp

Allocation = 10,000 lbs

Share Categories

Red Snapper (RS)

Red snapper

Red Grouper (RG)

Red grouper¹

Gag (GG)

Gag¹

Deep-water grouper (DWG)

Yellowedge grouper
Snowy grouper
Warsaw grouper²
Speckled hind²
Misty grouper³

Tilefish (TF)

Golden tilefish
Blueline tilefish
Goldface tilefish
~~Blackline tilefish³~~
~~Anchor tilefish³~~

Other shallow-water grouper SWG

Black grouper
Yellowmouth grouper
Yellowfin grouper
Scamp²
~~Red hind³~~
~~Rock hind³~~

¹Multi-use species; ²Flexibility measure species; ³Species crossed out were removed in 2012.

Flexibility and Multi-use

- Flexibility and multi-use to reduce discards in GT-IFQ
- Multi-use (red grouper and gag)
 - On quota release, a percentage of the gag or red grouper allocation may be converted to gag multi-use or red grouper multi-use allocation
 - Multi-use allocation can be used to land either gag or red grouper.
 - Percentage based on formula using the ACL and quotas of the two species



Allocation and Multi-use

$$RGM \text{ allocation} = 100 * \frac{(Gag \text{ ACL} - Gag \text{ Commercial Quota})}{Red \text{ Grouper Commercial Quota}}$$

Red Grouper Shares



Red Grouper Allocation



Red Grouper
Allocation

Red Grouper
Multi-use

Gag Shares



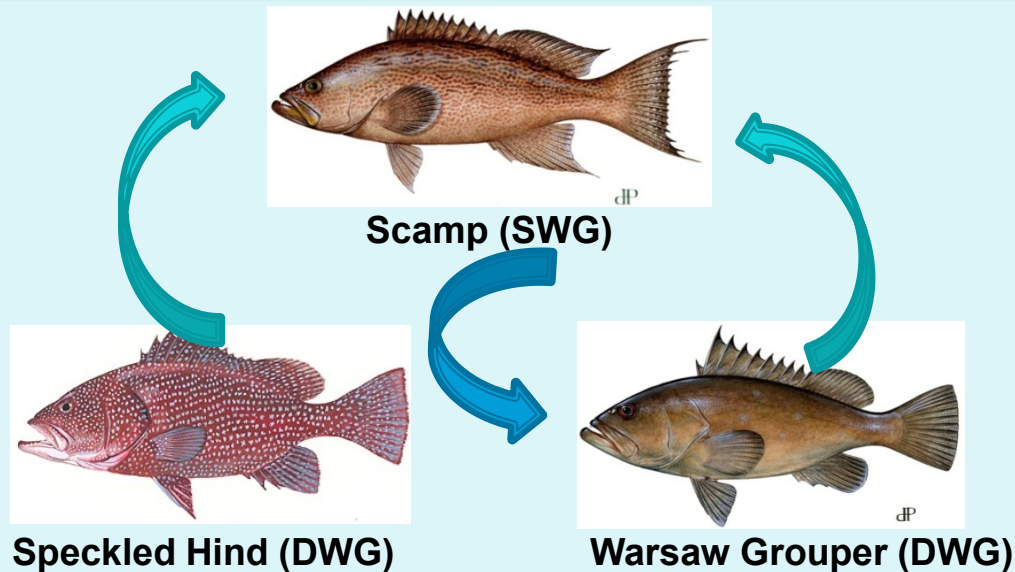
Gag Allocation



Gag Allocation

Gag Multi-use

Flexibility Measures



- Multi-use and flexibility applied after primary category has been exhausted within an account
- System controls both multi-use and flexibility measures at time of landing

Types of Account

Shareholder account

- Each account held by unique entities
- **May** hold shares and/or allocation
- Transfer shares and/or allocation
- **May** be associated with multiple vessel accounts
- **Must** be U.S. citizen or permanent resident alien

Vessel account

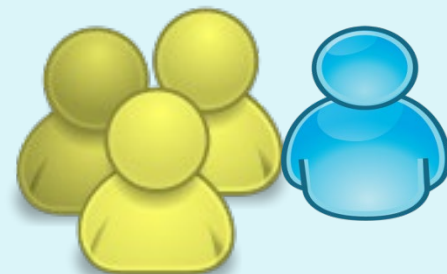
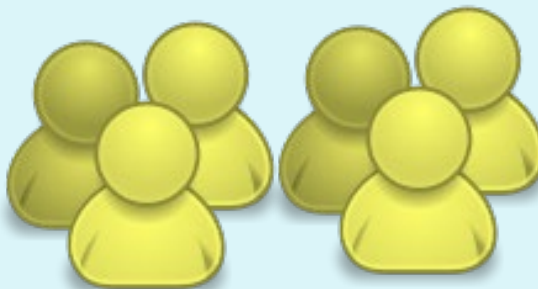
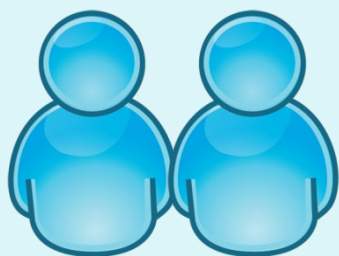
- Related to a shareholder account
- Vessel permit holder names must match shareholder account names
- Sufficient allocation required prior to landing transaction

Dealer account

- Must be associated with a federal dealer permit
- Completes landing transactions
- Collects cost recovery fee from fishermen
- ***Can not hold shares or allocation***

Shareholder Account

- Each shareholder account is held by a unique set of entities
 - May be single individual or multiple individuals
 - May be a single business or multiple businesses
 - May be combination of individual(s) & business(es)



- Entities (e.g., people, businesses) may be related to more than one account.

Fishing with the IFQ system

Declare fishing trip
prior to leaving:
VMS or VMS call
service

3-24 hour advanced
landing notification:
VMS, website, or SERO
call service

Land only at
approved
locations

Dealer completes IFQ landing
transaction on the day of offload or
within 96 hr of notification.
Allocation deducted from account

