



A Survey of the Sportfishing Industry in Nova Scotia



Front cover images — Top left; small mouth bass tournament at Big Mushamush Lake (photo by Jason Leblanc). Middle left; Sea-run Speckled Trout from the West River, Antigonish (photo by Peter Poole). Lower left; Mother and son with smallmouth bass at Lake Vaughn, Yarmouth County (photo by Shawn Sears). Bottom; Hatchery pool, Margaree River (photo by Mark Hamilton). Back cover image — River Denys fly fishing (photo by John MacMillan).



Recycled Fibre

A Survey of the Sportfishing Industry in Nova Scotia

Introduction

This report summarizes a survey based on the 2010 fishing season which was carried out in early 2011, with data analysis completed in June, 2012. The purpose of the survey was to provide information on the numbers and origins of anglers, their angling effort, species harvested, expenditures and investments incurred while fishing in the province, and to collect angler input on a wide range of topics of interest to provincial fisheries managers. This information is used to develop and prioritize initiatives and strategies to sustain and improve the sport fishery. The management of sportfish species is partitioned between the Department of Fisheries and Oceans and the Province of Nova Scotia. Nova Scotia is responsible for freshwater species such as brook, brown, rainbow and lake trout, smallmouth bass, white perch, yellow perch, chain pickerel, and landlocked Atlantic salmon, while the federal government manages diadromous species such as smelt, eel, striped bass, sea run Atlantic salmon, and shad.

The survey was conducted by the Inland Fisheries Division of the Nova Scotia Department of Fisheries and Aquaculture in co-operation with the Federal Department of Fisheries and Oceans, Ottawa. The Nova Scotia survey was part of a national survey that has been conducted

in all jurisdictions every five years since 1975.

Questionnaires were sent to 2,788 persons who purchased recreational fishing licences in Nova Scotia in 2010. Fifty-nine percent of the questionnaires were completed and returned. The information contained in these questionnaires was used to calculate the survey results outlined in this report. The sample group was considered representative of the licensed participants in the sportfishery in Nova Scotia.

Resource Base

Nova Scotia has a land area of 53,000 square kilometers, which includes 6,700 lakes, 100 rivers, innumerable brooks and 7,442 kilometers of coastline. Thirty-eight species of fish inhabit the province's fresh waters and approximately 300 saltwater species are found in Nova Scotia's estuarial and coastal waters.



The main species fished by anglers are trout (brook trout, rainbow trout and brown trout), smallmouth bass, Atlantic

salmon, and smelt. Other freshwater species of interest include landlocked salmon, white and yellow perch, bullhead and chain pickerel. Anglers licensed to fish in freshwater also included



their activity in saltwater in the province for which no licence is required. These anglers indicated they had sought saltwater species such as striped bass, mackerel, cod, pollock, flounder and tuna. Overall, brook (speckled) trout continues to be the most highly preferred and targeted species in Nova Scotia. The relatively short rivers in Nova Scotia facilitate anadromy in brook trout populations and the sea run brook trout grow to large sizes due to the abundance of food in estuaries. Productive sea trout rivers attract a great deal of angling effort in tidal water in spring and early summer.



Angler Profile

Two types of recreational fishing licences are issued by the Nova Scotia Department of Fisheries and Aquaculture: a general licence and a salmon licence. All anglers must purchase a salmon licence to fish for salmon. To fish species other than salmon in the province's fresh waters, a general fishing licence is required by all anglers except those under the age of sixteen. A licence is currently not required to angle for species such as sea trout in saltwater or the tidal portions of most rivers. In 2010 there were 64,112 licensed anglers¹ in Nova Scotia, 90% (57,755) of whom fished. Ninety-seven percent were residents of the province and 3% were non-residents. There were also 14,466 young people under the age of 16 living in licensed anglers' households that fished,

bringing the estimated number of active anglers in the province to 78,578 (Table 1). The average

participation in the sportfishery between the young (<24 years old) and older age groups

Table 1. Angling participation of licensed and unlicensed anglers in Nova Scotia in 2010.

	Resident Number	Non-resident Number	Total Number
Total licence sales	62,143	1,969	64,112
Active licensed anglers	55,951	1,804	57,755
Participation percentage	90.0	91.6	90.1
Under 16 years old	14,054	412	14,466
Total number of anglers	76,197	2,381	78,578

age of all active anglers was 52 years and the vast majority (91%) of resident anglers were male. The number of active anglers under the age of 16 years is likely underestimated in this survey since only those under-aged anglers living in households with a licensed adult angler were included. A comparison of the age of anglers and that of the general population² of Nova Scotia demonstrates the large difference that exists between the

(Figure 1). Recruitment of youth into the sportfishery is of great interest to the Inland Fisheries Division to maintain the number of anglers and economic value of the resource.



