

**Minutes of the
Lake Superior Technical Committee
January 14-16, 2003
Comfort Inn
Duluth, Minnesota**

Agenda Item 1 – Lake Herring Report

Ebener discussed the rationale behind the need for the report. Essentially the LSTC had agreed to replicate the 1973 status of lake herring report written by the LSTC (Wright et al. 1973). The previous report described commercial fishery catch and effort by statistical district and political jurisdiction and briefly described age and growth of herring the commercial harvest. Our report would begin in 1973 since the last year of the report was about 1972. The LSTC agreed on the following structure for the future lake herring report.

1. Description of the fish itself – author Tom Todd? (Owen Gorman will contact)
 - 1.1 shallow-water form (WiDNR genetic study)
 - 1.2 deep-water forms
 - 1.21 confusion among deepwater ciscoes
 - 1.3 life history characteristics – author Ron Kinnunen
 - 1.4 maturity, growth, fecundity
 - 1.5 stock Delineation – author Owen Gorman
2. Description of the commercial fisheries in Lake Superior – authors are each agency
 - 2.1 description of the historic fishery
 - 2.2 description of the current fishery
 - 2.21 catch and effort both lakewide and jurisdictional
 - 2.22 biological statistics of the fishery
 - 2.221 age and size structure
3. Description of the sport fisheries – agency reports
4. Review of herring consumption by predators
 - 4.1 bioenergetics estimates - Don Schreiner will talk to Molly about being the author
 - 4.2 review of literature
 - 4.3 diet summaries – authors Brad Ray and Tom Hrbik
 - 4.4 burbot consumption – author Schram et al.
5. Review of species interactions - author Jeff Black
6. Analysis of data sets to look for interaction – second phase of report
8. Stock/Recruitment - Ebener talk to Hansen about being author
9. Review of 1999 LSTC report to LSC
10. Survey data – author Owen Gorman
 - 10.1 USGS trawl
 - 10.11 estimated of standing stocks (numerical and biomass)
 - 10.12 year class strength
 - 10.2 Acoustic surveys – author Tom Hrbik
 - 10.21 estimated standing stocks

- 10.22 differences from bottom trawls
- 10.3 Agency-specific gill net surveys – authors are each agency
 - 10.31 CPUE
 - 10.311 spawning surveys
 - 10.312 summer small mesh surveys
 - 10.32 age and size composition, growth
- 11. Development of management policy – second phase of report
 - 11.1 rational for setting harvest limits
- 12. Management Recommendations and Strategies – second phase of report

The LSTC decided on the following time line for completion of the lake herring report.

- Summer 2003 meeting – status and description of data, standardization of data
- Winter 2004 meeting – assign writing and analysis tasks
- Summer 2004 meeting – review first drafts and analysis, discuss further analysis
- Winter 2005 meeting – review analysis, discuss management policy and recommendations
- Summer 2005 meeting – create first full document, discuss management goals with LSC

Charge: At the summer 2003 LSTC meeting each agency should come prepared to report on their respective agencies lake herring information. The data should include but is not limited to commercial catch and effort data, biological data, surveys data, etc. Each agency should also come equipped with electronic data in spreadsheet or database form. Don't be afraid to tell the LSTC every little bit of information the agency possesses.

Agenda Item 2 – Minnesota SCAA Model

Mark Pranckus and Don Schreiner described the present process that the MnDNR is taking to develop a statistical catch-at-age assessment model for lake herring in MN waters. The stock assessment models will start in 1980. The model will be divided into two seasons; a general season from January through August, and a roe fishery in September to November. Don and Mark are in need of maturity and fecundity data for the models and requested these data from each agency. MnDNR is proposing to use SSBR as the metric for setting management policy.

Agenda Item 3 – Lakewide Acoustics Survey (Tom Hrbik)

Tom Hrbik from UMD described his proposal for development of a lake-wide acoustics assessment program for Lake Superior. Tom also summarized some finding from acoustic surveys conducted on Lake Superior since 1997 and reported on the results from the USFWS Restoration Act funded project: Phase 1 - assess target strength and species composition. The acoustic surveys in the western arm and the Apostle Island showed that biomass estimates from bottom trawls were lower than acoustic estimates by an order of magnitude.