Offload with IFQ
dealer between
6am – 6pm

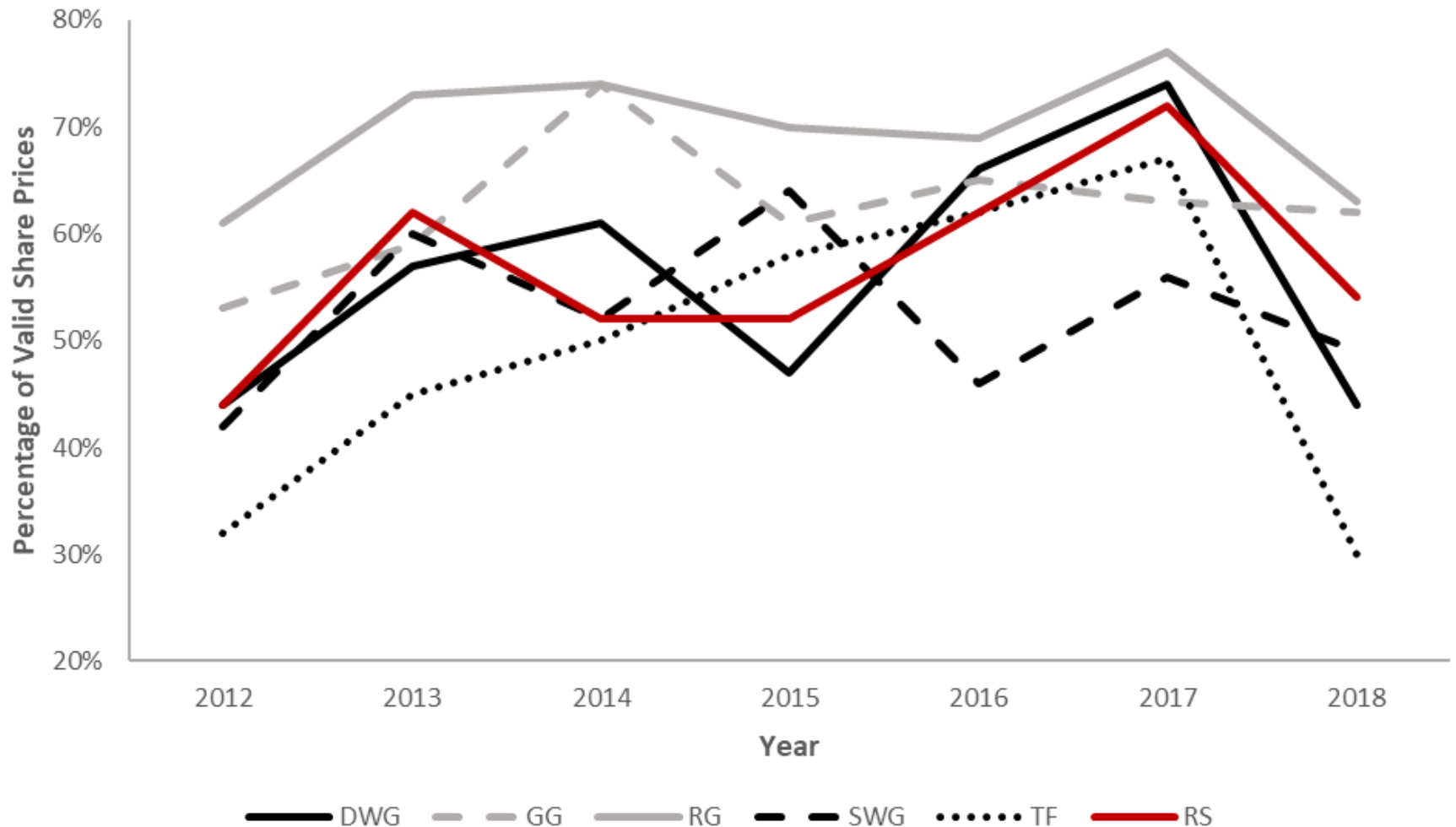
Data Collection and Reporting

The IFQ programs use an online electronic system. The website is used to complete transactions including:

- Allocation and share transfers
- Landing notifications and transactions
- Registration of new landing locations
- View and pay cost recovery fees

Data gap in the collection of shares and allocation prices

Percentage of “Valid” Share Prices

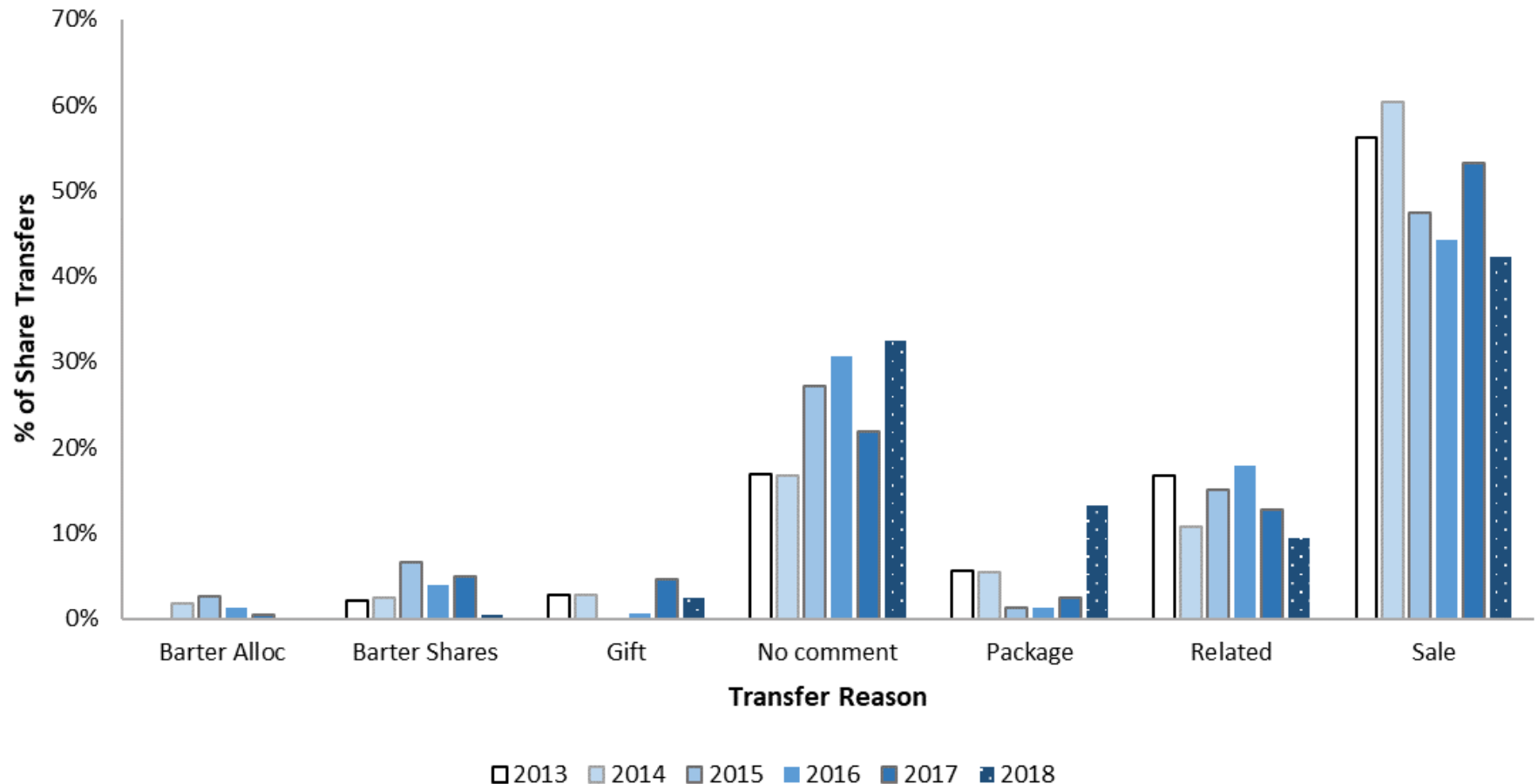


Percentage of “Valid” Share Prices

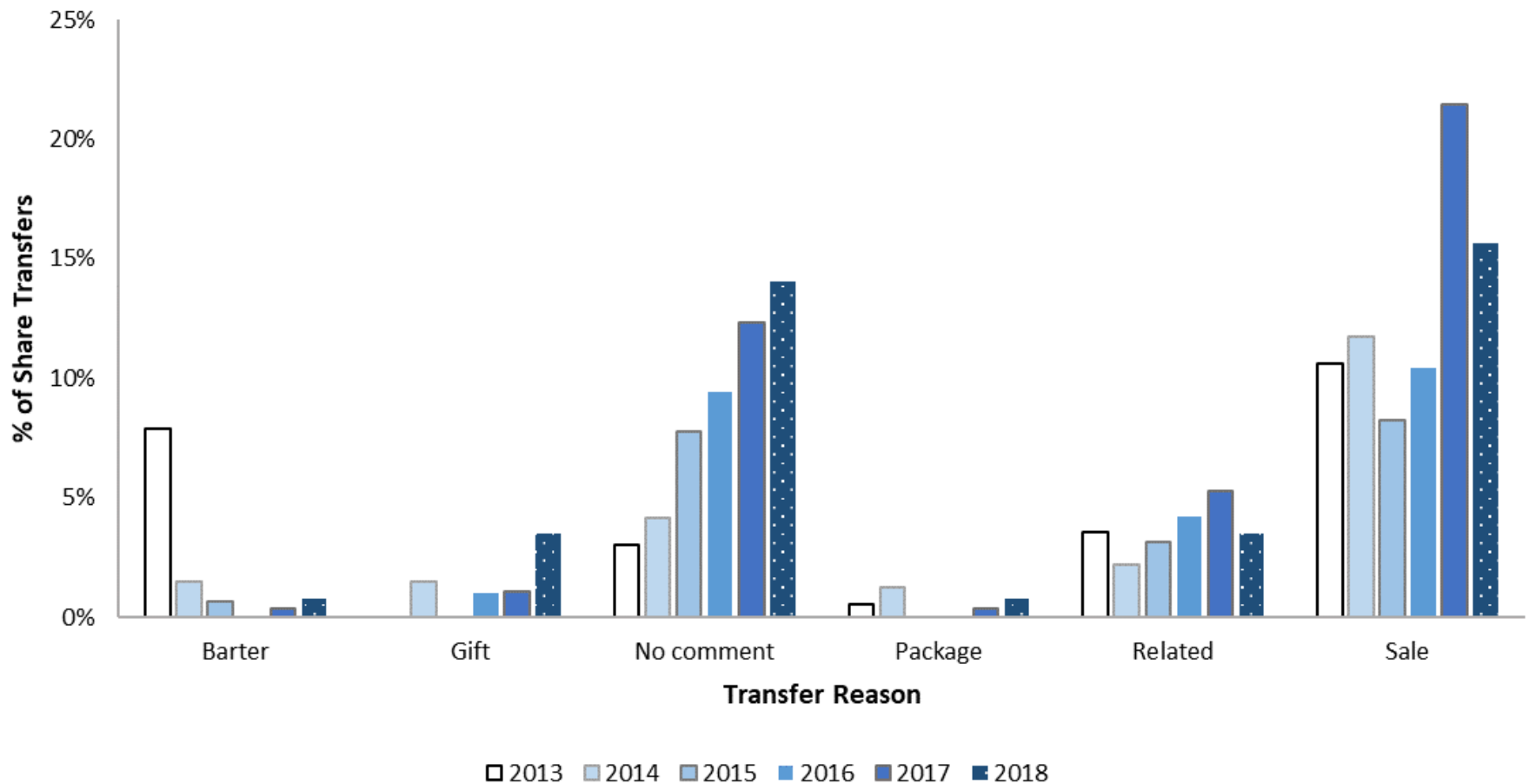
GT-IFQ	N	%
2012	281	51%
2013	250	63%
2014	273	67%
2015	379	63%
2016	220	63%
2017	196	69%
2018	140	55%

