

# Quality Waters Strategy

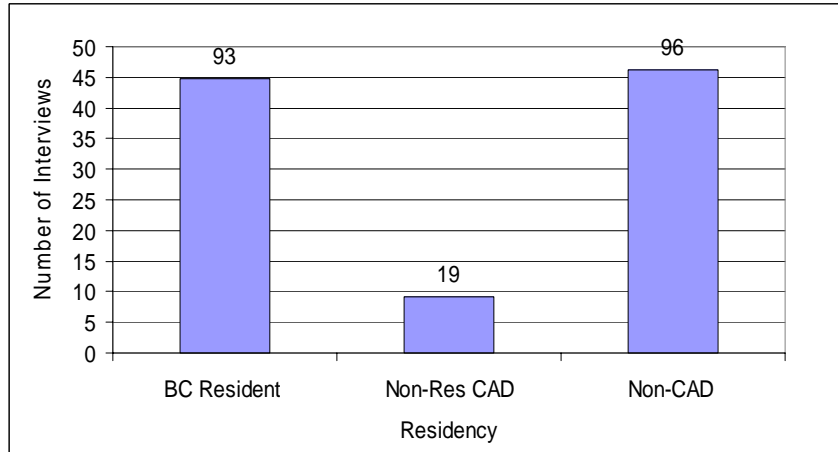
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## Historical Data Summary of Angler Use on Selected Skeena Region Classified Waters – A Survey of Classified Waters “Counterfoils”, Steelhead Harvest Analyses and Annual Guide Reports

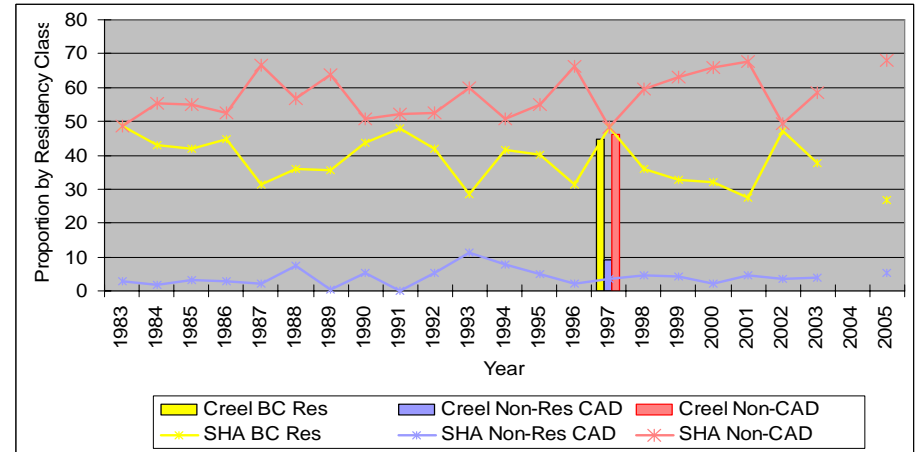
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Prepared for the Skeena Regional Quality Waters Management Committee by the Ministry of Environment, Skeena Region.  
August 2007.

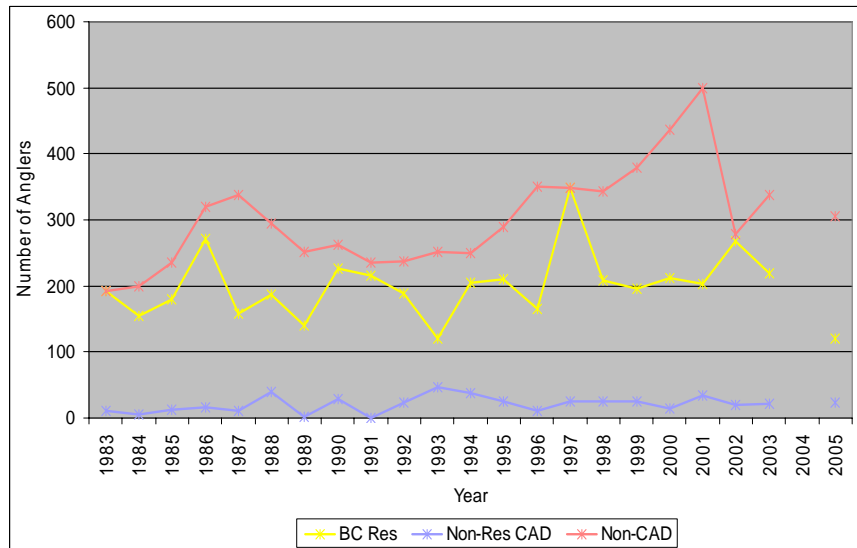
# Babine River – Estimated Number of Anglers



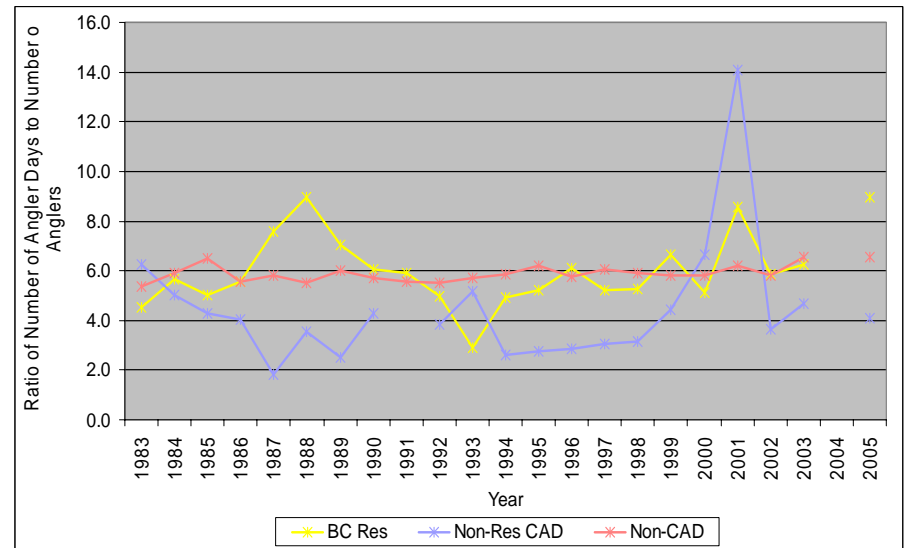
**Figure 1.** Number of angler interviews initiated by residency class during 1997 classified waters (Sept-Oct) creel survey (Morten, 1998). Note - numbers above columns represent number of angler interviews initiated.



**Figure 2.** Comparison of number of anglers reported for Steelhead Harvest Analyses (SHA) data and creel survey data from 1983 to 2005. Note that the intent of the figure presented above is to compare SHA and creel data, and presents proportional values, not actual values.



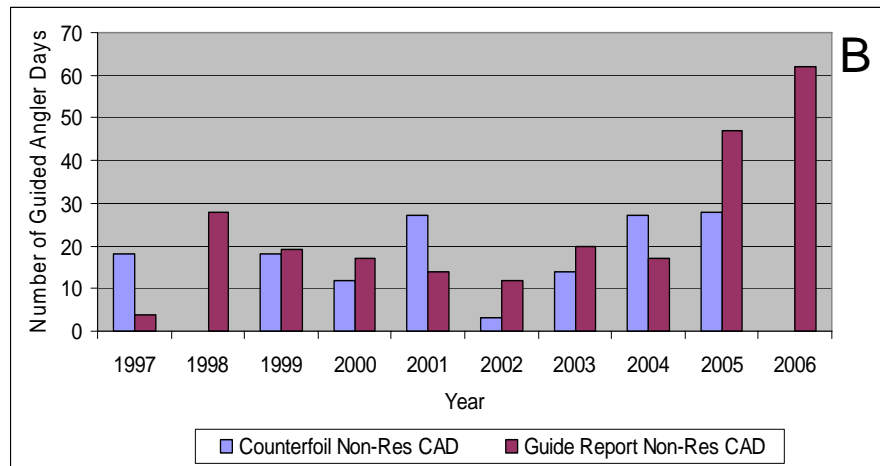
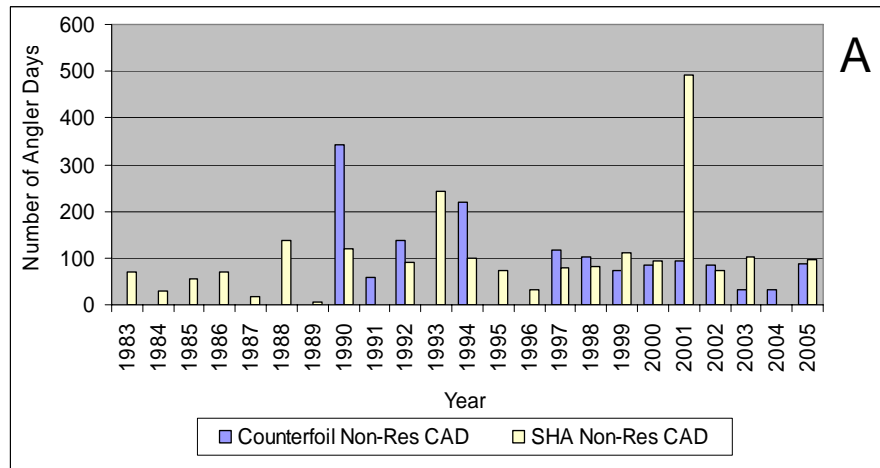
**Figure 3.** SHA number of anglers by residency according to SHA data from 1983 to 2005.



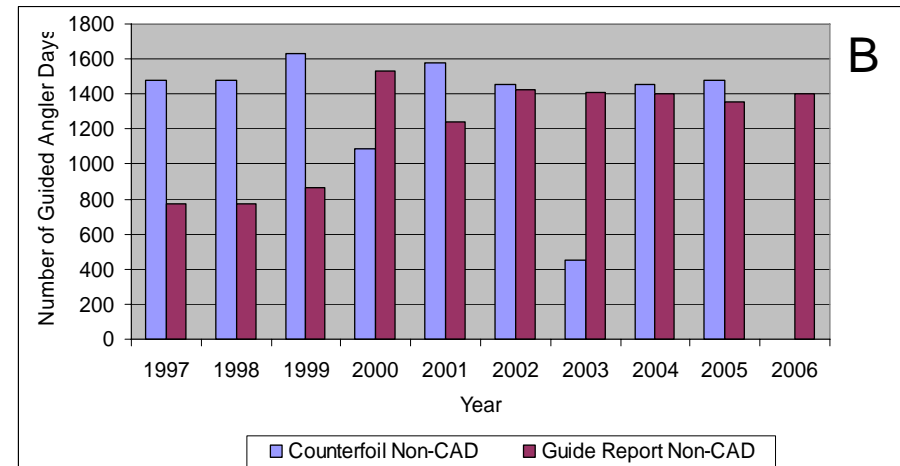
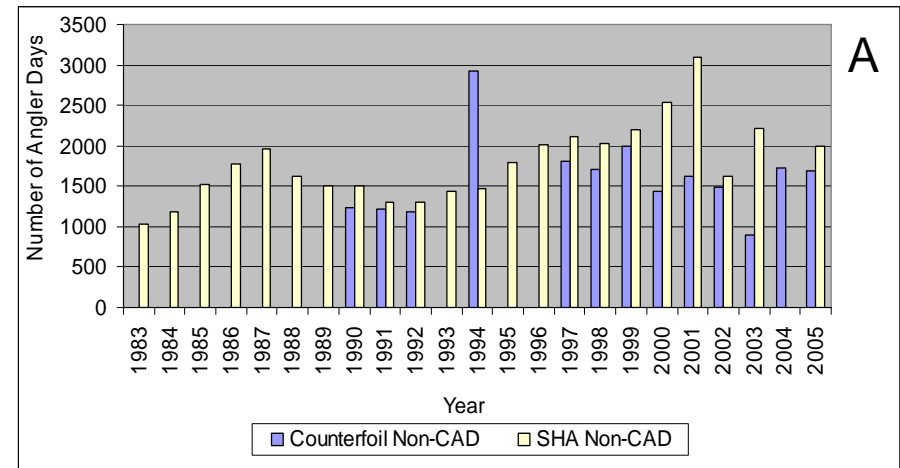
**Figure 4.** SHA ratio of number of angler days to number of anglers for the Babine River from 1983 to 2005.

# Babine River – Estimated Number of Angler Days

The graphs presented below are intended to compare angler day projections for counterfoil, SHA and guide report data. Theoretically, angler day counts for counterfoils and guide reports should be equal, and SHA estimates should roughly correspond to counterfoil data. For reasons known and unknown, however, differences exist. Therefore, for decision making purposes, the data presented in each figure below should only be considered accurate when a similar number of angler days are reported for a specific year.



**Figure 5.** Counterfoil Non-Res CAD data comparison for number of angler days to A) SHA data and B) guide report data.



**Figure 6.** Counterfoil Non-CAD data comparison for number of angler days to A) SHA data and B) guide report data.

**Note** – It was not possible to include the **number of anglers** in the above comparisons for two reasons: 1) counterfoil design did not allow for the number of anglers to be accurately counted in a timely manner and 2) guide reports include angler days, not the number of anglers.

# Babine River Angler Use Data - Points to Consider

## Creel Survey

- It is important to consider the following creel survey methodology, as it affects the number of angler interviews initiated:
  - Morten (1998) conducted angler interviews using on-site roving surveys conducted from Sept 1 to October 23, 1997. Interviews were conducted by river guardians and Conservation Officers. Most interviews were conducted at popular road and foot access locations, and on rare occasion, jet boat and helicopter were used to interview anglers in areas inaccessible by foot. The results of this creel survey are not representative of the Babine River in general as river guardians had limited access to the river. It should also be noted that survey research conducted by law enforcement officials can jeopardize the quality of data collected by introducing bias (Malvestuto, 1996). No aerial flights were conducted to collect an instantaneous angler count data. The objective of this study was to survey anglers targeting Steelhead trout.
- Creel survey data could not be compared to SHA data prior to 1984, as prior to this date, SHA data was not residency stratified.

## Steelhead Harvest Analyses

- SHA results suffer from a number of survey errors, which include sampling error, response error and non-response error. Sampling error results from under coverage of the angling population i.e. inability to sample anglers who do not purchase a steelhead conservation stamp. (*Note – it is believed that prior to fiscal 1997/1998, some anglers would intentionally target steelhead without purchasing a steelhead conservation stamp, thereby potentially negatively-biasing SHA results through angler under representation*). Response error stems from factors such as recall bias, rounding bias, prestige bias, and intentional deception. Non-response error exists when anglers refuse to answer the SHA mail out questionnaire. *Information taken from: DeGisi, J., 1999. Precision and Bias of the British Columbia Steelhead Harvest Analysis. Skeena Fisheries Report SK122.*
- Although the majority of SHA results cover the summer steelhead anglers (Sept to Oct), a certain percentage of the data represents those anglers targeting winter run steelhead during the next year, but same fiscal year i.e. QCI Rivers and Skeena tributaries downstream of Cedarvale.

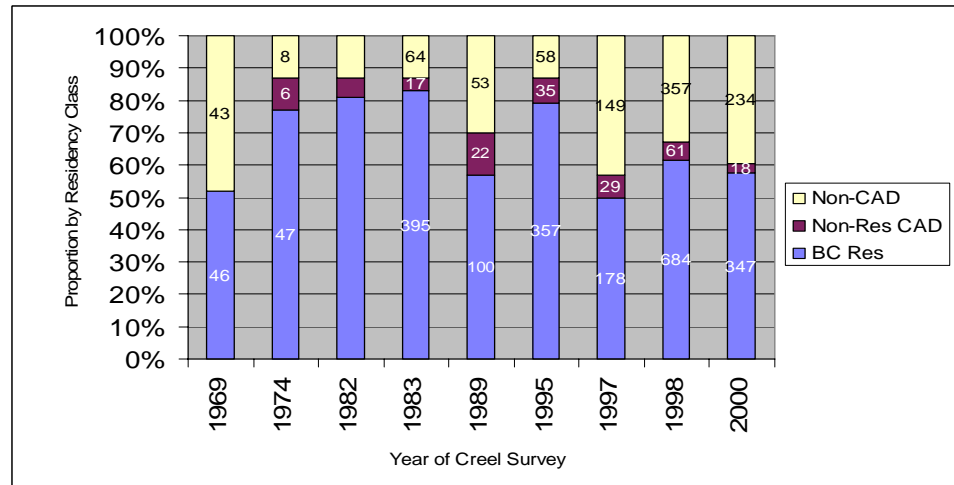
## Counterfoils and Guide Reports

- As counterfoil and guide report data are compiled by hand, the opportunity exists for human error introduced during tabulation. It is also important to note that the SHA does not separate guided from non-guided anglers, therefore, comparison to guide report data is not possible.

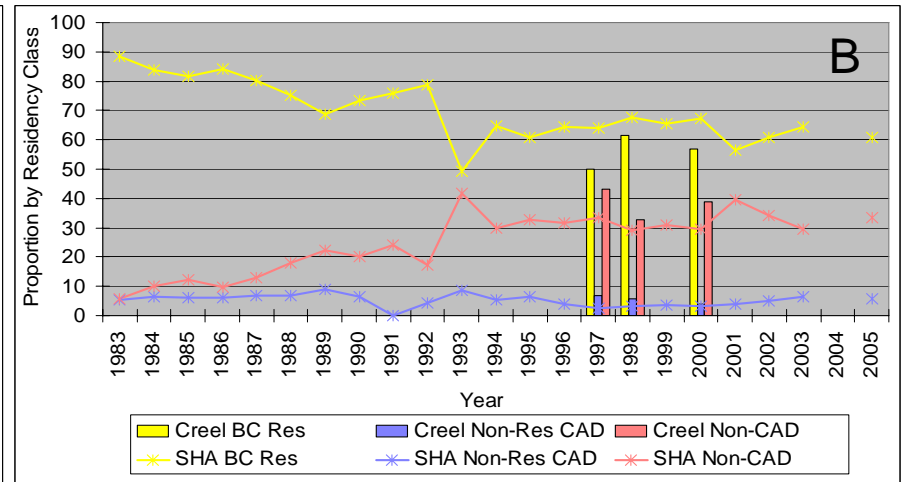
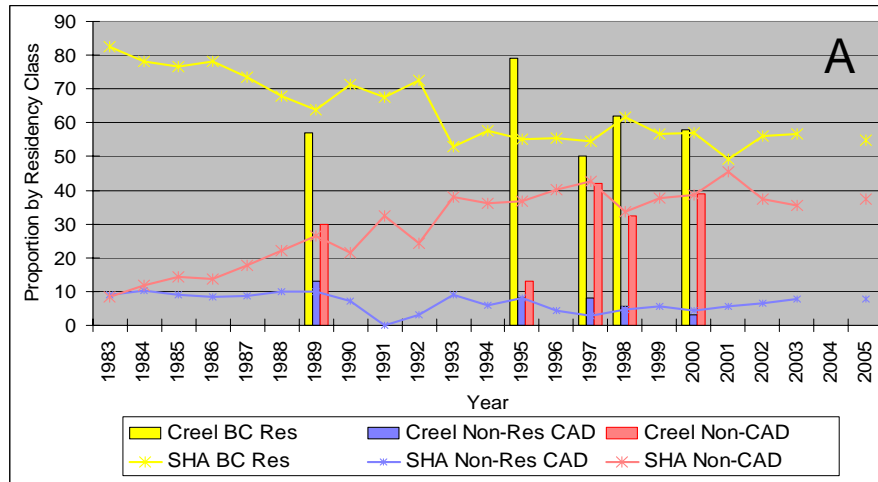
## **Babine River Angler Use Data - References**

- Malvestuto, S. 1996. Sampling the Recreational Creel in *Fisheries Techniques* Second Edition. American Fisheries Society. Bethesda, Maryland.
- Morten, K. 1998. A Survey of the Upper Babine River Steelhead Anglers During the Classified Waters Period of 1997. Skeena Fisheries Report # 114.