The number of active resident female anglers has remained relatively stable at around 4,900 participants, although the proportion has fallen slightly between 2005 and 2010, from 11% to 9%. The proportion of female anglers has consistently ranged between 8.4% and 12.3% between 1975 and 2010. Further to this, Nova Scotia had the lowest rate of female participation in

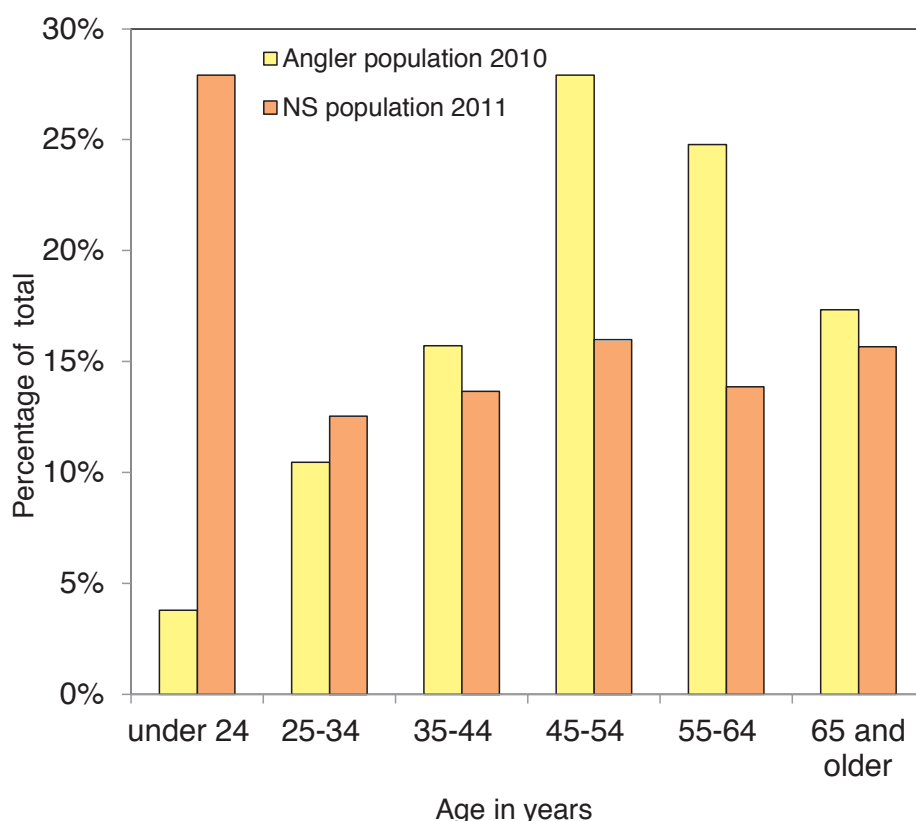


Figure 1. Age structures expressed as a percentage of the total populations of resident anglers and the provincial population of Nova Scotia.



angling in the country, well below the national average of 24% in 2010. This suggests that angling remains a predominantly male sport in Nova Scotia despite programs designed to increase the participation of women, such as, Becoming an Outdoors Woman (BOW).

¹ This estimate is less than licence sales (67,526) because an angler may hold more than one type of licence (typically, anglers might hold both a general licence and a salmon licence).

² Data on the population number and age distribution in the province of Nova Scotia is located in a report by Statistics Canada: <http://www.gov.ns.ca/finance/stats.div/papers/demograt/demo4.htm>

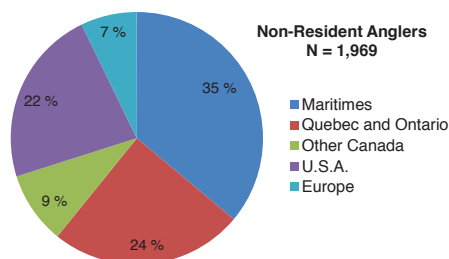


Figure 2. Origin of non-resident anglers expressed as a percentage of the total, Nova Scotia 2010.

The proportion of the Nova Scotia population that is licensed for freshwater sport fishing is

approximately 6% and is less than the national average of 8% for all provinces and territories according to the Survey of Recreational Fishing in Canada, 2010. The number of non-resident anglers in Nova Scotia fell from 2,133 to 1,969 anglers between 2005 and 2010. New promotional initiatives have been implemented to encourage more participation in the sportfishery in Nova Scotia. The lower proportion of licensed anglers in comparison to other provinces may reflect the lack of

requirement for a license to angle in tidal water.

Sixty-eight percent of the non-resident anglers were from other provinces and territories in Canada, over 50% of whom were residents of other Maritimes provinces. Another 29% were from the United States, primarily from the Northeastern states. The remaining four percent of non-resident anglers were from the United Kingdom and other European nations (Figure 2).

Fishing Effort

Angling was a major recreational activity in Nova Scotia in 2010. Licensed anglers spent a total of 1.1 million days fishing, representing an 8% increase in fishing effort since 2005. Fishing activity was highest in Halifax, Cape Breton, Lunenburg and Cumberland counties, which accounted for 48% of all days



fished in the province in 2010. Resident active anglers fished an average of 18.5 days in Nova Scotia in 2010, while the non-resident active anglers fished an average of 7.2 days (Table 2). Non resident anglers represent a minor percentage (1.2%) of the overall angler effort in Nova Scotia.

Anglers also reported they spent almost 54,000 days fishing during the winter fishery (January

Table 2. Days fished by anglers in Nova Scotia in 2010.

County fished	Residents		Non-residents	
	Number	Percent	Number	Percent
Annapolis	52,398	5	115	1
Antigonish	17,527	2	367	3
Cape Breton	112,997	11	1,179	9
Colchester	58,460	6	729	6
Cumberland	60,702	6	1,126	9
Digby	36,783	4	273	2
Guysborough	56,717	6	691	5
Halifax	258,653	25	2,213	17
Hants	49,737	5	546	4
Inverness	42,406	4	3,652	28
Kings	41,650	4	258	2
Lunenburg	63,511	6	282	2
Pictou	31,860	3	267	2
Richmond	22,322	2	97	1
Queens	22,342	2	487	4
Shelburne	18,537	2	8	0
Victoria	35,732	3	549	4
Yarmouth	55,008	5	111	1
Total	1,037,343		12,949	
Average	18.5		7.2	

to March). They fished for 20,000 days in open water and almost 34,000 days though the ice during the winter. Participants in the winter fishery were almost

exclusively resident anglers. For fisheries management purposes, Nova Scotia is divided into six Recreational Fishing areas (RFAs; Figure 3).