RS-IFQ	N	%
2012	36	44%
2013	47	62%
2014	47	52%
2015	62	52%
2016	58	62%
2017	84	72%
2018	53	54%

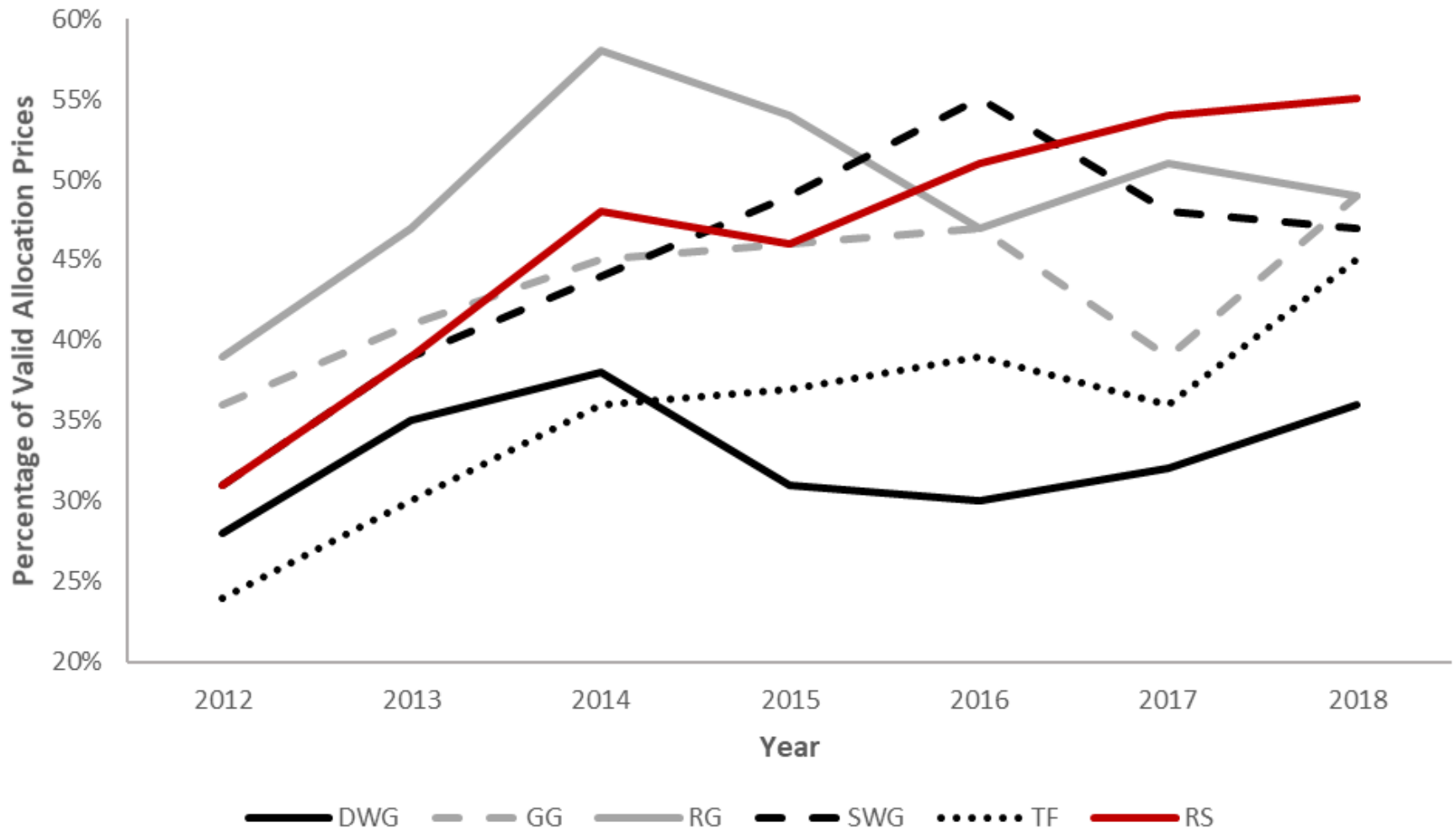
Reasons for GT-IFQ Share Transfers



Reasons for RS-IFQ Share Transfers



Percentage of “Valid” Allocation Prices

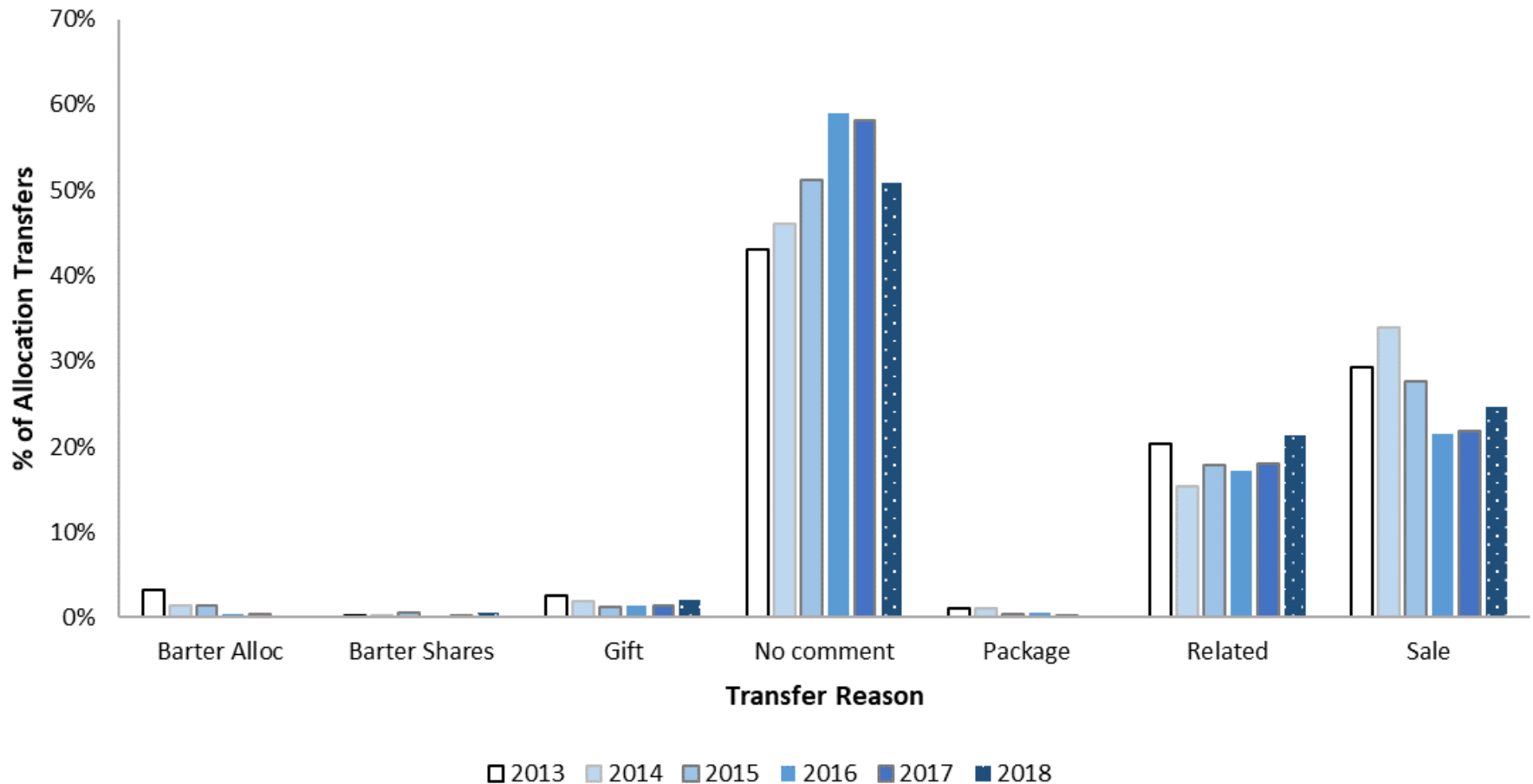


Percentage of “Valid” Allocation Prices

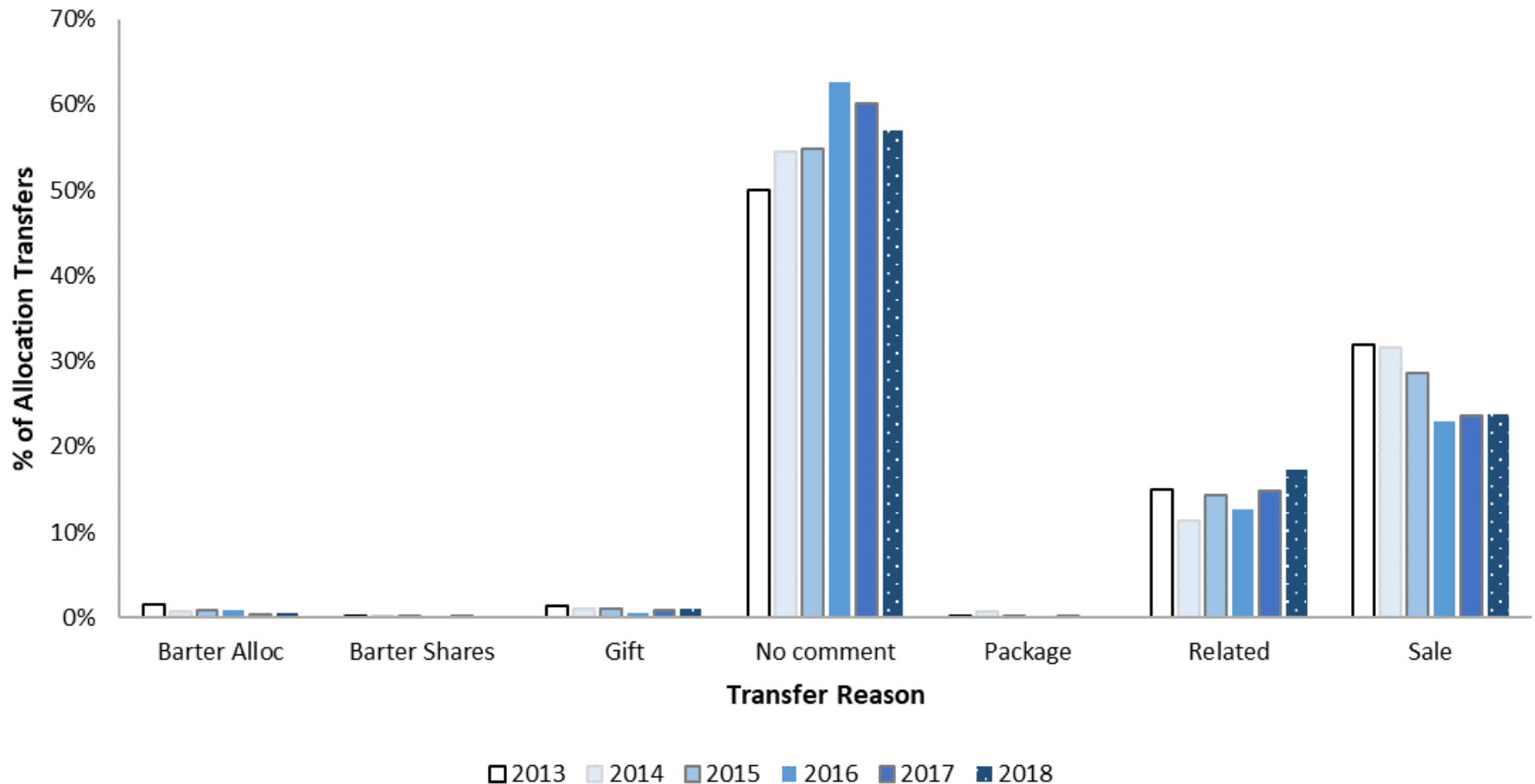
GT-IFQ	N	%
2012	1,962	34%
2013	2,188	41%
2014	3,273	48%
2015	3,175	47%
2016	3,765	46%
2017	2,438	43%
2018	2,066	42%

RS-IFQ	N	%
2012	781	31%
2013	1,068	39%
2014	1,382	48%
2015	1,562	46%
2016	1,891	51%
2017	1,982	54%
2018	2,051	55%

Reasons for GT-IFQ Allocation Transfers



Reasons for RS-IFQ Allocation Transfers



Eligibility and Participation

- People wanting to participate must contact IFQ staff to obtain an account
- For the first five years, a commercial reef fish permit was required to obtain a shareholder account
- Dealer permit is required to obtain a dealer account.
- After the first five years, those without permits who want accounts must submit an application with all relevant information completed (e.g., name, address, birthdate, citizenship, etc.)

Accounts with Shares

DWG	Small	Med.	Large	Total
2012	253	134	14	401
2013	238	131	13	382
2014	224	129	15	368
2015	220	131	15	366
2016	215	127	17	359
2017	221	123	17	361
2018	208	118	18	344