Phase 1- Assessment of in situ relations of target strength to fish size and species: The two research questions being posed by the project were: are fish sizes measured during acoustic surveys consistent with those observed in mid-water trawls, and are bottom trawl estimates consistent with abundance and biomass estimates obtained from acoustics? Most of the surveys

conducted as part of this study were done in the Apostle Islands and the western arm of Lake Superior.

Phase 1 - Fish size estimation: Single targets from acoustics data were compared to the midwater trawl catch. The acoustic surveys and trawls were conducted at night. There was no difference in mean size of fish between acoustic pings and the midwater trawl catches. Tom reported that there was more variability in trawl catches than in the acoustic surveys primarily because of the low sample sizes in the trawl catches. Tom also reported that there is a good cut off between smelt and coregonids pings from the acoustic survey because the smelt were smaller in length than lake herring. The separation of species based on acoustic signal will help reduce the need for midwater trawls surveys during the acoustic surveys. However, in years when age-1 lake herring are abundant, midwater trawl surveys will be needed to distinguish between smelt and herring.

Phase 1 - Comparison of biomass from acoustics and bottom trawls: Bottom trawls are consistently underestimating biomass compared to acoustics. A combination of bottom trawls and acoustics will probably provide the best estimate of prey fish biomass. The fact the bottom trawls are conducted in the day-time and acoustics are conducted at night-time might confound interpretation of biomass estimates between the two gears.

Phase II – Survey design for Whole Lake Assessment on Lake Superior: Tom reported that a standard operating procedure for conducting acoustic surveys in the Great Lakes are under construction (i.e. 120 kHz, 0.4 pulse duration, -65db thresholds etc.). The appropriate spatial scale for sampling is still an unresolved question of acoustic surveys in the Great Lakes?

Tom briefly described the potential spacing and coverage design for the Lake Superior acoustic assessments. Year one of the Lake Superior survey will start in Ontario waters and will consist of a concurrent depth stratification process. Tom reported that acoustics estimates of abundance differ by about 35% between daytime and night-time surveys. Lake Superior will be divided into four sampling stations in Lake Superior: Ontario waters year 1, western basin U.S. waters, central basin U.S. waters, and eastern basin U.S. waters. Tom is considering conducting about 30 transects in Ontario waters. The real question is what is the preferred sampling designs; stratified random, zig-zag, and parallel stratified.

Agenda Item 4 – Proposals to GLFC & USFWS

Jack Wingate reported that there were 36 proposals submitted to the GLFC Fishery Research Program and USFWS Restoration Act. All proposals will be posted on GLFC website, but will only be accessed by lake committee members. The following Lake Superior oriented proposals were submitted; GLIFWC (1), USGS (4), CORA (1), UW-Stevens Point (1), and KBIC (1).

Agenda Item 5 – Keweenaw Bay Habitat Mapping Project

Gene Mensch briefly described the habitat-mapping project conducted for the Keweenaw Bay Band by Canadian Hydrographic Service in lower Keweenaw Bay in 2002. One objective was to identify areas of woody debris caused by logging operations in the area. Keweenaw Bay also wanted the study to identify stamp sand deposits in the area that resulted from past mining activities.

Agenda Item 6 – Environmental Objectives

Tom Pratt discussed development of environmental objectives for Lake Superior. The environmental objectives should be quantitative. The outcome should use habitat-based models to link fish production to specific environmental objectives. Tom is asking for help from LSTC members and participants with development of environmental objectives for Lake Superior. This will mean several meetings over the next few months. There is also a need to identify important Lake Superior data needs. Tom reported that there is money available from the GLFC to help with development of the data needs.

Henry Quinlan, Sue Greenwood, and Neville Ward agreed to assist Tom Pratt with development of environmental objectives for Lake Superior. The LSTC suggested that the people working on environmental objectives consider writing a proposal to the GLFC to access funds for updating the Lake Superior GIS project with data that currently exist around the lake; i.e. Keweenaw Bay and CORA habitat mapping projects, Minnesota DNR. The proposal should be submitted to the GLFC Coordination Funds.