Table 3. Angling effort (days fished) by licensed anglers by Recreational Fishing Area (RFA) in Nova Scotia in 2010.

RFA	Region	Residents		Non-residents		Total Number
		Number	Percent	Number	Percent	
1	Cape Breton	213,457	21	5,477	42	218,934
2	Eastern	106,104	10	1,325	10	107,429
3	Central	322,164	31	2,495	19	324,659
4	Southern	132,670	13	880	7	133,550
5	Western	143,785	14	918	7	144,703
6	Northern	119,163	11	1,855	14	121,018
Total		1,037,343		12,949		1,050,293

Most of the effort by resident anglers occurred in RFA3 (31% of all days), reflecting the large population base in Halifax and Lunenburg counties. For non-resident anglers, over 42% of all fishing days were spent in RFA1 comprising the four Cape Breton Island counties (Table 3). Major factors influencing the decision to fish in Cape Breton Island are the opportunities to angle salmon in the Margaree River or sea trout in numerous rivers and in Bras d'Or Lakes. Management strategies include increasing awareness about angling opportunities available in all regions of in Nova Scotia.

**Nova Scotia
Recreational Fishing Areas (RFA)**
(Figure 3)



Harvest

Trends in the number of species caught and the rate of capture can be used as an index of abundance and reflect on the overall health of the sportfishery. In 2010, licensed anglers caught an estimated 4.0 million fish and retained 1.6 million (40%) of the total number of fish caught. The release rate of 60% was similar in 2005 and 2010. Catch and release was a popular choice of anglers, mainly on a voluntary basis, in both 2005 and 2010.

bass. The release rates for Atlantic salmon and striped bass are high in part due to length limits and seasonal catch and release regulations for these two species. The high release rate for smallmouth bass in almost entirely voluntary and reflects a widespread conservation ethic among anglers targeting this species. Anglers tended to retain higher percentages of saltwater species with almost 82% for smelt, 68% for mackerel and 55% for cod retained (Table 4).

Off freshwater species, brook trout, smallmouth bass, rainbow trout, and yellow perch were the four most frequently caught species in 2010. Saltwater species were also very popular among licensed anglers, especially smelt and mackerel. Compared to 2005, catches increased considerably for species such as brook trout (20%), Atlantic salmon and chain pickerel (both up about 40%) and mackerel (34%). On the other hand, there were notable declines in catches since 2005

Table 4. Harvest of fish by licensed anglers by species in Nova Scotia in 2010.

Fish Species	Number caught*	Number retained	Percent retained
Brook trout	1,621,807	572,967	35
Mackerel	646,399	441,406	68
Smallmouth bass	598,869	9,653	2
Smelt	526,427	430,410	82
Rainbow trout	114,304	57,849	51
Yellow perch	104,415	8,533	8
Chain pickerel	94,769	5,685	6
Striped bass**	94,700	3,710	4
White perch	75,656	24,698	33
Brown trout	41,091	16,343	40
Cod	21,707	11,851	55
Atlantic salmon	9,181	297	3
Landlocked salmon	2,112	310	15
Other	69,367	20,344	29
Total fish	4,020,804	1,604,056	40

* Includes released fish

** Possible confusion with white perch.



An average of 70 fish were caught per angler of which 28 fish were retained in 2010. The highest percentages of fish returned to the water were smallmouth bass, Atlantic salmon and striped

for landlocked salmon (down 56%), brown trout (down 28%) and yellow perch (down 24%).

In 2010 brook trout were fished by 87% of active resident anglers, while landlocked salmon were fished by only 1%. Daily catches

for residents in 2010 ranged from a high of 17 smelt to a low of 0.3 for Atlantic salmon. The average catch by resident anglers over the fishing season was 120 smelt, 56 mackerel, 54 smallmouth bass and 33 brook trout in addition to other species (Table 5).

Table 5. Number of active resident anglers who reported fishing for each species, number of days fished and catch per angler in Nova Scotia in 2010.

Species	Number of anglers	Number of days fished	Average days	Catch per day	Average annual Catch
Brook trout	48,570	588,303	12	2.8	33
Rainbow trout	14,747	141,655	10	0.8	8
Brown trout	7,689	70,047	9	0.6	5
Smallmouth bass	11,062	124,285	11	4.8	54
Atlantic salmon	2,480	29,839	12	0.3	4
Landlocked salmon	594	5,350	9	0.4	4
Yellow perch	4,267	40,293	9	2.6	24
White perch	2,409	20,839	9	3.6	31
Chain pickerel	3,645	29,932	8	3.2	26
Smelt	4,384	30,783	7	17.1	120
Striped bass	7,248	68,861	10	1.4	13
Mackerel	11,567	86,608	8	7.5	56
Cod	1,461	10,993	8	2	15
Other fish	3,554	28,618	8	2.4	20



Photo: Jason Leblanc



Species preferences



Resident and non-resident anglers fishing in Nova Scotia in 2005 and 2010 preferred brook trout as their favorite species. Following brook trout, species preference for residents were rainbow trout, smallmouth bass, brown trout, mackerel and Atlantic salmon. Non-resident anglers preferred brook trout followed by Atlantic salmon,

rainbow trout, brown trout and smallmouth bass. Species garnering the lowest percentage of responses by residents were yellow perch, cod and landlocked

salmon, while for non-residents, white perch, smelt, and cod had the lowest number of responses (Table 6).