GG	Small	Med.	Large	Total
2012	355	249	8	612
2013	342	244	9	595
2014	333	233	9	575
2015	328	238	8	574
2016	328	232	11	571
2017	331	227	12	570
2018	288	223	12	523

TF	Small	Med.	Large	Total
2012	155	76	15	246
2013	144	72	16	232
2014	143	69	15	227
2015	143	63	16	222
2016	138	54	19	211
2017	142	54	18	214
2018	134	52	19	205

RG	Small	Med.	Large	Total
2012	349	212	8	569
2013	339	200	11	550
2014	327	192	11	530
2015	332	186	12	530
2016	332	185	13	530
2017	345	190	13	548
2018	303	190	12	505

SWG	Small	Med.	Large	Total
2012	384	234	11	629
2013	364	227	13	604
2014	351	218	13	582
2015	346	223	12	581
2016	345	221	11	577
2017	347	219	10	576
2018	295	216	10	521

RS	Small	Med.	Large	Total
2012	273	117	17	407
2013	261	120	18	399
2014	236	125	17	378
2015	238	131	17	386
2016	230	125	19	374
2017	233	126	19	378
2018	199	125	17	341

Small accounts hold < 0.05%; Medium accounts: 0.05% - 1.49999%; Large accounts: ≥ 1.5% shares

Accounts with Shares

GT-IFQ	Total
2012	665
2013	644
2014	628
2015	645
2016	653
2017	667
2018	616

RS-IFQ	Total
2012	407
2013	399
2014	378
2015	386
2016	374
2017	378
2018	341

Accounts Holding Shares in Multiple GT-IFQ Categories

Share categories	2012	2013	2014	2015	2016	2017	2018
1	5%	5%	6%	9%	10%	12%	13%
2	6%	8%	8%	9%	9%	9%	8%
3	34%	33%	33%	32%	33%	31%	30%
4	24%	24%	23%	22%	22%	21%	22%
5	31%	30%	30%	28%	27%	26%	27%