# Bulkley River – Estimated Number of Anglers

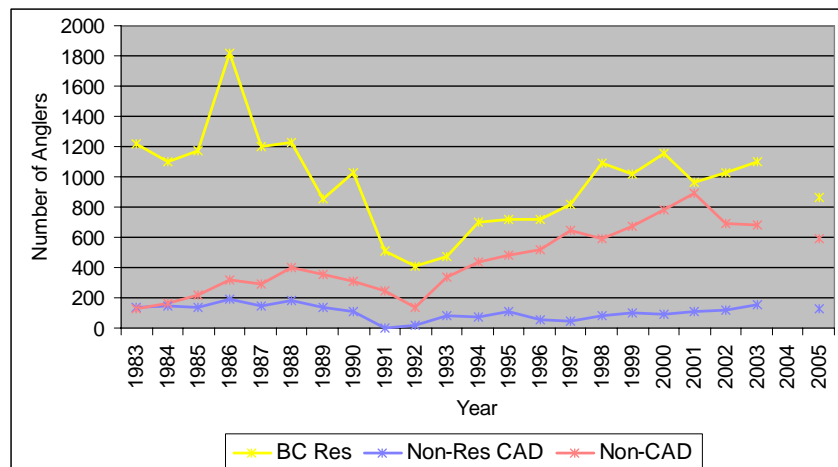


**Figure 1.** Bulkley River creel survey summary of proportional number of anglers by residency. Number in columns display number of angler interviews initiated. The 1982 data represents angler days by residency.

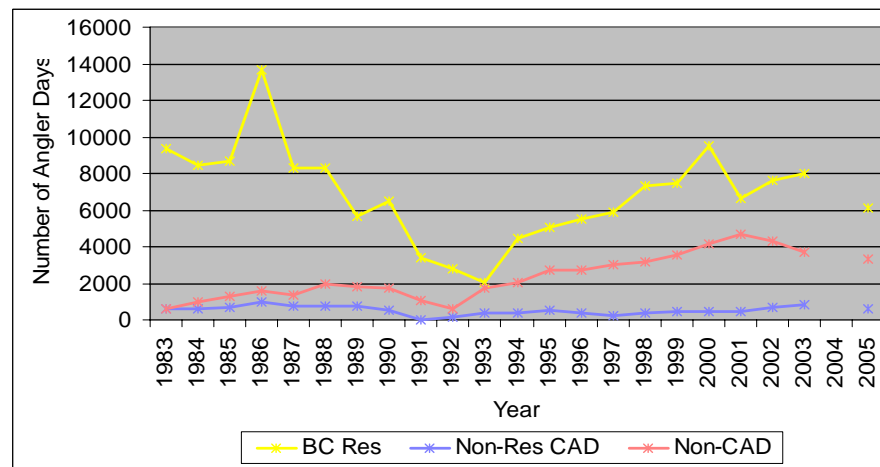


**Figure 2.** Comparison of A) number of anglers and B) number of angler days between Steelhead Harvest Analyses (SHA) data and creel survey data from 1983 to 2005. Note that the intent of the figures presented above is to calibrate SHA and creel data. The above graphs present proportional values, not actual values.

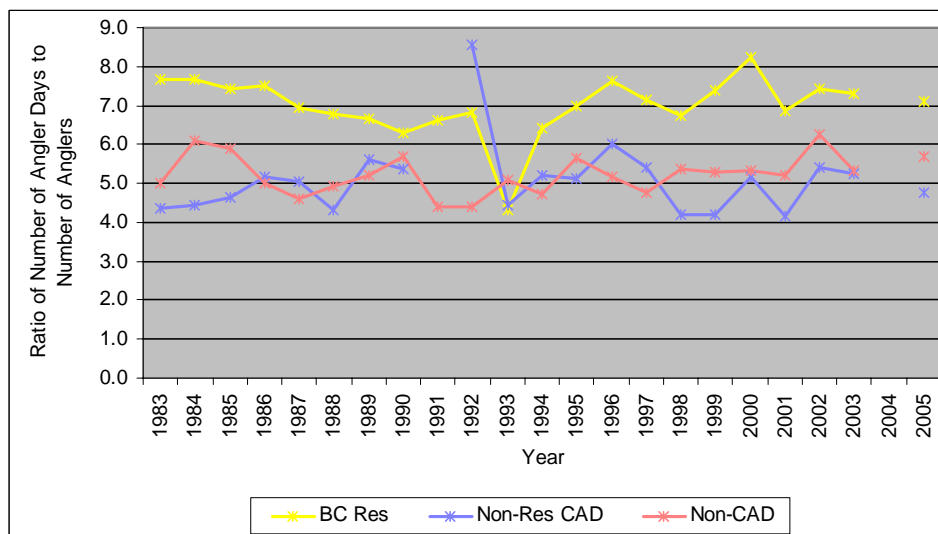
# Bulkley River – Estimated Number of Anglers and Angler Days



**Figure 3.** Number of anglers by residency according to SHA data from 1983 to 2005.



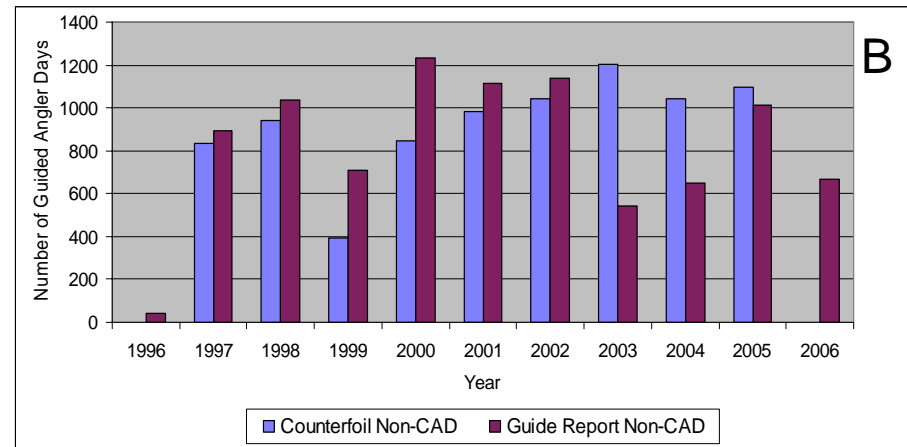
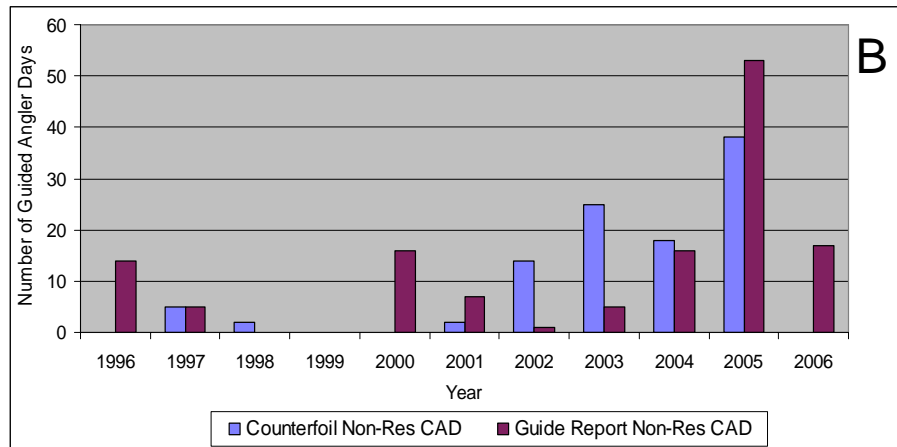
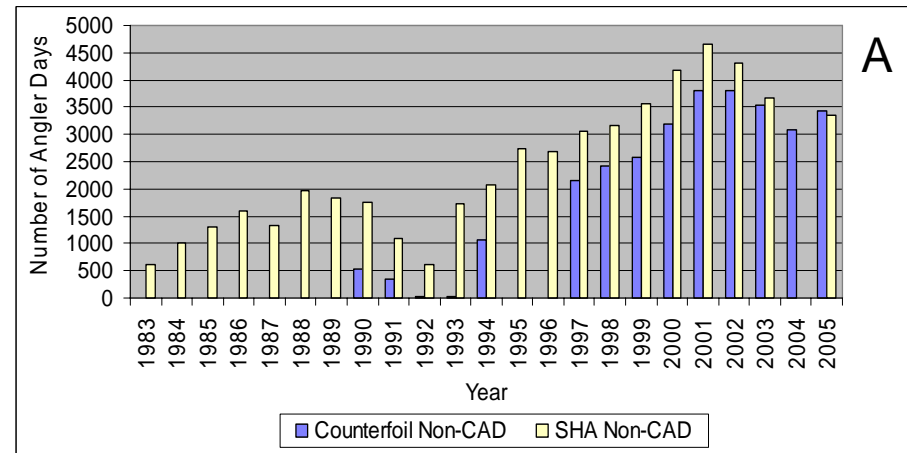
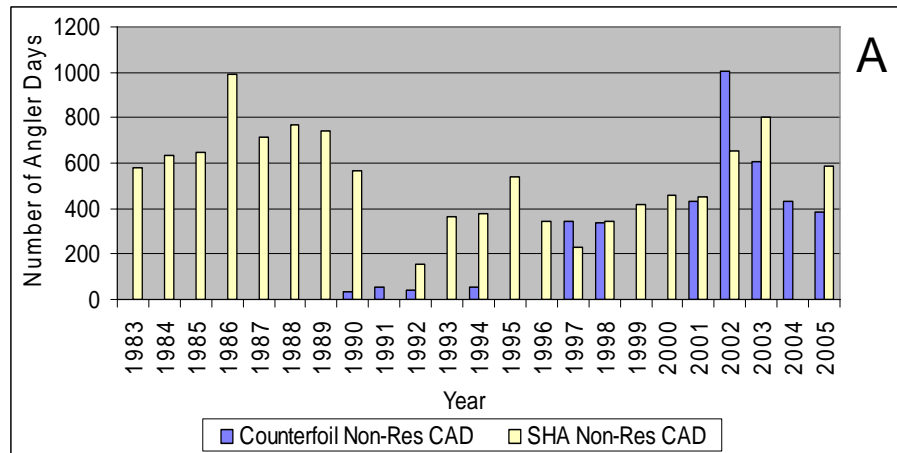
**Figure 4.** Number of angler days by residency according to SHA data from 1983 to 2005.



**Figure 5.** SHA ratio of number of angler days to number of anglers for the Bulkley River from 1983 to 2005.

# Bulkley River – Estimated Number of Angler Days

The graphs presented below are intended to compare angler day projections for counterfoil, SHA and guide report data. Theoretically, angler day counts for counterfoils and guide reports should be equal, and SHA estimates should roughly correspond to counterfoil data. For reasons known and unknown, however, differences exist. Therefore, for decision making purposes, the data presented in each figure below should only be considered accurate when a similar number of angler days are reported for a specific year.



**Figure 6.** Counterfoil Non-Res CAD data comparison for number of angler days to A) SHA data and B) guide report data.

**Figure 7.** Counterfoil Non-CAD data comparison for number of angler days to A) SHA data and B) guide report data.

**Note** – It was not possible to include the **number of anglers** in the above comparisons for two reasons: 1) counterfoil design did not allow for the number of anglers to be accurately counted in a timely manner and 2) guide reports include angler days, not the number of anglers.



# Bulkley River Angler Use Data – Points to Consider

## Creel Survey

- It is important to consider the following differences in creel survey methodologies, as it affects the number of angler interviews initiated:
  - Pinsent (1970) was conducted during October and November, 1969. A technical assistant checked each of the Morice, Bulkley and Kispiox Rivers six days per month, three of which were weekend days. Residency was organized as local residents, residents and non-residents. It was not possible to determine if the resident group contained BC residents or entirely non-res Canadians, therefore, local resident and resident data was combined and report as non-res CAD residency. The objective of this study was to survey anglers targeting Steelhead trout.
  - Remington (1974) was conducted five days per week from September 15 to November 15, 1974 at points of road access to the river. The objective of this study was to survey anglers targeting Steelhead trout.
  - O'Neill and Whately (1984) was conducted between August 26 and November 20, 1983. For each zone, creel days were randomly selected and covered by two, 2 person crews using jet boats to access anglers. The number of anglers interviews initiated was not reported, only the number of anglers. The objective of this study was to survey anglers targeting Steelhead trout.
  - Lewynsky and Olmsted (1990) was conducted from September 1 to October 31, 1989 on the Bulkley River between Suskwa river bridge and Morice River confluence. Creel survey methodology consisted of an access point survey complemented with an aerial reconnaissance survey of river wide fishing activity. The number of angler interviews initiated was approximated from bar graphs as actual data was not presented (Figure 18). The objective of this study was to obtain guided and non-guided angler catch and effort information during the major period of summer-run Steelhead migration.
  - O'Neill (1995) surveyed anglers from 0.25 miles upstream and downstream of Toboggan Creek/Bulkley River confluence from August 15 to October 16, 1995 to obtain daily catch and effort information of anglers participating in the harvest-oriented Coho salmon fishery. This creel survey noted that there were considerably more anglers fishing this section of river than reflected in the number of angler interviews.
  - Morten and Parken (1998) was conducted from September 1 to October 15, 1997 by river guardians. As the primary duty of river guardians was to provide an enforcement presence, a strict sampling schedule could not be used and therefore, a convenience sample of anglers was collected using jet boat patrol, drift boat and truck patrol. The objective of this study was to survey anglers targeting Steelhead trout during the classified waters period.
  - Morten (1999) was conducted from August 25 to November 22, 1998 using aerial counts and on-site roving techniques. Creel survey conducted by four river guardians in two teams. The objective of this study was to survey anglers targeting Steelhead trout during the classified waters period.
  - Mitchell (2001) was conducted from late August to the end of October, 2000 using access point survey, roving survey and aerial flights. The access point survey was conducted at the Trout Creek-Toboggan Creek confluence with the Bulkley River and the roving survey was conducted from the Morice-Bulkley confluence to the Suskwa-Bulkley confluence. The objective of this study was to obtain angler information (characteristics, composition, catch and effort) during the classified waters period.
- Creel survey data could not be compared to SHA data prior to 1984, as prior to this date, SHA data was not residency stratified.

## Steelhead Harvest Analyses

- SHA results suffer from a number of survey errors, which include sampling error, response error and non-response error. Sampling error results from under coverage of the angling population i.e. inability to sample anglers who do not purchase a steelhead conservation stamp. (*Note – it is believed that prior to fiscal 1997/1998, some anglers would intentionally target steelhead without purchasing a steelhead conservation stamp, thereby potentially negatively-biasing SHA results through angler under representation*). Response error stems from factors such as recall bias, rounding bias, prestige bias, and intentional deception. Non-response error exists when anglers refuse to answer the SHA mail out questionnaire. *Information taken from: DeGisi, J., 1999. Precision and Bias of the British Columbia Steelhead Harvest Analysis. Skeena Fisheries Report SK122.*
- It is also important to note that although the majority of SHA results cover the summer steelhead anglers (Sept to Oct), a certain percentage of the data represents those anglers targeting winter run steelhead i.e. QCI Rivers and Skeena tributaries downstream of Cedarvale.

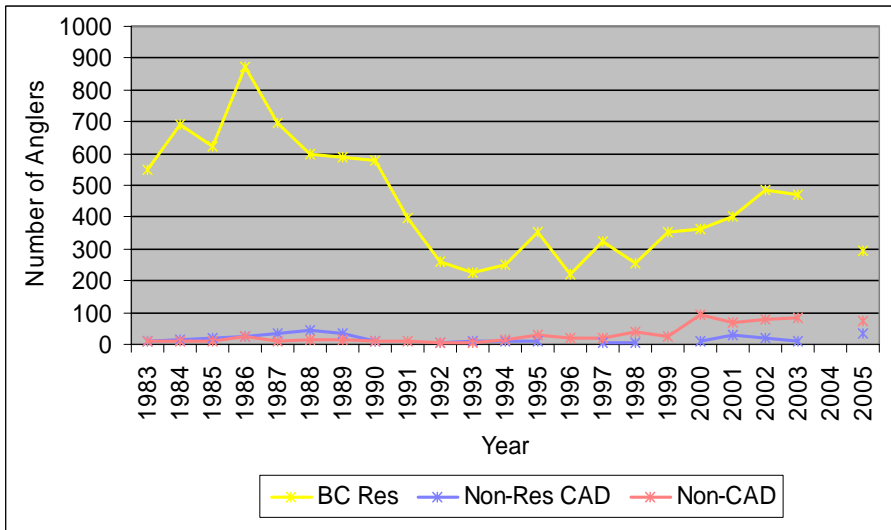
## Counterfoils and Guide Reports

- As these data sources are compiled by hand, the opportunity exists for human error introduced during tabulation. It is also important to note that the SHA does not separate guided from non-guided anglers, therefore, comparison to guide report data is not possible.

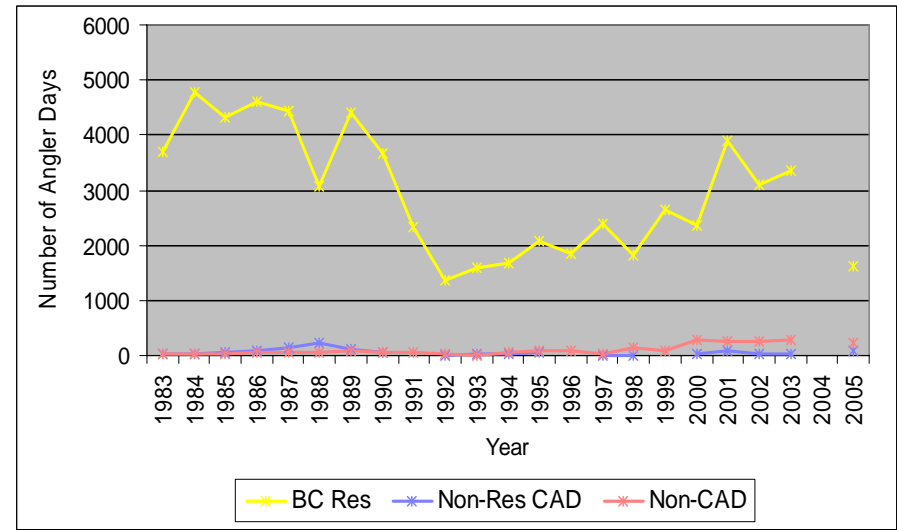
## **Bulkley River Angler Use Data - References**

- Lewynsky, V. and W. Olmsted. 1990. Angler Use and Catch Surveys of the Lower Skeena, Zymoetz (Copper), Kispiox and Bulkley River Steelhead Fisheries, 1989. ESL Environmental Sciences, Ltd. Vancouver, BC.
- Mitchell, S. 2001. 2000 Bulkley River Creel Survey – An Evaluation of the Angling Community on the Bulkley River Using a Complemented Access-Roving Creel Survey. Prepared for Fisheries Renewal B.C. by Toboggan Creek Salmon and Steelhead Enhancement Society. Smithers, B.C.
- Morten, K. and C. Parken. 1998. A Survey of Bulkley River Steelhead Anglers During the Classified Waters Period of 1997. Skeena Fisheries Report Series SK # 113.
- Morten, K. 1999. A Survey of Bulkley River Steelhead Anglers in 1998. Skeena Fisheries Report SK # 119.
- O'Neill, M. and M. Whately. 1984. Bulkley River Steelhead Trout: A Report on Angler Use, Tagging, and Life History Studies Conducted in 1982 and 1983. Skeena Fisheries Report SK # 43.
- O'Neill, M. 1995. 1995 Upper Skeena River Creel Survey. Prepared by Toboggan Creek Salmon Enhancement Society.
- Pinsent, M. 1970. A Report on the Steelhead Anglers of Four Skeena Watershed Streams During the Fall of 1969. Ministry of Environment. Fisheries Branch.
- Remington, D. 1974. Bulkley River Steelhead Survey, September 15 – November 15, 1974. Ministry of Environment. Fisheries Branch.