Table 6. Species preferences of anglers in Nova Scotia in 2010.

Rank	Resident anglers Species	Percent of responses	Non resident anglers Species	Percent of responses
1	Brook trout	47	Brook trout	35
2	Rainbow trout	15	Atlantic salmon	23
3	Smallmouth bass	8	Rainbow trout	13
4	Brown trout	7	Brown trout	10
5	Mackerel	6	Smallmouth bass	8
6	Atlantic salmon	5	Striped bass	4
7	Striped bass	5	Mackerel	3
8	Smelt	2	Chain pickerel	1
9	Chain pickerel	0.9	Landlocked salmon	1
10	White perch	0.9	Yellow perch	0.6
11	Other fish	0.9	White perch	0.6
12	Yellow perch	0.7	Smelt	0.5
13	Cod	0.6	Cod	0.5
14	Landlocked salmon	0.5	Other fish	0.4

Other Activity-Related Questions

Anglers were asked a few questions regarding other aspects of their fishing experience. In particular, anglers

Table 7. Percentage of time anglers used different types of tackle in Nova Scotia in 2010.

Tackle	Residents	Non-residents	Total
Lure	21.6	20.4	21.6
Bait	32.4	15.2	31.9
Lure & bait	24.1	10.2	23.6
Flies	21.9	54.1	22.9

were asked about the percentage of time they used specific fishing gear or tackle. Resident anglers fished most of the time with bait only (32%) followed by lure and bait combinations (24%). Flies (mandatory for Atlantic salmon) were used 22% and 54% of the time by residents and non-residents, respectively (Table 7).

The province of Nova Scotia stocked Atlantic salmon in selected rivers and several trout species in lakes, ponds and rivers in all counties in 2010. Anglers were asked about their awareness of which lakes and rivers were stocked as well as whether or not they had fished in stocked waters. As might be expected, residents (66%) were more aware of stocked waters in the province compared to non-residents (40%; Table 8). Overall, 63,827 days were spent fishing on stocked waters. Stocked lakes can provide increased angling opportunities



in urban areas, particularly in the spring of the year. Many of the lakes stocked in the Province also support programs such as Learn to Fish, or trout derbies which target unlicensed young anglers.

Table 8. Awareness of and activity on stocked waters of licensed anglers in Nova Scotia in 2010.

Area of interest	Residents	Non-residents	Total
Number of active anglers	55,951	1,804	57,755
% of anglers aware of stocking program	66	40	66
% of anglers aware of which lakes stocked	40	40	40
Days spent fishing stocked waters	61,693	1,134	62,827
percentage of total effort fished on stocked waters	5.9	8.7	6.0

Angler perspective in Nova Scotia

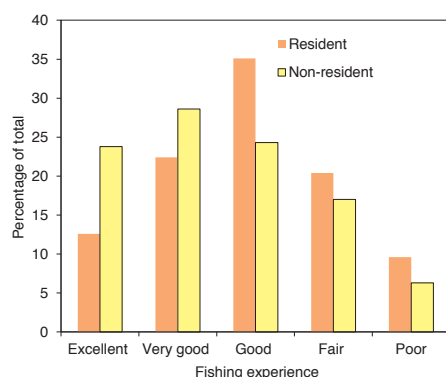


Figure 4. Angler rating of their fishing experience in Nova Scotia in 2010.

Anglers were asked to rate their fishing experience in 2010. Of those who answered this question, 70% of resident anglers and 77% of non-resident anglers rated their experience as good to excellent (Figure 4). Ten percent of resident anglers and six percent of non-resident anglers respectively rated their fishing experience as poor. In order to develop fisheries management practices aimed at sustainability, anglers were asked to compare their fishing experience in 2010 to their experience five years earlier in 2005. Of primary concern to the province was whether anglers had experienced a decline in how they rated their fishing experience between 2005 and 2010.

For those anglers that responded, 15% said it improved, 40% reported it remained about the same, while 45% claimed their angling experience had declined.

Ninety percent of anglers who considered that their fishing had declined provided reasons for their assessment. Those anglers were asked to rate the importance of factors contributing to the decline on a scale of 1 (not important) to 5 (extremely important). The top four reasons provide by

anglers for rating a decline in sportfishing in the province were habitat degradation, followed by pollution, competition from introduced species, and

important and improving access was ranked as somewhat important (Table 10).

For those anglers who indicated

Table 9. Angler ratings on a scale of one to five for the reasons if a decline in fishing experience was reported between 2005 and 2010.

Reason	Residents	Non-residents	Total
Habitat degradation	3.2	3.4	3.2
Pollution	3.1	2.7	3.1
Competition from introduced species	3	2.8	3
Overfishing	2.7	2.2	2.7
Poaching	2.1	2.4	2.1
Access problems	2	1.5	2

overfishing (Table 9). Poaching and access problems were considered to be of lower importance when assessing decline in fishing.

All active anglers were asked to

the angling activity had declined in 2010, the top reason provided was the lack of time. The second most common answer provided for the decline in activity was the poor quality of their fishing experience in 2010. Family

Table 10. Angler ratings on a scale of one to five of the factors that would improve fishing in Nova Scotia in 2010.