GT-IFQ and RS-IFQ Overlap

GT-IFQ	% Vessels
2012	77%
2013	81%
2014	83%
2015	85%
2016	87%
2017	86%
2018	89%

Accounts with Shares by Permit Status

DWG	Permit	No Permit	GG	Permit	No Permit	RG	Permit	No Permit
2012	90%	10%	2012	84%	16%	2012	84%	16%
2013	85%	15%	2013	80%	20%	2013	80%	20%
2014	80%	20%	2014	75%	25%	2014	76%	24%
2015	75%	25%	2015	70%	30%	2015	70%	30%
2016	73%	27%	2016	68%	32%	2016	68%	32%
2017	70%	30%	2017	66%	34%	2017	66%	34%
2018	69%	31%	2018	69%	31%	2018	67%	33%

SWG	Permit	No Permit	TF	Permit	No Permit	RS	Permit	No Permit
2012	84%	16%	2012	91%	9%	2012	71%	29%
2013	79%	21%	2013	86%	14%	2013	68%	32%
2014	74%	26%	2014	82%	18%	2014	68%	32%
2015	70%	30%	2015	75%	25%	2015	65%	35%
2016	68%	32%	2016	73%	27%	2016	66%	34%
2017	66%	34%	2017	72%	28%	2017	65%	35%
2018	68%	32%	2018	74%	26%	2018	70%	30%

Accounts with Shares by Permit Status

GT-IFQ	Permit	No Permit	RS-IFQ	Permit	No Permit
2012	84%	16%	2012	71%	29%
2013	79%	21%	2013	68%	32%
2014	74%	26%	2014	68%	32%
2015	68%	32%	2015	65%	35%
2016	66%	34%	2016	66%	34%
2017	64%	36%	2017	65%	35%
2018	65%	35%	2018	70%	30%

Accounts with Allocation

DWG	N	% thru shares	GG	N	% thru shares	RG	N	% thru shares
2012	498	84%	2012	743	87%	2012	715	85%
2013	465	83%	2013	716	83%	2013	683	82%
2014	457	80%	2014	726	80%	2014	689	79%
2015	464	76%	2015	753	74%	2015	716	73%
2016	462	76%	2016	752	74%	2016	723	75%
2017	455	75%	2017	767	72%	2017	750	70%
2018	477	72%	2018	756	74%	2018	755	72%

SWG	N	% thru shares	TF	N	% thru shares	RS	N	% thru shares
2012	737	87%	2012	292	83%	2012	599	73%
2013	720	84%	2013	282	82%	2013	598	70%
2014	722	80%	2014	279	78%	2014	606	66%
2015	742	75%	2015	287	74%	2015	635	63%
2016	738	75%	2016	273	76%	2016	639	60%
2017	749	74%	2017	264	74%	2017	639	61%
2018	745	74%	2018	286	70%	2018	650	58%

Accounts with Allocation

GT-IFQ	N	% thru shares	RS-IFQ	N	% thru shares
2012	812	86%	2012	599	73%
2013	786	84%	2013	598	70%
2014	795	80%	2014	606	66%
2015	835	74%	2015	635	63%
2016	842	78%	2016	639	60%
2017	872	74%	2017	639	61%
2018	878	75%	2018	650	58%

GT-IFQ Dealers

Year	Total	Small <1% of landings	Medium 1-3% of landings	Large >3% of landings
2012	97	73 (75%)	16 (16%)	8 (8%)
2013	96	75 (78%)	11 (11%)	10 (10%)
2014	112	94 (84%)	7 (6%)	11 (10%)
2015	114	97 (85%)	7 (6%)	10 (9%)
2016	107	89 (83%)	8 (8%)	10 (9%)
2017	113	95 (84%)	8 (7%)	10 (9%)
2018	114	94 (82%)	10 (9%)	10 (9%)

RS-IFQ Dealers

Year	Total	Small <1% of landings	Medium 1-3% of landings	Large >3% of landings
2012	82	67 (82%)	7 (9%)	8 (10%)
2013	81	66 (81%)	7 (9%)	8 (10%)
2014	96	77 (80%)	11 (11%)	8 (8%)
2015	105	88 (84%)	8 (8%)	9 (9%)
2016	96	79 (82%)	7 (7%)	10 (10%)
2017	109	91 (83%)	7 (6%)	11 (10%)
2018	111	93 (84%)	8 (7%)	10 (9%)

Volume of Shares by Permit Status

DWG	Permit	No Permit	GG	Permit	No Permit	RG	Permit	No Permit
2012	97%	3%	2012	97%	3%	2012	98%	2%
2013	95%	5%	2013	94%	6%	2013	96%	4%
2014	93%	7%	2014	94%	6%	2014	95%	5%
2015	87%	13%	2015	87%	13%	2015	80%	20%
2016	85%	15%	2016	85%	15%	2016	79%	21%
2017	85%	15%	2017	83%	15%	2017	80%	20%
2018	69%	31%	2018	80%	19%	2018	79%	21%

SWG	Permit	No Permit	TF	Permit	No Permit	RS	Permit	No Permit
2012	96%	4%	2012	98%	2%	2012	79%	21%
2013	94%	6%	2013	96%	4%	2013	76%	24%
2014	92%	8%	2014	95%	5%	2014	72%	28%
2015	85%	15%	2015	89%	11%	2015	70%	30%
2016	85%	15%	2016	87%	13%	2016	70%	30%
2017	85%	15%	2017	89%	11%	2017	70%	30%
2018	83%	16%	2018	79%	21%	2018	68%	32%

Landings by Share Status

DWG	Shares	No Shares	GG	Shares	No Shares	RG	Shares	No Shares
2012	84%	16%	2012	83%	17%	2012	87%	13%
2013	62%	38%	2013	81%	19%	2013	80%	20%
2014	55%	45%	2014	65%	35%	2014	66%	34%
2015	50%	50%	2015	64%	36%	2015	62%	38%
2016	45%	55%	2016	64%	36%	2016	57%	43%
2017	48%	52%	2017	62%	38%	2017	52%	48%
2018	47%	53%	2018	59%	41%	2018	48%	52%
SWG	Shares	No Shares	TF	Shares	No Shares	RS	Shares	No Shares
2012	85%	15%	2012	78%	22%	2012	69%	31%
2013	79%	21%	2013	50%	50%	2013	61%	39%
2014	74%	26%	2014	41%	59%	2014	61%	39%
2015	68%	32%	2015	40%	60%	2015	55%	45%
2016	62%	38%	2016	42%	58%	2016	55%	45%
2017	60%	40%	2017	40%	60%	2017	53%	47%
2018	56%	44%	2018	45%	55%	2018	53%	47%

Annual Landings

DWG	Quota	% Quota	GG	Quota	% Quota	RG	Quota	% Quota
2012	1.127	86%	2012	0.567	93%	2012	5.370	97%
2013	1.118	82%	2013	0.708	82%	2013	5.530	83%
2014	1.110	94%	2014	0.835	83%	2014	5.630	98%
2015	1.101	83%	2015	0.939	59%	2015	5.720	84%
2016	1.024	85%	2016	0.939	83%	2016	7.780	60%
2017	1.024	80%	2017	0.939	47%	2017	7.780	43%
2018	1.024	80%	2018	0.939	48%	2018	7.780	31%
SWG	Quota	% Quota	TF	Quota	% Quota	RS	Quota	% Quota
2012	0.509	59%	2012	0.582	78%	2012	3.713	97.9%
2013	0.518	59%	2013	0.582	76%	2013	5.054	97.1%
2014	0.523	50%	2014	0.582	89%	2014	5.054	99.2%
2015	0.525	54%	2015	0.582	92%	2015	6.570	98.5%
2016	0.525	68%	2016	0.582	74%	2016	6.097	99.4%
2017	0.525	46%	2017	0.582	83%	2017	6.313	99.6%
2018	0.525	43%	2018	0.582	66%	2018	6.313	99.6%

*Quota is in million pounds, gutted weight. Quotas in red indicate there was an in-season quota increase that year.