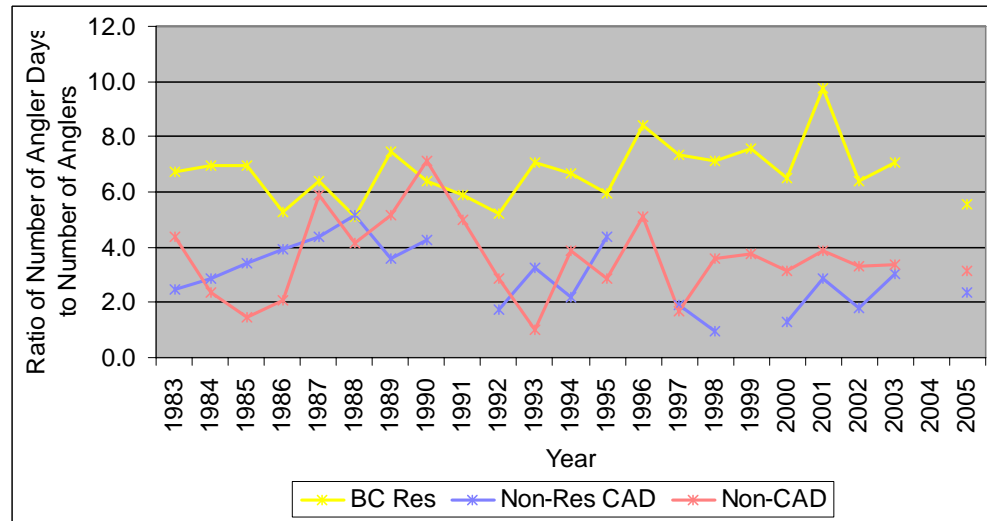
# Kitsumkalum River – Estimated Number of Anglers and Angler Days



**Figure 1.** Number of anglers by residency according to SHA data from 1983 to 2005.



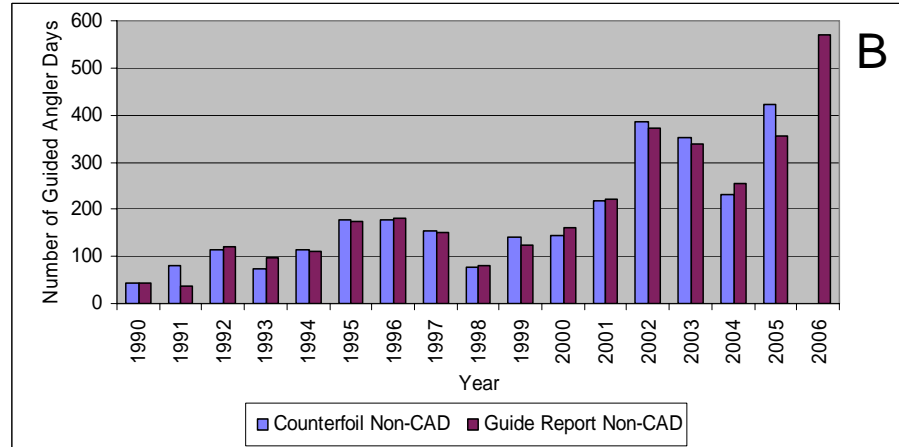
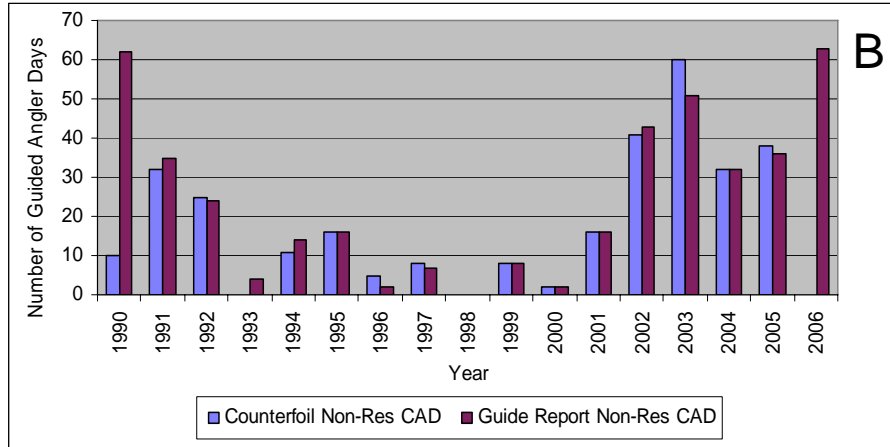
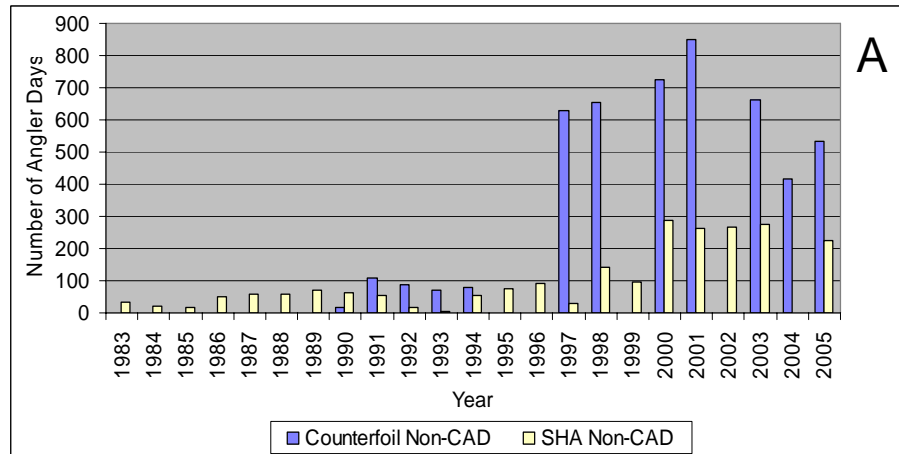
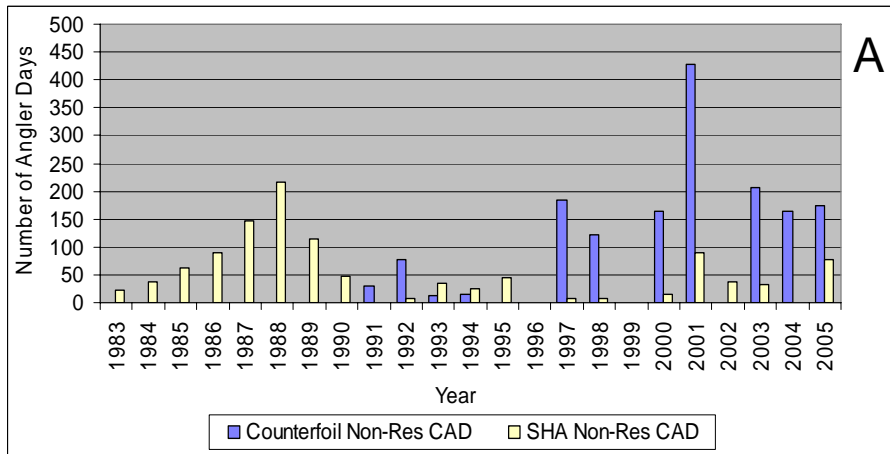
**Figure 2.** Number of angler days by residency according to SHA data from 1983 to 2005.



**Figure 3.** SHA ratio of number of angler days to number of anglers for the Kitsumkalum River from 1983 to 2005.

# Kitsumkalum River – Estimated Number of Angler Days

The graphs presented below are intended to compare angler day projections for counterfoil, SHA and guide report data. Theoretically, angler day counts for counterfoils and guide reports should be equal, and SHA estimates should roughly correspond to counterfoil data. For reasons known and unknown, however, differences exist. Therefore, for decision making purposes, the data presented in each figure below should only be considered accurate when a similar number of angler days are reported for a specific year.



**Figure 4.** Counterfoil Non-Res CAD data comparison for number of angler days to A) SHA data and B) guide report data.

**Figure 5.** Counterfoil Non-CAD data comparison for number of angler days to A) SHA data and B) guide report data.

**Note** – It was not possible to include the **number of anglers** in the above comparisons for two reasons: 1) counterfoil design did not allow for the number of anglers to be accurately counted in a timely manner and 2) guide reports include angler days, not the number of anglers.

# Kitsumkalum River Angler Use Data – Points to Consider

## Creel Survey

- There have been no creel surveys conducted on the Kitsumkalum River to date.

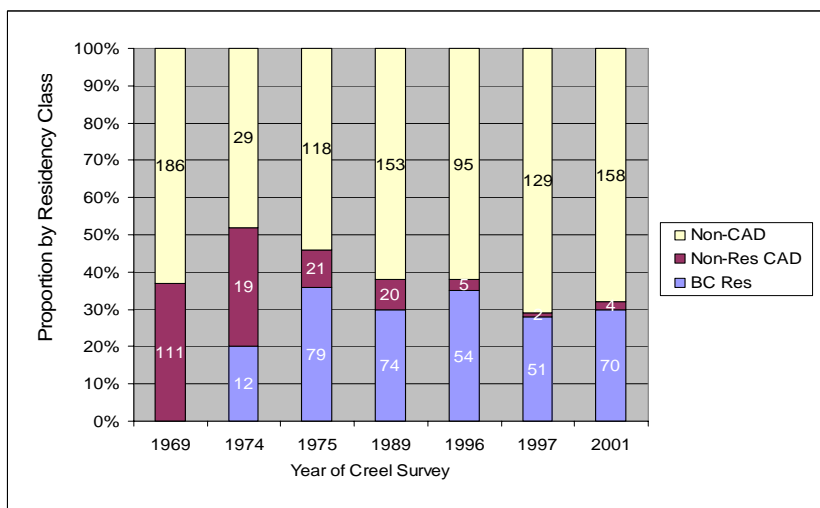
## Steelhead Harvest Analyses

- SHA results suffer from a number of survey errors, which include sampling error, response error and non-response error. Sampling error results from under coverage of the angling population i.e. inability to sample anglers who do not purchase a steelhead conservation stamp. (*Note – it is believed that prior to fiscal 1997/1998, some anglers would intentionally target steelhead without purchasing a steelhead conservation stamp, thereby potentially negatively-biasing SHA results through angler under representation*). Response error stems from factors such as recall bias, rounding bias, prestige bias, and intentional deception. Non-response error exists when anglers refuse to answer the SHA mail out questionnaire. *Information taken from: DeGisi, J., 1999. Precision and Bias of the British Columbia Steelhead Harvest Analysis. Skeena Fisheries Report SK122.*
- It is also important to note that although the majority of SHA results cover the summer steelhead anglers (Sept to Oct), a certain percentage of the data represents those anglers targeting winter run steelhead i.e. QCI Rivers and Skeena tributaries downstream of Cedarvale.

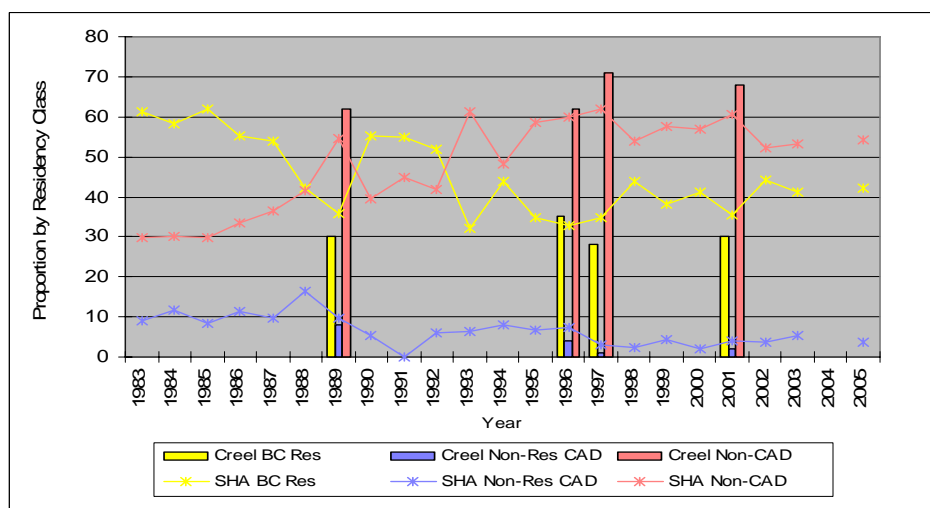
## Counterfoils and Guide Reports

- As these data sources are compiled by hand, the opportunity exists for human error introduced during tabulation. It is also important to note that the SHA does not separate guided from non-guided anglers, therefore, comparison to guide report data is not possible.

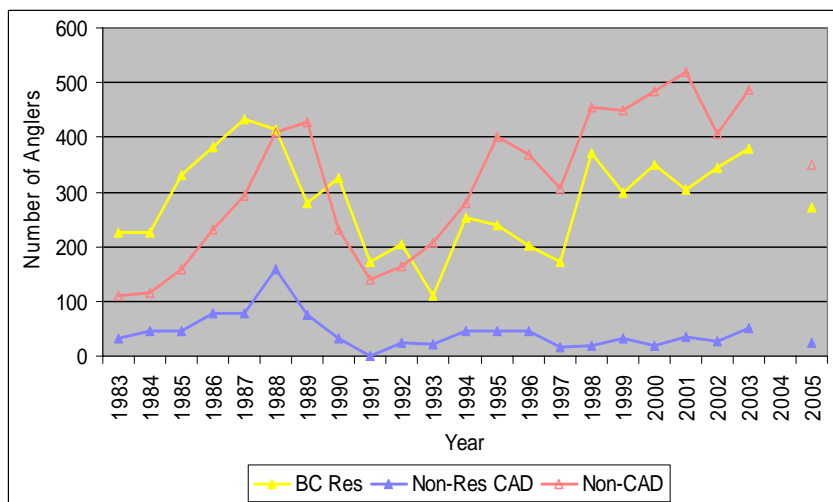
# Kispiox River – Estimated Number of Anglers



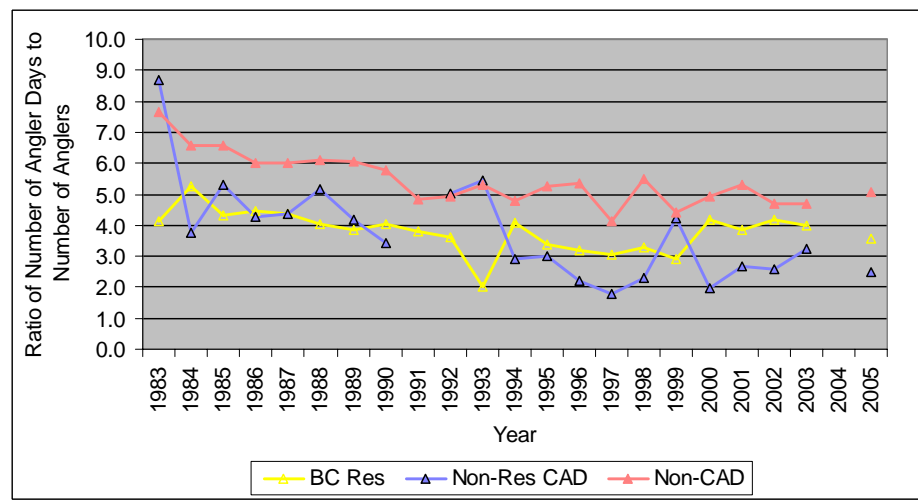
**Figure 1.** Kispiox River creel survey summary of proportional number of anglers by residency. Note - numbers in columns represent number of angler interviews initiated. Non-Res CAD data for 1969 is a combination of local residents and Canadian residents.



**Figure 2.** Comparison of number of anglers between Steelhead Harvest Analyses (SHA) data and creel survey data from 1983 to 2005. Note that the intent of the figure presented above is to calibrate SHA and creel data. The above graph present proportional values, not actual values.



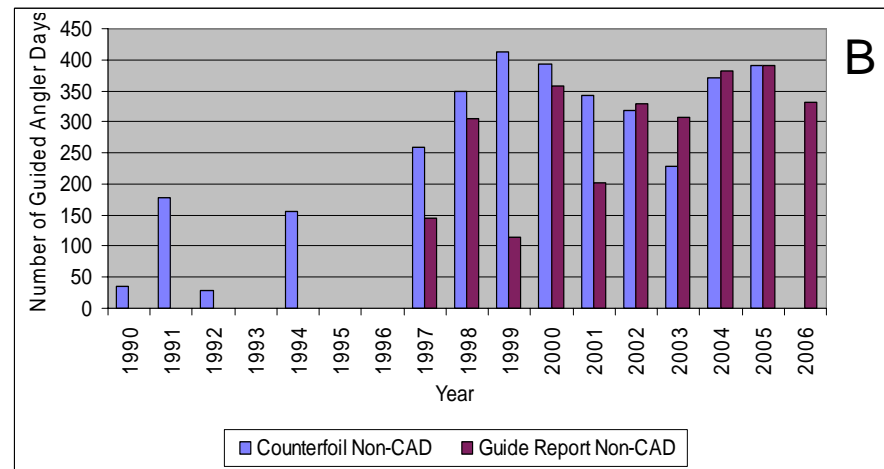
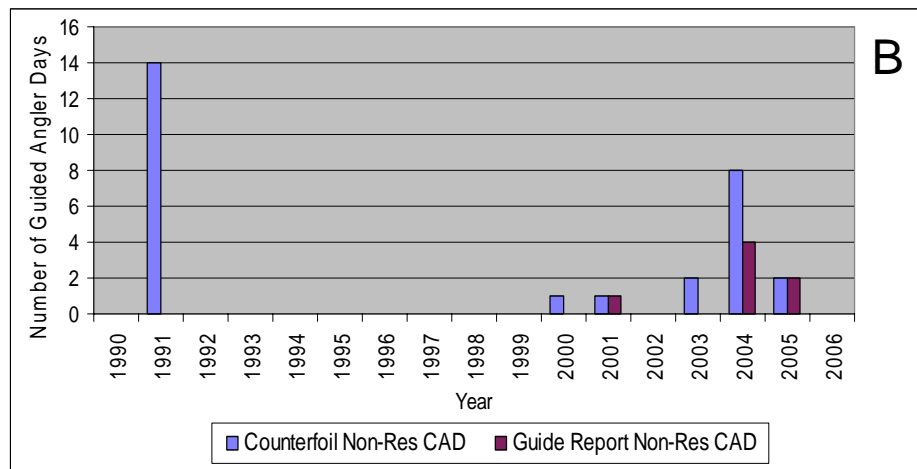
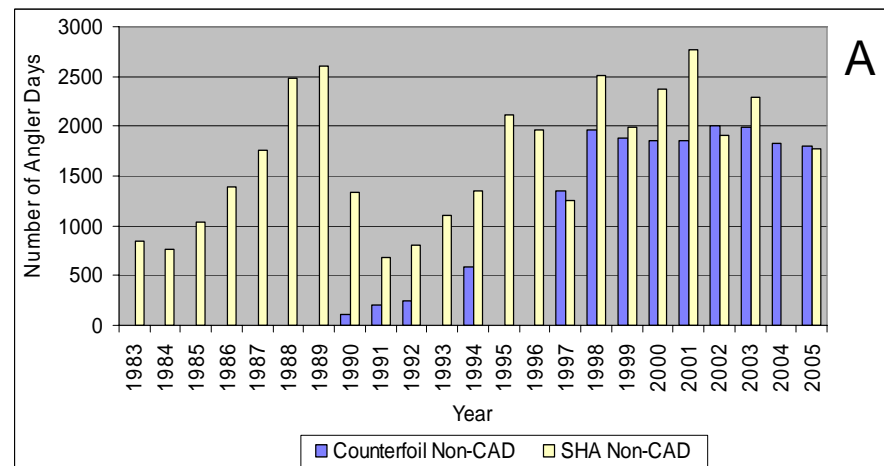
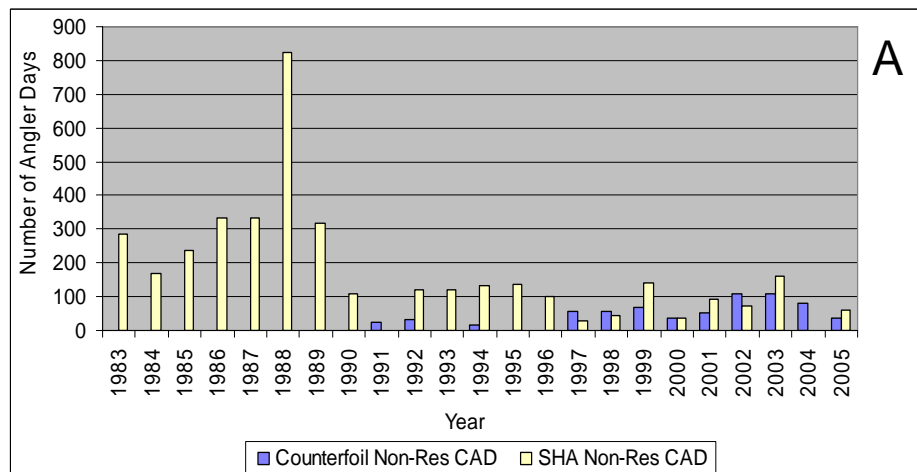
**Figure 3.** Number of anglers by residency according to SHA data from 1983 to 2005.