Factor to Improve Fishing	Residents	Non-residents	Total
Programs to control Aquatic Invasive Species	3.8	3.7	3.8
Improve stocking programs	3.5	3.2	3.5
Improve habitat	3.3	3.5	3.4
Increase enforcement	3.3	3.6	3.3
Change in regulations	2.5	2.8	2.5
Better access	2.2	2.4	2.3
Other options	1.3	1.6	1.3

rate the importance of a list of factors aimed at improving the sportfishery. Their highest rating focused on the control of Aquatic Invasive Species (AIS), the first time this factor has rated the number one concern of anglers since the initial survey in 1975, underlining the concern for the introduction of non-native species and their impacts on native stocks. Anglers also cited the following factors as important to improving the fishery: improvements to the stocking program, improvement of fish habitat and increased enforcement. Modifications to regulations were ranked as

responsibilities, health and other reasons were also cited as contributing to a decline in angling activity for those anglers (Table 11).

Table 11. Reasons cited by those anglers who reported a decline in angling activity in Nova Scotia in 2010.

	Total	Percent
No time	8,824	53
Poor fishing quality	8,103	48
Family responsibilities	3,763	22
Other reasons	3,139	19
Health reasons	3,123	19
Financial reasons	2,283	14
Complex regulations	1,381	8
Lack of information	551	3
Total	16,785	

Sportfishing Promotion

To promote sportfishing, the province offers two free fishing weekends each year (one in summer and one in winter) in which resident and non-resident anglers do not require a licence except for Atlantic salmon. Almost 60% of active licensed anglers were aware of the June 5-6 weekend in 2010. Their awareness of the event was attributed mainly to information included in the Angler's Handbook, followed by the print media and also

through radio advertising. Only 14% or 4,878 licenced active resident anglers, participated in the weekend, although the intent of the Sportfishing Weekend is to provide an opportunity for unlicensed anglers to try out sportfishing. Non-resident anglers did not participate in the free fishing weekend.

All licensed anglers were asked what sources of information they used when looking for fishing information in the province. The top source of information used by resident anglers was the Anglers' Handbook followed closely

by family and friends which collectively accounted for 75% of the information sources used by anglers. The departmental website was used by 13% of anglers followed by tackle shops and newspapers.



Aquatic Invasive Species

The presence of aquatic invasive species is a significant issue in most provinces of Canada. Nova Scotia has specific regulations that prohibit the introduction or transfer of live fish of any species from one body of water to another in the province (including sportfish and bait fish). New regulations on the possession of live fish will assist in preventing



the spread of juvenile and adult stages of smallmouth bass and chain pickerel, however many aquatic invasive species can be introduced unwittingly on the equipment used when fishing such as boats and trailers, fishing gear or waders and boots. Of critical importance when moving between bodies

of water is the need to clean or wash their equipment to prevent the spread of invasive species. Anglers were asked about their knowledge of regulations in place as well as their fishing behaviour in 2010. Over 90% of anglers indicated they were aware of the prohibitions on the transfer of sport fish and bait fish between different bodies of water.

To gauge anglers awareness of measures that can prevent the spread of aquatic invasive species, anglers were asked about washing and cleaning equipment between bodies of water. Almost 74% of resident anglers and 46% of non-resident anglers indicated they had fished on more than one body of water in the province.

Anglers who fished in more than one body of water, were asked about how they cleaned their equipment between water bodies. Most anglers did not wash their equipment as a matter of course after fishing in more than one body of water. Of critical importance is the behaviour of anglers who fished outside the province and then fished in Nova Scotia. The risk

of introducing aquatic invasive species is higher if such species are transported unknowingly from another province or state into the province on unwashed or untreated equipment. Of the anglers who fished outside the province, most reported that they washed their boating equipment before fishing in Nova Scotia. On the other hand, most did not wash their fishing gear or boots or waders after returning to the province from fishing elsewhere.



About 55% of active anglers fished with live bait in 2010. Of those who used live bait, approximately three percent indicated they had released unused live bait into a body of water other than where it was caught.

The results of these two

questions point to the need for more awareness on how aquatic invasive species are spread when fishing. Most importantly, anglers need to be aware on how to prevent the spread of such species through washing and cleaning their equipment thoroughly, whether it is their boats, fishing equipment or waders and boots.

Direct Expenditures

Anglers were asked about the amount of money they spent on their fishing trips, including package deals, for such categories as food and lodging, transportation, services, supplies and other types of expenditures. Anglers reported that they spent almost \$22 million on trip-related expenditures. Most of this, \$9.6 million, was spent on transportation which



included personal vehicles, boating costs, boat rentals and other transportation expenses. Another \$6.9 million was spent on accommodation such as hotels, motels, chalets and

cabins as well as campsite fees. Purchases of fishing tackle, line, lures, flies and other similar fishing gear requirements accounted for another \$3.3 million in expenditures made by anglers in Nova Scotia. Fishing services which comprise licence fees, permits and tags, and other fees added an additional \$1.9 million to the total. Package deals, which normally are made for Atlantic salmon trips in Nova Scotia accounted for a relatively low \$54,600 in 2010. Anglers indicated that \$316,334 was spent solely for trips for ice fishing (Table 12).

Table 12. Direct expenditures made by anglers for sportfishing in Nova Scotia in 2010 (\$).

Expenditures	Residents	Non-residents	Total
Food and lodging	6,192,561	660,136	6,852,697
Transportation	9,324,316	313,821	9,638,137
Fishing services	1,761,963	160,197	1,922,161
Fishing gear	3,212,808	52,960	3,265,767
Package deals	33,533	21,060	54,593
Other	159,209	21,678	180,887
Total	20,684,390	1,229,852	21,914,242
Average per angler	370	682	379
Amount for ice fishing	316,344	0	316,344

Non-Resident Trip Information

The survey gathered general information on the overall tourism activities of non-resident anglers. Anglers were asked about the number of trips they made to Nova Scotia and their reason for visiting Nova Scotia. As a whole,

non-resident anglers made almost 8,000 trips to the province in 2010 and just under half (49%) of their trips were primarily for fishing.