Agenda Item 7 – Report of the SWG Aquatic Committee

Sue Greenwood and Henry Quinlan & updated the LSTC on activities of the Aquatic Committee. The ACC has two new members, Rick Back of LSSU and Al Rowlinson of DFO, Fish Habitat Division

- Marty Auer has committed to joining the ACC following his current sabbatical from Michigan Tech.
- Work plan progress was reviewed to September 2002 and progress on priority projects since was requested.
- Sue reported that there was a joint meeting of Aquatic Committee, Habitat Committee and Terrestrial Committee

LaMP 2000 Chapter consolidation

- The Co Chairs of these three committees have been working with a contractor to consolidate the Aquatic, Terrestrial, and Habitat chapters of the 2000 LaMP. This action came out of comments from the public and agency review of the LaMP.
- During this process the three committees decided to include the chapter on Invasive Species
- A draft table of contents and Mission, principles and goals were reviewed and comments/direction suggestions received
- Comment opportunity is open until Jan 29 just prior to next meeting with contractor

Joint projects with Forum

- The Ecosystem Committee of the Forum is considering opportunities for a joint project with the three committees as occurs between other Forum committees and Superior Working Group committees

Riparian Workshop by Ecosystem Committee of Forum in 2003

- The Lake Superior Forum is planning to hold a workshop on riparian habitat issues. The Forum is looking for advice on topics and presenters for the workshop.

BiNational GIS database

- Pat Collins and Gerald Sjerven (NRRI) provided background and current status of the Lake Superior GIS data base. After some discussion it was clear that the database should be updated and new information sought. The co-chairs will be considering how to initiate a joint funding proposal for the project and how to engage all agencies in support and use of the data base

Agenda Item 8 – Sea Lamprey Control and Management

Gavin Christie lead a discussion concerning the status of sea lamprey populations and control activities in Lake Superior. Discussion will focus on how many sea lampreys there are, how much mortality do they cause, how much control are we proposing, what alternative controls are there, are we addressing critical uncertainties, and how best to engage the LSTC and LSC.

Doug Cuddy provided an overview of the status of sea lamprey in Lake Superior. In 2002 the control agents assessed spawere abundance in 23 streams. The number of spawning sea lamprey was about 63,000 in 2002 and 100,000 in 2001. The control agents are also involved in a project to estimate the number of transformers in the lake through the release of coded-wire marked transformers into selected streams. Five cohort of sea lampreys have been tagged and released into Lake Superior but only three have been captured thus far. The estimates of transformers ranges from 390,00 to 650,000 on an annual basis and the large estimates suggest that they are more transformers in the lake than they can account for based on larval surveys in streams. Independent estimates of sea lamprey abundance are obtained from instream quantatitive assessment surveys (QAS) in streams, mark-recapture of transformers, and mark-recapture of adults. Each of these estimates give substantially different estimates of lamprey abundance. QAS estimates are 100,000 transformers without treatment, thus after treatment the number of transformers from QAS should be much less.

Doug described the potential sources of parasitic sea lamprey in Lake Superior that included undiscovered populations, untreated streams, survivors of treatment, and lentic populations. Doug reported that 136 streams to Lake Superior have had sea lamprey populations, 71 currently support populations, and 58 are treated regularly. Ten streams produce 80% of the sea lampreys. Significant lentic areas are found in Helen Lake in Nipigon Bay, Mountain Bay, and Batchawana Bay, others are in Thunder Bay, Furnance Bay Creek near Munusing, and Silver and Ravine Rivers in lower Keweenaw Bay.

Parasitic hotspots in 2002 were in Nipigon Bay and Straits, Thunder Bay, east and west Keweenaw Peninsula, and Marquette area based on reports from anglers and commercial fishermen. Sources of lampreys in Nipigon Bay and Thunder Bay may have been Lake Helen and residuals in the Nipigon River, Kaministiquia River, and Mackenzie Bay in Ontario. The source of sea lampreys around the Keweenaw Peninsula probably originate in the Ontanogan and Chocolay Rivers.

Doug described operational impediments to the control program. Regulatory constraints include effects on lake sturgeon, and native lamprey. Stephen Schram and Don Schreiner raised the issue that they are concerned about the negative effects of implementing the sturgeon treatment protocol. There are also impediments to implementation of alternative controls such as barriers, pheromones, and larval populations in lentic areas. The need to include passage of coaster, walleye, and sturgeon inhibits the use of barriers to stop sea lampreys because these fish and sea lampreys can't move through fish passage facilities very easily. Before pheromones can be implemented we must overcome potential registration issues and conduct additional research. Fish community objectives want sea lamprey abundance at levels that cause insignificant mortality, typically less than 5% marking.