**Figure 4.** SHA ratio of number of angler days to number of anglers for the Kispiox River from 1983 to 2005.

# Kispiox River – Estimated Number of Angler Days

The graphs presented below are intended to compare angler day projections for counterfoil, SHA and guide report data. Theoretically, angler day counts for counterfoils and guide reports should be equal, and SHA estimates should roughly correspond to counterfoil data. For reasons known and unknown, however, differences exist. Therefore, for decision making purposes, the data presented in each figure below should only be considered accurate when a similar number of angler days are reported for a specific year.



**Figure 5.** Counterfoil Non-Res CAD data comparison for number of angler days to A) SHA data and B) guide report data.

**Figure 6.** Counterfoil Non-CAD data comparison for number of angler days to A) SHA data and B) guide report data.

**Note** – It was not possible to include the **number of anglers** in the above comparisons for two reasons: 1) counterfoil design did not allow for the number of anglers to be accurately counted in a timely manner and 2) guide reports include angler days, not the number of anglers.

# Kispiox River Angler Use Data – Points to Consider

## Creel Survey

- It is important to consider the following creel survey methodology, as it affects the number of angler interviews initiated:
  - Pinsent (1970) was conducted during October and November, 1969. A technical assistant checked each of the Morice, Bulkley and Kispiox rivers six days per month, three of which were weekend days. Residency was organized as local residents, residents and non-residents. It was not possible to determine if the resident group contained BC residents or entirely non-res Canadians, therefore, local resident and resident data were combined and reported as non-res CAD residency. The objective of this study was to survey anglers targeting Steelhead trout.
  - Wright (1975) was conducted by one person between September 16 and October 1, 1974. The study design was a roving creel survey. The objective of this study was to survey anglers targeting Steelhead trout.
  - Whately (1977) was conducted between late August and early November, 1975. Anglers fishing the Kispiox River were directed to several fishing lodges in the valley where they were asked to complete creel census forms summarizing their angling trip. The objective of this study was to survey anglers targeting Steelhead trout.
  - Lewynsky and Olmsted (1990) was conducted from the Skeena River confluence upstream to Cullen Creek from September 1 to October 31, 1989. Creel survey methodology consisted of an access point survey complemented with an aerial reconnaissance survey of river wide fishing activity. The number of anglers interviewed was approximated from bar graphs, as no hard numbers were presented in the report. The objective of this study was to obtain guided and non-guided angler catch and effort information during the major period of summer-run Steelhead migration.
  - Tallman (1997) was conducted from the Kispiox Village to Sweetin River from September 15 to October 31, 1996. Creel survey methodology consisted of on-site roving survey design. The objective of this study was to collect angler catch and effort data during the classified waters period.
  - Morten (1998) was conducted by river guardians using a roving survey design to conduct on-site interviews. Interviews were conducted during the classified waters period from September 1 to October 31, 1997. Creel survey was completed from the confluence with the Skeena to the Sweetin River Recreation Site. The objective of this study was to collect angler catch and effort information during the classified waters period.
  - Morten and Giroux (2006) was conducted by river guardians using aerial counts and on-site roving survey techniques from August 27 to November 18, 2001. Similar to 1997, the creel survey was conducted from the confluence with the Skeena River to the Sweetin River recreation site. The objective of this study was to survey anglers targeting Steelhead trout during the classified waters period.
- Creel survey data could not be compared to SHA data prior to 1984, as prior to this date, SHA data was not residency stratified.

## Steelhead Harvest Analyses

- SHA results suffer from a number of survey errors, which include sampling error, response error and non-response error. Sampling error results from under coverage of the angling population i.e. inability to sample anglers who do not purchase a steelhead conservation stamp. (*Note – it is believed that prior to fiscal 1997/1998, some anglers would intentionally target steelhead without purchasing a steelhead conservation stamp, thereby potentially negatively-biasing SHA results through angler under representation*). Response error stems from factors such as recall bias, rounding bias, prestige bias, and intentional deception. Non-response error exists when anglers refuse to answer the SHA mail out questionnaire. *Information taken from: DeGisi, J., 1999. Precision and Bias of the British Columbia Steelhead Harvest Analysis. Skeena Fisheries Report SK122.*
- It is also important to note that although the majority of SHA results cover the summer steelhead anglers (Sept to Oct), a certain percentage of the data represents those anglers targeting winter run steelhead i.e. QCI Rivers and Skeena tributaries downstream of Cedarvale.

## Counterfoils and Guide Reports

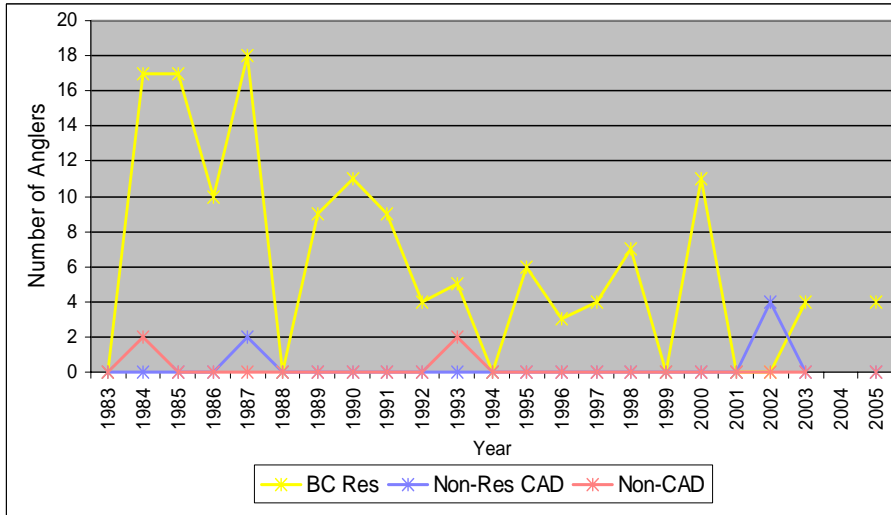
- As these data sources are compiled by hand, the opportunity exists for human error introduced during tabulation. It is also important to note that the SHA does not separate guided from non-guided anglers, therefore, comparison to guide report data is not possible.



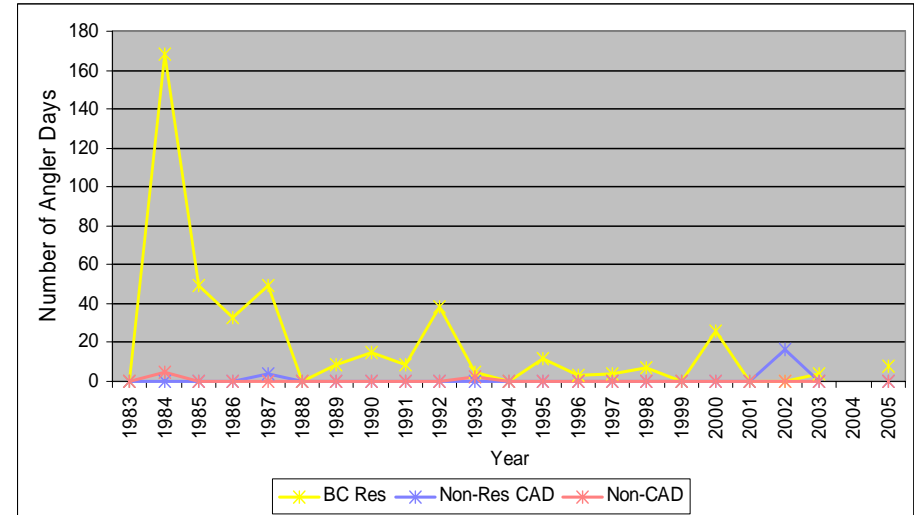
## Kispiox River Angler Use Data - References

- Lewynsky, V. and W. Olmsted. 1990. Angler Use and Catch Surveys of the Lower Skeena, Zymoetz (Copper), Kispiox and Bulkley River Steelhead Fisheries, 1989. Report by ESL Environmental Sciences Limited for Fisheries Branch, B.C. Ministry of Environment. Victoria, B.C.
- Morten, K. 1998. A Survey of Kispiox River Steelhead Anglers During the Classified Waters Period of 1997. Report by Cascadia Natural Resource Consulting, Smithers, B.C. for B.C Ministry of Environment, Fisheries Branch. Skeena Fisheries Report Series SK #115.
- Morten, K. and P. Giroux. 2006. A Survey of Kispiox River Steelhead Anglers in 2001. Skeena Fisheries Report SK # 145.
- Pinsent, M. 1970. A Report on the Steelhead Anglers of Four Skeena Watershed Streams During the Fall of 1969. Ministry of Environment. Fisheries Branch.
- Tallman, D. 1997. 1996 Kispiox River Sport Fishery Survey Summary Report. Prepared by J.O. Thomas and Associates for B.C. Ministry of Environment. Fisheries Branch.
- Whately, M. 1977. Kispiox River Steelhead Trout: The 1975 Sport Fishery and Life History Characteristics from Anglers' Catches. B.C. Fisheries Technical Circular No. 30.
- Wright, J. 1975. Kispiox River Steelhead Survey, Fall 1974. British Columbia Ministry of Environment. Fisheries Branch.

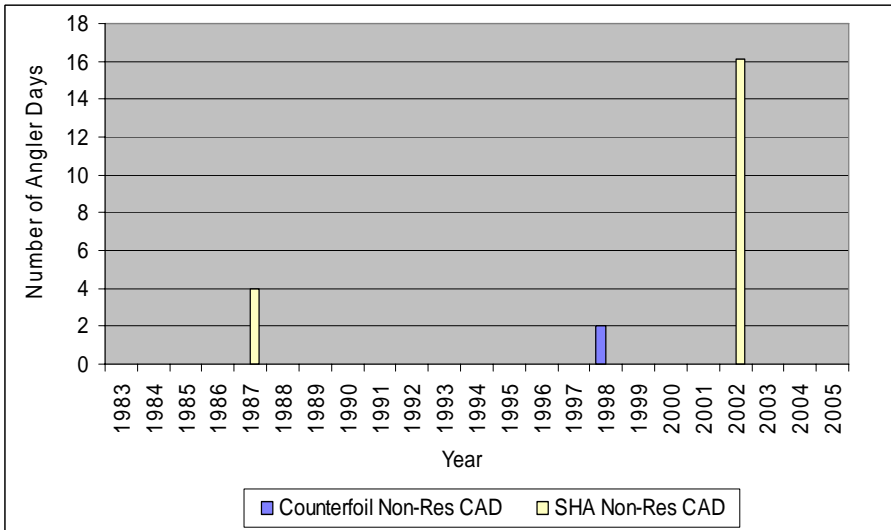
# Kitsequecla River – Estimated Number of Anglers and Angler Days



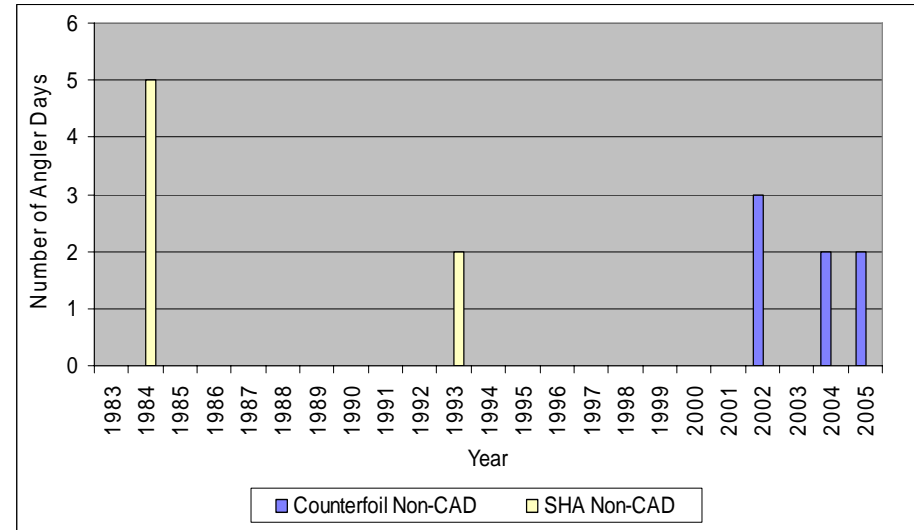
**Figure 1.** Number of anglers by residency according to SHA data from 1983 to 2005.



**Figure 2.** Number of angler days by residency according to SHA data from 1983 to 2005.



**Figure 3.** Counterfoil Non-Res CAD data comparison for number of angler days to SHA data from 1983 to 2005.



**Figure 4.** Counterfoil Non-CAD data comparison for number of angler days to SHA data from 1983 to 2005.

**Note - Due to the lack of data, Figures 3 and 4 should not be relied upon for decision making purposes.**

# Kitsequecla River Angler Use Data – Points to Consider

## Creel Survey

- No creel surveys have been conducted on the Kitsequecla Rive to date.

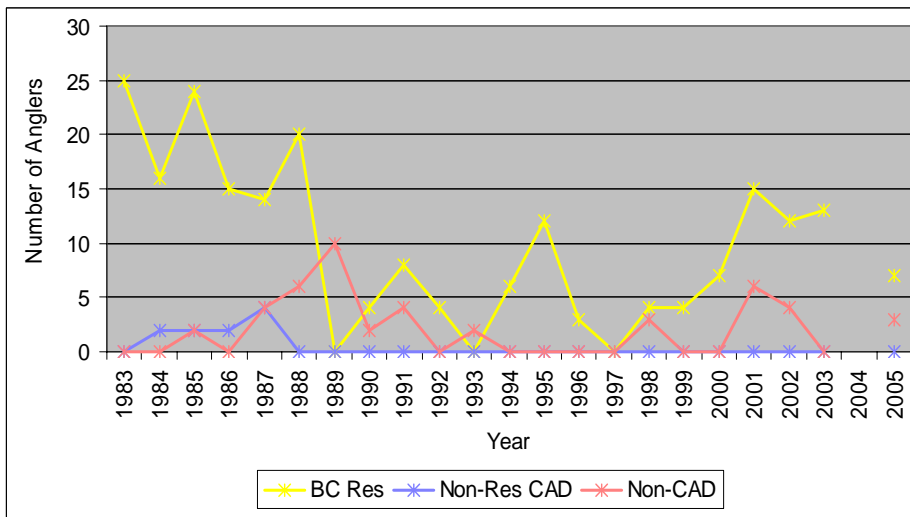
## Steelhead Harvest Analyses

- SHA results suffer from a number of survey errors, which include sampling error, response error and non-response error. Sampling error results from under coverage of the angling population i.e. inability to sample anglers who do not purchase a steelhead conservation stamp. (*Note – it is believed that prior to fiscal 1997/1998, some anglers would intentionally target steelhead without purchasing a steelhead conservation stamp, thereby potentially negatively-biasing SHA results through angler under representation*). Response error stems from factors such as recall bias, rounding bias, prestige bias, and intentional deception. Non-response error exists when anglers refuse to answer the SHA mail out questionnaire. *Information taken from: DeGisi, J., 1999. Precision and Bias of the British Columbia Steelhead Harvest Analysis. Skeena Fisheries Report SK122.*
- When comparing creel surveys and SHA data, it is important to note that SHA data covers summer steelhead anglers (Sept to Oct), and winter Steelhead anglers (November to April) i.e. QCI Rivers and Skeena tributaries downstream of Cedarvale. Creel surveys typically cover the Steelhead angling season from September to October.

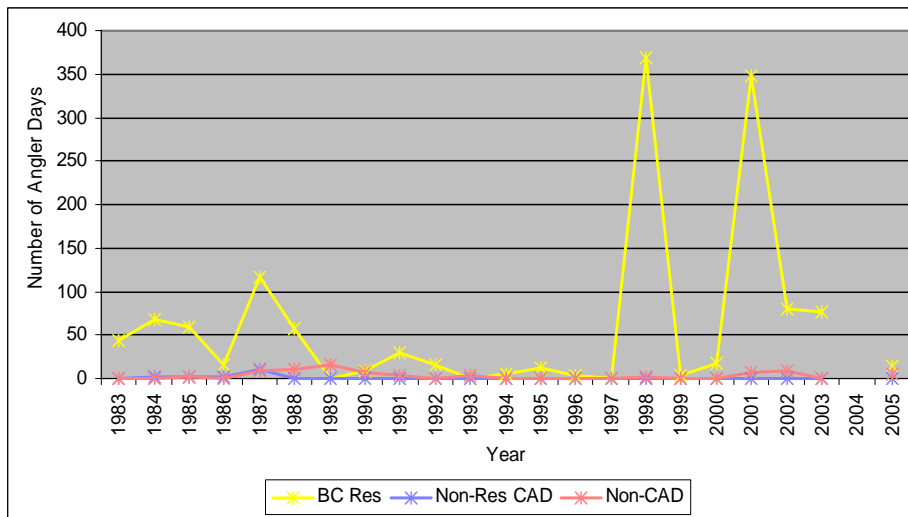
## Counterfoils and Guide Reports

- As these data sources are compiled by hand, the opportunity exists for human error introduced during tabulation. It is also important to note that the SHA does not separate guided from non-guided anglers, therefore, comparison to guide report data is not possible.
- There is currently no guide quota on the Kitsequecla River, therefore, guide report data is not available for comparison to counterfoil data.

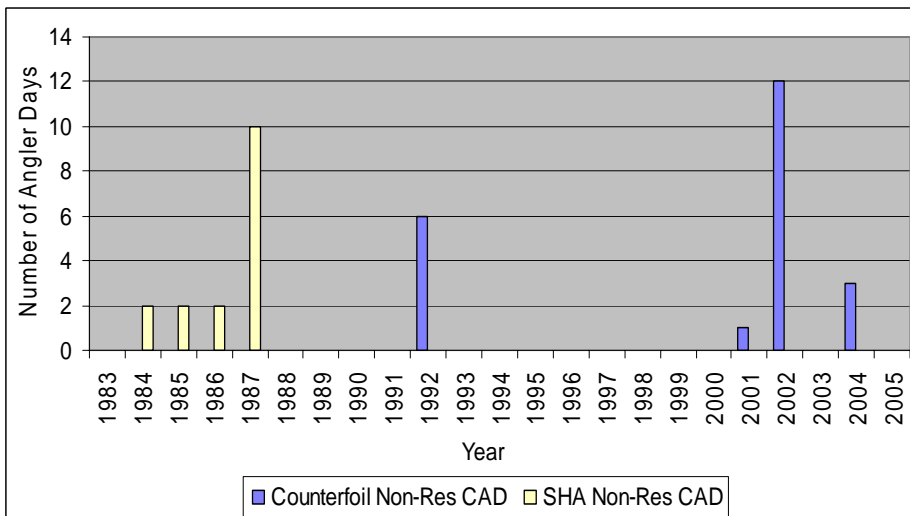
# Kitwanga River – Estimated Number of Anglers and Angler Days



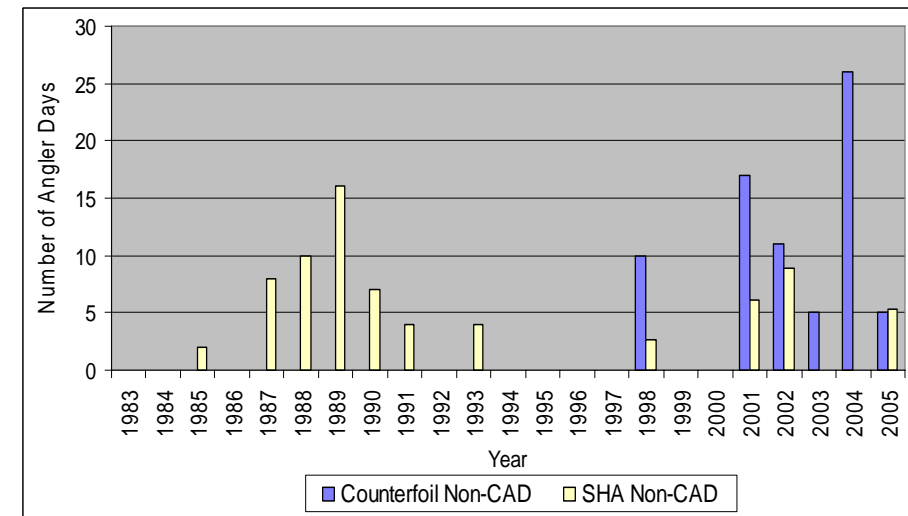
**Figure 1.** Number of anglers by residency according to SHA data from 1983 to 2005.