Seventy-two percent of Canadian non-resident anglers cited fishing as the main reason for visiting Nova Scotia. Almost 45% of the fishing trips made to the province

by Canadian non-resident anglers were day-trips, reflecting the high proportion of anglers visiting from other Maritime provinces. Foreign anglers fished on 71% of their trips in 2010. Fishing was the primary motivation for about 55% of trips made by foreign anglers to Nova Scotia in 2010.

Investments and Major Purchases

Resident anglers were responsible for 99.5% of all investments in Nova Scotia in 2010. All anglers invested just over \$63.7 million on major durables and property (Figure 5). The highest investment expenditures made by anglers were for land and for buildings such as cabins and cottages. Special vehicles (ATV's, snowmobiles, camper trucks, etc.) were the second most popular items purchased, followed by boating equipment. Compared to 2005, total investments increased by 12%. There were major decreases in investments for special vehicles (-27%) and other purchases (-36%) as well as a minor drop of about 4% for fishing equipment. These decreases were more than offset by increases in camping equipment (+90%), land and buildings (+72%) and boating equipment (+20%) (Table13).

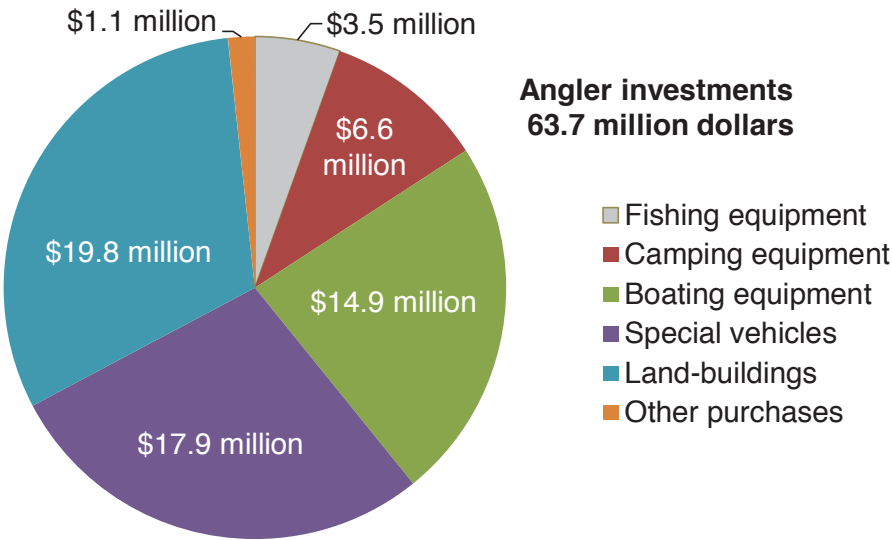


Figure 5. Angler investments in millions of dollars made in whole or in part for sportfishing in Nova Scotia in 2010.

Table 13. A comparison of investments in millions of dollars made in whole or in part for sportfishing in Nova Scotia in 2005 and in 2010.

Investment category	2005	2010	Percent change
Fishing equipment	3.6	3.5	-4
Camping equipment	3.5	6.6	90
Boating equipment	12.4	14.9	20
Special vehicles	24.4	17.9	-27
Land-buildings	11.5	19.8	72
Other purchases	1.6	1.1	-36
Total	57	63.7	12



Photo: Jason Lobanc

Attributable Expenditures

For all expenditures made in whole or in part for sportfishing, anglers were asked to provide an estimate of the percentage of each investment amount that they attributed solely to sportfishing. This information was used to estimate the total amount of investments that were wholly attributable to sportfishing in the province. Major purchases made in 2010 that were wholly attributable to sportfishing totalled \$34.5 million, which is 10% higher than they were

in 2005 (\$31 million). Of this amount, anglers reported that \$1.2 million was spent in pursuit of ice fishing. Attributable expenditures made by resident anglers accounted for 99.3%

million was spent on new and used boating equipment, \$10.4 million on special vehicles, \$4.7 million on property, \$3.5 million on fishing equipment, and \$2.7 million on camping equipment,

Table 14. Expenditures in millions of dollars made by anglers that were wholly attributable to sportfishing in Nova Scotia in 2005 and in 2010.

Investment category	2005	2010	Percent change
Fishing equipment	3.6	3.5	-4
Camping equipment	2.9	2.7	-9
Boating equipment	8.4	12.3	46
Special vehicles	9.4	10.4	10
Land-buildings	5.3	4.7	-12
Other purchases	1.5	0.97	-36
Total	31.2	34.5	10

of all expenditures. Of the total attributable to sportfishing, \$12.3

and just under 1 million on other items (Table 14).

Total Value of the Recreational Fishery in Nova Scotia

Anglers spent \$85.6 million for all reasons in pursuit of their sportfishing activities in 2010. Of this amount, \$56.4 million, was wholly attributable to sportfishing in Nova Scotia. Wholly attributable expenditures increased by 6%, while the average expenditure per angler fell by almost 16%, from

\$1,160 in 2005 to \$977 in 2010. The number of active anglers increased by 26% between 2005 and 2010 (Table 15). The reduced average expenditure from 2005 to 2010 may be explained by the

older age of Nova Scotia anglers. As anglers age they accumulate tackle and equipment and only occasionally need to replace larger capital items such as boats and fishing gear.

Table 15. Comparison of all expenditures in millions of dollars made by anglers for sportfishing in Nova Scotia in 2005 and in 2010.