Annual Landings

Year	GT-IFQ % Quota	RS-IFQ % Quota
2012	91%	97.9%
2013	81%	97.1%
2014	92%	99.2%
2015	80%	98.5%
2016	65%	99.4%
2017	49%	99.6%
2018	39%	99.6%

Ownership Caps

- **Share cap for each category:** maximum percentage of shares that can be held by any entity or account.
- **GT-IFQ Allocation cap across all categories:** the total amount of pounds that can be held at a point in time; corresponds to allocation equal to all share caps combined

Share Category	Share Cap %
DWG	14.704321
GG	2.349938
RG	4.331882
SWG	7.266147
TF	12.212356
RS	6.020300

Share Prices

DWG	N	Avg	GG	N	Avg	RG	N	Avg
2012	78	\$11.90	2012	129	\$28.60	2012	202	\$8.85
2013	53	\$13.65	2013	88	\$34.08	2013	145	\$14.28
2014	62	\$13.88	2014	106	\$32.13	2014	144	\$13.91
2015	85	\$13.42	2015	153	\$23.15	2015	214	\$13.55
2016	56	\$13.00	2016	84	\$14.89	2016	118	\$10.54
2017	31	\$12.92	2017	67	\$16.24	2017	117	\$5.29
2018	34	\$10.92	2018	63	\$9.78	2018	84	\$4.10

SWG	N	Avg	TF	N	Avg	RS	N	Avg
2012	97	\$8.61	2012	44	\$9.07	2012	81	\$38.36
2013	82	\$9.00	2013	29	\$9.16	2013	76	\$39.89
2014	63	\$7.84	2014	34	\$9.32	2014	91	\$36.59
2015	97	\$7.10	2015	57	\$9.67	2015	120	\$35.42
2016	56	\$6.09	2016	34	\$10.44	2016	93	\$31.95
2017	45	\$8.89	2017	24	\$8.90	2017	116	\$35.59
2018	55	\$4.87	2018	20	\$10.70	2018	98	\$36.26

*Inflation adjustments from: <http://www.bea.gov/> with 2018 as the base year using the GDP deflator.

Allocation & Ex-Vessel Prices

DWG	Alloc \$	Ex-Vessel \$	GG	Alloc \$	Ex-Vessel \$	RG	Alloc \$	Ex-Vessel \$
2012	\$1.31	\$4.48	2012	\$2.51	\$5.18	2012	\$0.87	\$3.54
2013	\$1.24	\$4.66	2013	\$2.60	\$5.32	2013	\$1.05	\$3.84
2014	\$1.19	\$4.73	2014	\$2.17	\$5.14	2014	\$1.04	\$4.01
2015	\$1.24	\$4.87	2015	\$2.00	\$5.34	2015	\$1.13	\$4.15
2016	\$1.21	\$4.81	2016	\$1.44	\$5.35	2016	\$0.93	\$4.18
2017	\$1.20	\$4.84	2017	\$1.48	\$5.37	2017	\$0.43	\$4.37
2018	\$0.99	\$5.08	2018	\$1.01	\$5.66	2018	\$0.32	\$4.75
SWG	Alloc \$	Ex-Vessel \$	TF	Alloc \$	Ex-Vessel \$	RS	Alloc \$	Ex-Vessel \$
2012	\$1.27	\$4.78	2012	\$0.73	\$2.51	2012	\$3.31	\$4.90
2013	\$0.90	\$4.86	2013	\$0.73	\$2.80	2013	\$3.23	\$4.84
2014	\$0.78	\$4.79	2014	\$0.77	\$2.78	2014	\$3.23	\$5.06
2015	\$0.63	\$4.86	2015	\$0.82	\$3.05	2015	\$3.25	\$5.09
2016	\$0.58	\$4.82	2016	\$0.69	\$3.06	2016	\$3.35	\$5.07
2017	\$0.59	\$4.87	2017	\$0.73	\$3.04	2017	\$3.40	\$5.08
2018	\$0.54	\$5.21	2018	\$0.72	\$2.82	2018	\$3.40	\$5.10

*All prices are inflation adjusted yearly averages. Inflation adjustments from: <http://www.bea.gov/> with 2018 as the base year using the GDP deflator.

Allocation Transfers

DWG	N	% Quota	GG	N	% Quota	RG	N	% Quota
2012	764	135%	2012	1,745	89%	2012	1,906	88%
2013	608	158%	2013	1,718	88%	2013	1,752	101%
2014	846	214%	2014	2,232	148%	2014	2,317	128%
2015	898	294%	2015	1,847	134%	2015	2,480	151%
2016	947	238%	2016	2,183	148%	2016	2,978	194%
2017	780	210%	2017	1,485	90%	2017	1,758	114%
2018	820	224%	2018	1,274	75%	2018	1,373	108%

SWG	N	% Quota	TF	N	% Quota	RS	N	% Quota
2012	900	72%	2012	385	118%	2012	2,551	101%
2013	911	95%	2013	291	160%	2013	2,752	114%
2014	1,000	97%	2014	430	216%	2014	2,860	110%
2015	1,084	110%	2015	504	243%	2015	3,387	141%
2016	1,595	126%	2016	515	195%	2016	3,682	140%
2017	1,147	96%	2017	472	184%	2017	3,701	138%
2018	999	88%	2018	422	149%	2018	3,702	126%

*Inflation adjustments from: <http://www.bea.gov/> with 2018 as the base year using the GDP deflator.

Discard Ratios by Gear

GG	VL	LL	RG	VL	LL	RS	VL	LL
2012	0.47	0.44	2012	0.44	0.88	2012	0.28	3.62
2013	0.23	0.52	2013	0.42	0.50	2013	0.13	1.89
2014	0.15	0.05	2014	0.25	0.55	2014	0.10	1.21
2015	0.16	0.01	2015	0.41	0.52	2015	0.10	0.62
2016	0.17	0.04	2016	0.54	0.51	2016	0.12	0.70
2017	0.19	0.04	2017	0.57	1.11	2017	0.21	1.01
2018	0.34	0.01	2018	1.29	1.19	2018	0.14	0.45
2012-18 Avg	0.24	0.16	2012-18 Avg	0.56	0.75	2012-18 Avg	0.14	1.36

*Source: SEFSC Reef Fish Observer Program (2019).

Discard Reasons

Species	Number Reported	Not Legal Size	Other Regulations	Market Conditions	Out of Season
Gag	22,914	54.3%	44.2%	0.8%	0.7%
Red Grouper	344,400	97%	2.7%	0.2%	0.1%
Shallow Water Grouper					
Scamp	2,084	89.2%	9.5%	0.8%	0.5%
Black Grouper	1,093	46.4%	52.1%	0.1%	1.5%
Deep-water Grouper					
Yellowedge Grouper	606	53.3%	35.8%	10.9%	0.0%
Snowy Grouper	124	68.5%	12.1%	19.4%	0.0%
Speckled Hind	41	4.9%	95.1%	0.0%	0.0%
Warsaw Grouper	10	50.0%	30.0%	20.0%	0.0%
Tilefish					
Golden Tilefish	1,496	52.1%	22.3%	25.5%	0.0%
Blueline Tilefish	3,250	1.5%	30.2%	68.3%	0.0%
Red Snapper	288,601	28.7%	60.8%	9.3%	1.3%

*Source: SEFSC Supplemental Discard Logbook (2019).

- The discard logbook attempts to quantify the reason discards occur. These discards are from a reef fish wide sample, and may not be representative of IFQ.
- For IFQ species, other regulation could refer to lack of allocation.