**Figure 2.** Number of angler days by residency according to SHA data from 1983 to 2005.



**Figure 3.** Counterfoil Non-Res CAD data comparison for number of angler days to SHA data from 1983 to 2005.



**Figure 4.** Counterfoil Non-CAD data comparison for number of angler days to SHA data from 1983 to 2005.

# Kitwanga River Angler Use Data – Points to Consider

## Creel Survey

- There have not been any creel surveys conducted on the Kitwanga River to date.

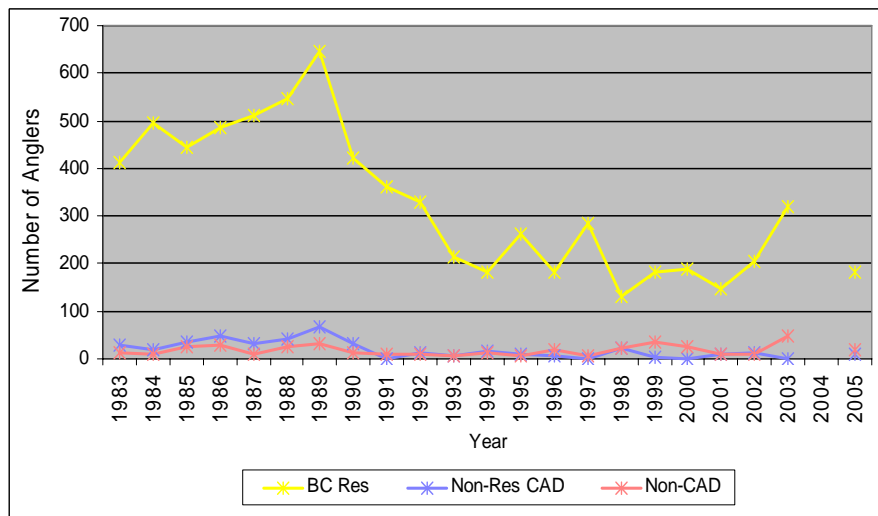
## Steelhead Harvest Analyses

- SHA results suffer from a number of survey errors, which include sampling error, response error and non-response error. Sampling error results from under coverage of the angling population i.e. inability to sample anglers who do not purchase a steelhead conservation stamp. (*Note – it is believed that prior to fiscal 1997/1998, some anglers would intentionally target steelhead without purchasing a steelhead conservation stamp, thereby potentially negatively-biasing SHA results through angler under representation*). Response error stems from factors such as recall bias, rounding bias, prestige bias, and intentional deception. Non-response error exists when anglers refuse to answer the SHA mail out questionnaire. *Information taken from: DeGisi, J., 1999. Precision and Bias of the British Columbia Steelhead Harvest Analysis. Skeena Fisheries Report SK122.*
- It is also important to note that although the majority of SHA results cover the summer steelhead anglers (Sept to Oct), a certain percentage of the data represents those anglers targeting winter run steelhead i.e. QCI Rivers and Skeena tributaries downstream of Cedarvale.

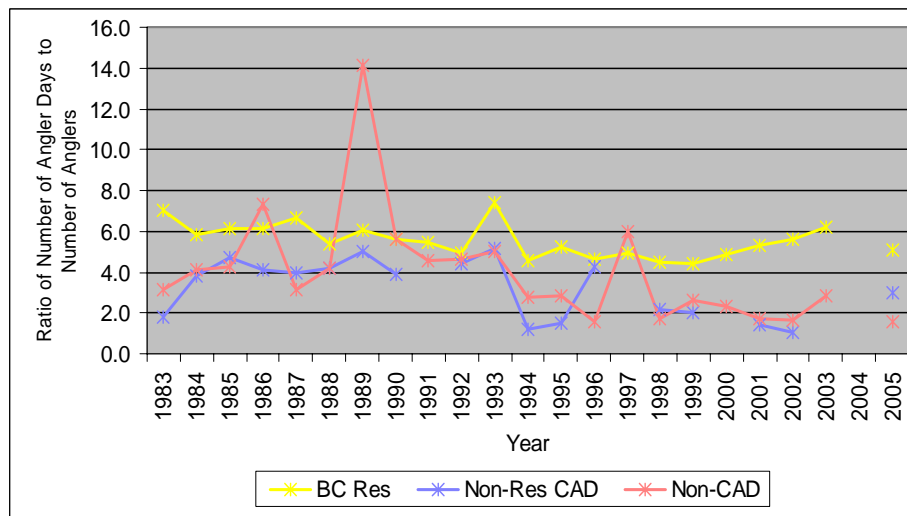
## Counterfoils and Guide Reports

- As these data sources are compiled by hand, the opportunity exists for human error introduced during tabulation. It is also important to note that the SHA does not separate guided from non-guided anglers, therefore, comparison to guide report data is not possible.
- There is currently no guide quota on the Kitsequecla River, therefore, guide report data is not available for comparison to counterfoil data.

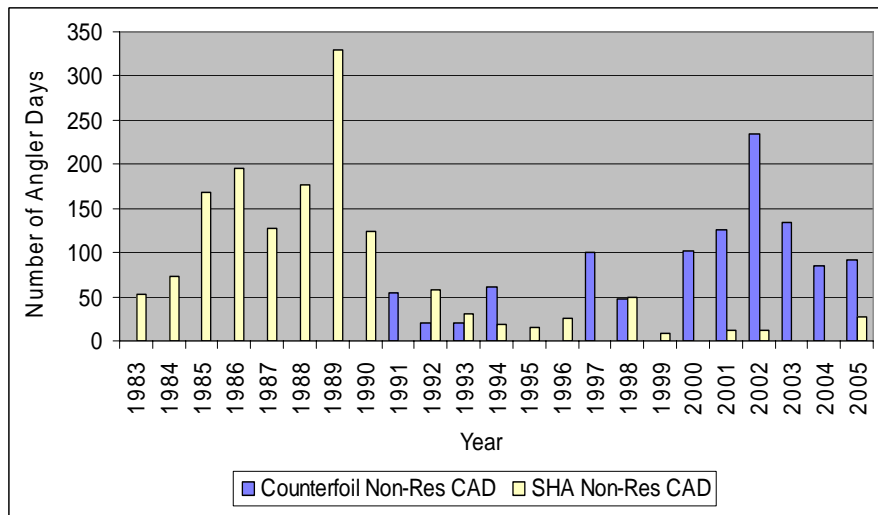
# Lakelse River – Estimated Number of Anglers and Angler Days



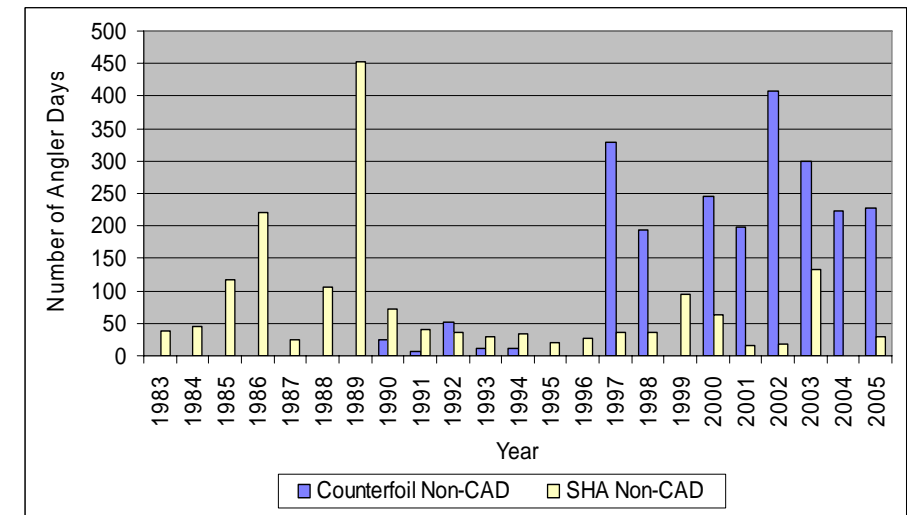
**Figure 1.** Number of anglers by residency according to SHA data from 1983 to 2005.



**Figure 2.** SHA ratio of number of angler days to number of anglers for the Lakelse River from 1983 to 2005.



**Figure 3.** Counterfoil and SHA angler day comparison for Non-Res CAD anglers from 1983 to 2005.



**Figure 4.** Counterfoil and SHA angler day comparison for Non-CAD anglers from 1983 to 2005.

**For clarification on data presented in Figures 3 and 4, see next page.**

# Lakelse River Angler Use Data – Points to Consider

## Creel Survey

- There have not been any creel surveys conducted on the Lakelse River to date.

## Steelhead Harvest Analyses

- SHA results suffer from a number of survey errors, which include sampling error, response error and non-response error. Sampling error results from under coverage of the angling population i.e. inability to sample anglers who do not purchase a steelhead conservation stamp. *(Note – it is believed that prior to fiscal 1997/1998, some anglers would intentionally target steelhead without purchasing a steelhead conservation stamp, thereby potentially negatively-biasing SHA results through angler under representation).* Response error stems from factors such as recall bias, rounding bias, prestige bias, and intentional deception. Non-response error exists when anglers refuse to answer the SHA mail out questionnaire. *Information taken from: DeGisi, J., 1999. Precision and Bias of the British Columbia Steelhead Harvest Analysis. Skeena Fisheries Report SK122.*
- It is also important to note that although the majority of SHA results cover the summer steelhead anglers (Sept to Oct), a certain percentage of the data represents those anglers targeting winter run steelhead i.e. QCI Rivers and Skeena tributaries downstream of Cedarvale.

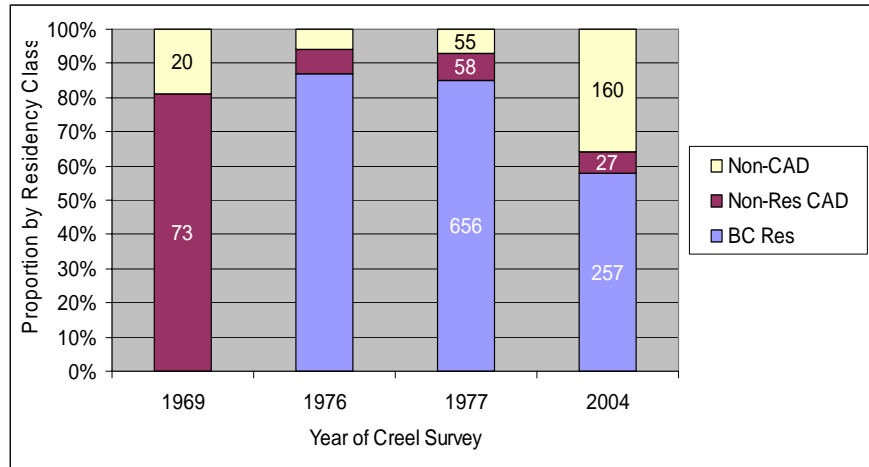
## Counterfoils and Guide Reports

- As these data sources are compiled by hand, the opportunity exists for human error introduced during tabulation. It is also important to note that the SHA does not separate guided from non-guided anglers, therefore, comparison to guide report data is not possible.
- There is currently no guide quota on the Lakelse River, therefore, guide report data is not available for comparison to counterfoil data.

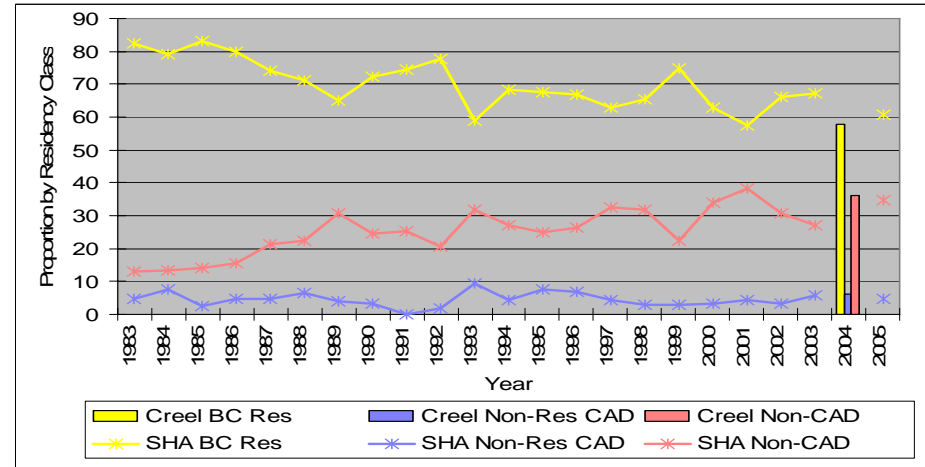
It is important to note that Figures 3 and 4 are intended to compare angler day projections for counterfoil, SHA and guide report data. Theoretically, angler day counts for counterfoils and guide reports should be equal, and SHA estimates should roughly correspond to counterfoil data. For reasons known and unknown, however, differences exist. Therefore, for decision making purposes, the data presented in each figure below should only be considered accurate when a similar number of angler days are reported for a specific year.

Also, it was not possible to include the **number of anglers** with Figures 3 and 4 for two reasons: 1) counterfoil design did not allow for the number of anglers to be accurately counted in a timely manner and 2) guide reports include angler days, not the number of anglers.

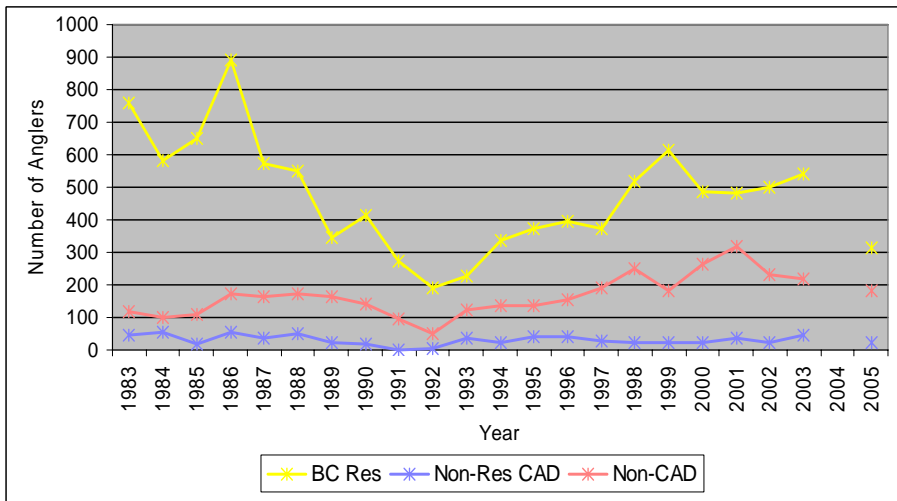
# Morice River – Estimated Number of Anglers



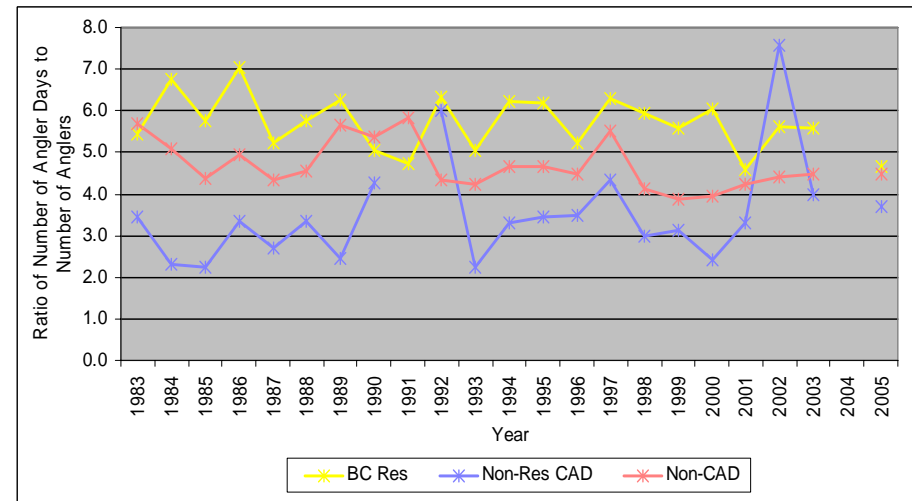
**Figure 1.** Morice River creel survey summary of proportional number of anglers interviewed by residency class. Note - numbers in columns represent number of anglers interviewed. Percentages for 1976 represent number of angler trips. Non-Res Canadian data for 1969 is a combination of local residents and Canadian residents.



**Figure 2.** Comparison of number of anglers reported for Steelhead Harvest Analyses (SHA) data and creel survey data from 1983 to 2005. Note that the intent of the figure presented above is to compare SHA and creel data, and presents proportional values, not actual values.



**Figure 3.** Number of anglers by residency according to SHA data from 1983 to 2005.

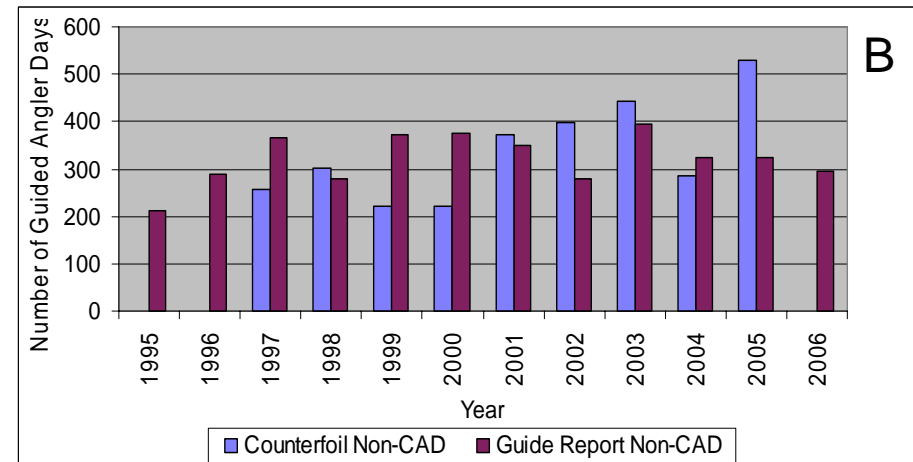
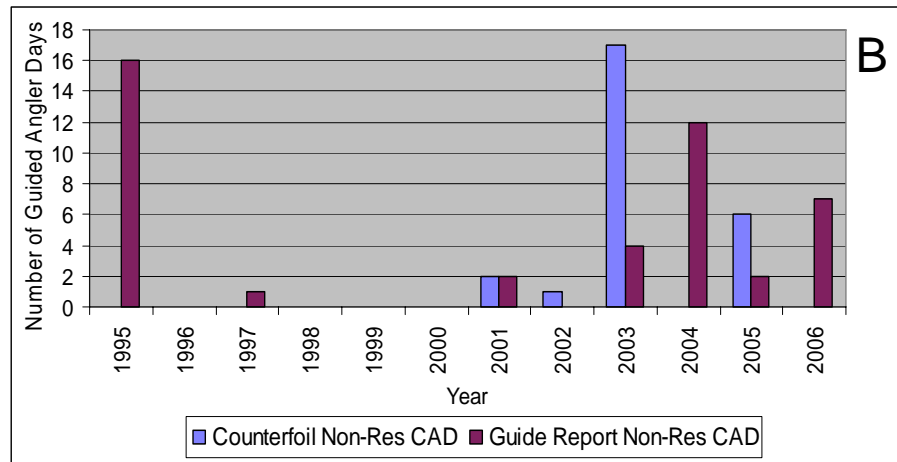
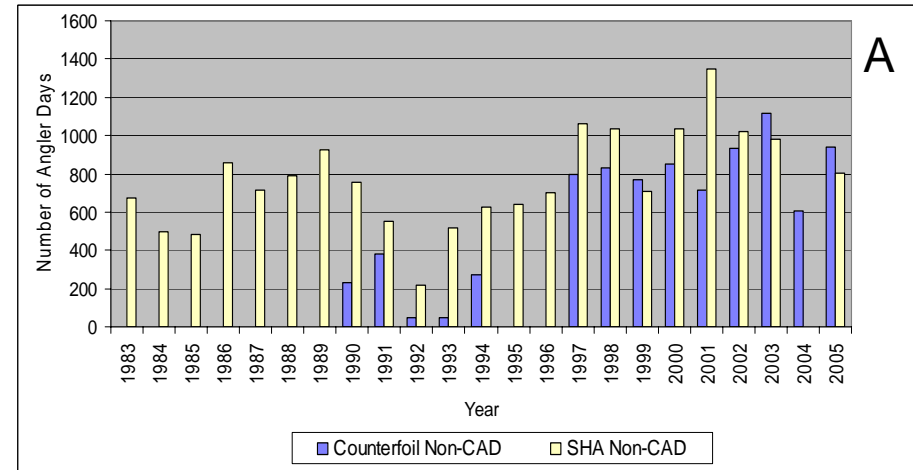
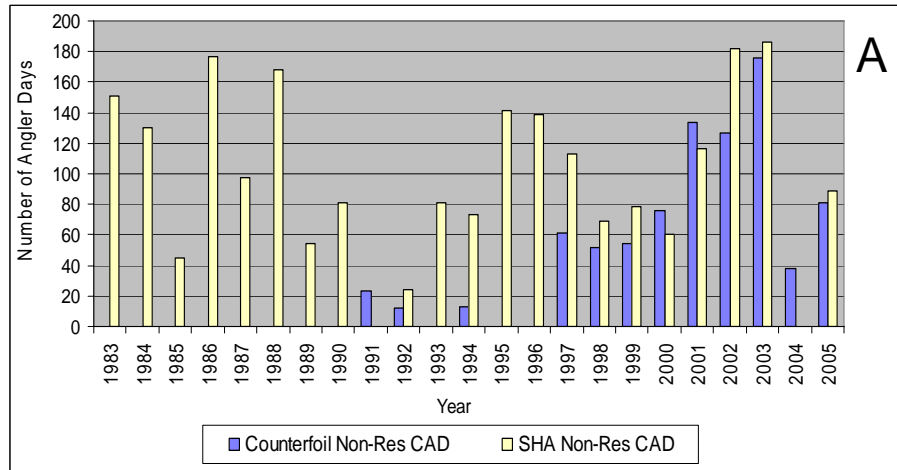


**Figure 4.** SHA ratio of number of angler days to number of anglers for the Morice River from 1983 to 2005.



# Morice River – Estimated Number of Angler Days

The graphs presented below are intended to compare angler day projections for counterfoil, SHA and guide report data. Theoretically, angler day counts for counterfoils and guide reports should be equal, and SHA estimates should roughly correspond to counterfoil data. For reasons known and unknown, however, differences exist. Therefore, for decision making purposes, the data presented in each figure below should only be considered accurate when a similar number of angler days are reported for a specific year.