	2005	2010	% change
Active anglers	45,848	57,755	26
Total investments	57,037,673	63,722,296	12
Attributable investments	31,251,704	34,510,816	10
Direct expenditures	21,952,902	21,914,242	0
Attributable expenditures and investments	53,204,606	56,425,058	6
Total value of the Fishery	78,990,575	85,636,538	8
Average expenditure per angler	1,160	977	-16

Comments received from respondents to the 2010 Survey of Sportfishing in Nova Scotia:

"Please note that my primary reason for going to NS is to fly fish for Atlantic Salmon. While here, I enjoy purchasing tickets for Celtic Colours shows, music shows and tourist attractions (i.e. Louisburg). I also enjoy going out to dinner at local restaurants. I've purchased locally made goods for souvenirs like cutting boards and clay pottery. If salmon fishing were not available or poor I'd probably go instead to Quebec or Newfoundland."

"Enjoyed my trip to Nova Scotia. The people I met were very friendly and hospitable. Coastal scenery is beautiful."

"In my party there were four fishermen. So multiply what I spent by four. Until this year we came twice a year for the last 15 years. We all love Nova Scotia and will come until we can't. Love our friends there, the countryside, etc."

Discussion

The Department of Fisheries and Aquaculture has a direct role to play in managing the sportfishery through licensing, population enhancement (stocking), habitat restoration, regulation development, promotion and resource assessment, as well as through indirect roles in enforcement and protection of the resource. In 2010, at least 78,500 anglers or 6% of the population of Nova Scotia participated in sportfishing. The average age of anglers was 52 years and continues to increase and the number of female anglers and young anglers is small. The limited participation of women and youth in the sportfishery demonstrates the need to direct resources toward increasing their participation and promote angling as a fun and healthy family recreational activity.



The Inland Fisheries Division has implemented education programs to increase participation of youth, women and families in the sportfishery. Each year, through the Learn 2 Fish Program, over 1600 elementary school children are provided in-class instruction about fish species, habitat, how to assemble a fishing rod and then taken out to a stocked lake and or pond where they learn casting, and have the opportunity to catch a fish. The Becoming an Outdoors Woman Program is offered in the fall and every other winter to provide women an experience in a variety of outdoor activities including fishing. The purpose of both these programs

is to encourage participants to become active anglers in the future. Another program designed to encourage participation in the sportfishery is the Fishing Tackle Program introduced at several



provincial parks across the province. Through this program, angling equipment is loaned free of charge to campers at the park. Additionally, in the early spring the department partners with Nova Scotia Department of Natural Resources to provide family fishing workshops to celebrate National Wildlife Week.

Non-resident licensed anglers in Nova Scotia represented just three percent of total license sales and are the lowest in the country. Although the decline in the salmon fishery has no doubt had an impact of non-resident license sales, Nova Scotia offers an abundance of freshwater and saltwater opportunities to angle species such as sea run trout and striped bass. The Nova Scotia record for striped bass was a 26 kg fish caught in Cape Breton. The recent opening of the striped bass sportfishery in the Gulf of St. Lawrence has further increased opportunities. Year-round angling in the tidal Bras d'Or Lakes provide an opportunity to catch large saltwater trout. Several non-resident anglers included written comments about their angling experience. Favorable comments were made regarding the lack of a requirement for a fishing guide, the abundance of public waters, friendly people,

and the scenic beauty of Nova Scotia. Promotional initiatives to encourage more anglers to visit Nova Scotia could be expanded in the future.

The total catch by licensed anglers was estimated at 4 million fish and represents a slight increase compared to the results of the 2005 survey. Rates of retention were similar and anglers released almost 60% of their catch in 2005 and 2010, although the number of voluntarily released fish of all species has increased markedly since 1975, and this trend is expected to continue as more anglers are concerned about conservation. For freshwater species, about one in every three trout caught were retained. Brook trout, smallmouth bass, and yellow perch were the freshwater species most frequently caught in 2010 and accounted for more than half of the total catch of all species. Smelt and mackerel were the saltwater species retained most frequently and



Photo: Jason LeBlanc

accounted for 29% of the total catch of all species. A number of new angling opportunities for trout, perch, and pickerel have been created through season



extensions and winter fishing opportunities.

Licensed anglers provide a very important source of information by which to better manage the sportfishery. The number of anglers, value of the sportfishery, and pursuit of species that inhabit saltwater such as sea-run trout is underestimated due to the fact that a license is not required to angle and retain fish from salt (tidal) water. The province is currently working with the Federal Department of Fisheries



Photo: Jason Leblanc

and Oceans to investigate the potential for an extended provincial jurisdiction to include the requirement of a provincial license to angle in saltwater for species that the province manages. If successful, a more complete assessment and understanding of the value and status of the sportfishery will be obtained.

Most anglers were satisfied with their recreational fishing experience in Nova Scotia in 2010 with 77% indicating they rated their angling experience as good to excellent. For anglers

who reported that their fishing declined in 2010, invasive species, habitat degradation, pollution, and overfishing were the most important reasons for the decline. Poaching and access problems were rated as less significant. These concerns are underlined by the fact that anglers believed that angling would improve if the spread of invasive species was controlled, fish habitat and stocking were improved, and overfishing was addressed. The Inland Fisheries Division has new initiatives and ongoing programs to address these concerns. An increased focus on invasive species management options is being directed by department biologists to control the rate that species such as smallmouth bass and chain pickerel, are spreading to new habitats. The development of a strategy to deal specifically with invasive species is underway. It is thought that the increase in the distribution of smallmouth bass and chain pickerel has occurred through intentional illegal introductions rather than by inadvertent means such as releasing live bait. A component of that strategy is the Live Fish Possession Regulations that have been implemented to allow enforcement officers to charge individuals who are caught with live fish, particularly invasive species.