Red grouper and gag multi-use

Red grouper (RGM) and gag (GGM)

Year	GGM	RGM
2012	8%	NA
2013	70%	NA
2014	47%	NA
2015	33%	5%
2016	33%	5%
2017	44%	4%
2018	44%	4%

Red grouper and gag multi-use landings (% of allocation)

Year	RGM		GGM	
	Red Grouper	Gag	Red Grouper	Gag
2012	NA	NA	6%	94%
2013	NA	NA	1%	99%
2014	NA	NA	35%	65%
2015	82%	18%	26%	74%
2016	8%	92%	1%	99%
2017	11%	89%	2%	98%
2018	4%	96%	0.3%	99.7%

Monitoring and Enforcement

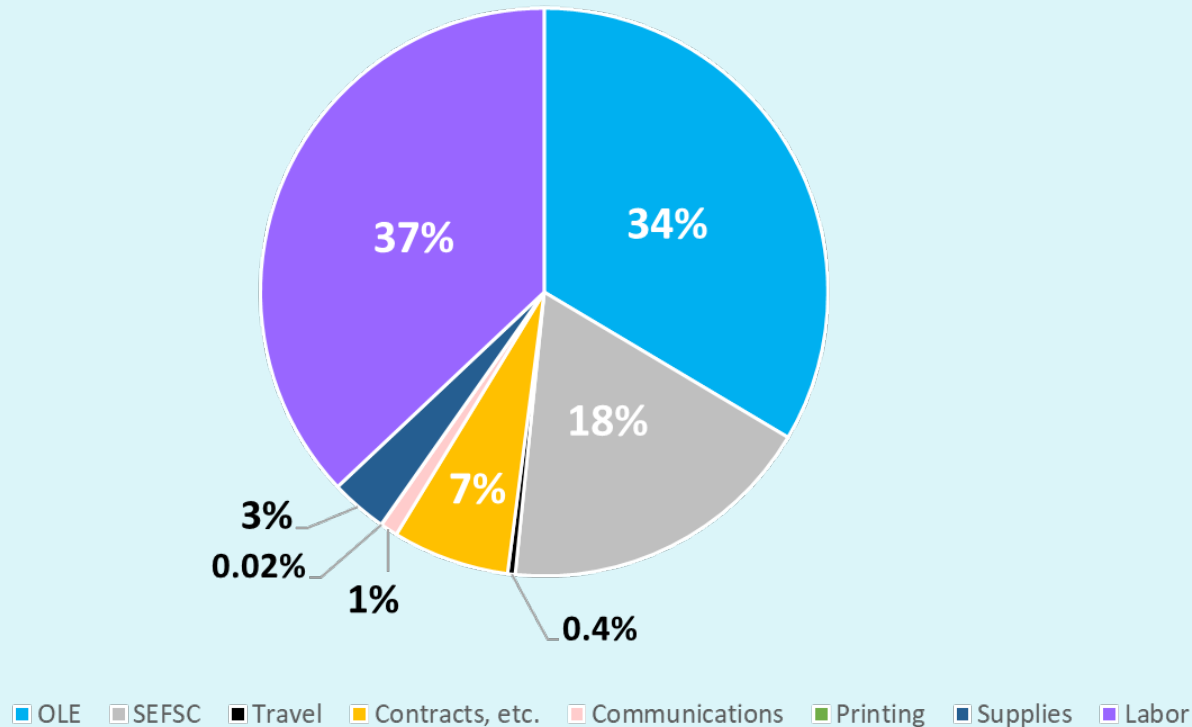
Number of enforcement cases resulting in seizure of fish

Year	IFQ Cases	GT-IFQ Seizures	RS-IFQ Seizures	Total Pounds
2012	6	4	5	10,748
2013	6	3	3	5,961
2014	4	3	3	5,240
2015	1	0	1	1,088
2016	3	2	2	3,817
2017	15	0	0	0
2018	19	0	0	0
Total	54	12	14	26,854

*As of June 2019, the Southeast Region summary settlement schedule added penalties for GT and RS-IFQ specific violations.

Administration and Cost Recovery

Aggregated IFQ program expenses, 2010-2018



- Bulk of cost recovery used for management of the program (labor) and enforcement.
- IFQ system was modernized 2019-2020, using a large percentage of CRF collected funds.

IFQ Programs and Ex-vessel Prices

- Keithly's (2017) results indicate the GT-IFQ program **did not affect the ex-vessel prices of Gulf grouper species**, likely because the “race to fish” and related shortened seasons did not exist for grouper species prior to the program.
- Birkenbach et al (2020) found that the RS-IFQ program caused a **statistically significant increase in the RS ex-vessel price**
- Birkenbach et al (2020) also found the GT-IFQ program **did not cause a statistically significant increase in the ex-vessel price for any GT species**. In fact, the red grouper ex-vessel price decreased slightly as a result of the program.

IFQ Programs and Ex-vessel Prices

Birkenbach et al. also produced the following general findings:

- species experiencing **ex-vessel price increases were found to supply higher-value fresh product markets** that discouraged market gluts (i.e., catch shares ended or at least slowed the race to fish);
- for species experiencing ex-vessel price decreases, the economic benefits from catch shares management accrued in the form of **improvements in technical efficiency (i.e., cost reductions) as season length increased**; and
- species experiencing **no change in ex-vessel price were found to supply frozen or canned product markets**, and so the timing of within-season landings did not influence ex-vessel price.



IFQ Programs and Ex-vessel Prices

Asche (2020) determined:

- like Mitchell, not a specific market for RS, but rather a **market for all snappers**;
- the RS-IFQ **did not shift demand between** snapper species or products;
- higher demand for RS was caused by an **increase in total demand for snapper**;
- **imports are “good” substitutes**, other domestic snappers are not;
- the RS-IFQ program **increased the RS ex-vessel price** and caused price to be **more stable**



Measuring Market Concentration

- **Herfindahl-Hirschman Index (HHI)** is most common metric; used/recommended by US DOJ/FTC and courts
- Concentration and competition **inversely related**
- **Market power** - ability to increase prices above marginal cost and restrict output below competitive levels; leads to **losses in economic efficiency**
- Markets include **landings, quota shares, and annual allocation; establishing market boundaries is critical** as results will vary; landings market(s) boundaries most difficult to determine due to substitutes and data constraints



Justice Department & Federal Trade Commission Guidance

- HHI above 2,500 is **highly** concentrated; HHI between 1,500 and 2,500 is **moderately** concentrated; HHI below 1,500 is considered **unconcentrated**
- Preferable to estimate HHIs at lowest known entity (LKE) level rather than IFQ account level as it accounts for an entity's ownership across multiple accounts; measuring at IFQ account level underestimates concentration
- In landings market(s), estimate HHIs for landings and revenue, though revenue more appropriate



Market Power Determinations

- GT allocation and GT/RS share **caps do not limit landings**; some entities possess market share in landings markets above the caps. GT allocation cap does not constrain market concentration.
- **No evidence of market power** in any landings, shares, or annual allocation markets for each share category, as well as for all IFQ species and all reef fish species in the case of landings markets.
- **However**, per Mitchell (2016), HHIs **should be estimated at the affiliated entity level** as it most closely approximates units of independent economic control suitable for market power analysis. **LKE level estimates do not account for affiliation** between entities; Additional research is needed on this issue.
- Further, current estimates **do not account for vertical integration**, where dealer/processors may also own/control shares/harvesting operations. NMFS recently began collecting ownership % data for dealers to investigate this issue.
- HHIs and market concentration are likely **underestimated** at present and caution must be exercised regarding the presence of market power.

Measuring Inequality of Distributions

- Gini coefficient is the most common metric
- The range of the Gini coefficient is between 0 and 1 (0% and 100%), where 0 indicates perfect equality (all entities have the same amount) and 1 (100%) indicates maximum inequality (one entity has the entire amount)
- No threshold akin to HHI to determine whether distribution is “too unequal,” so often evaluated relative to other comparable distributions



Gini Coefficients for Shares

- Distribution of shares at the LKE level is **highly unequal** in every share category, ranging from **.78 to .90**.
- Gini coefficients for shares were **mostly stable from 2012-2018** in most share categories, though coefficients for RS and SWG decreased (distributions became more equal) by 4.3% and 3.5% respectively during this time.
- Distribution of shares **most unequal in the DWG, TF, and RS** share categories, followed by RG, with GG and SWG being the least unequal.



Gini Coefficients for Landings and Revenue

- For landings and revenue across all GT species, the Gini coefficient at the vessel level increased by about 7% from 2012-2018.
 - although the distribution of landings and revenue in the GT-IFQ program was **already highly unequal** at the vessel level, it has **become even more so** during this time.
- Gini coefficients for landings and revenue at the LKE level are about the same within each share category, with TF being the exception
 - **Gini for TF revenue is higher than for TF landings** because some entities are better at targeting fish that, either due to species or size, command a higher ex-vessel price; so those entities control a higher % of the TF revenue than the TF landings.
- Gini coefficients for revenue are higher at the LKE level compared to the vessel level in each share category; result is expected because multiple vessels can be owned by a single LKE.