**Figure 5.** Counterfoil Non-Res CAD data comparison for number of angler days to A) SHA data and B) guide report data.

**Figure 6.** Counterfoil Non-CAD data comparison for number of angler days to A) SHA data and B) guide report data.

**Note** – It was not possible to include the **number of anglers** in the above comparisons for two reasons: 1) counterfoil design did not allow for the number of anglers to be accurately counted in a timely manner and 2) guide reports include angler days, not the number of anglers.

# Morice River Angler Use Data – Points to Consider

## Creel Survey

- It is important to consider the following creel survey methodology, as it affects the number of angler interviews initiated:
  - Pinsent (1970) was conducted during October and November, 1969. A technical assistant checked each of the Morice, Bulkley and Kispiox rivers six days per month, three of which were weekend days. Residency was organized as local residents, residents and non-residents. It was not possible to determine if the resident group contained BC residents or entirely non-res Canadians, therefore, local resident and resident data was combined and reported as non-res Canadians. The objective of this creel study was to survey anglers targeting Steelhead trout.
  - Whatley *et al.* (1976 and 1977) interviewed anglers via a check station on the Morice FSR from September 4 to December 13, 1976 and August 15 to November 30, 1977. A roving assistant periodically interviewed anglers at Barret. During times of high use, an additional check point was set up at the Owen Lake road turn-off. The objective of this creel study was to obtain angler information (origin, distribution, catch, effort and fishing methodology) during the summer-run migration of Steelhead trout on the Morice River.
  - Saimoto (2004) conducted angler interviews using roving surveys with some exit interviews conducted on an opportunistic basis. A total of 19 aerial flights were also conducted. The objective of this creel study was to survey anglers targeting Steelhead trout during the 2004 classified waters period,
- Creel survey data could not be compared to SHA data prior to 1984, as prior to this date, SHA data was not residency stratified.

## Steelhead Harvest Analyses

- SHA results suffer from a number of survey errors, which include sampling error, response error and non-response error. Sampling error results from under coverage of the angling population i.e. inability to sample anglers who do not purchase a steelhead conservation stamp. (*Note – it is believed that prior to fiscal 1997/1998, some anglers would intentionally target steelhead without purchasing a steelhead conservation stamp, thereby potentially negatively-biasing SHA results through angler under representation*). Response error stems from factors such as recall bias, rounding bias, prestige bias, and intentional deception. Non-response error exists when anglers refuse to answer the SHA mail out questionnaire. *Information taken from: DeGisi, J., 1999. Precision and Bias of the British Columbia Steelhead Harvest Analysis. Skeena Fisheries Report SK122.*
- Although the majority of SHA results cover the summer steelhead anglers (Sept to Oct), a certain percentage of the data represents those anglers targeting winter run steelhead i.e. QCI Rivers and Skeena tributaries downstream of Cedarvale.

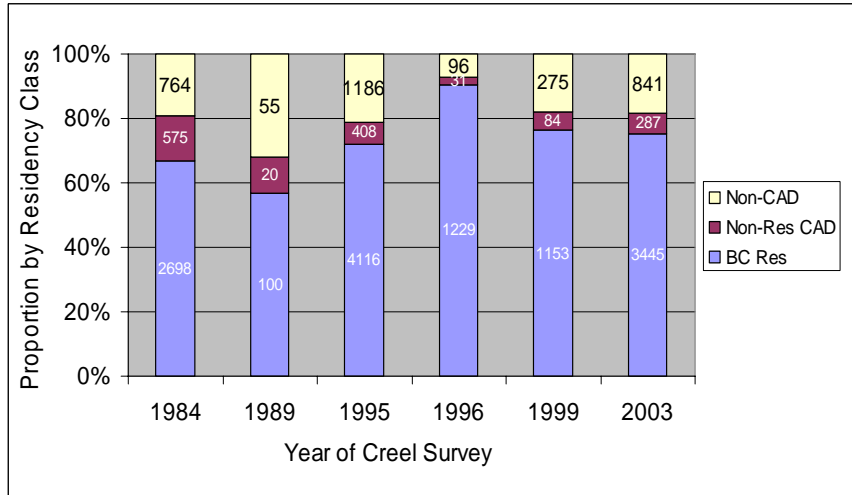
## Counterfoils and Guide Reports

- As these data sources are compiled by hand, the opportunity exists for human error introduced during tabulation. It is also important to note that the SHA does not separate guided from non-guided anglers, therefore, comparison to guide report data is not possible.

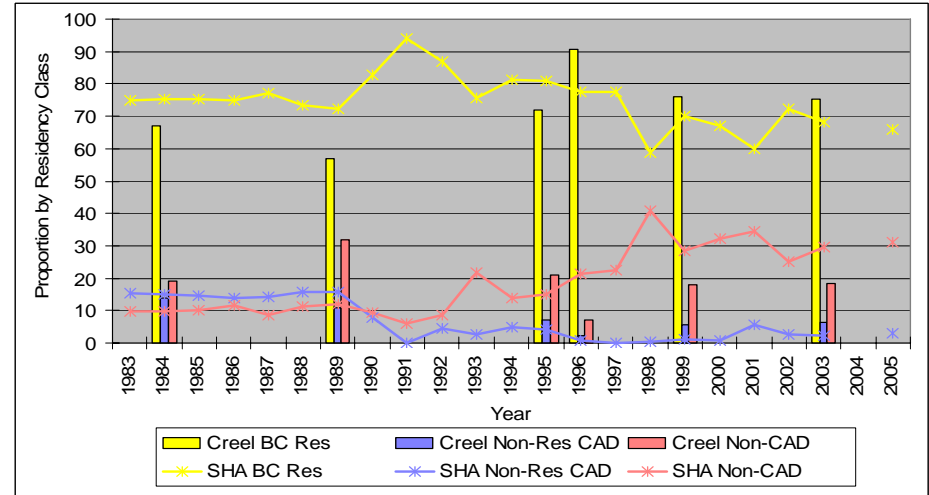
## **Morice River Angler Use Data - References**

- Pinsent, M. 1970. A Report on the Steelhead Anglers of Four Skeena Watershed Streams During the Fall of 1969. Ministry of Environment. Fisheries Branch.
- Saimoto, R. 2005. A Survey of Morice River Steelhead Anglers in 2004. Prepared for B.C Ministry of Water, Land and Air Protection by SKR Consultants Limited. Skeena Fisheries Report # 140.
- Whately, M., W. Chudyk and M. Morris. 1978. Morice River Steelhead Trout, the 1976 and 1977 Sport Fishery and Life History Characteristics from Anglers' Catches. Skeena Fisheries Report # 14. B.C Fish and Wildlife Branch, Smithers, B.C.

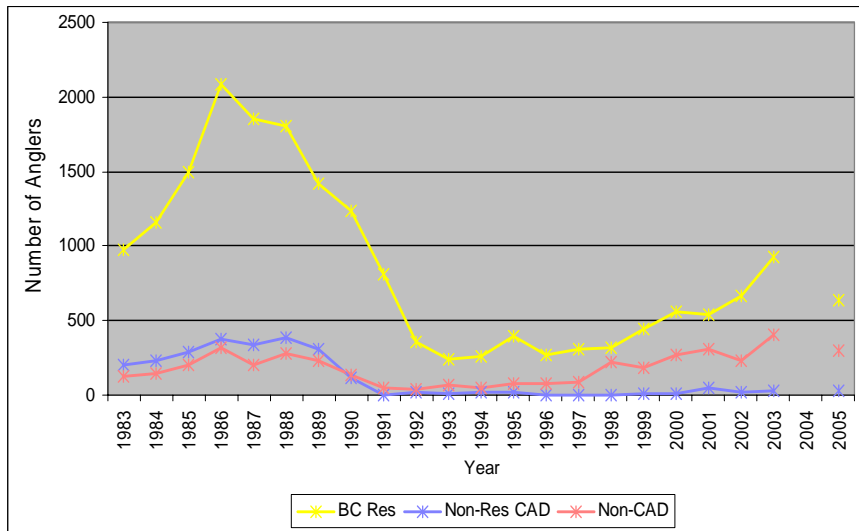
# Skeena River – Estimated Number of Anglers



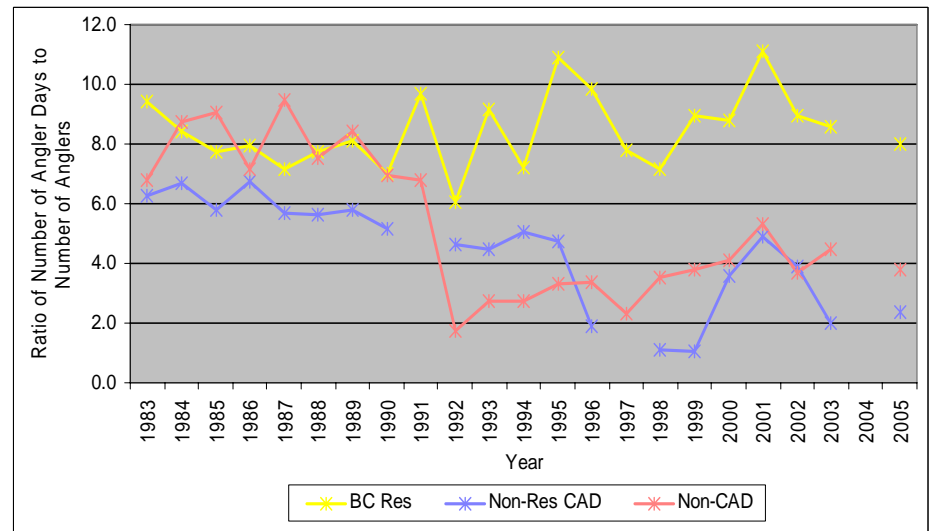
**Figure 1.** Skeena River creel survey summary of proportional number of anglers by residency. Note - numbers in columns represent number of angler interviews initiated.



**Figure 2.** Comparison of number of anglers reported for Steelhead Harvest Analyses (SHA) data and creel survey data from 1983 to 2005. Note that the intent of the figure presented above is to compare SHA and creel data, and presents proportional values, not actual values.



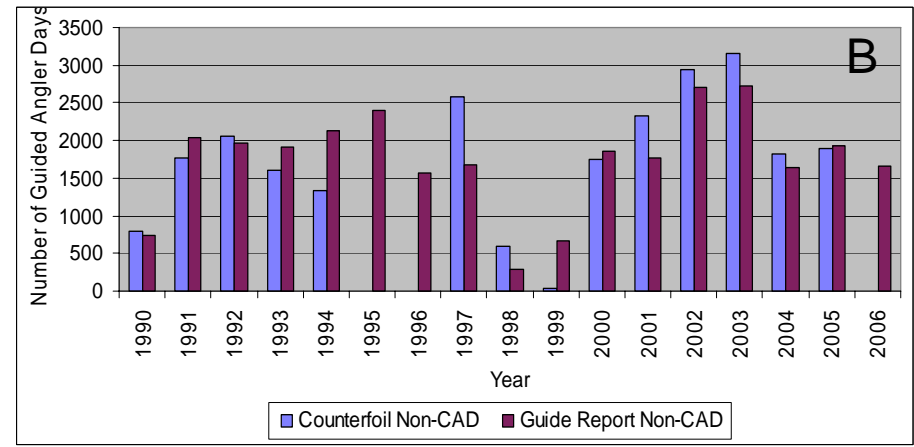
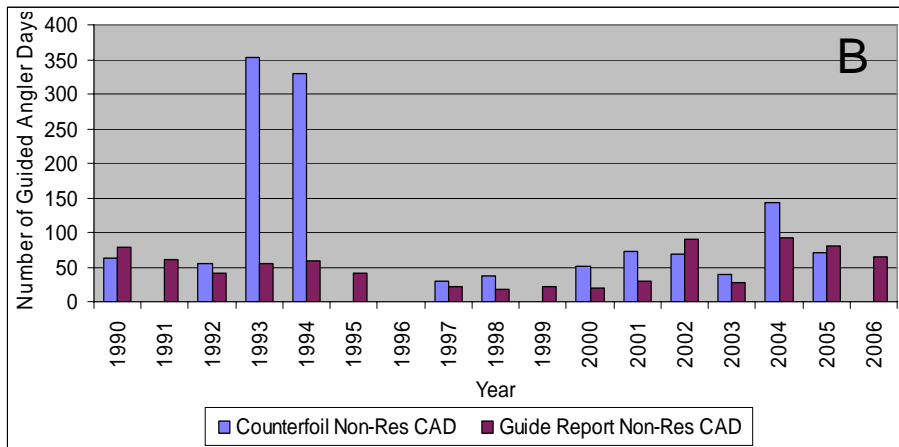
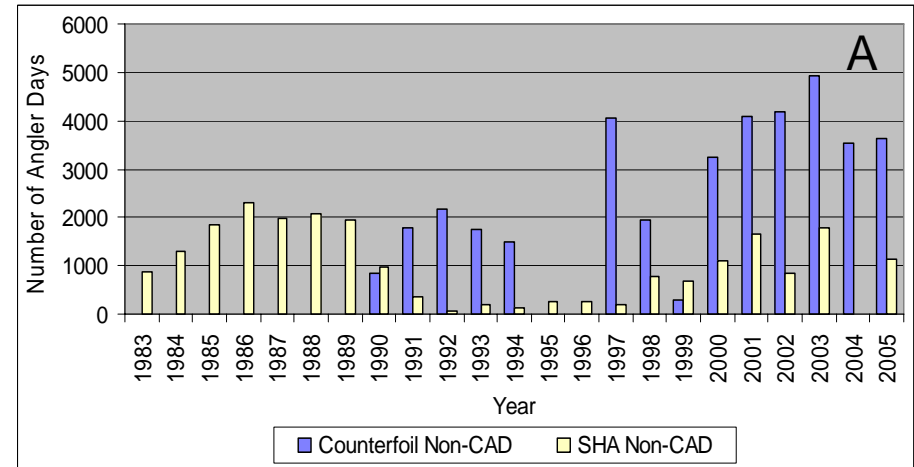
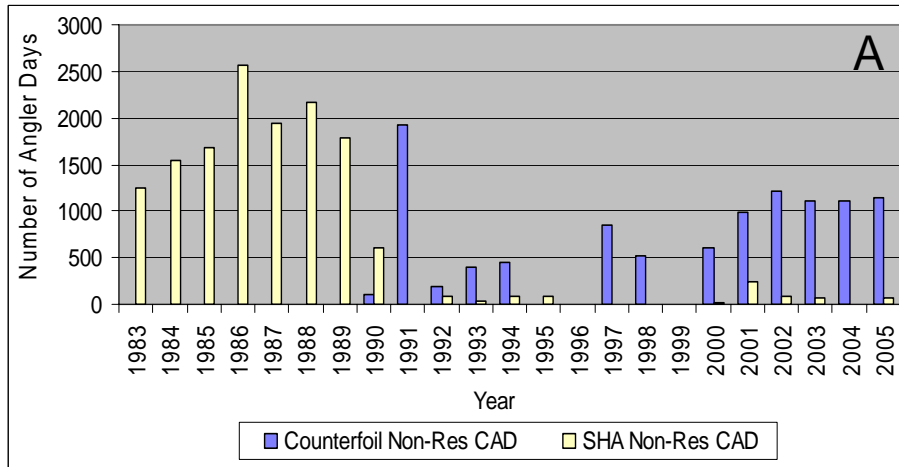
**Figure 3.** Number of anglers by residency according to SHA data from 1983 to 2005.



**Figure 4.** SHA ratio of number of angler days to number of anglers for the Skeena River from 1983 to 2005.

# Skeena River – Estimated Number of Angler Days

The graphs presented below are intended to compare angler day projections for counterfoil, SHA and guide report data. Theoretically, angler day counts for counterfoils and guide reports should be equal, and SHA estimates should roughly correspond to counterfoil data. For reasons known and unknown, however, differences exist. Therefore, for decision making purposes, the data presented in each figure below should only be considered accurate when a similar number of angler days are reported for a specific year. **Note – Counterfoil and guide report data represent Skeena River classified water sections 2 and 4 combined.**

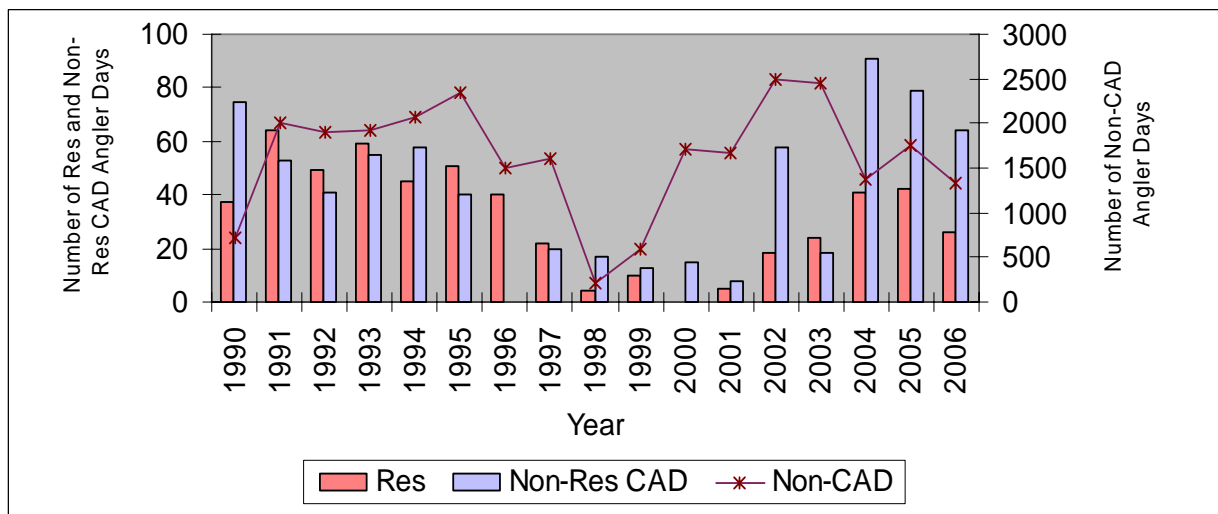


**Figure 5.** Counterfoil Non-Res CAD data comparison for number of angler days to A) SHA data and B) guide report data.

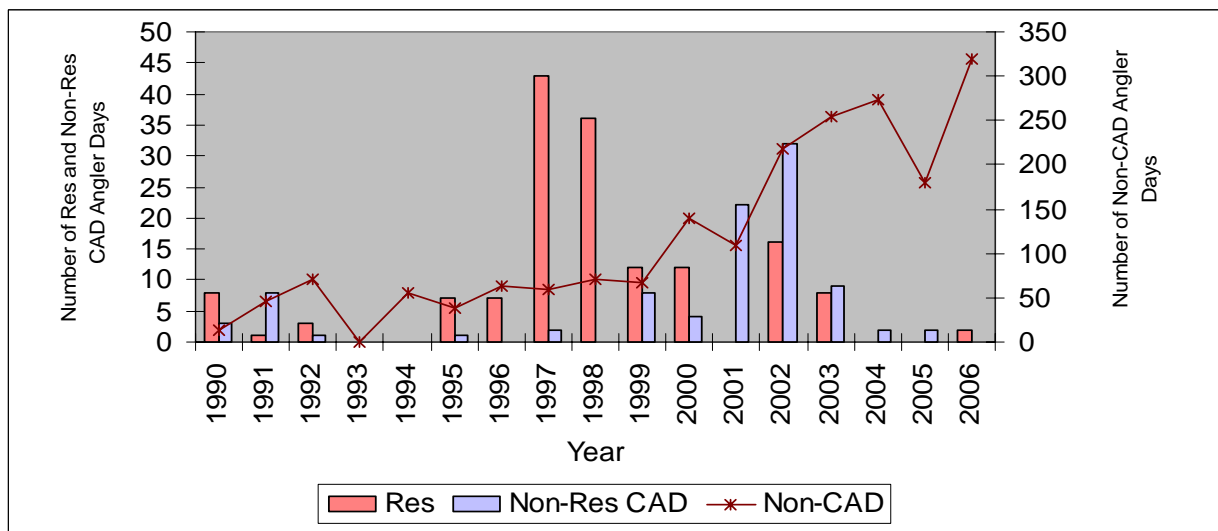
**Figure 6.** Counterfoil Non-CAD data comparison for number of angler days to A) SHA data and B) guide report data.