Three provincial hatcheries stock over one million trout and Atlantic salmon annually to increased angling opportunities across the province. The majority of these enhancement initiatives involve stocking brook trout under two strategies. The first strategy, involves fall stocking of juvenile salmonids to support the sportfishery in the following year. The second strategy is the very popular urban stocking

program where catchable sized trout are stocked in the spring and most are caught shortly after they are stocked. While primarily an Atlantic salmon hatchery, recent changes were made to the Margaree Hatchery to increase brook trout stocking initiatives to benefit angling in Cape Breton. There was a high awareness of the stocking program in general, with 66% of anglers indicating they knew about these programs. Angling on stocked waters



Photo: Ed Woodworth

represented six percent of the total angling effort in 2010.

Much of the angling in the province is directed toward the capture of wild brook trout. In many regions, habitat that supports the production of wild brook trout has been damaged. At the turn



of the century many streams and rivers were used to transport large timber downstream. In this process, stream systems were straightened and the natural meander that maintained productive salmonid habitat was lost. Degradation of stream habitats continued from poor land use activities associated with forestry, agriculture and other development. In-stream habitat restoration is one method of improving sportfish populations. In 2005 a levy of \$5.00 was directed from sportfishing licences sold in Nova Scotia to a dedicated account called the Nova Scotia Sportfish Habitat Fund. The Nova Scotia government provided



the administrative support to allow the Nova Scotia Salmon Association to manage all fish habitat projects under the existing Adopt-A-Stream Program. This program disburses funds for individual projects, advice, and guidance to community groups to restore stream habitats. Each year close to \$300,000 is raised by anglers through the Sportfish Habitat Fund, the majority of which supports the Adopt-A-



Photo: Frank MacDonald

Stream Program. The total value of the restoration work is much higher as other cash and in-kind services are leveraged by the fund on a three to one ratio. Since 2005 over \$2.4 million has been contributed by anglers to the Sportfish Habitat Fund and when in-kind and other cash contribution are considered, an estimated \$7.3 million dollars has been spent improving fish habitat and access to sportfishing opportunities.

Unlike some other provinces that have popular angling locations designated as private water; the streams, rivers, and lakes of the Nova Scotia are considered a public resource. Nova Scotia's Angling Act is unique and allows anglers to cross uncultivated land on foot to access their favourite angling locations. However, boat access to many of the 6,700 lakes in the province could be improved. Vehicle and boat access to traditional angling locations is being restricted due to urban development in the Halifax Regional Municipality area and rapidly expanding cottage development in rural areas. To increase accessibility, financial support is available through the Sportfish Habitat

Fund to plan and construct boat launches and barrier-free access sites. Currently there are more than twenty angling platforms specifically built to service physically challenged anglers.

Licensed anglers spent almost 1.1 million days fishing in Nova



Scotia in 2010. Freshwater angling effort totaled almost 831,000 days, which accounted for 79% of all days fished and represented a slight increase since 2005. Almost 54,000 days were fished during the winter fishery. Almost half of the total angling effort is spent in the pursuit of wild native brook trout and a significant number of trout are caught each year. To address

concerns about overfishing of brook trout and other species, regulations have been modified on lakes and rivers as a part of the Special Management Area program. In areas where harvest is believed to be limiting potentially superior fisheries, regulatory changes may be made to the daily bag limit, size limits, season



length, and angling gear, for the purpose of reducing harvest and increasing the size of the fish caught. Ongoing research is taking place to track the impacts



Photo: Gary Corbett

of changes to regulations and to assess the potential for some fish populations to withstand additional exploitation through season extensions. Fall and winter angling opportunities are being expanded in sites where the resource can sustain an increase in angling pressure, or in sites where trout are stocked to provide additional opportunity.

Enforcement to address poaching, habitat infractions, and ensure regulatory compliance, is carried out by Fisheries Officers from Fisheries and Ocean Canada and by Conservation Officers from Nova Scotia Department of Natural Resources. The Nova Scotia Department of Fisheries and Aquaculture recognizes this need and provides the Nova Scotia Department of Natural Resources additional funding each spring so seasonal enforcement officers can provide additional resources toward enforcement of angling regulations.

Sportfishing is valuable to the economy of Nova Scotia. The number of licenced anglers increased by 26% between 2005 and 2010. Anglers spent \$21.9 million in direct expenditures

such as licences, fishing, boating, or camping equipment. Anglers also spent \$63.7 million on major purchases such as boats, vehicles or land and buildings. Of this amount, \$34.5 million was considered wholly attributable to sportfishing. Total spending by anglers in 2010 was \$85.6 million representing



an increase of 8.4% since 2005. To put this in perspective, each angler spent an average of \$977 directly on sportfishing in 2010. Of course, angling has other positive aspects that are difficult to assess monetarily, such as, the cultural significance and the health benefits to Nova Scotians. Sportfishing is recognized as

a healthy outdoor living activity that promotes fitness and an appreciation for the environment that results from interacting with nature.

Explicit in the Mission Statement of the Inland Fisheries Division,

Nova Scotia Department of Fisheries and Aquaculture is to provide angling opportunities through enhancement and management of the resource. The successful attainment of these goals will improve angler participation and the value of

the sportfishery to Nova Scotia. Management of the sportfishery of Nova Scotia will continue to evolve and change to balance the needs of anglers with the long term sustainability of the resource.



Photo: Lawrence Shebib




NOVA SCOTIA