Mark Ebener discussed estimation of sea lamprey damage to lake trout in Lake Superior. Sea lamprey marking data on lake trout form the basis of estimating sea lamprey-induced mortality. The marking data on specific size classes of lake trout is converted to marks per fish and multiplied by the lethality of an attack to estimate size-specific lamprey mortality rate. The size-specific mortality data is converted to age-specific rates by applying an age-length key to the mortality data for each year. The result is a matrix of age- and year-specific estimates of sea lamprey induce mortality that is input to statistical catch-at-age models. The catch-at-age models then use the Baranov catch equation to estimate the number of lake trout deaths due to sea lamprey by replacing fishing mortality rate in the catch equation with the sea lamprey mortality rate for each age class in each year.

Ebener illustrated how the catch-at-age models can be used to determine the allocation of mortality among its various components for WI-2, MI-5, MI-6, and MI-7. In each unit, sea lamprey mortality has made up the largest proportion of total mortality during 1980-2001, particularly in the last few years. The number of lake trout deaths due to sea lamprey mortality ranged from 75,000 to 325,000 fish and averaged about 125,000 lake trout in the four management units from 1980-2001.

Ebener made a request for data from each of the agencies that will be used to estimate sea lamprey mortality. Ebener first requested the 2001 and 2002 sea lamprey marking data from each agency. The data should include the number of A1, A2, and A3 sea lamprey marks observed on lake trout of <17 inches, 17-20.9 inches, 21-24.9 inches, 25-28.9 inches and >28.9 inches observed in the spring lake trout surveys in each management unit. The number of fish observed for marks in each size category should also be provided to Ebener.

Ebener also requested data that will be used to estimate asymptotic marking rates using the logistic regression method of Rutter and Bence. The data will be used to estimate sea lamprey marking and mortality in a consistent method across the Great Lakes. The data required consists of length and the number of sea lamprey marks observed on individual lake trout caught during spring lake trout surveys. The data need to be organized by management unit and year. Ebener will contact each agency individually for the data.

Gavin described trends in estimated sea lamprey abundance in each of the Great Lakes. The lowest level of abundance is in lakes Erie and Ontario, highest in Lake Huron and moderate levels in Lakes Michigan and Superior. The problem is that control effects in terms of spawning

sea lampreys are not measured until two years after treatment. Gavin reported that the control agents have reduced the concentration of TFM through time by about 35%. They achieved the GLFC target of a 50% reduction in usage of TFM in 2000, but at the same time sea lamprey abundance increased across the lakes. In response to the increase in sea lamprey abundance, the GLFC increased chemical treatments in 2001 and 2002. In 2003 are also planning on keeping treatment effort higher than in 2000. Pattern of treatment effort was increased in 2001 on Lake Superior, but then decreased somewhat in 2002 and 2003.

Gavin reported that 20% of the largest streams contain 88% of the larval habitat and 75% of the larval sea lamprey. Gavin asked the LSTC if the proposed treatments for 2003 are enough and sufficient? Also, are we treating the correct hotspots? Are there concerns over the control actions on the Bad River and sturgeon protocol? Are we addressing the critical questions?

The LSTC had the following concerns with the control program on Lake Superior:

- 1) Effect of the sturgeon protocol on stream ranking and treatment effectiveness
- 2) Better ability to count animals in large and deep streams where surveying larvae is more difficult
- 3) Recognized the for a research project to discern if control actions with TFM really have an effect on sturgeon.
- 4) Effects on sea lamprey predation on species other than lake trout, such as lake herring and Pacific salmon
- 5) Production of sea lampreys in lentic areas

Agenda Item 10 – Results from Sea Lamprey Marking Workshop

Mark Ebener summarized results of the sea lamprey marking workshop held in conjunction with the summer 2002 meeting of the LSTC. Mark reported that the level of agreement among observers at classifying sea lamprey marks declined from trial 1 ($\kappa = 0.23$) to trial 2 ($\kappa = 0.22$). When observers with no experience were excluded from the analysis the level of agreement also declined in both trial 1 and trial 2. It did appear though, that the ability to distinguish the various marks did improve since the level of agreement increased from trial 1 to trial 2 for A2, A3, A4, B1, and B2 marks. The level of agreement among individuals within an agency declined from trial 1 to trial 2 for eight of ten agencies at the workshop. Mark was generally encouraged that when the A1, A2, and A3 marks were combined the level of agreement increased from 0.23 to 0.36 in trial 1 and from 0.21 to 0.32 at trial 2.