**Note –** It was not possible to include the **number of anglers** in the above comparisons for two reasons: 1) counterfoil design did not allow for the number of anglers to be accurately counted in a timely manner and 2) guide reports include angler days, not the number of anglers.

# Skeena River - Guide Report Data



**Figure 7.** Comparison of Skeena 2 angler days by residency according to guide report data.



**Figure 8.** Comparison of Skeena 4 angler days by residency according to guide report data.

**Note** – Complete records for early 90s guide report data were not available when this summary was conducted, therefore, the number of anglers reported in Figures 7 and 8 are likely lower than the actual number of anglers.

# Skeena River Angler Use Data – Points to Consider

## Creel Survey

- It is important to consider the following creel survey methodology, as it affects the number of angler interviews initiated:
  - O'Neill et al. (1985) was conducted from July 1 to October 15, 1984 from Cedarvale to Kwinitsa. Creel survey methodology used was an on-site roving survey with aerial flights. It should be noted that this creel survey was targeted at Chinook, Coho and Steelhead fisheries.
  - Lewynsky and Olmsted (1990) was conducted from August 1 to October 15, 1989 on the Skeena River between the Zymoetz and Kasiks River confluences. Creel survey methodology was an access point creel survey complemented with a “reconnaissance” survey of river wide fishing activity. The main objective of this study was to determine fishing effort, catch and catch rates of guided and non-guided anglers during the major period of summer run Steelhead migration.
  - Tallman (1995) Creel survey conducted from June 26 to October 15, 1995 from Ferry Island to Polymar Creek. Creel survey methodology consisted of a roving survey and a limited access-point survey. The primary objective of this study was to survey anglers targeting salmonids (Chinook, Coho, Sockeye and Pinks) and Steelhead trout.
  - Bergsma (1996) was conducted from April 25 to July 8, 1996 from the Kitsumkalum River mouth to Polymar Bar. Creel survey used a roving study design. The objective of this study was to survey anglers targeting Chinook salmon.
  - Culp (1999) was conducted from July 27 to August 7, 1999 on two river sections, from the Ferry Island Bar to 1 km DS of the Zymagotitz River and Delta Creek Bar to the Andesite Bar. Creel survey methodology consisted of on-site surveys of the 10 most popular bars contained within the study area. The objective of this creel survey was to examine the Chinook fishery and associated Coho by-catch.
  - Tallman (2004) was conducted from June 16 and August 31, 2003 from Ferry Island to Polymar Creek. Study design consisted of roving and access point surveys. The objective of this study was to gather information on angler characteristics and estimate catch of Chinook, Coho, Pink and Sockeye salmon and Steelhead trout during the study period.
- Creel survey data could not be compared to SHA data prior to 1984, as prior to this date, SHA data was not residency stratified.

## Steelhead Harvest Analyses

- SHA results suffer from a number of survey errors, which include sampling error, response error and non-response error. Sampling error results from under coverage of the angling population i.e. inability to sample anglers who do not purchase a steelhead conservation stamp. (*Note – it is believed that prior to fiscal 1997/1998, some anglers would intentionally target steelhead without purchasing a steelhead conservation stamp, thereby potentially negatively-biasing SHA results through angler under representation*). Response error stems from factors such as recall bias, rounding bias, prestige bias, and intentional deception. Non-response error exists when anglers refuse to answer the SHA mail out questionnaire. *Information taken from: DeGisi, J., 1999. Precision and Bias of the British Columbia Steelhead Harvest Analysis. Skeena Fisheries Report SK122.*
- It is also important to note that although the majority of SHA results cover the summer steelhead anglers (Sept to Oct), a certain percentage of the data represents those anglers targeting winter run steelhead i.e. QCI Rivers and Skeena tributaries downstream of Cedarvale.

## Counterfoils and Guide Reports

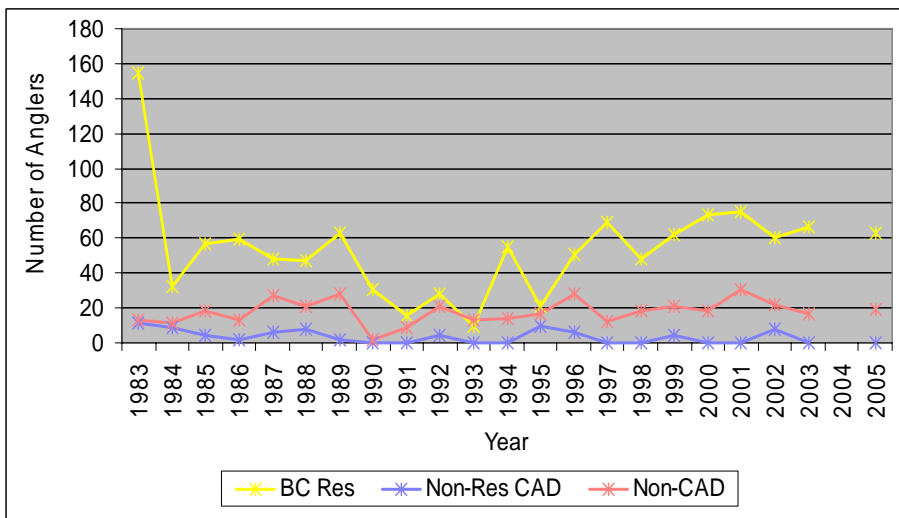
- As these data sources are compiled by hand, the opportunity exists for human error introduced during tabulation. It is also important to note that the SHA does not separate guided from non-guided anglers, therefore, comparison to guide report data is not possible.
- Counterfoil data from Skeena classified water sections 2 and 4 were combined together, as the majority of counterfoils were incorrectly labelled “Skeena”, failing to identify the specific river section fished.

## **Skeena Angler Use Data - References**

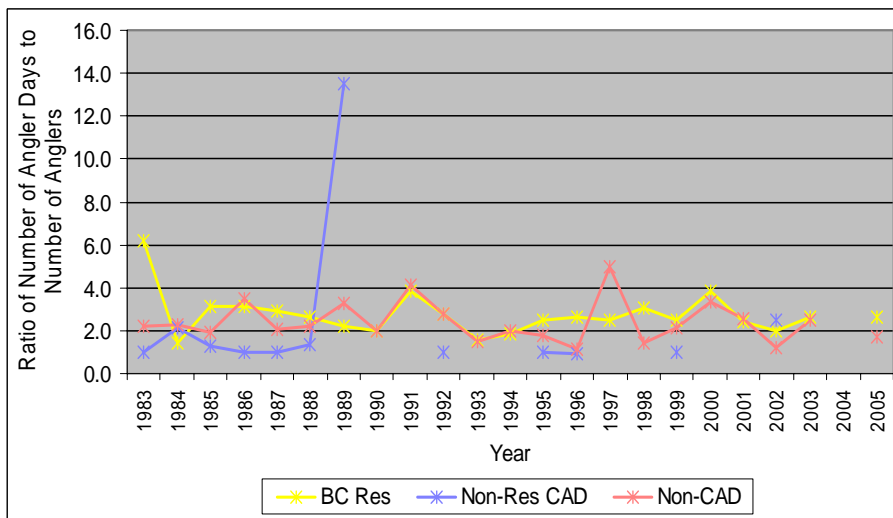
- Bergsma, I. 1996. 1996 Lower Skeena River Chinook Salmon Creel Survey and Biological Sampling Program. Skeena River Green Plan Project #34. Performed by Terrace Salmonid Enhancement Society for the Department of Fisheries and Oceans (Canada).
- Culp, J. 1999. 1999 Overview Report on the Lower Skeena River Catch Monitoring Program. Performed by J & S Outdoor Ventures Ltd.
- Lewynsky, V. and W. Olmsted. 1990. Angler Use and Catch Surveys of the Lower Skeena, Zymoetz (Copper), Kispiox and Bulkley River Steelhead Fisheries, 1989. ESL Environmental Sciences, Ltd. Vancouver, BC.
- O'Neill, M., V. Lewynsky and Howard Parish and Associates. 1985. Lower Skeena River Creel Survey 1984. Prepared for Salmonid Enhancement Program DSS Contract No. 03SB.FP576-4-0261.
- Tallman, D. 1995. 1995 Lower Skeena River Sport Fishery Survey Summary Report. Contract No. FP 95-5047.
- Tallman, D. 2004. 2003 Lower Skeena River Sport Fishery Survey Summary Report. Prepared by J.O. Thomas and Associates. Vancouver, BC.



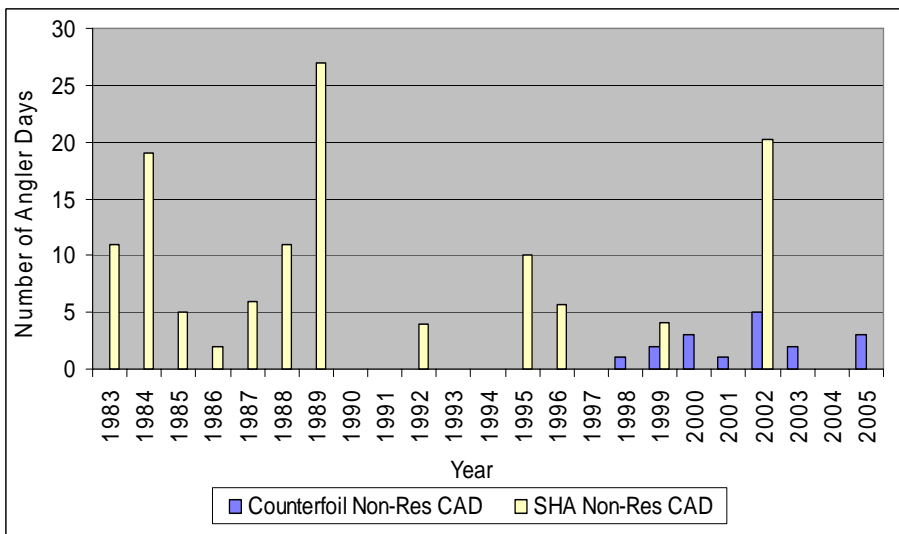
# Suskwa River – Estimated Number of Anglers and Angler Days



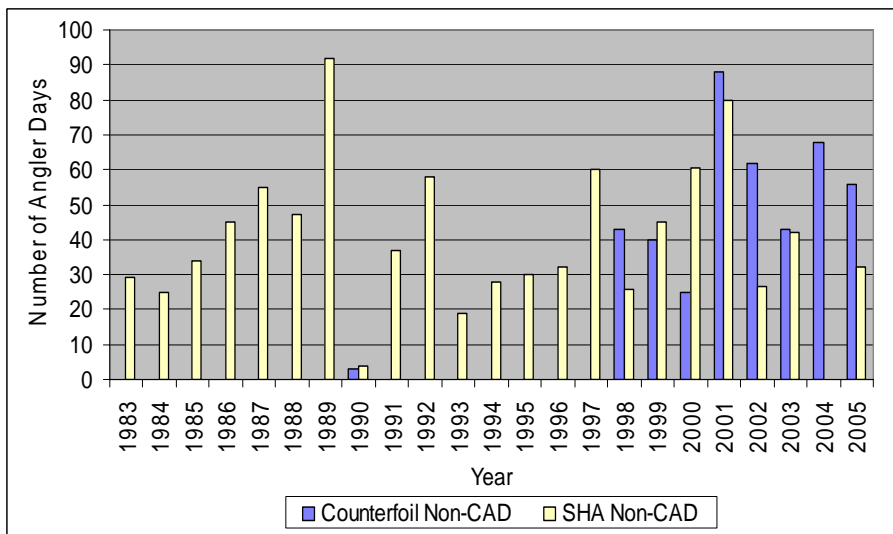
**Figure 1.** Number of anglers by residency according to SHA data from 1983 to 2005.



**Figure 2.** SHA ratio of number of angler days to number of anglers for the Suskwa River from 1983 to 2005.



**Figure 3.** Counterfoil and SHA angler day comparison for Non-Res CAD anglers from 1983 to 2005.



**Figure 4.** Counterfoil and SHA angler day comparison for Non-CAD anglers from 1983 to 2005.

**For clarification on data presented in Figures 3 and 4, see next page**

# Suskwa River Angler Use Data – Points to Consider

## Creel Survey

- In 1969, Pinsent (1970) conducted an opportunistic creel survey of Suskwa River steelhead anglers. Anglers were surveyed on an intermittent basis, however, and creel survey results are not considered reliable and potentially unrepresentative of actual angler use on the River at the time of the study. For this reason, the results of Pinsent (1970) were not presented in this summary.
- In 1977 a creel survey was conducted on the Suskwa River by Chudyk (1978), however, angler residency was not reported.

## Steelhead Harvest Analyses

- SHA results suffer from a number of survey errors, which include sampling error, response error and non-response error. Sampling error results from under coverage of the angling population i.e. inability to sample anglers who do not purchase a steelhead conservation stamp. (*Note – it is believed that prior to fiscal 1997/1998, some anglers would intentionally target steelhead without purchasing a steelhead conservation stamp, thereby potentially negatively-biasing SHA results through angler under representation*). Response error stems from factors such as recall bias, rounding bias, prestige bias, and intentional deception. Non-response error exists when anglers refuse to answer the SHA mail out questionnaire. *Information taken from: DeGisi, J., 1999. Precision and Bias of the British Columbia Steelhead Harvest Analysis. Skeena Fisheries Report SK122.*
- It is also important to note that although the majority of SHA results cover the summer steelhead anglers (Sept to Oct), a certain percentage of the data represents those anglers targeting winter run steelhead i.e. QCI Rivers and Skeena tributaries downstream of Cedarvale.

## Counterfoils and Guide Reports

- As these data sources are compiled by hand, the opportunity exists for human error during tabulation. It is also important to note that the SHA does not separate guided from non-guided anglers, therefore, comparison to guide report data is not possible.
- There is currently no guide quota on the Suskwa River, therefore, guide report data is not available for comparison to counterfoil data.

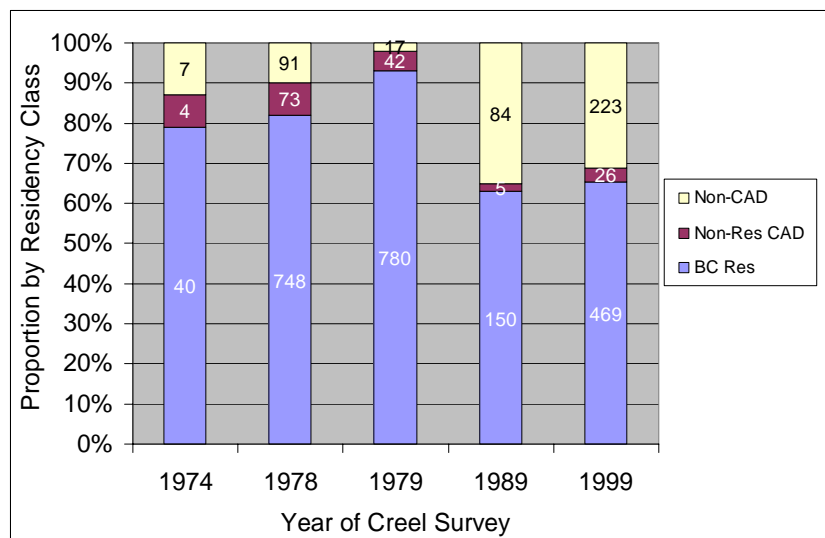
It is important to note that Figures 3 and 4 are intended to compare angler day projections for counterfoil, SHA and guide report data. Theoretically, angler day counts for counterfoils and guide reports should be equal, and SHA estimates should roughly correspond to counterfoil data. For reasons known and unknown, however, differences exist. Therefore, for decision making purposes, the data presented in each figure below should only be considered accurate when a similar number of angler days are reported for a specific year.

Also, it was not possible to include the **number of anglers** with Figures 3 and 4 for two reasons: 1) counterfoil design did not allow for the number of anglers to be accurately counted in a timely manner and 2) guide reports include angler days, not the number of anglers.

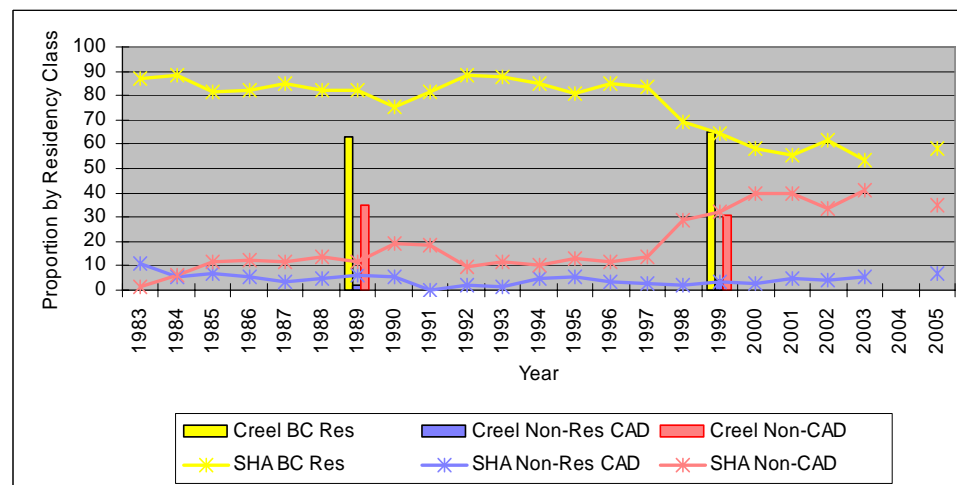
## **Suskwa River Angler Use Data - References**

- Chudyk, W. 1978. Suskwa River Steelhead Trout: The 1977 Inventory, Creel Survey and Life History Characteristics Study Leading to the Removal of a Barrier on Harold-Price Creek. Skeena Fisheries Report # 15.
- Pinsent, M. 1970. A Report on the Steelhead Anglers of Four Skeena Watershed Streams During the Fall of 1969. Ministry of Environment. Fisheries Branch.