Gini Coefficients Across US Catch Share Programs

- Brinson and Thunberg (2016) estimated Gini coefficients for the distribution of revenues at the vessel level for all U.S. catch share programs
 - The **effects** of implementing the RS and GT-IFQ programs **did not differ significantly** from the effects seen in most other catch share programs.
 - Most striking result is how **unequal the revenue distributions across vessels were prior to implementation of the RS and GT-IFQ programs** relative to other US catch share fisheries.
 - Gini coefficient averaged 0.45 upon implementation, ranging from 0.25 to 0.62, for other fisheries.
 - **Gini coefficients in the RS and GT-IFQ programs were 58%-84% higher upon implementation compared to the other U.S. fisheries**; distributions of revenues across vessels in the RS and GT IFQ programs were **much more unequal** upon implementation.
 - Because the RS-IFQ and GT-IFQ programs' effects were not significantly different from most other programs, the revenue distributions at the vessel level are **still much more unequal in the RS and GT-IFQ programs** compared to their distributions in other U.S. catch share programs.



Safety-at-Sea: Dangerous Business of Fishing

- Commercial fishing: second-most dangerous occupation in US.
- Average fatal occupational injury rate for fishers and related fishing workers : 80.8 deaths per 100,000 full-time equivalent (FTE) workers; National average is 3.3 per 100,000 FTE (BLS 2015).
- Studies on occupational injuries: RS IFQ effect, GT IFQ effect, risk perception and safety, value of life and injuries.



Government Regulations and Safety

- Promotion of safety in Magnuson-Stevens Fishery Conservation and Management Act (1976, 2007).
- Fishing seasons, quotas; fishing derbies.
- IFQ programs.
- Observer program.
- USCG safety regulations, Commercial Fishing Vessel Safety Examination Certificate.

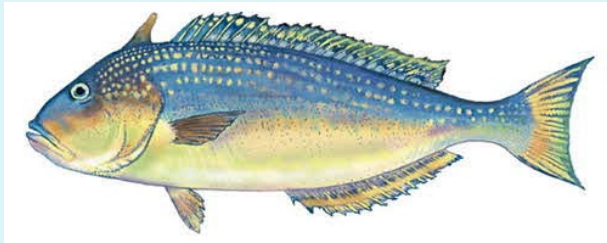
Occupational Safety and the Shift from Common to Individual Fishing Quotas in the Gulf of Mexico

- RS IFQ reduced the number of fatalities by 1.25 per 100,000 FTE.
- GT IFQ reduced the number of fatalities by 7.0 per 100,000 FTE.
- Expansion on IFQ programs in multi-species fisheries increases the safety effects.
- The role of wind speed in causing fatal accidents is reduced after the IFQ-RS program.
- Captains give more weight to wind speed in making their trip decision after the IFQ than they did before the IFQ. This implies that their attitude towards risk associated with poor weather conditions has changed.



A Difference-In-Difference (DD) Approach

- Have improvements in RS and GT fisheries' safety been a part of the trend in the industry? Are the results robust to the natural experiment design of the DD approach?
- Treatment group: RS and GT
- Control group: shrimp fishery



Results

- Treatment group has experienced a lower rate of incidents than the control group.
- The accident rate has fallen for all selected fisheries.
- Given the multispecies nature of reef fish fisheries in the GoM, and subsequently the presence of economies of scope, the RS-IFQ may not have altered fishermen's behavior in terms of safety as much as did the expansion of the program by the IFQ-GT with a much wider coverage of fish species.



Occupational Injuries in the Shrimp Harvesting in the Gulf of Mexico and the Value of Statistical Life- Results

- Value of Statistical Life: Upper bound 18 million, mean 9.7 million.
- Value of Statistical Injury: Upper bound 1.4 million, mean 0.7 million.



Attitude Towards Safety: Fishing Culture

- The acceptance of high risk of loss of life and injury as a part of commercial fishing-culture is an obstacle to improving safety in fishing. (Safety at Sea as an Integral Part of Fisheries Management, FAO, 2001).



Risk Perceptions in Fisheries: Is There a Rational Learning Process?

- Examine the rationality of safety beliefs and the correlation between risk perception and actual level of job-related physical risk, using data from the Maine's American lobster fishery.



Risk Perception and Risky Behavior Issues

- Risk perception, attitude towards risk
- Job sorting
- Accuracy and consistency of risk perception
- Cognitive ability and risk perception
- Risk normalization as a coping mechanism
- Actual risk vs. perceived risk and money trade-offs

Results

- No evidence supporting a correlation between risk perception and cognitive ability.
- Captains incorporate information on actual commercial fishing accidents to form their probabilistic judgments.
- Learning process is non-linear in lobster fishery.
- Could not confirm that fishermen use normalization strategy to minimize risk perception as a psychological method of coping with the threat.
- Estimates of value of reduction in perceived risk is \$87,186 vs. reduction in actual risk \$143,227.

Summary

- IFQ safety effect
- Increased safety effectiveness of the IFQ programs in multispecies fisheries
- Risk perception and safety
- Importance of safety (establishing a market value for losses)– VSL and VSI



Fishing Capacity - Definitions

Fishing Capacity: Potential (maximum) harvest given current level of fixed inputs, technology and biomass

Capacity Utilization (CU): Compares observed output (Y_o) to potential output (Y_{cap}). $CU = Y_o / Y_{cap}$ indicates the proportion of capacity that is effectively utilized. The rest is considered “**excess capacity.**”

Overcapacity: The difference between capacity output and a desirable sustainable catch level.

Operational Changes

- Agar, Horrace, and Parmeter (*under review*) evaluated fleet capacity dynamics based on two arrangements (a red snapper IFQ model and a combined Gulf reef fish IFQ model).
- **Red snapper IFQ model:** Technical efficiency increased by 6% post-IFQ. Excess capacity and overcapacity are still high in the fishery. About 20% of the vertical line fleet (if operating at full efficiency) could harvest the quota.
- **Gulf reef fish IFQ model:** Technical efficiency improved by 5% post-IFQ. The model also found evidence of excess capacity. The estimation of overcapacity was challenging because the fleet did not harvest all the quota. However, about 57% of the Gulf reef fish IFQ fleet (operating at full efficiency) could harvest the quota.

Conclusions

- The IFQ programs has been relatively successful in meeting its objectives.
- Initial objectives did not specify quantified benchmarks and targets, e.g., “reduce overcapacity.”

Conclusions

Data Collection and Reporting

- Collection of share and allocation prices has greatly improved since requiring transfer reasons.

Participation and Operational Changes

- Overcapacity has declined. Capacity utilization has increased and the technical efficiency of the fleet has increased
- Consolidation and efficiency gains within the bottom longline and vertical line sectors. Further consolidation is possible as fishing capacity remains large relative to the available quotas.

Conclusions

Share and Allocation Caps

- Distributions of shares and landings by share category have changed little since the IFQ programs were implemented.
- Market power does not exist in any of the markets for landings, shares, or annual allocation
- Existing share and annual allocation caps are not constraining landings.

Conclusions

Share, Allocation, and Ex Vessel Prices

- Analyses of share and allocation prices have been hindered by missing or erroneous data. The collection of accurate share and allocation prices continues to be a challenge.
- RS IFQ appears to have increased the ex-price for red snapper
- GT-IFQ program does not appear to have an appreciable effect on ex-vessel prices for Gulf groupers.
- The flexibility afforded by the RS and GT-IFQ programs has improved the profitability of fishing operations. Fishermen are able to reduce operating costs, thereby improving net revenues

Conclusions

Catch and Sustainability

- The IFQ programs have provided year-round fishing opportunities to participating commercial fishermen for red snapper and, grouper and tilefish species included in the programs.
- Gag (GGM) and red grouper (RGM) multi-use shares were not effective. The program could be streamlined by eliminating GGM and RGM shares.
- The primary reason for discarding of IFQ species is predominantly due to minimum legal size and other regulations (such as lack of allocation).

Conclusions

Safety at Sea

- The IFQ programs have improved the safety-at sea of participating commercial fishermen; resulted in significant decreases in the number of fatalities.
- The IFQ programs have allowed fishermen to select more favorable weather conditions to plan fishing trips

Administration and Cost Recovery

- During the review period, collected cost recovery fees have fully funded the IFQ programs (including enforcement activities, salaries and benefits of staff working on the programs, and modernization of the IFQ system).

Thank you