The primary problems encountered in the workshop were distinguishing type-A from type-B marks, dealing with multiple marks, dealing with sliding type-B marks, and recording mark size. Type-A marks have a distinct hole through the skin and into the muscle, whereas type-B marks do not penetrate the skin or muscle. Type-B marks can result in the skin sloughing-off the fish and exposing the muscle, but there will be no hole into the muscle. Many people at the LSTC workshop mistakenly called the marks where the skin sloughed-off type A1, whereas the real classification was probably type B2. Multiple marks made by the same sea lamprey should be recorded only as one mark type and of these only the most severe mark should be recorded. On sliding type-B marks only the freshest mark should be recorded. Agencies should also distinguish between small and large marks. Small marks are typically less than the diameter of a dime, while large marks are greater than a dime in diameter. The mark size should reflect the

entire wound formed by the buccal funnel of the sea lampreys, not just the hole itself. The hole, many times, is cause only by the tongue of the sea lamprey.

Agenda Item 11– Stable Isotope Study

Mark Ebener briefly summarized the study he and Chris Harvey have been funded to conduct that will use stable isotopes to assess sea damage to fish stocks in Lake Superior. Mark currently has a laboratory study being conducted at the Hammond Bay Biological Station that will be used to validate the isotope data collected in the wild. The lab study consists of placing white suckers, whitefish, and lake trout in separate tanks and placing five transformers sea lampreys in each tank to feed on the fish. This way Mark and Chris should be able to estimate the degree of isotope fractionation in ^{15}N and ^{13}C that occurs from each species to sea lamprey.

Mark is currently collecting parasitic sea lampreys from through Lake Superior by offering a \$10 reward to sport and commercial fishermen for the sea lampreys they collect that are attached to fish they catch. The reward system will be continued into 2003. Mark will also need to collect 10 fish of various species from each agency that conducts surveys in Lake Superior. The species Mark will be collecting are lean lake trout, siscowets, lake herring, lake whitefish, burbot, deepwater ciscoes, Pacific salmon, and suckers. All size of fish will be needed. Mark will contact everyone before the sampling season to remind them of his needs for fish.

Agenda Item 12 – State of Lake Report

Ebener will send an electronic version of state of lake report to everyone. Two sections of the report have not been written; brook trout and status of phytoplankton, zooplankton and benthos. Ebener will talk to Marc Tuchman about writing the phytoplankton section. Marilee Chase was to have written the brook trout section, but she is currently not working. Stephen Schram volunteered Dennis Pratt to take the lead on writing the brook trout section along with other authors.

The LSTC reviewed the various sections of the report and made a few suggestions for modifications to each section. In particular the LSTC reviewed the recommendations contained in each section and modified or added more recommendations. The suggested changes to each section and specific management recommendations for each section are described below.

Community Structure

Owen Gorman will write this section that will be similar to his presentation made under Agenda Item 14 in these minutes.

Agenda Item 13 – Database management

Shawn Sitar offered to sponsor a workshop on management of databases for fisheries data. The workshop would be held in conjunction with the summer LSTC meeting. The LSTC agreed that a workshop would be useful and that Shawn should hold the workshop before the summer meeting. Shawn should consider including a review of agency database management as part of the workshop.

Agenda Item 14 – USGS Fish Community Overview

Owen Gorman gave a presentation on the status and trends of Lake Superior fishes based on the USGS spring bottom trawl surveys. The purpose of the presentation is to give a community assessment of the trawl surveys. Lake herring, rainbow smelt and lake whitefish make up 2/3 of the biomass caught by the trawls. Owen has identified 12 ecoregions where the fish communities are unique. Overall, biomass of the principal prey species have been declining in Lake Superior since peaking at 4 kg/ha the late 1980s and early 1990s and biomass is now below 2 kg/ha and similar to the early 1980 before lake herring reproduction increased. There has been a substantial changes in composition of the benthic community through time. Some conclusions are that: community structure was not stable over time and space, and there has been a recovery of the natural predator prey base (i.e. lake herring).