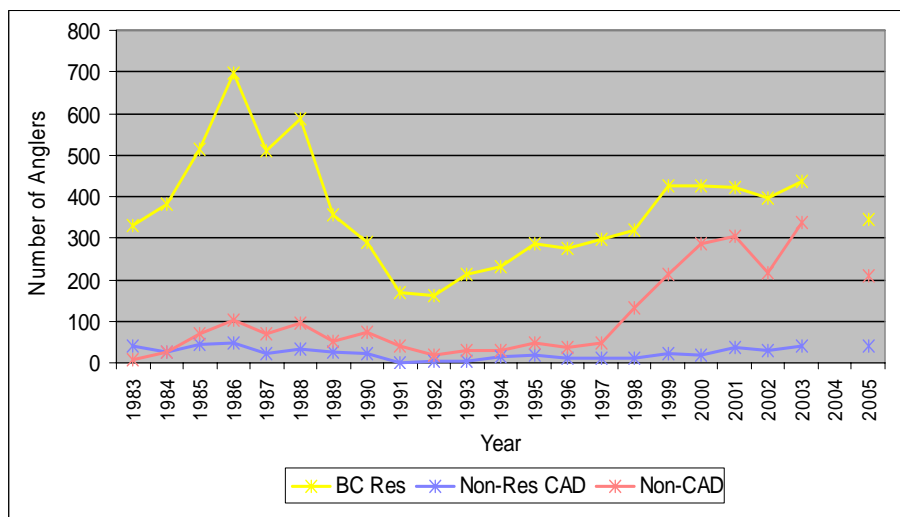
# Zymoetz (Copper) River – Estimated Number of Anglers



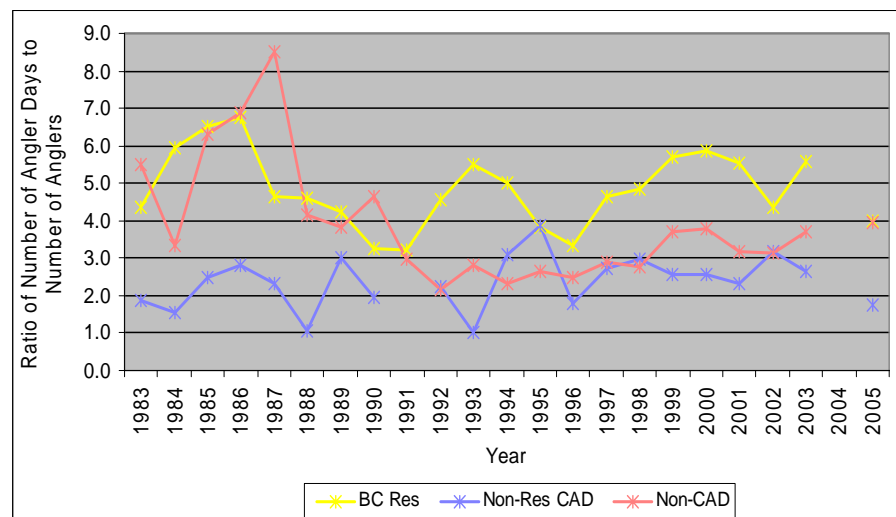
**Figure 1.** Zymoetz River creel survey summary of proportional number of anglers interviewed by residency class. Note - numbers in columns represent number angler interviews initiated.



**Figure 2.** Comparison of number of anglers reported for Steelhead Harvest Analyses (SHA) data and creel survey data from 1983 to 2005. Note that the intent of the figure presented above is to compare SHA and creel data, and presents proportional values, not actual values.

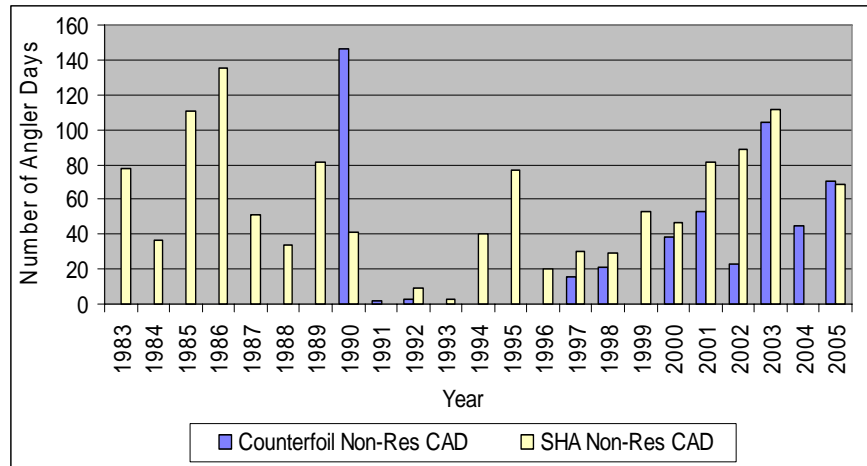


**Figure 3.** Number of anglers by residency according to SHA data from 1983 to 2005.

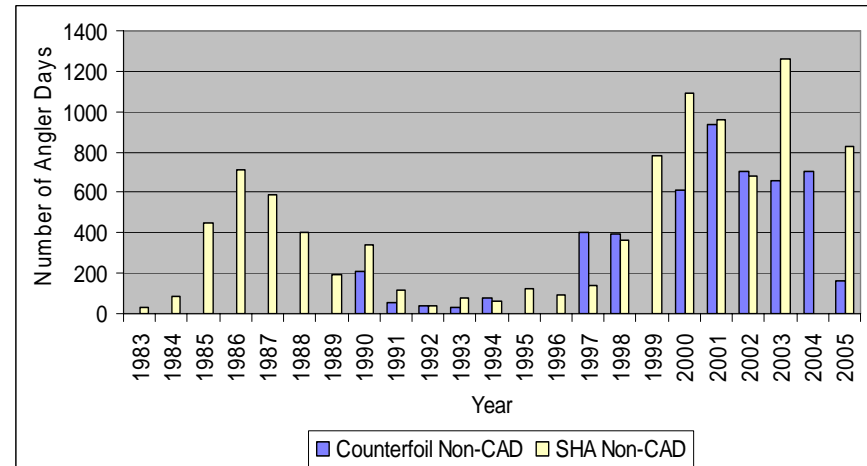


**Figure 4.** SHA ratio of number of angler days to number of anglers for the Zymoetz River from 1983 to 2005.

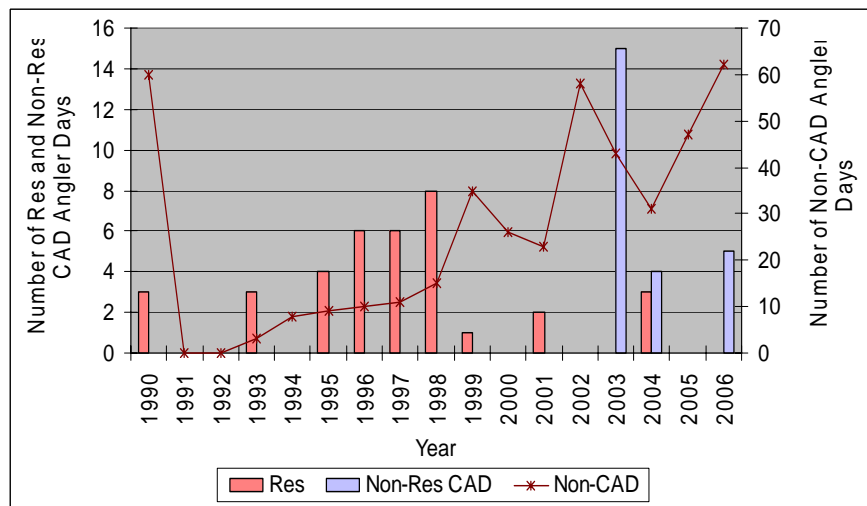
# Zymoetz (Copper) River – Estimated Number of Angler Days



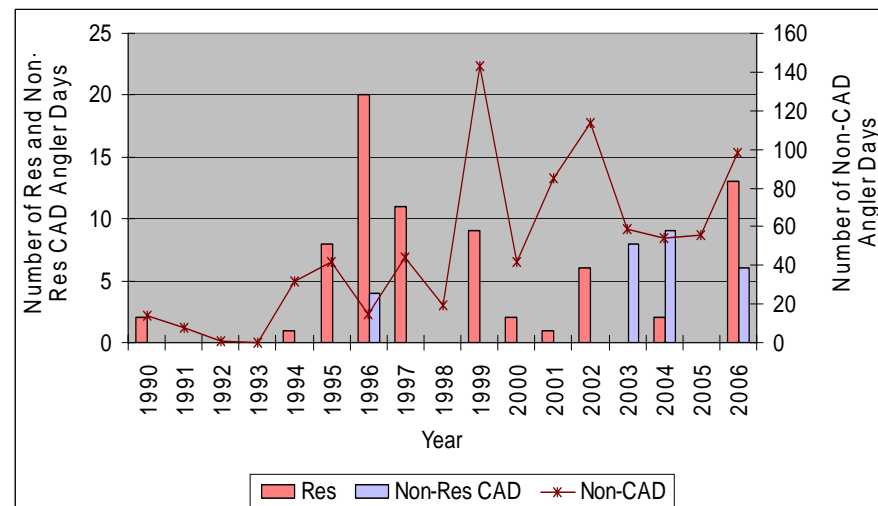
**Figure 5.** Counterfoil and SHA angler day comparison for Non-Res CAD anglers from 1983 to 2005.



**Figure 6.** Counterfoil and SHA angler day comparison for Non-CAD anglers from 1983 to 2005.



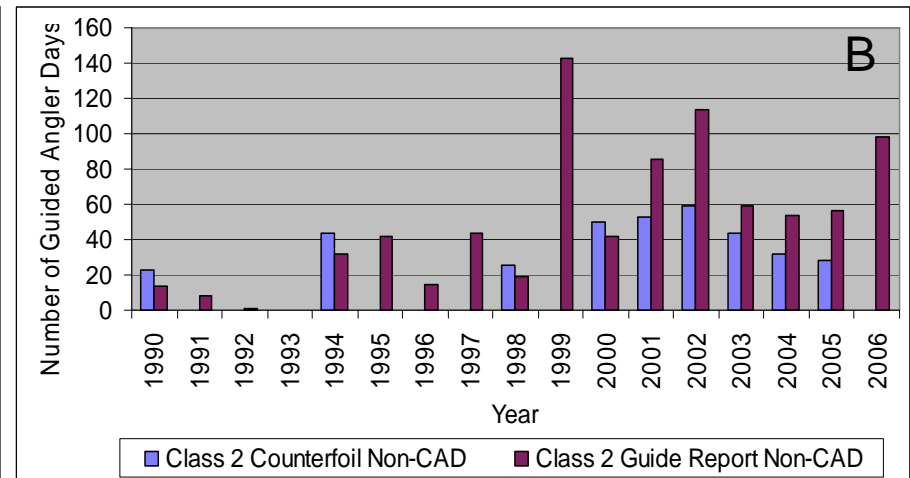
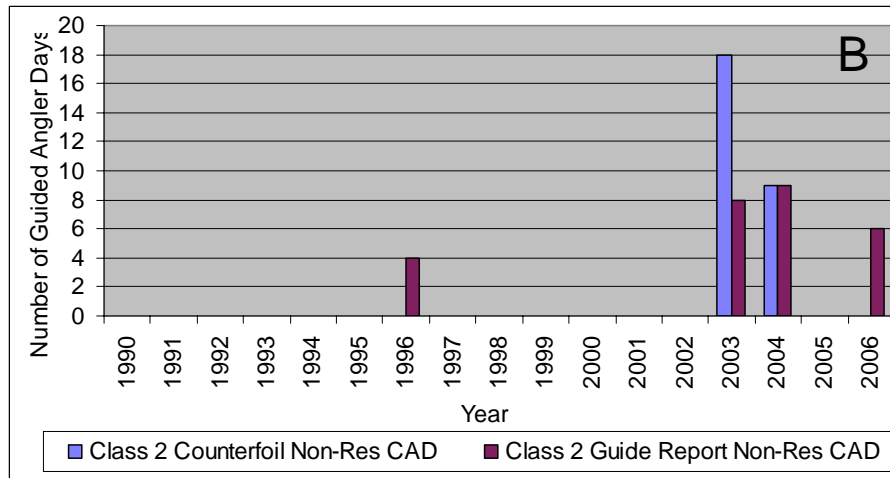
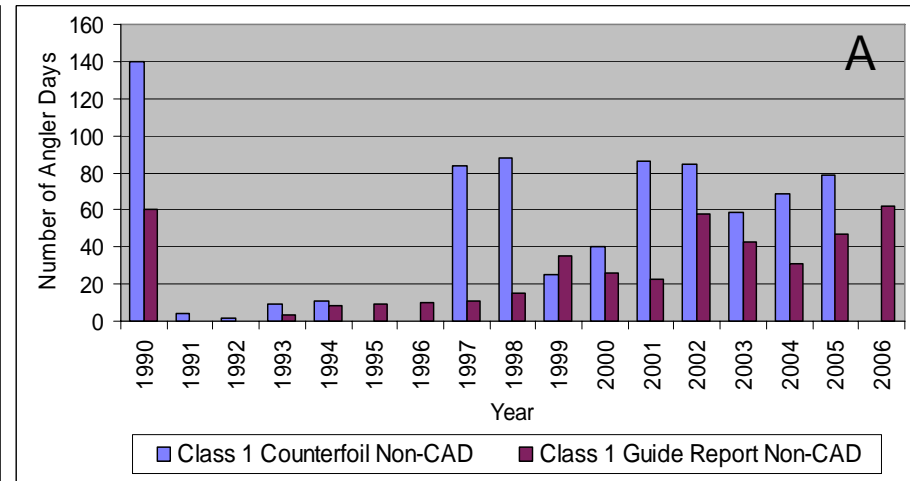
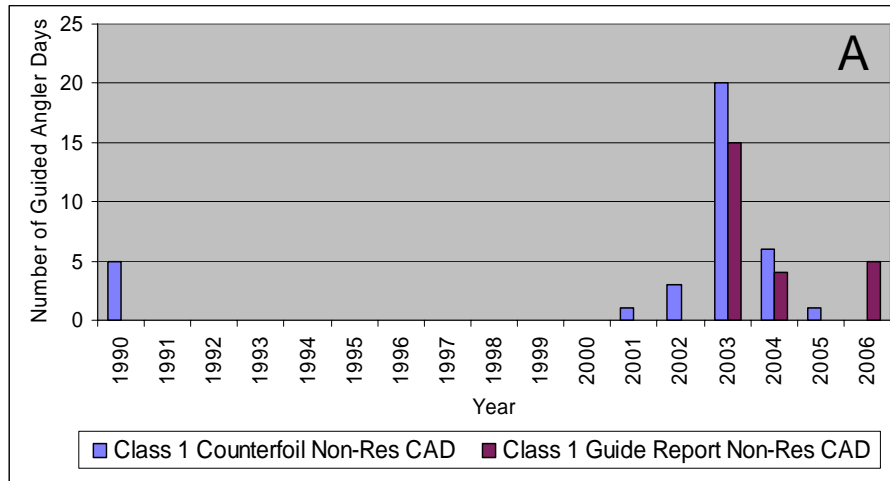
**Figure 7.** Comparison of Zymoetz Class 1 angler days by residency according to guide report data.



**Figure 8.** Comparison of Zymoetz Class 2 angler days by residency according to guide report data.

**Note – Figures 5 and 6 represent angler days for Zymoetz Class 1 and 2 river sections combined.**

## Zymoetz (Copper) River – Estimated Number of Angler Days from Guide Reports



**Figure 9.** Counterfoil and guide report angler day comparison for Non-Res CAD anglers to A) Zymoetz Class 1 and B) Zymoetz Class 2 river sections.

**Figure 10.** Counterfoil and guide report angler day comparison for Non-CAD anglers to A) Zymoetz Class 1 and B) Zymoetz Class 2 river section.

**Note** – Complete records for early 90s guide report data were not available when this summary was conducted, therefore, the number of anglers reported above are likely lower than the actual number of anglers.

**Note** – Figures 9 and 10 represent angler days for Zymoetz Class 1 and 2 river sections combined.

# Zymoetz (Copper) River Angler Use Data – Points to Consider

## Creel Survey

- It is important to consider the following creel survey methodology, as it affects the number of angler interviews initiated:
  - Whately (1975) was conducted from September 14 to October 7, 1974. Creel survey methodology was not reported. The objective of this study was to survey anglers targeting Steelhead trout.
  - Chudyk and Whately (1980) was conducted between September 1 to October 29, 1978 and August 18 to December 13, 1979. An angler check station was established at the junction of the Zymoetz River and Highway 16. In addition, a roving assistant occasionally interviewed anglers on banks of the Zymoetz River. The objective of this study was to survey anglers targeting Steelhead trout.
  - Lewynsky and Olmsted (1990) was conducted from the Skeena confluence upstream to, and including, the Clore River from August 15 to October 15, 1989. As the majority of anglers accessed the river from highway 16 near the Skeena River confluence, a single exit point survey was employed. The number of angler interview initiated during the creel survey had to be approximated as actual data was not presented in the report (Figure 18). The main objective of this study was to determine fishing effort, catch and catch rates of guided and non-guided anglers during the major period of summer run Steelhead migration.
  - Morten (2000) was conducted from the uppermost fishing boundary (3 km downstream of McDonnell Lake) to the Zymoetz confluence with the Skeena River. The creel survey was conducted by river guardians from August 19 to December 5, 1999 using aerial angler counts, an access points (exit) survey and a roving surveys. This creel survey was focussed on anglers targeting Steelhead trout.
- Creel survey data could not be compared to SHA data prior to 1984, as prior to this date, SHA data was not residency stratified.

## Steelhead Harvest Analyses

- **SHA data does not differentiate angler use i.e. angler days or number of anglers, between Zymoetz class 1 and 2 sections. Therefore, the SHA data set cannot be compared to class 1 and 2 angler use data from classified water counterfoils and guide reports.**
- SHA results suffer from a number of survey errors, which include sampling error, response error and non-response error. Sampling error results from under coverage of the angling population i.e. inability to sample anglers who do not purchase a steelhead conservation stamp. *(Note – it is believed that prior to fiscal 1997/1998, some anglers would intentionally target steelhead without purchasing a steelhead conservation stamp, thereby potentially negatively-biasing SHA results through angler under representation).* Response error stems from factors such as recall bias, rounding bias, prestige bias, and intentional deception. Non-response error exists when anglers refuse to answer the SHA mail out questionnaire. *Information taken from: DeGisi, J., 1999. Precision and Bias of the British Columbia Steelhead Harvest Analysis. Skeena Fisheries Report SK122.*
- Although the majority of SHA results cover the summer steelhead anglers (Sept to Oct), a certain percentage of the data represents those anglers targeting winter run steelhead i.e. QCI Rivers and Skeena tributaries downstream of Cedarvale.'

## Counterfoils and Guide Reports

- As these data sources are compiled by hand, the opportunity exists for human error introduced during tabulation. It is also important to note that the SHA does not separate guided from non-guided anglers, therefore, comparison to guide report data is not possible.

It is important to note that Figures 5 and 6 are intended to compare angler day projections for counterfoil, SHA and guide report data. Theoretically, angler day counts for counterfoils and guide reports should be equal, and SHA estimates should roughly correspond to counterfoil data. For reasons known and unknown, however, differences exist. Therefore, for decision making purposes, the data presented in each figure below should only be considered accurate when a similar number of angler days are reported for a specific year.

Also, it was not possible to include the **number of anglers** with Figures 5 and 6 for two reasons: 1) counterfoil design did not allow for the number of anglers to be accurately counted in a timely manner and 2) guide reports include angler days, not the number of anglers.

## Zymoetz River Angler Use Data – References

Chudyk, W. and Whately, M. 1980. Zymoetz and Clore River Steelhead Trout: A Report on the 1978 and 1979 Sport Fishery and some Aspects of their Life History. Skeena Fisheries Report No. 79-3 (S.E.P.). B.C Fish and Wildlife Branch. Smithers, B.C.

Lewynsky, V. and W. Olmsted. 1990. Angler Use and Catch Surveys of the Lower Skeena, Zymoetz (Copper), Kispiox and Bulkley River Steelhead Fisheries, 1989. ESL Environmental Sciences, Ltd. Vancouver, BC.

Morten, K. 2000. A Survey of Zymoetz (Copper) River Steelhead Anglers in 1999. Skeena Fisheries Report SK # 127.

Whately. 1975. Memo dated January 2, 1975. Re: Steelhead Angler Use Survey – Fall 1974. Copper River Steelhead Survey Fall 1974. Summary of Steelhead angler interviews and list of tagged fish. Ministry of Recreation and Conservation. On file at MoE, Smithers, B.C. Memo to file No. 42-02 XR51-00.