USGS has also done some trawling in the Ontario waters to describe the deepwater fish community. The depth strata surveys as part of this study were 50-115 m, 90-150 m, and 150-240 m. The community changed substantially with increasing depth. Siscowet were most abundant in the intermediate depth and declined somewhat at the deepest strata. Bloater were abundant in the intermediate depth, while Kiyi were abundant in the deepest strata. Pygmy whitefish are abundant at intermediate depths. Deepwater sculpin abundance declined at intermediate depths where siscowets were abundant, then increased at the deepest stations.

Owen also described differences in the structure of fish communities with the 12 ecoregions. Essentially dynamics of the fish community are not “insync” within ecoregions of the lake.

Agenda Item 15 – Gill Net Saturation

Shawn Sitar provided a summary to evaluate factors influencing gill net saturation by lake trout. Hansen et al. 1995 reported on a study to evaluate catch rates of lake trout in the spring survey based on number of nights out. They developed an asymptotic function where

$$CPUE = \alpha(1 - e^{-\beta * \text{nights}})$$

and

$$\beta = -\ln(1 - (cpue/211.443))/\text{nights}$$

Shawn is suggesting that we may to redo the analysis. Mike assumed that all the fish caught in the nets were lake trout and that no other species were caught in the nets. Shawn has had a problem finding the catch of other fish species than lake trout in the 1995 catches, so he can't find out if other species were present in the data Hansen used to calculate the gill net saturation parameters.

Shawn and Mike have developed a protocol for estimating CPUE and Shawn has provided that protocol in the form of a spreadsheet to everyone on the LSTC. Basically separate the lake trout catch into the three forms and compute a total CPUE for lake trout. Then compute the beta value and re-estimate CPUE, then allocate CPUE among the forms based on the proportion in the catch.

Ebener will modify the LSTC protocol to reflect this new change using proportions of each form.

Agenda Item 16 – Lake Trout Marking Study WI-1

Stephen Schram described the study WiDNR is conducting to change lake trout stocking in WI-1. One-half the fish will be stocked as fall fingerlings and the other half will be stocked in the spring in an attempt to reduce the cost of rearing fish because of budget constraints. Two fin clips will be used to mark the fish; ADLV in the fall and an ADLP in spring. This study will be conducted for three years beginning with 2002-year class.

Agenda Item 17– Lake Trout Coded-Wire Tag Recoveries

Gene Mensch provided a summary of coded-wire tag recoveries from lake trout stocked in Keweenaw Bay by KBIC and USFWS. Marking of fish with cwt's began with the 1995 year class. All fish stocked in the Bay by KBIC since 1996 are cwt-marked. Fish are all double-clipped. Gene is looking for assistance from other agencies in collection of the cwt-marked fish. The 1995 year class appears to have survived well and is providing most of the stocked fish abundance in Keweenaw Bay.

Agenda Item 18 – Lake Trout Stock Assessment Model MI-2

Bill Mattes described his progress at developing a catch-at-age model for lake trout management unit MI-2. GLIFWC has developed a data-entry interface with MicroSoft Visual Basic and EXCEL to make data entry easier in AD Model Builder. Bill will send Ebener a copy of the database interface to provide to LSTC members.

Bill has finally produced a working model for lake trout in MI-2 that is reaching convergence, but he is still having problems since the model shows that age 13 and older fish were more abundant than younger age class early in the time series. Ebener and Sitar suggested that selectivity curves for both fisheries might be incorrect, i.e. decline too much after peak selectivity and suggest that Bill consider estimating selectivity using a logistic function instead of the double logistic.

Agenda Item 19 – Update on Fish Diet Analysis

Brad Ray from UMD described the present state of his project to describe and evaluate predator diets in Lake Superior. Will combine all data set together. Will evaluate forage fish spatial heterogeneity and diet analysis. He is currently formatting the existing data into a consistent format.

Smelt is numerically very abundant in lake trout diets in nearly all jurisdictions (Ontario, Michigan, Wisconsin, and Minnesota).

Ebener send Brad the LSTC protocol for diet.

Agenda Item 20 – Lake Trout Photo ID of Lake Trout

Mike Petzold provided an overview of the results from which each agency classified the lake trout in pictures provided by Mike. Found that percent agreement among agencies was 79% and ranged from 72 to 88%. For hatchery fish agency agreement ranged from 63-79% and averaged

70%. On average only 25% of the fish caught in the Ontario survey were identified as leans, and only 45% of the people correctly classified hatchery fish.

Appears based on this study, that the proportion of leans is lower than would be anticipated.

Shawn Sitar also provided a CD with pictures of fish. LSTC members should also classify the lake trout on Shawn's CD in the same way Mike did. LSTC members should read Shawn's CD before the summer LSTC meeting and provide the data to Shawn.

Agenda Item 21 – 2003 Siscowet Survey

The LSTC agreed to conduct a coordinated survey of siscowet in Lake Superior during June 2003. OMNR reported that they would not be able to conduct siscowet survey in 2003. Ebener will provide a copy of the protocol to everyone. USFWS will coordinate with GLIFWC and Red Cliff Fisheries to conduct the siscowet survey in MI-2.

Ron Kinnunen asked if the LSTC would ever be estimating a harvestable biomass of siscowets from Lake Superior because there are people interested in using the oil from siscowets for Omega-3 oils. Our response was yes, but not for several years probably.

Agenda Item 22 – Consolidate Gill Net Twine Order

The LSTC was in general agreement that a consolidated gill net order would be useful. Shawn Sitar will have this boat captain take the lead on this issue and look to have a vendor and order set by the winter 2004 meeting.

Agenda Item 23 – Brook Trout Conference

Don Schreiner described the status of the brook trout conference being planned for the next several years. The purpose of the workshop will be to provide some direction and coordination to research on brook trout in Lake Superior and outside the Great Lakes basin. Two steering committees have been developed to aid with the conference. One is the synthesis workshop steering committee being chaired by Jeff Schuldt and Ed Iwachewski. They are planning four activities:

- 1) Session on migratory brook trout at the 2003 Annual AFS National Meeting in Quebec City. Hired facilitators Cliff Craft and Dan Josephson for this session.
- 2) Synthesis Workshop to be held in Oct 2003 in Duluth, MN or Houghton, MI that should be similar to CLAR symposium. This workshop will be open only to about 50 invited participants.
- 3) Another session at the 2004 Annual AFS Meeting in Madison, WI run by Marty Jennings of WIDNR. Synthesis papers will be presented here. Hoping to publish some of these as a section in a NAJFM journal
- 4) In 2004 and thereafter will be public outreach sponsored by MN and WI Sea Grant Programs.

If LSTC members and participants know of experts please let Don know so these people can become involved in the process.

Agenda Item 24- Presentation at March 2003 LSC Meeting

Mark Ebener – Provide an overview of LSTC activities and recommendations to LSC.

- include discussion on SCAA models
- lakewide model development usage for long-term gaming
- lake herring report
- fish ID stuff
- update on state of lake report
- lakewide acoustic survey

Owen Gorman - Status of prey fish

Mark Ebener – sea lamprey marking and damage estimation, isotope study,

Mark Ebener and Shawn Sitar -allocation of lake trout mortality and population dynamics

Mike Fodale – sea lamprey control and assessment (include sturgeon protocol discussion)

Bill Mattes – fishery harvests

Don Schreiner – summary of lakewide and jurisdictional stocking

USFWS – status of invasive species monitoring

Bryan Henderson – his lake trout ecology study (Ebener will talk to them)

Hansen - Bioenergetics study in Chequamegon Bay

Nearshore indicators project for in-common session

GLFC and USFWS funded projects

- Don Schreiner on brook trout conference
- Bill Mattes on lake sturgeon study on White River
- Bryan Henderson on lake trout ecology
- Owen Gorman on acoustic study
- Tom Doolittle and Henry Quinlan on Bad River sturgeon habitat study
- Brad Ray on fish diet analysis
- Mike Hansen on lake trout movements

Agenda Item 24 – Time and Place of Summer 2003 Meeting

The next meeting of the LSTC will be July 29-30, 2003 in Marquette, MI at the USFWS Marquette Biological Station. The LSTC agreed to try and keep the meeting to 1-½ days instead of two days. The LSTC meeting will directly follow the database management workshop being sponsored by Shawn Sitar and scheduled for July 28-29, 2003.